

TITUS RESTORATION SERVICES, INC.

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TITUS RESTORATION SERVICES, INC.

SAFETY AND HEALTH POLICY STATEMENT

October 2012

At Titus Restoration Services, Inc. we believe that integrating safety and health into every operation at our company is of the utmost importance. The health and safety of our employees continues to be the first consideration in our operations.

To this extent, Titus Restoration Services, Inc. strives to comply with all applicable laws and regulations that govern our operations. In so doing, we conduct our processes and operations in a manner that reduces or eliminates the conditions that are unhealthful or could cause injury to our employees. Employees are consistently urged to report unsafe conditions in their workplace, and work with Titus Restoration Services, Inc. management to alleviate these conditions where they may exist.

Quality or production goals do not supercede the safety of our employees. With this in mind, Titus Restoration Services, Inc. management and staff have implemented a Safety Management Program. This program provides for:

- The continual commitment of improving safety at our workplace
- Employee awareness and training with regard to safety issues
- A commitment to visitors, neighbors, and our community to lessen or eliminate any safety-related issues from our corporation that could impact them

Within the scope and applicability of our Safety Management Program, Titus Restoration Services, Inc. has established a goal to have injury and illness incident rates below the industry average. To accomplish this goal, we ask each of our employees to commit not only to their own safety but to the safety of their co-workers and their community as well.

Titus Restoration Services, Inc.

PROGRAM OVERVIEW

ACCIDENT INVESTIGATION AND REPORTING SAFETY PROGRAM

REGULATORY STANDARD: OSHA - 29 CFR 1904

INTRODUCTION: The accident investigation and reporting program is a tool used to ensure notification of accidents and assist in the correction action process. Accident investigation is primarily a fact-finding procedure - the facts revealed are used to prevent recurrences of similar accidents in the future.

TRAINING:

- Supervisors should be trained in accident investigation
- Employees should be trained on when and how to report accidents and incidents

ACTIVITIES:

- Determine who is a part of the Accident Investigation Team, which may include supervisors, management, and employees
- Determine accident and near miss reporting procedures
- OSHA Recordkeeping, forms 300 and 301 or equivalent
- Injury trending

FORMS:

- Accident, Incident, Near Miss Investigation Report
- Training Attendance Roster

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Accident Investigation and Reporting Safety Program

- 1. Purpose.** Accidents and Incidents result from a failure of people, equipment, supplies, or surroundings. A successful accident investigation determines not only what happened, but also attempts to find out how and why the accident occurred. Investigations are an effort to prevent a similar or perhaps more disastrous sequence of events. The company will review and evaluate this safety program:
 - 1.1 On an annual basis
 - 1.2 When changes occur that prompt revision of this document (within the company or to regulatory documents)
 - 1.3 When facility operational changes occur that require a revision of this document
- 2. Scope.** This program applies to the total workplace regardless of the number of workers employed or the number of work shifts.
- 3. Responsibilities:**
 - 3.1 Management:
 - 3.1.1 Ensure supervisors are trained in accident investigation, as needed or required.
 - 3.1.2 Encourage employees to report accidents and incidents.
 - 3.1.3 Provide resources, as needed or required, to implement corrective actions based on results of incident investigations.
 - 3.1.4 Review incident reports and any incident trends to establish corrective and preventive actions.
 - 3.1.5 Communicate incident information to other areas of the company where similar incidents may occur, and implement preventive actions to eliminate the potential for future incidents.
 - 3.1.6 Maintain required documentation.
 - 3.1.7 Train appropriate personnel to review and implement Job Hazard Analysis and Trend Analysis as needed.
 - 3.2 Supervisor:
 - 3.2.1 Provide or arrange for adequate medical treatment for any injured employee.
 - 3.2.2 Promptly investigate any incidents or near miss incidents that occur.
 - 3.2.3 Provide recommendations to management on corrective actions to prevent recurrence of similar incidents.

3.3 Employees:

- 3.3.1 Promptly report incidents or near misses that occur.
- 3.3.2 Report hazardous conditions to your supervisor.
- 3.3.3 Participate in incident investigations, as needed or required.

3.4 Safety Officer (as needed or required):

- 3.4.1 Participate in incident investigations.
- 3.4.2 Review hazard reports and incident reports.
- 3.4.3 Recommend corrective or preventive actions to eliminate similar incidents.
- 3.4.4 Track corrective and preventive actions to ensure completion.
- 3.4.5 Prepare incident trend summaries and present to management.
- 3.4.6 Maintain required documentation.

4. Procedure:

4.1 Accident Investigation Team Composition. Supervisors, in conjunction with the safety officer as needed or required, are primarily responsible for the investigation of accidents and incidents. In addition, members of the safety committee or a separate Accident Investigation Team may serve as incident investigators.

4.2 Hazard Reporting:

4.2.1 Hazards or potential hazards identified by employees will immediately be reported to management or supervision.

4.2.1.1 Person reporting hazard:

4.2.1.1.1 Notify department Supervisor of the hazard.

4.2.1.1.2 Initiate lock-out/tag-out, if required, on the machine.

4.2.1.2 Supervisor:

4.2.1.2.3 Notify all affected workers of hazard.

- 4.2.1.2.4 Notify Maintenance Department of hazard, if required.
 - 4.2.1.2.5 Ensure hazard is properly marked and controlled until corrected.
- 4.3 Accident Investigation, Analysis and Reporting. Accident investigation is primarily a fact-finding procedure; the facts revealed are used to prevent recurrences of similar accidents. The focus of accident investigation will be to prevent future accidents and injuries to increase the safety and health of all our employees.
- 4.3.1 Immediate concerns:
 - 4.3.1.1 Ensure any injured person receives proper care.
 - 4.3.1.2 Ensure co-workers and personnel working with similar equipment or in similar jobs are aware of the situation. This is to ensure that procedural problems or defects in certain models of equipment do not exist.
 - 4.3.1.3 Start the investigation promptly.
 - 4.3.2 Accident Investigation and Reporting. OSHA Form 301 (or a standardized investigation report form which details specific company requirements for investigation) will be developed and used to gather data to determine causes and corrective actions. As a minimum the form will contain the following areas of concern.
 - 4.3.2.1 Injured employee's name and any other identifier
 - 4.3.2.2 Employee's address
 - 4.3.2.3 Date and time of injury
 - 4.3.2.4 Shift and department
 - 4.3.2.5 Sex/DOB
 - 4.3.2.6 Length of service (hire date) and length of time at specific job
 - 4.3.2.7 Time shift started
 - 4.3.2.8 Physician's and hospital name (if transported)
 - 4.3.2.9 Indication if employee was hospitalized as an in-patient (i.e. overnight)
 - 4.3.2.10 Type of injury
 - 4.3.2.11 Body part or body system injured

- 4.3.2.12 Resulting fatalities (date of death)
- 4.3.2.13 Occupation or task being performed just prior to being injured
- 4.3.2.14 Description and analysis of accident
- 4.3.2.15 Indication of the object or substance that directly harmed the employee
- 4.3.2.16 Name of person completing form, their title, phone number and the date
- 4.3.3 Additional information that is recommended on the form is:
 - 4.3.3.1 Time shift started
 - 4.3.3.2 Overtime length when injury occurred
 - 4.3.3.3 Action taken to prevent recurrence
 - 4.3.3.4 Employee's statement
 - 4.3.3.5 Witnesses' statement
 - 4.3.3.6 Employer's statement
 - 4.3.3.7 Name of person(s) reviewing form and date of review
- 4.4 Accident Investigation Review Team. A member of management responsible will review all Incident Reports for the department/section involved ensuring pertinent information is transmitted to all concerned and remedial action(s) taken.
- 4.5 Accident Investigation Final Report. The report will include but is not limited to the following:
 - 4.5.1 Investigation report form and pertinent data
 - 4.5.2 Photographs/drawings/exhibits of scene
 - 4.5.3 Narrative of accident
 - 4.5.4 Sequence of events
 - 4.5.5 Contributing information
 - 4.5.6 Findings and recommendations of review team
 - 4.5.7 Action items and completion dates
 - 4.5.8 Responsible persons

4.5.9 Follow-up procedures to ensure completion

4.5.10 Distribution list

4.6 Safety and Job Hazard Analysis. The company will identify through the use of information sources, screening and job surveys any activities that place employees at risk. After any accident or near miss, the task or job in question will have a job hazard analyses routinely performed by a qualified person(s). This analysis will help to verify that all required actions are being taken to determine if risk factors for a work position have been reduced or eliminated to the maximum extent feasible.

4.6.1 Workstation Analysis. Workstation analysis will be conducted to identify risk factors present in each job or workstation.

5. Safety Information:

5.1 Administrative Controls. Once data has been gathered from the Incident Report, administrative controls will be used where needed to eliminate or reduce the frequency and severity of accidents and near misses. Examples of administrative controls include the following:

5.1.1 Reducing the production rates and or line speeds where possible.

5.1.2 Providing rest pauses to relieve fatigued muscle-tendon groups.

5.1.3 Increasing the number of employees assigned to a task to alleviate severe conditions, especially in lifting heavy objects.

5.1.4 Using job rotation and as a preventive measure, not as a response to physical symptoms. The principle of job rotation is to alleviate physical fatigue and stress of a particular set of muscles and tendons by rotating employees among other jobs that use different muscle-tendon groups. If rotation is utilized, the job analyses must be reviewed to ensure that the same muscle-tendon groups are not used when they are rotated.

5.1.5 Providing sufficient numbers of standby/relief personnel to compensate for foreseeable upset conditions on the line (e.g., loss of workers).

5.1.6 Job enlargement. Having employees perform broader functions which reduce the stress on specific muscle groups while performing individual tasks.

5.1.7 Machine maintenance/guarding. Ensure regular maintenance is performed on machines and/or tools used by employees are properly guarded and that maintenance is routinely performed.

5.1.8 Employee training. Ensure all employees are properly trained in the hazards associated with the job before work is performed unsupervised.

- 5.2 Medical Management. The Safety Officer or other designated person will manage the safety program. Employees of each work shift should have access to health care providers or designated alternates in order to facilitate treatment, surveillance activities, and recording of information. During an accident investigation the medical management safety program will, as a minimum, address the following issues:
- 5.2.1 Injury and illness recordkeeping
 - 5.2.2 Early recognition of problems such as strains and muscle fatigue that could lead to accidents
 - 5.2.3 Systematic evaluation and referral
 - 5.2.4 Conservative treatment after an accident
 - 5.2.5 Conservative return to work after an accident
 - 5.2.6 Systematic monitoring
 - 5.2.7 Recordability criteria. The accident must be work related. Simply stated, unless the illness was caused solely by a non-work-related event or exposure off-premises, the case is presumed to be work related.
 - 5.2.8 Occupational injuries. Injuries are caused by instantaneous events in the work environment. To keep recordkeeping determinations as simple and equitable as possible, back cases are classified as injuries even though some back conditions may be triggered by an instantaneous event and others develop as a result of repeated trauma. Any occupational injury involving any of the following circumstances is to be recorded on the OSHA-Form 300:
 - 5.2.8.1 Medical treatment resulting from significant injury/illness as diagnosed by a physician or other licensed health care professional
 - 5.2.8.2 Loss of consciousness
 - 5.2.8.3 Restriction of work or motion
 - 5.2.8.4 Contaminated needle stick or sharp exposure
 - 5.2.8.5 Work related tuberculosis infection
 - 5.2.8.6 Cases of medical removal as required under specific OSHA Regulatory Standard
 - 5.2.8.7 Transfer to another job
 - 5.2.9 When an incident is recorded on the OSHA Form 300, that same incident must also be recorded on OSHA Form 301.

5.2.10 Periodic Workplace Walk-throughs. Supervisors, in conjunction with the Safety Officer or Health Care provider as needed or required, will conduct periodic, systematic workplace walk-throughs on a monthly basis (OSHA recommended) to remain knowledgeable about operations and work practices, to identify potential light duty jobs, and to maintain close contact with employees. Safety Officers and Health care providers also should be involved in identifying accident risk factors in the workplace as part of the Accident Investigation Team. A record will be kept documenting the date of the walk-through, area(s) visited, accident risk factors recognized, and action initiated to correct identified problems. Follow-up will be initiated and documented to ensure corrective action is taken when indicated.

5.3 Accident Trend Analysis:

5.3.1 The information gathered from incident investigations, OSHA logs and hazard reports will help to identify areas or jobs where potential accident or injury conditions could or do exist. This information may be shared with anyone in the company since employees' personal identifiers are not solicited. The analysis of medical records (e.g., sign-in logs and individual employee medical records) may reveal areas or jobs of concern, but it may also identify individual workers who require further follow-up. The information gathered while analyzing medical records will be of a confidential nature, therefore care must be exercised to protect the individual employee's privacy.

5.3.2 The information gained from the trend analysis may help determine the effectiveness of the various safety programs initiated to decrease accidents in our facility.

5.3.3 Employee survey or Job Hazard Analysis. A survey may be used to provide a standardized measure of the extent of progress in reducing work-related accidents for each area of the plant or facility. This will determine which jobs are exhibiting problems and measure progress of the overall safety program.

5.3.3.1 Design of the survey. A survey of employees will be conducted to measure employee awareness of work-related accident and to report the location, frequency, and type of accidents likely to occur.

5.3.3.2 Surveys normally will not include an employee's personal identifiers. This is to encourage employee participation in the survey.

5.3.3.3 Frequency. Surveys will be conducted as a minimum on an annual basis or anytime deemed necessary by the Accident Investigation Team. Conducting the survey annually should help detect any major change in the prevalence, incidence, and/or location of reported and unreported accidents.

5.3.4 List of Jobs. The company will compile a list of jobs, tasks and activities. This listing should be prioritized, based on the risk factors for type of injury (s) sustained. Jobs will be analyzed to determine the physical procedures used in the performance of each job including lifting requirements, postures, handgrips, frequency of repetitive motion, and general safety requirements of the job. This information will assist health care providers in recommending assignments to light or restricted duty jobs. Supervisors should periodically review and update the lists.

6. Training and Information:

- 6.1 The purpose of accident investigation training and education is to ensure those members of the Accident Investigation Team and all of our employees are sufficiently informed about the Accident Investigation Safety Program.
 - 6.1.1 Employees will be adequately trained about the company's Accident Investigation Safety Program. Proper training will allow managers, supervisors, and employees to understand the procedures to follow to report an accident, hazards associated with a job or production process, their prevention and control, and their medical consequences.
 - 6.1.2 Training program design. The program will be designed and implemented by the Safety Officer, Senior Manager or other designated person. Appropriate special training will be provided for personnel responsible for administering the program.
 - 6.1.3 Learning level. The safety program will be presented in language and at a level of understanding appropriate for the individuals being trained. It will provide an overview of the potential risk of illnesses and injuries, their causes and early symptoms, the means of prevention, and treatment.
 - 6.1.4 Training for affected employees will consist of both general and specific job training:
 - 6.1.4.1 General Training. Employees will be given formal instruction on the hazards associated with their jobs and with their equipment. This will include information on the varieties of hazards associated with the job, what risk factors cause or contribute to them, how to recognize and report hazardous conditions, and how to prevent accident with their respective jobs. This instruction will be repeated for each employee as necessary. This training will be conducted on an annual basis. (OSHA experience indicates that, at a minimum, annual retraining is advisable).
 - 6.1.4.2 Job-Specific Training. New employees and reassigned workers will receive an initial orientation and hands-on training before being placed in a full-production job. Each new hire will receive a demonstration of the proper use of and procedures for all tools and equipment before assignment.
 - 6.1.5 Training for Supervisors. Supervisors are responsible for ensuring that employees follow safe work practices and receive appropriate training to enable them to do this. Supervisors therefore will undergo training comparable to that of the employees. Such additional training as will enable them to recognize and correct hazardous work practices, proper accident reporting/investigation requirements, and to reinforce the company safety program.
 - 6.1.6 Training for Managers. Managers will be made aware of their safety and health responsibilities and will receive sufficient training pertaining to issues at each workstation and in the production process as a whole so that they can effectively carry out their responsibilities.

6.1.7 Training for Engineers and Maintenance Personnel. Plant engineers and maintenance personnel will be trained in the prevention and correction of job hazards through job and workstation design and proper maintenance, both in general and as applied to the specific conditions of the facility.

6.2 Employee Training and Education. Health care providers will participate in the training and education of all employees, as needed or required. This training will be reinforced during workplace walk-throughs and the individual health surveillance appointments. All new employees will be given such education during orientation. This demonstration of concern along with the distribution of information should facilitate early recognition of accident conditions before their development, an elimination or reduction in accidents, and increased likelihood of compliance with recognition, prevention, and control.

7. Definitions.

- *Accident* - An injury or substance exposure that results in a detrimental health effect to an individual.
- *Incident* – An event that results in an accident, near miss or property damage.
- *Near Miss* – An avoided accident. An incident that could have occurred, but due to mitigating circumstances (or luck) did not occur.

ACCIDENT, INCIDENT OR NEAR MISS INVESTIGATION REPORT

PART 1 IDENTIFICATION INFORMATION

Employee Name	
Date of Accident	Time: AM PM
Occupation	Shift
Department	SS#:
Employee Home Address:	Date of Birth:
	Date of Hire
	Gender: Male <input type="checkbox"/> Female <input type="checkbox"/>

PART 2 SUPPLEMENTARY INFORMATION

Company			
Mailing Address			
City	State	Zip	
Telephone ()			
Accident Location	<input type="checkbox"/> Same as establishment?	<input type="checkbox"/> On premises?	(Check if applies)
Location Where Accident Occurred (if different from above):			
Remarks:			
Was injured person performing regular job at time of accident? <input type="checkbox"/> Yes <input type="checkbox"/> No			
Describe activity the person was doing just before they were injured:			
Length of Service: With Employer		On this job	
Time shift started	AM PM	Overtime?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Name and address of physician:			
City	State	Zip	
Employee treated in an emergency room? <input type="checkbox"/> Yes <input type="checkbox"/> No.		Employee hospitalized overnight? <input type="checkbox"/> Yes <input type="checkbox"/> No	
If hospitalized, name and address of hospital:			
City	State	Zip	
Fatality? <input type="checkbox"/> Yes <input type="checkbox"/> No		If Yes, date of death	

PART 3 ACCIDENT TREE

NATURE OF INJURY OR ILLNESS:			PART OF BODY AFFECTED:			
Operation Location:	Operation Task:	Employee Task:	Employee Body Position/Activity	Agency	Preceding Situation or Event	Type of Accident

PERSONAL PROTECTIVE EQUIPMENT		
Did employee use any protective equipment for the job or task performed? <input type="checkbox"/> Yes <input type="checkbox"/> No		
Type:		
Did equipment fail? <input type="checkbox"/> Yes <input type="checkbox"/> No		
If so, describe:		
CORRECTIVE ACTIONS:		
Were any corrective or preventive actions put into place due to the incident? <input type="checkbox"/> Yes <input type="checkbox"/> No		
If so, list them:		
Action Taken	Expected Result	Expected Completion Date
Were corrective actions followed through to completion? <input type="checkbox"/> Yes <input type="checkbox"/> No		
If so, list results and dates:		
Action Taken	Expected Result	Expected Completion Date
STATEMENTS CONCERNING ACCIDENT		
EMPLOYEE STATEMENT CONCERNING ACCIDENT		
Name	Title	Date
SUPERVISOR/EMPLOYER'S STATEMENT		
Name	Title	Date
WITNESS STATEMENT		
Name	Title	Date
SAFETY COMMITTEE COMMENTS		
Name	Title	Date
ATTACH ADDITIONAL COMMENTS, REPORTS AND PHOTOS ON NEXT PAGE		

PROGRAM OVERVIEW

BACK SAFETY IN THE WORKPLACE PROGRAM

REGULATORY STANDARD: OSHA - 29 CFR 1903. (General Duty Clause)
OSHA - 29 CFR 1910.151 (Medical Services)
Best Practices - Ergonomics

INTRODUCTION: Outlines the methods for identifying back disorder risk factors and for implementing protective measures to prevent back injuries.

TRAINING:

- Recommended for most workplaces

ACTIVITIES:

- Identify risk factors for back injury in the operations
 - Repetitive or prolonged activities
 - Awkward postures
 - Unusual size or weight objects
- Implement any required controls to minimize or eliminate hazards.

FORMS:

- Training Attendance Roster, as needed

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Back Safety in the Workplace Program

- 1. Purpose.** This safety program is designed to establish clear company goals and objectives with regard to back safety and will be communicated to all required personnel. The company will review and evaluate this safety program:
 - 1.1 On an annual basis
 - 1.2 When changes occur to 29 CFR that prompt revision of this document
 - 1.3 When facility operational changes occur that require a revision of this document
 - 1.4 When there is an accident or close-call that relates to this area of safety
 - 1.5 Review the safety program any time these procedures fail
- 2. Scope.** This program applies to the total workplace regardless of the number of workers employed or the number of work shifts
- 3. Responsibilities.**
 - 3.1.1 Management and Supervisor:
 - 3.1.1.1 Evaluate the workplace for potential back safety issues
 - 3.1.1.2 Implement controls and awareness training to prevent back injuries
 - 3.1.1.3 Review this program and information at least annually to assure it remains effective.
 - 3.1.2 Employees:
 - 3.1.2.1 Follow workplace rules and procedures
 - 3.1.2.2 Immediately report injuries or symptoms of back disorders
 - 3.1.3 Safety Officer (as needed or required):
 - 3.1.3.1 Assist in the implementation of the back safety program
- 4. Procedure.**
 - 4.1 **Back Disorder Risk Factors.** Identification of hazards will be based on risk factors such as conditions of a job process, workstation, or work methods that contribute to the risk of developing problems associated with back disorders. Not all of these risk factors will be present in every job containing stressors nor is the existence of one of these factors necessarily sufficient to cause a back injury. Supervisors will use the following known risk factors to isolate and report suspected problem areas:

- 4.1.1 Repetitive and/or prolonged activities
- 4.1.2 Bad body mechanics such as:
 - 4.1.2.1 Continued bending over at the waist
 - 4.1.2.2 Continued lifting from below the knuckles
 - 4.1.2.3 Continued lifting above the shoulders
 - 4.1.2.4 Twisting at the waist
 - 4.1.2.5 Twisting at the waist while lifting
 - 4.1.2.6 Lifting or moving objects of excessive weight
 - 4.1.2.7 Lifting or moving object of asymmetric size
 - 4.1.2.8 Prolonged sitting with poor posture
 - 4.1.2.9 Lack of adjustable :
 - 4.1.2.9.1 Chairs
 - 4.1.2.9.2 Footrests
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 - 4.1.2.14 Stability of load
 - 4.1.2.15 Coupling of load
 - 4.1.2.16 Type of grip
 - 4.1.2.17 Reach distances
 - 4.1.2.18 Work height

4.2 Safe Lifting Techniques. First, use a pushcart or other material-handling device! Second, ask a co-worker for help if no device is available! If you must lift alone here are some tips. Before starting to lift or carry anything, check your entire walkway to make sure your footing will be solid. Your shoes should give you good balance, support and traction. Keep loads as close to your body as possible. The following situations show basic lifting techniques to avoid injury:

4.2.1 Lifting or lowering from a high place

- 4.2.1.1 Stand on a platform instead of a ladder
- 4.2.1.2 Lift the load in smaller pieces, if possible
- 4.2.1.3 Slide the load as close to yourself as possible before lifting
- 4.2.1.4 Grip firmly and slide it down
- 4.2.1.5 Get help when you need it to avoid injury

4.2.2 Lifting from hard-to-get-at places

- 4.2.2.1 Get as close to the load as possible
- 4.2.2.2 Keep back straight, stomach muscles tight
- 4.2.2.3 Push buttocks out behind you
- 4.2.2.4 Bend your knees
- 4.2.2.5 Use leg, stomach, and buttock muscles to lift -- not your back

4.2.3 Lifting drums, barrels, and cylinders

- 4.2.3.1 Use mechanical assists
- 4.2.3.2 Always be aware that loads can shift
- 4.2.3.3 Get help if load is too heavy

4.2.4 Awkward objects

- 4.2.4.1 Bend your knees with feet spread
- 4.2.4.2 Grip the top outside and bottom inside corners
- 4.2.4.3 Use your legs to lift, keeping back straight

4.2.5 Shoveling

- 4.2.5.1 Make sure your grip and balance are solid

- 4.2.5.2 Tighten your abdomen as you lift
- 4.2.5.3 Keep the shovel close to your body
- 4.2.5.4 Use the strength of your thigh muscles to bring you to an upright position
- 4.2.5.5 Increase your leverage by keeping your bottom hand low and toward the blade
- 4.2.6 General safety tips
 - 4.2.6.1 Don't lift objects over your head
 - 4.2.6.2 Don't twist your body when lifting or setting an object down
 - 4.2.6.3 Don't reach over an obstacle to lift a load
 - 4.2.6.4 Pace yourself to avoid fatigue

5. Safety Information.

- 5.1 Job Hazard Analysis and Work Station Analysis Surveys. Job hazard analysis surveys will be routinely performed by a qualified person for jobs that put workers at risk. This analysis survey will help to verify risk factors and to determine if risk factors for a work position have been reduced or eliminated to the extent feasible.
 - 5.1.1 Upper extremities. For upper extremities three (3) measurements of repetitiveness will be reviewed:
 - 5.1.1.1 Total hand manipulations per cycle.
 - 5.1.1.2 The cycle time.
 - 5.1.1.3 The total manipulations or cycles per work shift.
 - 5.1.2 Force measurements. Force measurements will be noted as an estimated average effort and a peak force (unless quantitative measurements are feasible). They will be recorded as "light," "moderate," or "heavy".
 - 5.1.3 Tools. Tools will be checked for excessive vibration and weight. (The NIOSH criteria document on hand/arm vibration should be consulted.) The tools, personal protective equipment, and dimensions and adjustability of the workstation will be noted for each job hazard analysis.
 - 5.1.4 Postures. Hand, arm, and shoulder postures and movements will be assessed for levels of risk.
 - 5.1.5 Lifting Hazards. Workstations having tasks requiring manual materials handling will have the maximum weight-lifting values calculated. (The NIOSH *Work Practices Guide for Manual Lifting* should be used for basic calculations.)

5.1.6 Videotape Method. The use of videotape, where feasible, will be used as a method for analysis of the work process. Slow-motion videotape or equivalent visual records of workers performing their routine job tasks will be used where practical to determine the demands of the task on the worker and how each worker actually performs each task. A task analysis log/form will be used to break down the job into components that can be individually analyzed.

5.2 Hazard Prevention and Control. Company management understands that engineering solutions, where feasible, are the preferred method of control for ergonomic hazards. The focus of this safety program is to make the job fit the person, not to make the person fit the job. This is accomplished by redesigning the workstation, work methods, or tools to reduce the demands of the job. Such as high force, repetitive motion, and awkward postures. This safety program will whenever possible research into currently available controls and technology. The following examples of engineering controls will be used as models for workstation design and upgrade.

5.2.1 Workstation Design. Workstations when initially constructed or when redesigned will be adjustable in order to accommodate the person who actually works at a given workstation. It is not adequate to design for the "average" or typical worker. Workstations should be easily adjustable and either designed or selected to fit a specific task so that they are comfortable for the workers using them. The workspace should be large enough to allow for the full range of required movements especially where hand held tools are used. Examples include:

5.2.1.1 Adjustable fixtures on work tables so that the position of the work can be easily manipulated.

5.2.1.2 Workstations and delivery bins that can accommodate the heights and reach limitations of various-sized workers.

5.2.1.3 Work platforms that move up and down for various operations.

5.2.1.4 Mechanical or powered assists to eliminate the use of extreme force.

5.2.1.5 Suspension of heavy tools.

5.2.1.6 The use of diverging conveyors off of main lines so that certain activities can be performed at slower rates.

5.2.1.7 Floor mats designed to reduce trauma to the legs and back.

5.2.2 Design of Work Methods. Traditional work method analysis considers static postures and repetition rates. This will be supplemented by addressing the force levels and the hand and arm postures involved. The tasks will be altered where possible to reduce these and the other stresses. Examples of methods for the reduction of extreme and awkward postures include the following:

5.2.2.1 Enabling the worker to perform the task with two hands instead of one.

5.2.2.2 Conforming to the NIOSH *Work Practices Guide for Manual Lifting*.

- 5.2.3 Excessive force. Excessive force in any operation can result in both long-term problems for the worker and increased accident rates. Ways to reduce excessive force will be continually emphasized by first line supervisors and employees. Examples of methods to reduce excessive force include:
 - 5.2.3.1 The use of automation devices.
 - 5.2.3.2 The use of mechanical devices to aid in removing scrap from work areas.
 - 5.2.3.3 Substitution of power tools where manual tools are now in use.
 - 5.2.3.4 The use of articulated arms and counter balances suspended by overhead racks to reduce the force needed to operate and control power tools.
- 5.2.4 Repetitive motion. All efforts to reduce repetitive motion will be pursued. Examples of methods to reduce highly repetitive movements include:
 - 5.2.4.1 Increasing the number of workers performing a task.
 - 5.2.4.2 Lessening repetition by combining jobs with very short cycle times, thereby increasing cycle time. (Sometimes referred to as "job enlargement.")
 - 5.2.4.3 Using automation where appropriate.
 - 5.2.4.4 Designing or altering jobs to allow self-pacing, when feasible.
 - 5.2.4.5 Designing or altering jobs to allow sufficient rest pauses.
- 5.3 Administrative Controls. Administrative controls will be used to reduce the duration, frequency, and severity of exposures to ergonomic stressors that can cause back injury. Examples of administrative controls include the following:
 - 5.3.1 Reducing the total number of repetitions per employee by such means as decreasing production rates and limiting overtime work.
 - 5.3.2 Providing rest pauses to relieve fatigued muscle-tendon groups. The length of time needed depends on the task's overall effort and total cycle time.
 - 5.3.3 Increasing the number of employees assigned to a task to alleviate severe conditions, especially in lifting heavy objects.
 - 5.3.4 Using job rotation, with caution and as a preventive measure, not as a response to symptoms. The principle of job rotation is to alleviate physical fatigue and stress of a particular set of muscles and tendons by rotating employees among other jobs that use different muscle-tendon groups. If rotation is utilized, the job analyses must be reviewed to ensure that the same muscle-tendon groups are not used when they are rotated.

- 5.3.5 Providing sufficient numbers of standby/relief personnel to compensate for foreseeable upset conditions on the line (e.g., loss of workers).
- 5.3.6 Job enlargement. Having employees perform broader functions which reduce the stress on specific muscle groups while performing individual tasks.

6. Training and Information.

- 6.1 Types of training. Supervisors will determine whether training required for specific jobs will be conducted in a classroom or on-the-job. The degree of training provided shall be determined by the complexity of the job and the associated hazards.
 - 6.1.1 Initial Training. Prior to job assignment the company shall provide training to ensure that the hazards associated with pre-designated job skills are understood by employees. Also the knowledge and skills required for the safe application and usage of work place procedures and equipment is acquired by all employees. The training shall include the following:
 - 6.1.1.1 Each affected employee shall receive training in the recognition of back injury hazards involved with a particular job, and the methods and means necessary for safe work.
 - 6.1.1.2 Training course content. All new and current workers, who work in areas where there is reasonable likelihood of back injury, will be kept informed through continuing education programs. Initial and refresher training will, as a minimum, cover the following:
 - 6.1.1.2.1 Back hazards associated with the job.
 - 6.1.1.2.2 Lifting techniques.
 - 6.1.1.2.3 Potential health effects of back injury.
 - 6.1.1.2.4 Back injury precautions.
 - 6.1.1.2.5 Proper use of protective clothing and equipment.
 - 6.1.1.2.6 Use of engineering controls.
 - 6.1.1.3 Responsibility. Employees are responsible for following proper work practices and control procedures to help protect their health and provide for the safety of themselves and fellow employees, including instructions to immediately report to the Supervisor any significant back injury.

6.1.2 Refresher Training. Scheduled refresher training will be conducted on an as needed basis.

6.1.2.1 Retraining shall be provided for all authorized and affected employees whenever there is a change in their job assignments, a change in equipment or processes that present a new hazard, or when their work takes them into other hazard areas.

6.1.2.2 Additional retraining shall also be conducted whenever a periodic inspection reveals, or when there is reason to believe that there are deviations from or inadequacies in the employee's knowledge of known hazards and use of equipment or procedures.

6.1.2.3 The retraining shall reestablish employee proficiency and introduce new equipment, new lifting procedures or revised control methods and procedures.

6.1.3 Verification. The company shall verify that employee training has been accomplished and is being kept up to date. The verification shall contain a synopsis of the training conducted, each employee's name, and dates of training.

6.2 New Employee Acclimatization Period. Supervisors will ensure that new or transferred employees are allowed an appropriate acclimatization period. New and returning employees will be gradually integrated into a full work schedule as appropriate for specific jobs and individuals. Employees will be assigned to an experienced trainer for job training and evaluation during this period. Employees reassigned to new jobs should also have an acclimatization period.

- *Important:* Supervisors will closely monitor employees that fall into this category throughout their acclimatization period.

7. Definitions.

➤ *None at this time*

PROGRAM OVERVIEW

COMPRESSED GAS SAFETY PROGRAM

REGULATORY STANDARD: OSHA - 29 CFR 1910.101 - 105

CGA - G-1, 4, 4.1, 5, 6, 8.1, P-1, 2, V-1, SB-2

INTRODUCTION: Some compressed gases are flammable, toxic, or both and all are under pressure. Cylinders must be used, handled, and stored with extreme care. An exploding cylinder can have the same destructive effect as a bomb. The hazards of compressed gases must be evaluated, safety procedures implemented, and proper hazard information must be communicated to all affected workers.

TRAINING:

- Required for employees who move, handle or use compressed gas cylinders.

ACTIVITIES:

- Ensure storage areas are identified and inspected frequently.
- Cylinders must be secure and prevented from tipping.
- Cylinders must be labeled with the type of gas, hazard warnings, and indication if the cylinder is empty or full. All empty cylinders should be grouped together.
- Full oxygen cylinders must be located 20 feet from, or have a half hour rated fire wall separating them from, any flammable gases while in storage.

FORMS:

- Compressed Gas Handling and Storage of Acetylene in Tanks and Cylinders
- Compressed Gas Program Assessment
- Compressed Gas Storage Locations
- Training Attendance Roster

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- 1. Purpose**
- 2. Scope**
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Compressed Gas Safety Program

1. **Purpose.** Effective implementation for job safety and health of our employees requires a written safety program fully endorsed and advocated by the highest level of management within the company. This safety program is designed to establish clear company goals and objectives for the use and handling of compressed gases, and will be communicated to all required personnel. The company will review and evaluate this safety program:
 - 1.1 On an *annual* basis
 - 1.2 When changes occur to the regulatory standard governing this safety program that prompt revision of this document
 - 1.3 When facility operational changes occur that require a revision of this document
2. **Scope.** It encompasses the total workplace regardless of the number of workers employed or the number of work shifts. This program applies to any compressed gas cylinder larger than 1 liter in size.
3. **Responsibilities.**
 - 3.1 Management and Supervisor:
 - 3.1.1 Assure safe handling procedures are in place and followed
 - 3.1.2 Ensure containers are labeled, color coded, inspected and that all components are functioning normally. Leaking or defective containers must be immediately removed from service.
 - 3.1.3 Ensure defective containers are returned to the supplier as soon as possible.
 - 3.1.4 Provide the appropriate tools and equipment to handle, use, store and transport cylinders safely.
 - 3.2 Employees:
 - 3.2.1 Inspect gas cylinders before use to assure that the proper gas is utilized and that the cylinders are not defective.
 - 3.2.2 Notify management or supervisor immediately if a cylinder or a component is defective.
 - 3.3 Safety Officer (as needed or required)
 - 3.3.1 Assist in the implementation of this program

4. Procedure.

4.1 Safe Handling Procedures for Compressed Gases.

4.1.1 Filling. Containers will not be filled except by the supplier of the cylinder or with the supplier's consent. Where filling is authorized it will be accomplished in accordance with DOT, OSHA, and CGA Regulatory Standards.

4.1.2 Content identification

4.1.2.1 Warning labels. All employees, whose work operations are or may be in an area where compressed gas may be utilized, shall be instructed in the recognition and use of warning labels. Warning labels are essentially warning devices and must be legible at all times. The following will be addressed as a minimum:

4.1.2.1.1 Removal. When a warning label is attached to a compressed gas cylinder, it is not to be removed without authorization of the person responsible for it, and it is never to be bypassed, ignored, or otherwise defeated.

4.1.2.1.2 Legibility. In order to be effective, warning labels must be legible and understandable by all authorized employees, affected employees, and other employees whose work operations are or may be in the area. Non-legible or missing labels will be reported to the Safety Officer immediately.

4.1.2.1.3 Durability. Labels and their means of attachment must be made of materials which will withstand the environmental conditions encountered in the workplace.

4.1.2.1.4 Labels may evoke a false sense of security, and their meaning needs to be understood as part of the overall Compressed Gas Safety Program.

4.1.2.1.5 Labels must be securely attached to cylinders so that they cannot be inadvertently or accidentally detached during use.

4.1.2.2 Labeling. Each container will bear the proper label for the compressed gas contained.

4.1.2.3 Maintenance.

4.1.2.3.1 Authorization. Containers and their appurtenances used by the company will be maintained only by the container supplier or authorized representative. Any employee who is not sure of the type of maintenance allowed on containers should contact the Safety Officer for further information.

4.1.2.3.2 Changing prescribed markings. The prescribed markings, supplier/owner markings or symbols stamped into containers will not be removed or changed unless in accordance with pertinent regulatory standards.

4.1.2.3.3 Changing content markings. No employee will deface or remove any markings, labels, decals, tags or stencil marks applied by our supplier and used for the identification of content. Like markings may be affixed if the original becomes illegible or detached.

4.1.2.3.4 Pressure relief devices. No employee will change, modify, tamper with, obstruct, or repair pressure relief devices in container valves or in containers.

4.1.2.4 Painting.

4.1.2.4.1 Containers will not be painted. If a container shows signs of corrosion it will be removed from service and returned to the supplier.

4.1.2.4.2 Cylinder color. All employees should be aware that containers may only be painted by the supplier for the purpose of recognition and segregation. Should the company change suppliers' of compressed gas the color codes could also change, always double-check to ensure you have the correct cylinder for the intended use. Never rely solely on the cylinder color for identification.

4.1.2.5 Contamination or improper contents. Any container found suspected to be contaminated or having its contents suspect will be immediately removed from service and reported to the Safety Officer. The supplier will be immediately notified.

4.1.2.6 Leaking or defective containers.

4.1.2.6.1 Leaking Containers. Supervisors will ensure all employees under their control understand the following. Any employee discovering a leaking container should attempt to take the following actions:

4.1.2.6.1.1 Notify workers in the immediate area of the leak.

4.1.2.6.1.2 If the container could contain hazardous material (or if you're not sure) evacuate personnel in the area to fresh air (preferably up-wind or side-wind relative to the source).

4.1.2.6.1.3 Report the following as soon as possible to the Safety Officer.

4.1.2.6.1.3.1 Contents.

4.1.2.6.1.3.2 Location.

4.1.2.6.1.3.3 Number of employees in immediate area.

4.1.2.6.1.3.4 Circumstances of the release.

4.1.2.6.1.3.5 Condition of container.

4.1.2.6.1.3.6 Other pertinent information as required.

4.1.2.6.2 Defective Containers. Supervisors will ensure all employees under their control understand the following. Any employee discovering a defective or corroded container should attempt to take the following actions:

4.1.2.6.2.1 Notify the Supervisor of the department where the container was discovered.

4.1.2.6.2.2 If the container could contain hazardous material (if you're not sure), evacuate personnel in the area to fresh air (preferably up-wind or side-wind relative to the source).

4.1.2.6.2.3 Report the following as soon as possible to the Safety Officer:

4.1.2.6.2.3.1 Contents

4.1.2.6.2.3.2 Location

4.1.2.6.2.3.3 Number of employees in immediate area

4.1.2.6.2.3.4 Circumstances

4.1.2.6.2.3.5 Condition of container

4.1.2.6.2.3.6 Other pertinent information as required

4.1.2.7 Container usage requirements.

4.1.2.7.1 Content Identification. Where company employees are responsible to handle and connect the container for use, the operation will not proceed unless the contents can be verified by legible markings and labels.

4.1.2.7.2 Container caps, valve outlet caps, and plugs.

4.1.2.7.2.1 Container caps. Where removable caps are provided by the gas supplier for valve protection, company employees shall keep such caps on containers at all times except when containers are connected to dispensing equipment.

4.1.2.7.2.2 Valve outlet caps and plugs. Where valve outlet caps and plugs are provided by the supplier, employees will keep such devices on the containers and valve outlets at all times except when containers are connected to dispensing equipment.

4.1.2.7.3 Misuse. No container will be used for anything other than its intended purpose. Containers will not be used as rollers, supports or for any purpose other than to contain the content as received. No employee will allow an unsafe condition such as this to occur without notifying his or her Supervisor.

- 4.1.2.7.4 Containers not in use (configuration). When containers are not being used the valves will remain closed at all times except when operational constraints apply.
- 4.1.2.8 Movement of compressed gas containers.
 - 4.1.2.8.1 Trucks. Containers will not be rolled, dragged, or slid. A suitable hand truck, fork truck, roll platform, or similar device will be used to move containers.
 - 4.1.2.8.2 Rough handling. Containers will not be dropped or permitted to strike violently against each other or other surfaces.
 - 4.1.2.8.3 Lifting requirements.
 - 4.1.2.8.3.1 Container caps. Container caps will not be used for lifting containers except for the use of hand trucks which grip the container cap for lifting on to the hand truck. In any case the container will not be lifted higher than six inches above the operating surface.
 - 4.1.2.8.3.2 Magnetic lifting devices. Magnetic lifting devices are prohibited from use with compressed gas containers.
 - 4.1.2.8.3.3 Ropes, chains, or slings. Ropes, chains, or slings are prohibited from use with compressed gas containers unless lugs or lifting attachments are provided by the manufacturer.
 - 4.1.2.8.3.4 Cradles or platforms. Where approved lifting attachments have been provided by the manufacturer, cradles or platforms are authorized for use.
- 4.1.2.9 Container storage requirements.
 - 4.1.2.9.1 Posting requirements.
 - 4.1.2.9.1.1 No Smoking. No Smoking signs will be posted in the storage area.
 - 4.1.2.9.1.2 Type gas. Signs designating the type gas stored in the area will be posted.

- 4.1.2.9.2 Grouping requirements. Where different types of gases are stored in the same general area the following apply.
 - 4.1.2.9.2.1 Like gases. Gases will be stored with like gases and segregated from dissimilar gases.
 - 4.1.2.9.2.2 Full and empty containers. Full and empty containers will not be intermingled. Separate storage areas will be delineated for each.
- 4.1.2.9.3 Stock rotation. Stock will be rotated so that the oldest material will be the first to be used. The storage layout will be such that old stock can be removed first with a minimum handling of other containers.
- 4.1.2.9.4 Storage rooms. Storage rooms used by the company will be well ventilated and dry. Room temperature will not exceed 125 degrees F. Storage in subsurface location will be avoided.
- 4.1.2.9.5 Separation from combustibles. Containers will not be stored near readily ignitable substances such as gasoline or waste, or near combustibles in bulk, including oil.
- 4.1.2.9.6 External corrosion requirements. Containers will not be exposed to continuous dampness and should not be stored near salt or other corrosive chemicals or fumes. Corrosion may damage the containers and may cause the valve protection caps to stick.
- 4.1.2.9.7 Mechanical damage requirements. Containers shall be protected from any object that will produce a harmful cut or other abrasion in the surface of the metal. Containers will not be stored near elevators, gangways, and unprotected platform edges or in locations where heavy moving objects may strike or fall on them.
- 4.1.2.9.8 Storage and use requirements.
 - 4.1.2.9.8.1 Store upright. All compressed gas containers in service or in storage will be stored standing upright where they are not likely to be knocked over.

4.1.2.9.8.2 Restrain. All compressed gas containers in use will be restrained above the midpoint to prevent accidental fall-over of the container.

4.1.2.9.8.2.1 Gas containers with a water volume up to 305 cu. in. (5.0 L) may be stored in a horizontal position.

4.1.2.9.8.3 Container valve end up. Liquefied gas containers except those designed for use in a horizontal position on tow motors, etc., will be stored and used valve end up. Acetylene containers will be stored and used valve end up. Storage of acetylene containers valve end up will minimize the possibility of solvent being discharged. Note: Valve end up includes conditions where the container axis is inclined as much as 45 degrees from the vertical.

4.1.2.9.9 Outdoor storage. Containers may be stored in the open, but will be stored on a clean dry surface to prevent corrosion to the bottom of the container.

4.1.2.9.9.1 Sunlight. Containers may be stored in direct sunlight, except in localities where extreme temperatures prevail (above 125 degrees F.). If our supplier recommends storage in the shade for a particular gas, this recommendation will be observed.

4.1.2.9.9.2 Public area. Containers used or stored in public areas will be protected to prevent tampering.

4.1.2.9.10 Interference with egress. Containers when stored inside will not be located near exits, stairways, or in areas normally used or intended for the safe exit of employees.

4.1.2.10 Connecting containers and withdrawing content.

4.1.2.10.1 Trained personnel. Compressed gases will be handled and used only by properly trained employees. Employees must have had initial training in order to handle and use compressed gases.

- 4.1.2.10.2 Content identification. Employees will verify that a label exists and review the label before beginning operations with a compressed gas. Unmarked containers will not be used. Such containers will be reported to the Safety Officer. The container color will never be relied on for identification of a container.
- 4.1.2.10.3 Container caps. Caps will be retained and not removed until the container is placed in service.
- 4.1.2.10.4 Secure containers. The company will ensure that compressed gases will be secured above the midpoint to prevent them from being knocked over.
- 4.1.2.10.5 Pressure regulator. A suitable pressure regulating device will be used where gas is admitted to a system of lower pressure rating than the supply pressure, and where, due to the gas capacity of the supply source, the system rating may be exceeded.
- 4.1.2.10.6 Pressure relief device. A suitable pressure relief device will be used to protect a system using a compressed gas where the system has a pressure rating less than the compressed gas supply source and where, due to the gas capacity of the supply source, the system pressure rating may be exceeded.
- 4.1.2.10.7 Connection requirements. Connections that do not fit will not be forced. Threads on regulator connections or other auxiliary equipment will match those on container valve outlets.
- 4.1.2.10.8 Manifold. Where compressed gas containers are connected to a manifold, the manifold, and its related equipment will be of proper design for the product(s) they are to contain at the appropriate temperatures, pressures, and flows.
- 4.1.2.10.9 Equipment compatibility. Regulators, gauges, hoses, and other appliances provided for use with a particular gas or group of gases, will not be used on containers containing gases having different chemical properties unless information obtained from the supplier indicates that this can be done safely.

- 4.1.2.10.10 Container valve requirements.
 - 4.1.2.10.10.1 Container valves will be opened slowly and pointed away from personnel and sources of ignition.
 - 4.1.2.10.10.2 For valves having no hand wheel the wrench provided by, or recommended by the supplier will be used.
 - 4.1.2.10.10.3 On valve containing a hand wheel wrenches will not be used.
 - 4.1.2.10.10.4 Valves will never be forced open or closed. If valves become frozen for whatever reason, the supplier will be contacted to provide instructions.
- 4.1.2.10.11 Dusting clothing, cleaning work areas. Compressed gas will not used to dust off clothing or clean work areas of debris. This may cause serious injury to the eyes or body or create a fire hazard.
- 4.1.2.10.12 Residual empty container pressure. When withdrawing a non-liquefied compressed gas from a container, it should not be reduced to below 20 psig so as to preclude the back flow of atmospheric air or other contaminants into the container. The container valve should be closed tightly to retain this residual pressure.
- 4.1.2.10.13 Check valves. Compressed gases will not be used where the container may be contaminated by the feedback of process materials unless protected by suitable traps or check valves.
- 4.1.2.10.14 Gas tightness. Connections to piping, regulators and other appliances will be kept tight to prevent leakage. Where hose is used, it shall be kept in good condition.
- 4.1.2.10.15 Removing pressure regulator. Before a regulator is removed from a container, the container valve shall be closed and the regulator drained of gas pressure.

4.2 General Safety Rules for Specific Types of Gases.

4.2.2 Flammable gases.

- 4.2.2.1 Adjoining exposures. Provisions will be made to protect flammable gases from hazardous exposure to and against hazardous exposure from adjoining buildings, equipment, property, and concentrations of people.
- 4.2.2.2 Heating requirements. Where storage areas are heated, the source will be by steam, hot water, or other indirect means. Heating by flames or fire is prohibited.
- 4.2.2.3 Electrical equipment requirements. Will conform to the provisions of NFPA 70, National Electrical Code, article 501, for Class 1 Division 2 locations.
 - 4.2.2.3.1 Sources of ignition will be forbidden.
 - 4.2.2.3.2 Storage buildings will be well ventilated.
- 4.2.2.4 Combustibles and ignition sources. Flammable gas containers stored inside of buildings with other occupancies will be kept at least 20 feet from combustibles or ignitions sources.
- 4.2.2.5 Capacity limitations. Flammable gas containers stored inside industrial buildings on company property. (Except those in use or those attached for use are limited to a total gas capacity of 2500 cubic feet of acetylene or non-liquefied flammable gas, or a total container content water capacity of 735 pounds for liquefied petroleum gas or stabilized methylacetylene-propadiene).
- 4.2.2.6 Fire protection requirements.
 - 4.2.2.6.1 Fire extinguishers. Adequate portable fire extinguishers of carbon dioxide or dry chemical types will be made available for fire emergencies at company storage locations.
 - 4.2.2.6.2 No smoking signs. Signs will be posted around the storage area of buildings or at the entrance to storage rooms.
 - 4.2.2.6.3 Leak testing. A flame or other ignition source will not be used for detection of flammable gas leaks. Use either a flammable gas leak detector, soapy water, or other suitable solution.

4.2.3 Oxygen (Including oxidizing gases).

- 4.2.3.1 Cleanliness. Oxygen containers, valves, regulators, hose and other oxygen apparatus will be kept free at all times from oil or grease and will not be handled with oily hands, oily gloves, or with greasy equipment.
- 4.2.3.2 Separation of oxygen from combustibles. Oxygen containers in storage will be separated from flammable has containers or combustible materials (especially oil and grease) a minimum distance of 20 feet or by a noncombustible barrier at least 5 feet high having a fire resistance rating of at least one-half hour.
- 4.2.3.3 Oxygen-rich atmospheres. The oxygen content in work areas (other than hyperbaric chambers) must not exceed 23 percent by volume.
- 4.2.3.4 Compatibility of materials. Any materials used by the company that come into contact with oxygen in valves, piping, fittings, regulators, and utilization equipment must be suitable for use with oxygen, and at the pressures and conditions involved at the specific use point of material. The handling and use of oxygen above 3000 psi may involve greater fire potential, adequate safety systems analysis need to be made.

4.2.4 Acid and alkaline gases.

- 4.2.4.1 Personal protective equipment. Supervisors will ensure that precautions are taken to avoid contacting skin or eyes with acid or alkaline gases. Chemical goggles or face shields, rubber (or other suitable chemically protective material) gloves and aprons will be worn. Long sleeves and trousers will be worn. Open toed shoes or sneakers are prohibited.
- 4.2.4.2 Respiratory equipment. Employees handling and using acid and alkaline gases will have gas masks or self-contained breathing apparatus (SCBA) immediately available for use. SCBA must be used when the concentration of the gas could be higher than the mask canister rating, and or where the oxygen content of the atmosphere could be below 19 percent by volume.
- 4.2.4.3 Emergency showers and eyewash fountains. Supervisors will ensure that areas where acid or alkaline gases are used are equipped with an emergency shower and eyewash fountain.
- 4.2.4.4 Quantity on site. Because of their hazardous nature, Supervisors will limit the quantity of this type of gas to the minimum requirements for the foreseeable future.
- 4.2.4.5 Ventilation. Acid and alkaline gases will only be used in well ventilated areas.

4.2.5 Highly toxic gases.

- 4.2.5.1 Respiratory equipment. Employees handling and using highly toxic gases will have gas masks or self-contained breathing apparatus (SCBA) immediately available for use. SCBA must be used when the concentration of the gas could be higher than the mask canister rating, and or where the oxygen content of the atmosphere could be below 19 percent by volume.
- 4.2.5.2 Storage locations. Storage of highly toxic gases will be:
 - 4.2.5.2.1 Outdoors, or in a separate noncombustible building without other occupancy, or in a separate room without other occupancy.
 - 4.2.5.2.2 Of noncombustible construction with a fire-resistance rating of at least one hour.
 - 4.2.5.2.3 Well ventilated to preclude development of hazardous concentrations.
 - 4.2.5.2.4 Protected against tampering.
- 4.2.5.3 Ventilation. Highly toxic gases will be used only in forced ventilated areas or in hoods with forced ventilation, or outdoors. Hazard analysis will be conducted on equipment emitting high concentrations. The gas will be discharged into appropriate scrubbing equipment which will remove or neutralize the toxic effects before entering the effluent gas stream.
- 4.2.5.4 Toxicity. Supervisors will ensure the following. Before using a highly toxic gas, employees must read and understand all warning labels and material data sheet information. All employees working in the immediate area where these gases are handled will be instructed as to the toxicity of the gases and methods of protection against harmful exposure. Employees will not be exposed to concentrations greater than those determined to be safe levels by OSHA 29 CFR 1910.1000 and the threshold limit values guidance by the ACGIH.
- 4.2.5.5 Quantity on site. Because of their hazardous nature, Supervisors will limit the quantity of this type of gas to the minimum requirements for the foreseeable future.

4.2.6 Cryogenic liquefied gases.

- 4.2.6.1 Cryogenic liquids are gases which are handled in liquid form at relatively low pressure and extremely low temperatures, usually below -238 degrees F. Because of their low temperature, cryogenic liquids are handled in multi-wall, vacuum-insulated containers, tank trucks, tank cars, and storage tanks to minimize evaporation and venting of the gas. Some cryogenic liquids in small quantities are also handled in open, low pressure thermos type containers in laboratory work.
- 4.2.6.2 Personal protective equipment. Cryogenic liquids and cold gases can cause frostbite injury upon contact with the body. When handling cryogenic liquids Supervisors will ensure that employees use suitable eye protection, such as a face shield, safety glasses, or safety goggles, hand protection, such as insulated loose fitting gloves, and proper clothing to prevent other bodily exposure.
- 4.2.6.3 Ventilation. Cryogenic liquid containers will only be stored and handled in well ventilated areas to prevent excessive concentrations of the gas. Containers are equipped with pressure relief devices which permit venting of gas intentionally.
- 4.2.6.4 Container handling. Cryogenic liquid containers will be handled and stored in an upright position. The containers must not be dropped, tipped over, or rolled on their sides. A four wheeled handling truck will be used to move cryogenic liquid containers over 20 gallons capacity.
- 4.2.6.5 Containers. Containers designed for specific gas storage will not be used for any other type of gas.
- 4.2.6.6 Pressure relief devices. Containers entering this facility will be provided with DOT approved devices to prevent excessive buildup of pressure from warming gas. Where cryogenic liquids or cold gas may be trapped between valves, piping will be equipped with appropriate pressure relief devices.
- 4.2.6.7 Transfer of cryogenic liquids. Only transfer lines designed for cryogenic liquids will be used. Transfer of cryogenic liquids will be performed slowly enough to minimize excess evaporation and stress due to rapid cooling and contraction of warm containers and equipment.
- 4.2.6.8 Liquid oxygen. Liquid oxygen containers, piping and equipment will be kept clean and free of grease, oil, and organic materials. Ignitions sources are not permitted in areas where liquid oxygen is stored or transferred.

- 4.2.6.9 Liquid hydrogen. Ignitions sources are not permitted in areas where liquid hydrogen is stored or transferred. Liquid hydrogen must be stored and transferred under positive pressure to prevent the infiltration and solidification of air or other gases.
- 4.2.6.10 Liquid helium and liquid neon. Liquid helium and liquid neon must be stored and transferred under positive pressure to prevent the infiltration and solidification of air or other gases.
- 4.2.6.11 Liquefied natural gas. Ignitions sources are not permitted in areas where liquefied natural gas is stored or transferred. Liquefied natural gas must be stored and transferred under positive pressure to prevent the infiltration of air or other gases.
- 4.2.6.12 Inert gases. In areas where inert gases are used or stored employees will have self-contained breathing apparatus (SCBA) immediately available for use. SCBA must be used in the even the oxygen in the room is displaced by the inert gas creating an oxygen deficient atmosphere where the oxygen content of the atmosphere could be below 19 percent by volume.

4.3 General Safety Rules for Use of Compressed Gas.

4.3.1 Pre-operation safety rules:

- 4.3.1.1 Read the Material Safety Data Sheet before use.
- 4.3.1.2 Inspect cylinder for damage before use.
- 4.3.1.3 Ensure "In use" label is present.
- 4.3.1.4 Ensure all labels/warnings are readable.
- 4.3.1.5 Place upright on stable dry surface.
- 4.3.1.6 Ensure cylinder is restrained above mid-point.
- 4.3.1.7 Keep heat, flame, and electrical sources from gas.
- 4.3.1.8 Operate in accordance with established procedures.

4.3.2 Post-operation safety rules:

- 4.3.2.1 Ensure "empty" or like label is present.
- 4.3.2.2 Remove from operation using established procedures.

4.3.2.3 Close valve completely and cap cylinder.

4.3.2.4 Transport cylinder using a hand-truck.

4.3.3 Full cylinder storage rules:

4.3.3.1 Read the Material Safety Data Sheet before use.

4.3.3.2 Do not smoke.

4.3.3.3 Mark cylinder with date of storage.

4.3.3.4 Ensure stock is properly rotated.

4.3.3.5 Use oldest stock first.

4.3.3.6 Inspect cylinder for damage before storage.

4.3.3.7 Store with like kind of gas.

4.3.3.8 Ensure all labels are readable.

4.3.3.9 Ensure valve assembly is tightly capped.

4.3.3.10 Ensure cylinder is restrained above midpoint.

4.3.3.11 Store upright on stable dry surface.

4.3.3.12 Keep electrical devices away from gas.

4.3.3.13 Keep combustible materials away from gas.

4.3.3.14 Keep heat and flame away from gas.

4.3.4 Empty cylinder storage rules.

4.3.4.1 Read the Material Safety Data Sheet before use.

4.3.4.2 Do not smoke.

4.3.4.3 Label cylinder "empty" before storage.

4.3.4.4 Ensure valve assembly closed tightly.

4.3.4.5 Ensure valve assembly capped tightly.

- 4.3.4.6 Inspect cylinder for damage before storage.
- 4.3.4.7 Store with like kind of gas cylinders.
- 4.3.4.8 Ensure all labels are readable.
- 4.3.4.9 Ensure cylinder is restrained above midpoint.
- 4.3.4.10 Store upright on stable dry surface.
- 4.3.4.11 Keep electrical devices away from gas.
- 4.3.4.12 Keep combustible materials away from gas.
- 4.3.4.13 Keep heat and flame away from gas.

5. Safety Information.

5.1 Visual Inspection of Compressed Gas Cylinders.

- 5.1.1 Employees will use the following for general inspection of compressed gas cylinders. Our supplier has the first responsibility for inspection of cylinders used by the company in accordance with CGA and NFPA guidelines. Only the following inspection criteria will be followed by employees:

<u>Inspect For:</u>	<u>Possible Result:</u>
Dents	Weakening of cylinder wall
Cuts, gouges, or digs	Decrease in wall thickness
Corrosion	Decrease in wall thickness
Pitting	Decrease in wall thickness
Crevice corrosion	Weakening of cylinder wall
Bulges	Weakening of cylinder wall
Neck defects	Leak or cylinder explosion
ARC/Torch burns	Weakening of cylinder wall
Valve ease of movement	Corrosion leading to leak
Valve thread serviceability	Leak during operation

- 5.1.2 Suspect cylinders. Cylinders that are suspected to be deficient in any manner will be removed from service. The supplier will then be notified and a representative of the supplier will be asked to inspect the cylinder. Employees discovering a cylinder suspected to be deficient in any manner should notify the Safety Officer.
- 5.1.3 Cylinders will be stored upright and chained to an external wall when not in use.
- 5.2 Facility/Department Evaluation.
 - 5.2.1 An evaluation of our facility(s) will be conducted to identify, designate, and prioritize Compressed Gas use and storage.

- 5.2.2 Existing Compressed Gas Systems. A process hazard analysis will be conducted for existing systems. Existing systems where possible, will be designated and managed as a complete and separate process.
- 5.2.3 Future Compressed Gas Systems. For new systems, a process hazard analysis will be conducted. The PHA will be used to improve the design and construction of the process from a reliability and quality point of view. The safe operation of the new process will be enhanced by making use of the PHA recommendations before final installations are completed.
- 5.3 Gas System listing.
 - 5.3.1 Designated gas systems will be stored in locations so as not to cause undue hazards to employees.
 - 5.3.2 All pipes and delivery components will be inspected annually at a minimum.
- 5.4 Compressed Gas Association Safety Manuals.
 - 5.4.1 To obtain any of the CGA safety manuals you can contact the CGA for a current literature catalog at: www.cganet.com. These include: the Handbook of Compressed Gases; Equipment such as regulators, hose lines, valve connections and pressure relief devices; information on specific gas types and their handling; Insulated cargo tanks, and the protection and safe handling of specific cylinders

6. Training and Information.

- 6.1 Initial Training. Initial training will be provided before job assignment. The company shall provide training to ensure that the purpose and function of the Compressed Gas Safety Program is understood by employees and that the knowledge and skills required for the safe application and usage of compressed gases are acquired by employees. The training shall include the following:
 - 6.1.1 Applicable hazards. Each authorized employee shall receive training in the recognition of applicable hazards associated with compressed gases, and the methods and means necessary for safe operation.
 - 6.1.1.1 Purpose and use. Each affected employee shall be instructed in the purpose and use of the compressed gas they will come in contact.
 - 6.1.1.2 Awareness level training. All other employees whose work operations are or may be in an area where compressed gas may be utilized, shall be instructed about the emergency procedure, and about the prohibition(s) relating to compressed gases used in their work area.
 - 6.1.1.3 Warning labels. All employees, whose work operations are or may be in an area where compressed gas may be utilized, will be instructed in the recognition and use of warning labels.

- 6.1.1.4 Storage requirements. Storing and handling requirements will be covered in accordance with this safety program.
 - 6.1.1.5 Handling requirements. Handling requirements will be covered in accordance with this safety program.
 - 6.1.1.6 Moving requirements. Moving requirements will be covered in accordance with this safety program.
 - 6.1.1.7 Connecting and disconnecting requirements. Connecting and disconnecting requirements will be covered in accordance with this safety program.
 - 6.1.1.8 Health hazards regarding specific gases. Health hazard regarding specific gases will be covered in accordance with this safety program.
 - 6.1.1.9 General safety precautions. General safety precautions will be covered in accordance with this safety program.
 - 6.1.1.10 Verification. The company shall verify that employee training has been accomplished and is being kept up to date. The documentation shall contain each employee's name and dates of training.
 - 6.1.1.11 Authorized trainers. The compressed gas suppliers will be requested to provide training as needed or required for all compressed gas users and handlers.
- 6.2 Refresher Training. Refresher will be conducted on an as needed basis. Retraining shall be provided for all authorized and affected employees whenever there is a change in their job assignments, a change in the type of gas used, equipment or processes that present a new hazard, or when there is a change in operating procedures.
- 6.2.1 Additional retraining shall also be conducted whenever a periodic inspection reveals, or whenever there is reason to believe, that there are deviations from or inadequacies in the employee's knowledge or use of the compressed gas safety procedures.
 - 6.2.2 The retraining shall reestablish employee proficiency and introduce new or revised control methods and procedures, as necessary.
- 6.3 Verification. The company shall verify that employee training has been accomplished and is being kept up to date. The documentation includes employee's name and dates of training.

7. Definitions.

- CGA – Compressed Gas Association

COMPRESSED GAS HANDLING AND STORAGE OF ACETYLENE IN TANKS AND CYLINDERS

General Information

Acetylene is highly flammable and highly shock sensitive. Acetylene gas that is exposed to any spark, flame or extreme heat will ignite and burn rapidly, and possibly cause the cylinder to explode if the cylinder is not controlled properly. Should the cylinders be subjected to a shock (for example, from tipping over or from being knocked into an object), the cylinders may also break open or possibly decompress explosively. During sudden decompression, the gas leaks out from the cylinder very quickly, and the friction caused by the leak could ignite the gas, exploding the cylinder.

All Acetylene cylinders and systems must be handled with extreme care and kept well away from any and all ignition sources during storage and installation.

Cylinders

The handling, storage and use of cylinders must be in accordance with the Compressed Gas Association Pamphlet G-1. These requirements include, but are not limited to:

- Preventing the cylinders from tipping over, striking against other objects, or being struck by objects or vehicles at ALL times,
- Ensuring storage and installation areas are free from free ignition sources such as electrical sparks, open flames and significant heat sources,
- Ensuring cylinders are labeled as full, empty or partially used, depending on their current status, and
- Ensuring any Oxygen storage is separated from Acetylene storage areas by either 20 feet or ½ hour rated fire wall.

Piped Systems

The installation and use of piped-in systems for Acetylene must be in accordance with Compressed Gas Association Pamphlet G-1.3. This includes protection from heat, sparks and flames in the storage area, as well as along piping lines.

Filling of Cylinders

Areas which generate Acetylene and charge or fill cylinders must be designed, constructed and tested in accordance with all the standards described in Compressed Gas Association Pamphlet G-1.4. Never attempt to refill or repair a compressed gas cylinder. If the cylinder is defective (or is even suspected to be defective), call the supplier immediately and follow their advice for precautions. Depending on the gases involved the cylinder may not be able to be moved safely.

COMPRESSED GAS PROGRAM ASSESSMENT		
Facility or Area:	Assessor:	Date:
Description of Requirement		Compliant?
HSE Review		
Has an HSE review (e.g. Job or Task Hazard Analysis) been performed to verify the need for compressed gas?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Have the materials of construction and design specifications for the process using the compressed gas been considered?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Have the materials of construction and design specifications for storage of compressed gas tanks or cylinders been considered?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Are physical protection and system controls present to reduce or eliminate the hazards of leaking containers?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Have emergency response requirements been established and provided for?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Are maintenance and inspection procedures established and implemented?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Has a pre-use review been performed that establishes the system schematics and process installation is build as designed and that content identification and flow labels are correct?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Are design and system drawings maintained?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Process Operating Procedures		
Are procedures established for inspection?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Are procedures established for usage (including PPE requirements and MSDS/Hazard Communication)?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Are procedures established for tank and cylinder handling?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Are procedures established for tank and cylinder storage?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Are procedures established for tank and cylinder transportation requirements (both OSHA for internal movement and DOT for over-the-road transport)?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Are procedures established for the disposal of or return of empty tanks and cylinder(s) to supplier?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Are procedures established for the disposal of or return of defective tanks and cylinder(s) to supplier?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Are procedures established for emergency response in the event of a release or unintended emission?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Are procedures established for contacting the supplier in the event of questions or concerns?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Are procedures established for the process shutdown in case of failure?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Are welding applications audited using the welding standard's auditing protocol?		<input type="checkbox"/> Yes <input type="checkbox"/> No

Description of Requirement	Compliant?
Maintenance	
Are process maintenance procedures established and implemented?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are mechanics/maintenance personnel experienced and trained in the process and material hazards?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are manifold systems, if present, installed, modified and/or maintained by experienced personnel who are knowledgeable about and who have experience with the specific requirements and hazards of the compressed gas system?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Emergency Response Personnel	
Are emergency response personnel familiar with the controls to shut down the process in an emergency?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Operator Training	
Are operators trained in the hazards presented by the system, process and/or the compressed gas used?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are operators training in the controls used to reduce the hazards presented by compressed gas usage?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are operators trained in the standard operating procedures for the process?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Inspections	
Are daily process checks performed to assess leaks, corrosion or damage to compressed gas systems?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Is a self-assessment or process audit performed at least annually to assure compliance with the regulatory and company standards? ➤ <i>Note:</i> Some states or local regulations may require more frequent inspections of processes utilizing compressed gases.	<input type="checkbox"/> YES <input type="checkbox"/> NO
Is a corrective action process in place to address any deficiencies found during the inspection/audit?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Does the inspection process visually verify the process and look for impending physical problems?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Does the inspection process contain a physical inspection of emergency shutdown systems?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Does the inspection process contain a physical inspection of the system into a fail-safe mode?	<input type="checkbox"/> YES <input type="checkbox"/> NO

PROGRAM OVERVIEW

CONSTRUCTION SAFETY PROGRAM

REGULATORY STANDARD: *OSHA – 29 CFR 1910*
 OSHA – 29 CFR 1926

INTRODUCTION: Outlines the safety requirements for a construction company. It provides guidance for tool selection, housekeeping, PPE, fall protection, and for the identification and control of other general construction industry hazards.

TRAINING:

- Employees will be trained on safety policies and procedures as well as the hazards posed by their work assignment for each construction site or job.

ACTIVITIES:

- Every construction job is unique and each must be assessed to identify its potential health and safety risks and communicate the identified hazards to employees
- Review operations for additional activities which could impact both contractors and employees
- Write and communicate polices and procedures
- Conduct compliance audits when contractors are on site

FORMS:

- Safety Checklist
- Training Attendance Roster
- As needed:
 - First Aid Kit Supply Requirements
 - On-site Code of Safe Practices

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- 1. Purpose**
- 2. Scope**
- 3. Responsibilities**
- 4. Procedure**
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- 7. Definitions**

Construction Safety Program

1. **Purpose.** Effective implementation for job safety and health of our employees requires a written safety program fully endorsed and advocated by the highest level of management within the company. This safety program is designed to establish clear company goals and objectives and will be communicated to all required personnel. It encompasses the total workplace regardless of the number of workers employed or the number of work shifts. The company will review and evaluate this safety program:
 - 1.1 On an annual basis.
 - 1.2 When changes occur to 29 CFR that prompt a revision.
 - 1.3 When changes occur to any related regulatory document that prompts a revision of this document.
 - 1.4 When facility operational changes occur that require a revision of this document.
2. **Scope.** This program applies to all construction job sites and company employees.
3. **Responsibilities.**
 - 3.1 Management:
 - 3.1.1 Provide sufficient human and financial resources to address federal, state, and local safety and health compliance.
 - 3.1.2 Assign compliance and general safety and health responsibilities to the Safety Officer (or other specifically designated person).
 - 3.1.3 Establish employee safety and health management goals.
 - 3.1.4 Review company safety and health management performance at least annually.
 - 3.1.5 Hold managers accountable for safety and health performances through annual performance appraisals or at the completion of each job.
 - 3.2 Project Managers:
 - 3.2.1 Assess each job to identify overall safety and health hazards and reassess as new components of the job begin.
 - 3.2.2 Develop safety rules and job procedures necessary to eliminate or control hazards.
 - 3.2.3 Conduct employee orientation and on-the-job training.

- 3.2.4 Conduct scheduled employee safety meetings.
 - 3.2.5 Conduct on-going informal hazard identification checks, inspections and scheduled formal audits.
 - 3.2.6 Report all incidents as required.
 - 3.2.7 Investigate and document all accidents per accident investigation procedures.
 - 3.2.8 Support and enforce all company, department, and job specific safety rules, policies and procedures and utilize disciplinary procedures as described in the company's Employee Handbook.
 - 3.2.9 Maintain required safety documentation (training, incident reports, equipment records, inspection/audit information, etc.).
- 3.3 Job Site Supervisor:
- 3.3.1 Implement safe conditions, work practices enforcement of safety rules, laws and procedures in the daily supervision of all employees.
 - 3.3.2 Ensure that each employee is provided with and wears the prescribed personal protective equipment that is necessary for the task at hand.
 - 3.3.3 Ensure that all employees are informed of the safety rules for the job site or work location.
 - 3.3.4 Enforce all safety rules and regulations.
 - 3.3.5 Instruct employees on the recognized hazards of the job and how to avoid and report unsafe conditions.
 - 3.3.6 Ensure that all regulatory standards for repair and maintenance of equipment are followed.
 - 3.3.7 Ensure that all defective or damaged equipment is tagged and removed from the work site immediately until repaired or replaced.
 - 3.3.8 Assist in the scheduled safety inspections as directed by the safety officer or other designated person.
 - 3.3.9 Assist in the new hire orientation of all new employees before permitting them to enter the job site.
 - 3.3.10 Assist the safety officer in the investigation of all accidents.
 - 3.3.11 Serve on the company Employee Safety Committee.

3.3.12 Maintain required safety documentation (training, incident reports, equipment records, inspection/audit information, etc.).

3.4 Safety Officer (as needed or required):

3.4.1 Develop programs as necessary to comply with federal, state, and local employee safety and health regulations.

3.4.2 Coordinate provision of employee and management safety and health training.

3.4.3 Maintain all required documentation (training, incident reports, equipment records, inspection/audit information, etc.).

3.4.4 Participate in the Employee Safety and Health Committee.

3.4.5 Prepare safety and health management status reports including Workers' Compensation loss summary, compliance summary, and trend analysis of audit results, accident and incident causes, safety alerts, and other reported safety concerns.

3.5 Employees:

3.5.1 Follow all safety and job rules and procedures.

3.5.2 Use only tools, equipment, and materials for which training and authorization have been given.

3.5.3 Report all incidents and accidents as required.

3.5.4 Report all observed unsafe conditions and behaviors.

3.5.5 Participate in all employee safety and health training programs.

4. Procedure.

4.1 General construction safety work rules:

4.1.1 Employees are to follow all task and job site policies, and procedures.

4.1.2 Employees are to refrain from running, horseplay, practical jokes, and other activities, which could lead to the injury of the employee or others.

4.1.3 Employees are to report to work in appropriate attire and condition to ensure constant awareness of surroundings and activities.

4.1.4 Employees under the influence of alcohol or drugs will be removed from the work site immediately.

4.1.5 Employees will only use, repair, or adjust tools and machinery if trained and authorized by supervisory personnel.

- 4.1.6 Employees will maintain good housekeeping in all work areas and follow housekeeping schedules as required by job procedures and department policies.
 - 4.1.7 Employees must report all unsafe conditions or behaviors to their supervisor immediately.
 - 4.1.8 Employees must report all injuries to their supervisor immediately.
 - 4.1.9 Employees are expected to assist in keeping the work site as free of debris as possible.
 - 4.1.10 Employees are not allowed on the work site with firearms, explosives or unlawful weapons. Employees with such possessions on their person or property will be removed from the job site immediately.
 - 4.1.11 Loose or ragged clothing shall not be worn while working around machinery.
 - 4.1.12 Rings and/or other jewelry should be removed while working around machinery.
 - 4.1.13 Know the location of emergency exits, first aid kits, fire extinguishers, fire alarms.
 - 4.1.14 Do not use compressed air for dusting or cleaning clothing.
 - 4.1.15 Attend and participate in the weekly “tool box” safety meetings.
 - 4.1.16 Wear only the approved personal protective equipment.
 - 4.1.17 Fall protection is required when exposed to falls greater than 6 feet.
 - 4.1.18 Never ride mobile scaffolding.
 - 4.1.19 All scaffolding must be properly constructed, with toe-boards, mid-rails, and handrails over 10 feet.
 - 4.1.20 All scaffolding must be inspected daily by the designated “competent person”.
 - 4.1.21 All ladders shall be inspected before use.
 - 4.1.22 Ladders are only to be used within appropriate compliance guidelines.
 - 4.1.23 Do not operate any machine unless trained and authorized to do so.
 - 4.1.24 All gas cylinders shall be chained in an upright position.
 - 4.1.25 Never remove a safety guard from machinery or equipment.
- 4.2 Specific jobsite construction industry safety work rules are located in the section labeled “General Safety” in this manual.

5. Safety Information.

5.1 Jobsite Safety Audits

5.1.1 Jobsite hazard assessment:

5.1.1.1 The Safety Officer or Project Manager conducts a General Hazard Assessment during the planning phase of a new project and updates the assessment as the job progresses. The completed assessment form is maintained in the main office, or where similar records are maintained.

5.1.2 Jobsite safety audits:

5.1.2.1 The Safety Officer or Job Site Supervisor will conduct formal jobsite safety audits on an annual basis for long term projects or on an as needed basis for shorter term projects to evaluate the overall safety of the jobsite.

5.1.2.2 Findings will be reviewed with the employees or the Subcontractor contact.

5.1.2.3 The Safety Officer or Project Manager will use recently completed audit reports during subsequent audits to ensure appropriate corrective actions are implemented as necessary.

5.1.3 Daily walk through safety audits:

5.1.3.1 The Safety Officer or Job Site Supervisor will walk through assigned areas on an as needed basis to identify any unsafe condition or behavior.

5.1.3.2 Hazards are to be corrected immediately.

5.1.3.3 If a hazard cannot be corrected immediately, a Hazard Alert Form will be completed and submitted to all affected subcontractors. Those subcontractors will inform employees of the hazards and appropriate precautionary measures. In such cases, the Job Site Supervisor must recheck the area in a reasonable time frame to ensure the hazard is appropriately corrected.

5.1.3.4 Work affected by any hazard that could cause serious injury must be halted until the hazard is corrected.

5.2 Accident and Incident Investigation

5.2.1 Reporting incidents is critical to the effectiveness of any injury and illness prevention program. The purposes of incident reporting are as follows:

5.2.1.1 Provide documentation for claims

5.2.1.2 Provide information to focus employee safety and health management efforts

5.2.1.3 Provide historical data to measure progress

5.2.1.4 Allow for continuous improvement

5.3 Reporting Procedures

5.3.1 Employees must report all incidents and accidents to the Job Site Supervisor (or the Safety Officer or Project Manager) that will complete the following forms. Portions of the report form may be completed by the employee or a Supervisor designee.

5.3.2 The employee's Supervisor must complete all portions relating to the accident/incident investigation and must also ensure the full completion of all portions.

5.3.3 The Safety Officer or Project Manager must review and sign the completed form.

5.3.4 Copies of the report must be forwarded to the following people, as needed or required:

5.3.4.1 Safety Officer

5.3.4.2 Claims Coordinator

5.3.4.3 Internal Human Resources Representative

5.4 Accident Investigation or Employee Incident Report flow:

5.4.1 The employee reports the incident to his/her Supervisor as soon as he/she is aware of the event.

5.4.2 The Safety Officer or Job Site Supervisor conducts an investigation and completes the Incident Report as soon as possible and forwards the report to the Project Manager or management.

5.4.3 The Manager reviews the report to ensure the completion of a thorough investigation and sends copies to the appropriate personnel.

5.4.4 Once the reports are completed and forwarded to the appropriate personnel, the following personnel will be undertake the listed activities to reduce the risk of recurrence:

5.4.4.1 Safety Officer:

5.4.4.1.1 Regularly reviews Incident Reports to identify trends.

5.4.4.1.2 Compiles an Incident Trend Summary Report which is presented to the Senior Manger or to the Employee Safety and Health Committee who initiates organization-wide corrective actions to address the identified trends.

5.4.4.1.3 Works with the Project Manager and/or Job Site Supervisor to ensure the correction of identified hazards.

5.4.4.2 Claims Officer:

5.4.4.2.1 Uses the Incident Reports to complete the necessary Worker's Compensation forms and to initiate claims management activities.

5.4.4.3 Project Manager:

5.4.4.3.1 Follows up with the Supervisor and employees to ensure the correction of identified incident/accident causes.

5.4.4.3.2 Shares relevant information with the Supervisor in other areas of their departments to ensure similar hazardous situations are addressed.

5.4.4.3.3 Ensures the provision of sufficient resources to make the necessary corrections and changes. Such resources may include equipment, materials, money, time, and support for policy changes.

5.4.4.4 Senior Manager:

5.4.4.4.1 Reviews Incident Reports as needed to determine the types of incidents occurring within the organization and the identified hazards in order to make appropriate decisions regarding safety and health management efforts.

5.4.4.4.2 Reviews the Incident Report Trend Summary Report provided by the Safety Officer to identify overall facility needs and to provide the leadership necessary to ensure workplace safety and health.

5.4.4.5 Employee Safety and Health Committee (as needed or required):

5.4.4.5.1 The Committee will be composed of both management and non-management personnel.

5.4.4.5.2 The Safety Officer is responsible for maintaining a list of current Committee members.

5.5 Recordkeeping. At a minimum the company will maintain the following records:

Record	Responsible Person	Location	Duration
Employee Safety Orientation	Safety Officer or other designated person	Main Office Employee File or with similar records	Until superseded
Employee Safety Training Records	Safety Officer or other designated person	Main Office Employee File or with similar records	Until superseded
Inspection Records and Audit Reports (w/corrective actions noted)	Safety Officer or other designated person	Main Office or with similar records	Until superseded or all action items are closed (whichever is longer)
Accident Reports (w/ corrective actions noted)	Safety Officer or other designated person	Main Office or with similar records	5 years
OSHA 300 Log and 301 Forms	Safety Officer or other designated person	Main Office or with similar records	5 years
Employee and Subcontractor Disciplinary Records regarding Safety/OSHA Compliance	Human Resources or other designated person	Human Resources Office or with similar records	Until Obsolete

6. Training and Information.

6.1 New employees:

6.1.1 All new employees will receive an orientation provided by the Safety Officer or Job Site Supervisor prior to their exposure to work place hazards.

6.1.2 The new employee orientation will cover the following items:

- 6.1.2.1 Overview of the Safety Program
- 6.1.2.2 Review of employee and management responsibilities
- 6.1.2.3 Hazard reporting procedures
- 6.1.2.4 Incident and accident reporting procedures
- 6.1.2.5 Employee Safety Committee function and members
- 6.1.2.6 General work rules
- 6.1.2.7 Department work rules
- 6.1.2.8 Method of access to first aid treatment
- 6.1.2.9 Acceptable clothing
- 6.1.2.10 Personal Protective Equipment required on the job
- 6.1.2.11 Location of all safety equipment
- 6.1.2.12 Fall protection

- 6.1.2.13 Scaffolds
 - 6.1.2.14 Materials and handling
 - 6.1.2.15 Cranes and hoists
 - 6.1.2.16 Tag lines
 - 6.1.2.17 Barricades
 - 6.1.2.18 Machine guarding, lock out/tag out
 - 6.1.2.19 Confined space entry
 - 6.1.2.20 Vehicle safety
 - 6.1.2.21 Housekeeping
 - 6.1.2.22 Job tasks hazards and methods of control
 - 6.1.2.23 Federal and State OSHA required training
- 6.1.3 The initial orientation documentation will be maintained by the Safety Officer or Job Site Supervisor and stored in the main office or the employee file (or where similar training records are maintained).

6.2 Transfer employees:

- 6.2.1 Employees transferring within the company will be trained in the items and exposures which previous training did not cover. The Safety Officer or Job Site Supervisor will provide this training prior to the employee's exposure to new hazards. Updated training will be documented on the employee's training record and stored in the main office or the employee file (or where similar training records are maintained).

6.3 Specific job/task training:

- 6.3.1 Employees must be trained to perform specific tasks in the construction job site such as forklifts, scaffold erection and confined space entry.
- 6.3.2 The Job Site Supervisor will identify which tasks require specific training and ensure this training is completed prior to permitting the employee to perform that task.
- 6.3.3 Training will be provided by the Safety Officer or Job Site Supervisor and documented on the employee's training record and stored in the main office or the employee file (or where similar training records are maintained).

6.4 Ongoing training:

6.4.1 Every construction job is unique. The Safety Officer or Job Site Supervisor must assess each job to identify its potential health and safety risks. Appropriate control methods will be communicated via:

6.4.1.1 New job orientation

6.4.1.2 Daily morning tailgate meetings

6.4.1.3 Weekly site updates/training

6.4.1.4 Scheduled skills training programs

7. Definitions.

- *Incident* - An incident is an unplanned event resulting in a minor injury (e.g. a small bruise) or minor property damage (e.g. a broken box with lightly damaged, mostly usable contents) or has the potential to result in injury or property damage (a near miss). Incidents do not usually result in a claim.
- *Accident* - An accident is an unplanned event resulting in an injury requiring treatment (in-house first aid or outside medical attention) or more substantial property damage. Accidents usually result in a claim.

CONSTRUCTION SAFETY CHECKLIST	
Checklist Completed by: _____ Date: _____	
ITEM	COMPLIANT?
Is an injury prevention program established for construction worksites? [29 CFR 1926.20(b)(1)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Does the program include regular inspections by a designated competent person of the worksite, materials, and equipment? [29 CFR 1926.20(b)(2)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
When machines, tools, materials, or equipment are identified as unsafe, is one of these procedures followed? [29 CFR 1926.20(b)(3)] a. they are tagged b. the controls are locked to render them inoperable; or c. they are immediately removed from the work area?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are only qualified employees (by training or experience) permitted to operate machinery? [29 CFR 1926.20(b)(4)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are all employees trained to recognize and avoid unsafe conditions? Do they know the regulations applicable to the work environment? [29 CFR 1926.21(b)(2)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Have employees been instructed regarding the safe handling and use of poisons, caustics, and other harmful substances? Are they aware of the hazards, personal hygiene, and personal protective measures required? [29 CFR 1926.21(b)(3)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
In areas where harmful plants or animals may be present, have employees been instructed regarding the hazards, how to avoid injury, and first aid procedures to be used in the event of injury? [29 CFR 1926.21(b)(4)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Have employees who are required to handle or use flammable liquids, gases, or toxic materials been instructed in the safe handling and use of these materials? [29 CFR 1926.21(b)(5)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Have all employees who are required to enter confined or enclosed spaces been instructed in the nature of the hazards involved, the necessary precautions to take, and the use of protective and emergency equipment required? [29 CFR 1926.21(b)(6)(i)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are medical personnel available for advice and consultation? [29 CFR 1926.23 and 1926.50(a)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are provisions made in advance of any project for prompt medical attention in case of serious injury? [29 CFR 1926.50(b)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
If emergency medical care is not readily available, is a certified person available to render first aid? [29 CFR 1926.50(c)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are first-aid supplies readily available at the worksite? [29 CFR 1926.50(d)(1)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are first-aid supplies at the worksite in a weatherproof container with individual sealed packages for each type of item? [29 CFR 1926.50(d)(2)]	<input type="checkbox"/> YES <input type="checkbox"/> NO

ITEM	COMPLIANT?
Are first-aid supplies checked to replace expended items each time they are sent to the worksite and at least weekly if left at the worksite? [29 CFR 1926.50(d)(2)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Is transportation available for taking an injured person to medical care, or is a communication system available for contacting an ambulance service? [29 CFR 1926.50(e)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are telephone numbers of physicians, hospitals, or ambulances conspicuously posted at the worksite? [29 CFR 1926.50(f)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Is an adequate supply of drinking water at or near the worksite? [29 CFR 1926.51(a)(1)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
If portable drinking water containers are used at the worksite, can they be tightly closed and are they equipped with a tap? [29 CFR 1926.51(a)(2)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Is dipping water from a drinking water container and use of a common drinking cup prohibited? [29 CFR 1926.51(a)(2) and (4)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are washing facilities at or near the worksite for employees who handle paints, coatings, pesticides, or other harmful contaminants? [29 CFR 1926.51(f)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Has an effective fire protection and prevention program been established at the worksite through all phases of construction, repair, or alteration? [29 CFR 1926.24]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Has all form and scrap lumber with protruding nails, re-bar and all other debris been cleared from work areas, passageways, and stairs in and around buildings or other structures? [29 CFR 1926.25(a)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Is combustible scrap and debris removed from the work area at regular intervals during the course of construction? [29 CFR 1926.25 (b) and 1926.252(c)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are containers provided for the collection and separation of waste, trash, oily and used rags, and other refuse? [29 CFR 1926.25(c)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are all solvent wastes, oily rags, and flammable liquids kept in fire-resistant, covered containers until removed from the work area? [29 CFR 1926.252(e)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are all construction areas, aisles, stairs, ramps, runways, corridors, offices, labs, shops, and storage areas where work is in progress well lighted? [29 CFR 1926.26 and 1926.56]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Is appropriate personal protective equipment used in all operations where hazardous conditions exist? [29 CFR 1926.28]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are all materials that are stored in tiers stacked, racked, blocked, interlocked, or otherwise secured to prevent sliding, falling, or collapse? [29 CFR 1926.250(a)(1)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Is the minimum safe load limit of floors within buildings and structures, in pounds per square foot, conspicuously posted in all storage areas? [29 CFR 1926.250(a)(2)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are maximum safe loads always maintained? [29 CFR 1926.250(a)(2)]	<input type="checkbox"/> YES <input type="checkbox"/> NO

ITEM	COMPLIANT?
Are aisles and passageways kept clear to provide for the free and safe movement of material-handling equipment and people? [29 CFR 1926.250(a)(3)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are such areas kept in good repair? [29 CFR 1926.250(a)(3)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Where a difference in road or working level exists, are means such as ramps, blocking, or grading provided to ensure the safe movement of vehicles between two levels? [29 CFR 1926.250(a)(4)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Is material stored inside buildings placed more than 6 feet away from any hoist-way or inside floor openings, or more than 10 feet away from an exterior wall? [29 CFR 1926.250(b)(1)] Note: The exterior wall must not extend beyond the top of the material stored.	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are non-compatible materials segregated in storage? [29 CFR 1926.250(b)(3)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are bagged materials stacked by stepping-back the layers and cross-keying the stack at least every 10 bags? [29 CFR 1926.250(b)(4)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Is it prohibited to store more material on scaffolds or runways than needed for the immediate operation? [29 CFR 1926.250(b)(5)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are brick stacks limited to 7 feet in height? [29 CFR 1926.250(b)(6)] Note: When a loose brick stack reaches a height of 4 feet, it must be tapered back 2 inches on every foot of height above the 4 foot level.	<input type="checkbox"/> YES <input type="checkbox"/> NO
When masonry blocks are stacked higher than 6 feet, is the stack tapered back one-half block per tier above the 6-foot level? [29 CFR 1926.250(b)(7)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are all nails withdrawn from lumber before lumber is stacked? [29 CFR 1926.250(b)(8)(i)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Is lumber stacked on level and solidly supported sills? [29 CFR 1926.250(b)(8)(ii)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Is lumber stacked in a stable, self-supporting manner? [29 CFR 1926.250(b)(8)(iii)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are all lumber piles 20 feet or less in height? [29 CFR 1926.250(b)(8)(iv)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are lumber piles to be handled manually stacked a height of 16 feet or less? [29 CFR 1926.250(b)(8)(iv)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are all structural steel, poles, pipe, bar stock other cylindrical material (unless racked) stacked and blocked to prevent spreading or tilting? [29 CFR 1926.250(b)(9)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are all masonry walls over 8 feet in height braced to prevent overturning? [29 CFR 1926.706(b)]	<input type="checkbox"/> YES <input type="checkbox"/> NO

PROGRAM OVERVIEW

CONTRACTOR SAFETY VERIFICATION PROGRAM

REGULATORY STANDARD: OSHA - 29 CFR General Duty Clause

INTRODUCTION: It is the responsibility of the host employer (i.e. the company) to ensure the safety of all workers conducting business on the site. When contractors or temporary employees perform work that involves activities that may put personnel at risk, the company must ensure these contractors have appropriate training, equipment, and work conditions to accomplish the task(s) in a safe manner. An evaluation may be required to ensure that the training and equipment is adequate to control exposure hazards. This program provides a framework for these evaluations.

TRAINING:

- None required

ACTIVITIES:

- Evaluate hazards of tasks and activities at your workplace where contractors and temporary employees may have risk or exposure. Ensure these hazards are controlled and the persons exposed have appropriate training and equipment.
- Evaluate hazards of tasks and activities which your employees may encounter at another job site or workplace. Ensure these hazards are controlled and your employees have appropriate training and equipment to control these hazards.

FORMS:

- Contractor or Contract Employee Safety Training Requirements
- Contractor Safety Information
- Contractor Safety Inspection Report

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- 1. Purpose**
- 2. Scope**
- 3. Responsibilities**
- 4. Procedure**
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Contractor Safety Verification Program

1. **Purpose.** This program is designed to establish a screening process so that the company may hire and use contractors (or temporary employees) who accomplish the desired job tasks without compromising the safety and health of employees at this facility. The contractor must assure that contract employees are trained on the hazards related to the job, of performing the job safely, and other applicable provisions of the OSHA Regulatory Standards. This safety program describes a systematic approach that will be used to evaluate contractor personnel used at this facility, and provides recommendations and guidelines for selecting contractors. Company management will review and evaluate this safety program:
 - 1.1 On an annual basis, or more frequently as needed
 - 1.2 When changes occur to 29 CFR, that prompt revision of this document
 - 1.3 When facility operational changes occur that require a revision of this document
 - 1.4 When there is an accident or near-miss incident that relates to this area of safety
 - 1.5 When changes occur to any related document that prompts a revision of this document
 - 1.6 Anytime the safety program procedures fail
2. **Scope.** This program applies to all company sites and facilities where contractors or sub-contractors are utilized for company business or operations.
3. **Responsibilities.**
 - 3.1 Management/Supervisors:
 - 3.1.1 Ensure contractors are informed of the company emergency action and fire prevention program(s) and the actions contractor employees are required to take during an emergency situation.
 - 3.1.2 Assure that contractors have the required training and equipment to comply with applicable federal, state and local safety regulations. Documented training and equipment maintenance records may be required to be produced by contractors in some instances.
 - 3.1.3 Perform periodic inspections of contractor work and records to assure compliance with applicable regulations.
 - 3.1.4 Assign or designate responsibility to a company employee to act as the primary liaison between the company and the contractor for safety-related issues.
 - 3.1.5 Periodically hold meetings with contractors or contract employees to discuss on-going safety issues.

3.2 Employees:

- 3.2.1 Report any hazardous conditions or situations to company management or your supervisor, as needed or required

3.3 Safety Officer:

- 3.3.1 Assist in the development and implementation of this program as needed or required.
- 3.3.2 Act as the liaison between the company and contractors, if designated to do so.

4. Procedure.

- 4.1 Emergency Action and Fire Prevention Program. All contract employers will be informed, prior to the initiation of the contractors' work at the site, of the applicable provisions of the facility emergency action safety program and all other information as required by the relevant OSHA Standard.

- 4.2 Contractor Pre-Qualification Policy. Contractors may be required to produce evidence that they are aware of regulatory compliance requirements for specific tasks or activities at company sites or locations. To evaluate contractor performance during or prior to the awarding of contract work, the company may utilize the Contractor Safety Information form, or an equivalent document, to assure adequate levels of past safety performance. As a means to assure that contract employees follow the safety rules of the facility, including safe work practices required by relevant regulations and policies the following criteria and information relating to the contractor will be reviewed and complied with before any contract for work on site is approved:

- 4.2.1 Information relating to contract employers' safety performance and programs
- 4.2.2 Methods of informing the contractor (and our personnel) of known potential hazards related to the contractor's work and applicable provisions of the facility emergency action safety program
- 4.2.3 Safe work practices to control the entrance, presence and exit of contract employers and contract employees in covered process areas, or other areas where known hazards exist
- 4.2.4 Evaluation of contractor performance in complying with specific safety standards
- 4.2.5 Contract employee injury and illness logs related to safety standards
- 4.2.6 A list of unique hazards presented by contractors' work or potential hazards generated by the contractor in the workplace will be communicated to company management and other company employees who would require this information to maintain a safe workplace.

- 4.3 Routine Contractor Compliance Inspections. Routine contractor compliance inspections will be conducted periodically when contractors are on site. The inspection will be conducted to discover conditions and work practices that do not conform to best management practices regarding contractor safety compliance. The Contractor Safety Inspection Report form, or an equivalent document, may be used to facilitate the inspection process.
- 4.3.1 Contractor Safety Inspection Team. The company contractor inspection team will be comprised of selected members of management/supervisors and hourly personnel.
- 4.3.2 Inspection Intervals. The Safety Officer or other designated person will coordinate inspection dates and times with all assigned inspection team members. Inspections will be conducted on an as needed basis while work is in progress, or at least annually for long-term work.
- 4.3.3 Inspection report. The Safety Officer or other designated person will develop a contractor safety report based on the inspection items noted during the inspection. The following items will be accomplished:
- 4.3.3.1 The pertinent sections of the report will be distributed immediately to personnel responsible for correcting deficiencies noted during the inspection.
- 4.3.3.2 The pertinent sections of the report will be distributed to all supervisors and key management personnel affected by the contractor's operation. Supervisors will brief the employees on the results. Any employee requesting to be placed on the distribution list will be accommodated.
- 4.3.3.3 The Safety Officer or other designated person will develop a statistical analysis of deficiencies noted to determine jobs/areas that have a high incidence of contractor non-compliance. These areas will be emphasized during future inspections and meetings. This analysis will become a determining factor in future awards of work to the contractor.
- 4.3.3.4 Any deficiencies noted will be immediately corrected by the contractor or a "stop work" order will be issued.

5. Safety Information.

- 5.1 Contractor Safety Meetings. A well ordered flow of information is essential to a good Contractor Safety Verification Program. Company management through contractor meetings at all levels intends to ensure that all contractors awarded work will maintain a high degree of safety compliance at all times.
- 5.1.1 Contractor meeting agendas. The Safety Officer will develop agendas serving various topics of importance to the Contractor Safety Verification Program. The agendas will be flexible. They will be intended to ensure the highest degree of compliance to existing regulations.

- 5.1.2 Contractor meeting schedules. Contractor safety meetings will be conducted on a regular basis and when operational changes to equipment, facilities, or the job occur that impacts the Contractor Safety Verification Program.
 - 5.1.3 Departmental staff meetings. Contractor safety topics will be included in the agenda of selected staff meetings. The Safety Officer will keep department heads informed of contractor safety performance developments in their area. Department heads may ask the Safety Officer to provide contractor safety briefings as required.
 - 5.1.4 Supervisor meetings. Contractor safety issues will be included in the agenda of selected meetings during times when contractors are used in their departments. Department heads will ensure that selected Contractor Safety Verification Program information is transmitted to supervisors for inclusion in meetings. Supervisors may ask the Safety Officer or another designated person to provide contractor safety briefings as required.
- 5.2 Specific Safety Standards Requiring Contractor Safety Compliance. The following standards will be reviewed if the contractor (or temporary employee) engages in activities that could fall under the jurisdiction of the specific standard:

Confined Space	29 CFR 1910.146
Fall Protection	29 CFR 1910.66, 119, 128, 129, 130, 131
Forklift	29 CFR 1910.178
Hazard Communication	29 CFR 1910.1200
Hazardous Waste Operations	29 CFR 1910.120
Lockout Tagout	29 CFR 1910.147
Process Safety	29 CFR 1910.119
Respiratory Protection	29 CFR 1910.134
Welding Safety	29 CFR 1910.252

6. Training and Information.

- 6.1 All contractors will ensure that their employees are properly trained about the hazards of the workplace (including, but not limited to known fire, explosion and or toxic hazards, uncontrolled energy, and confined spaces). To facilitate this process, the company may utilize the Contractor/Contract-Employee Safety Training Requirements form, or an equivalent document, to provide documented evidence of training.
 - 6.1.1 Contractors (including temporary employment agencies) used by the company are required to provide training to their employees in the work practices necessary for their specific job. Additionally, the company Safety Officer or other designated company personnel, in coordination with the contractor, will conduct process hazard analyses to identify, evaluate, and control processes involving highly hazardous chemicals.
 - 6.1.2 Whenever there are outside contractor's present, coordination with company management, supervisors or other designated company personnel is mandated. For example, the company will inform the contractor (and vice versa) when equipment cannot be touched, re-energized or restarted.

- 6.1.3 Based on interviews with the contractors and/or any previous employers, company management will ensure, through periodic evaluations, that the training provided to contractor employees by the contractor is equivalent to the training required for direct hire employees. The burden of training for contractor employees remains with the contractor.
- 6.1.4 Contractors used by the company must:
 - 6.1.4.1 Assure their employees are trained in safe work practices needed to perform the job.
 - 6.1.4.2 Assure their employees are instructed in the known potential fire, explosion, or toxic release hazards related to the job and the applicable provisions of the facility emergency action safety program.
 - 6.1.4.3 Document the required training and the means to verify their employees have understood the training.
 - 6.1.4.4 Assure their employees follow the facility safety rules and work practices.
 - 6.1.4.5 Advise the company of unique hazards presented by the contractor's work.

7. Definitions.

- *None at this time*

CONTRACTOR/CONTRACT EMPLOYEE SAFETY TRAINING REQUIREMENTS	
<i>PURPOSE: The purpose of this questionnaire is to provide this employer with necessary safety information about your prospective temporary employee to aid in the decision to hire him or her.</i>	
Agency Name:	
Address:	
Safety Director:	
Fax #:	Phone #:
Employee Name:	
Address:	
Fax #:	Phone #:
Job to be placed in:	
Department:	
Supervisor:	Phone #:
Previous Safety Training	
➤ Identify below the types of training attended within past 3 years.	
<input type="checkbox"/> Accident Investigation	<input type="checkbox"/> Ergonomics
<input type="checkbox"/> Bloodborne Pathogens Safety	<input type="checkbox"/> Office Safety
<input type="checkbox"/> Compressed Gas Safety	<input type="checkbox"/> Woodworking Safety
<input type="checkbox"/> Electrical Safety Work Practices	<input type="checkbox"/> Job Hazard Analysis
<input type="checkbox"/> Eye Protection	<input type="checkbox"/> Hazardous Substances
<input type="checkbox"/> Flammable & Combustible Liquids Safety	<input type="checkbox"/> Laboratory Safety
<input type="checkbox"/> Hand Protection	<input type="checkbox"/> Confined Space Entry
<input type="checkbox"/> HAZWOPER	<input type="checkbox"/> Hazard Communication
<input type="checkbox"/> Head Protection	<input type="checkbox"/> Emergency Response Procedures
<input type="checkbox"/> Hearing Protection	<input type="checkbox"/> Machine Guarding
<input type="checkbox"/> Housekeeping	<input type="checkbox"/> Hand & Power Tool Safety
<input type="checkbox"/> Industrial Fire Safety	<input type="checkbox"/> Ladder Safety
<input type="checkbox"/> Lead Safety	<input type="checkbox"/> Process Safety
<input type="checkbox"/> Respiratory Protection	<input type="checkbox"/> Barricades
<input type="checkbox"/> Safety Belts & Lifelines or Fall Protection	<input type="checkbox"/> Electrical Safety
<input type="checkbox"/> Scaffolding	<input type="checkbox"/> Sling, Rigging & Crane Safety
<input type="checkbox"/> Slips, Trips and Falls Safety	<input type="checkbox"/> Working in Hot Conditions
<input type="checkbox"/> Welding Safety	<input type="checkbox"/> Trenching and Excavations Safety
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>

COMPANY USE ONLY			
Job to be placed in:			
Department:			
Supervisor:			Phone #:
Recommended Safety Training			
➤ The training listed below must be completed before job assignment.			
<input type="checkbox"/> Accident Investigation		<input type="checkbox"/> Ergonomics	
<input type="checkbox"/> Bloodborne Pathogens Safety		<input type="checkbox"/> Office Safety	
<input type="checkbox"/> Compressed Gas Safety		<input type="checkbox"/> Woodworking Safety	
<input type="checkbox"/> Electrical Safety Work Practices		<input type="checkbox"/> Job Hazard Analysis	
<input type="checkbox"/> Eye Protection		<input type="checkbox"/> Hazardous Substances	
<input type="checkbox"/> Flammable & Combustible Liquids Safety		<input type="checkbox"/> Laboratory Safety	
<input type="checkbox"/> Hand Protection		<input type="checkbox"/> Confined Space Entry	
<input type="checkbox"/> HAZWOPER		<input type="checkbox"/> Hazard Communication	
<input type="checkbox"/> Head Protection		<input type="checkbox"/> Emergency Response Procedures	
<input type="checkbox"/> Hearing Protection		<input type="checkbox"/> Machine Guarding	
<input type="checkbox"/> Housekeeping		<input type="checkbox"/> Hand & Power Tool Safety	
<input type="checkbox"/> Industrial Fire Safety		<input type="checkbox"/> Ladder Safety	
<input type="checkbox"/> Lead Safety		<input type="checkbox"/> Process Safety	
<input type="checkbox"/> Respiratory Protection		<input type="checkbox"/> Barricades	
<input type="checkbox"/> Safety Belts & Lifelines or Fall Protection		<input type="checkbox"/> Electrical Safety	
<input type="checkbox"/> Scaffolding		<input type="checkbox"/> Sling, Rigging & Crane Safety	
<input type="checkbox"/> Slips, Trips and Falls Safety		<input type="checkbox"/> Working in Hot Conditions	
<input type="checkbox"/> Welding Safety		<input type="checkbox"/> Trenching and Excavations Safety	
<input type="checkbox"/>		<input type="checkbox"/>	
<input type="checkbox"/>		<input type="checkbox"/>	
Key Personnel Review			
Name:		Title:	Phone #:
Signature:		Date:	Time:
Name:		Title:	Phone #:
Signature:		Date:	Time:
AUTHORIZATION		YES	NO
Approved?		<input type="checkbox"/>	<input type="checkbox"/>
Further detailed on attachment:		<input type="checkbox"/>	<input type="checkbox"/>
I acknowledge that I have conducted a review of the information contained in this questionnaire and approve the employee for temporary hire in the above described position.			
Name:		Date:	Time:
Signature:		Title:	
QUESTIONNAIRE RETENTION INFORMATION			
Permanent Retention File:		Location:	
Date Filed:		Filed By:	

CONTRACTOR SAFETY INFORMATION			
<i>PURPOSE: The purpose of this questionnaire is to provide this employer with necessary information about your company's safety program. All items must be completed.</i>			
Company Name:			
Address:			
Safety Director:			
Fax #:			Phone #:
Accident/Injury Experience			
Using last year's OSHA 300 Log or Worker's Compensation Documentation, fill in the following:			
Number of recordable injuries/illnesses			
Number of restricted work days			
Number of lost work days			
Number of fatalities			
Employee hours worked last year			
Number of injuries/illnesses requiring hospitalization			
Overall Safety Program Compliance			YES
			NO
Does your company have a written safety program?			<input type="checkbox"/>
➤ Is the program revised/updated annually?			<input type="checkbox"/>
Does your written program contain a statement that your company abides by all federal (OSHA), state and local rules and regulations relating to safe work practices?			<input type="checkbox"/>
Do you have a new hire safety orientation program?			<input type="checkbox"/>
➤ Do you have handbooks for any of the below safety programs?			<input type="checkbox"/>
➤ Have you included copies of any of the handbooks?			<input type="checkbox"/>
➤ Does your new hire program include any training on the following?			
<input type="checkbox"/> Head Protection	<input type="checkbox"/> Emergency Response Procedures		
<input type="checkbox"/> Eye Protection	<input type="checkbox"/> Hazardous Substances		
<input type="checkbox"/> Hearing Protection	<input type="checkbox"/> Machine Guarding		
<input type="checkbox"/> Respiratory Protection	<input type="checkbox"/> Barricades		
<input type="checkbox"/> Safety Belts & Lifelines or Fall Protection	<input type="checkbox"/> Electrical Safety		
<input type="checkbox"/> Scaffolding	<input type="checkbox"/> Sling, Rigging & Crane Safety		
<input type="checkbox"/> Housekeeping	<input type="checkbox"/> Hand & Power Tool Safety		
<input type="checkbox"/> Welding Safety	<input type="checkbox"/> Trenching and Excavations Safety		
<input type="checkbox"/> Hand Protection	<input type="checkbox"/> Confined Space Entry		
<input type="checkbox"/> Bloodborne Pathogens Safety	<input type="checkbox"/> Office Safety		
<input type="checkbox"/> Compressed Gas Safety	<input type="checkbox"/> Woodworking Safety		
<input type="checkbox"/> Flammable & Combustible Liquids Safety	<input type="checkbox"/> Laboratory Safety		
<input type="checkbox"/> Industrial Fire Safety	<input type="checkbox"/> Ladder Safety		
Do you have a Supervisor safety training program? Outline included?			<input type="checkbox"/>
Do you conduct regular safety meetings?			<input type="checkbox"/>
➤ How often?		➤ Are records kept?	
Do you generate accident investigation reports?			<input type="checkbox"/>
Do you perform project safety inspections?			<input type="checkbox"/>
➤ Who conducts them?		➤ How often?	
➤ Job Title.			

CONTRACTOR SAFETY INSPECTION REPORT					
JOB NAME:				JOB #:	
SUPERINTENDENT:				DATE:	
PERSON(S) MAKING INSPECTION:					
SUBCONTRACTORS ONSITE (List Name & Trade):					
CATEGORY	ADEQUATE UPON INSPECTION	NEEDS CONSIDERATION	IMMEDIATE ATTENTION REQUIRED	N/A	ACTION TAKEN
Job Information					
• OSHA 300 forms posted and complete?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• OSHA poster posted?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Phone no. for the nearest medical center posted?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Toolbox talks up to date?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Work areas properly signed and barricaded?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Housekeeping					
• General neatness of work area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Projecting nails removed or bent over?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Waste containers provided and used?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Passageways and walkways clear?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Cords and leads off the floor?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Fire Prevention					
• Adequate fire extinguishers, checked and accessible?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Phone no. of fire department posted?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• "No Smoking" posted and enforced near flammables?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Electrical					
• Extension cords with bare wires or missing ground prongs taken out of service?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Ground fault circuit interrupters being used?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Terminal boxes equipped with required covers?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

CATEGORY	ADEQUATE UPON INSPECTION	NEEDS CONSIDERATION	IMMEDIATE ATTENTION REQUIRED	N/A	ACTION TAKEN
Hand, Power & Powder Actuated Tools					
• Hand tools inspected regularly?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Guards in place on machines?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Right tool being used for job at hand?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Operators of powder-actuated tools are licensed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Fall Protection					
• Safety rails and cables are secured properly?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Employees have D-ring of belts in center of back?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Employees exposed to fall hazards are tied off?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Employees below protected from falling objects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Ladders					
• Ladders extend at least 36" above the landing?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Ladders are secured to prevent slipping, sliding or falling?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Ladders with split or missing rungs taken out of service?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Stepladders used in fully open position?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• No step at top two rungs of stepladder?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Scaffolding					
• All scaffolding inspected daily?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Erected on sound rigid footing?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Tied to structure as required?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Guardrails, intermediate rails, toe boards and screens in place?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Planking is sound and sturdy?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Proper access provided?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Employees protected from falling objects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Floor & Wall Openings					
• All floor or deck openings are planked over or barricaded?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Perimeter protection is in place?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Deck planks are secured?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Materials stored away from edge?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Trenches, Excavation & Shoring					
• Competent person on hand?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Excavations are shored or sloped back?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Materials are stored at least two feet from trench?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Ladders provided every 25 feet in trench?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Equipment is a safe distance from edge of trench or excavation?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

CATEGORY	ADEQUATE UPON INSPECTION	NEEDS CONSIDERATION	IMMEDIATE ATTENTION REQUIRED	N/A	ACTION TAKEN
Material Handling					
• Materials are properly stored or stacked?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Employees are using proper lifting methods?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Tag lines are used to guide loads?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Proper number of workers for each operation?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Welding & Burning					
• Gas cylinders stored upright?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Proper separating distance between fuels and oxygen?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Burning/welding goggles or shields are used?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Fire extinguishers are nearby?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Hoses are in good condition?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Cranes					
• Outriggers are extended and swing radius barricade in place?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Operator is familiar with load charts?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Hand signal charts are on crane?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Crane operator logs are up-to-date?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Employees kept from under suspended loads?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Chains and slings inspected and tagged as required?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Concrete Construction					
• Employees are protected from cement dust?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Exposed skin is covered?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Runways are adequate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Personal Protective Equipment					
• Hard hats are being worn?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Safety glasses are being worn?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Respirators are used when required?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Hearing protection being worn when required?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Traffic vests being worn?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Unsafe Acts or Practices Observed (List):					
<p>COMMENTS:</p>					
AUTHORIZED SIGNATURE:			DATE:		

PROGRAM OVERVIEW

CRANE, HOIST AND SLING SAFETY PROGRAM

REGULATORY STANDARD: OSHA - 29 CFR 1910.179 and 184

ANSI - B30.2 and 30.9

Crane Manufacturers Association of America 61

INTRODUCTION: This program is intended to assist employers in identifying and minimizing the risks associated and ensuring proper procurement, maintenance, testing, inspection and safe operation of internally used overhead cranes and hoists, and sling equipment. Mobile cranes (like those used outside at construction sites) are excluded.

TRAINING:

- All employees trained initially on the hazards and how to minimize risk. Training should include hazard recognitions, suspended loads, tag lines, safe work areas. Note that Paychex can provide general awareness training, not certified crane operator training.
- Retraining is required as changes in the workplace occur, or as needed

ACTIVITIES:

- Purchase only equipment that is approved by the American National Standards Institute (ANSI B-30.2) and ensure it is labeled appropriately with registration numbers and load limits
- Test equipment as needed or required, or contract with the installation firm or manufacturer to perform required tests
- Identify Hoist & Crane Designee for approval of hoist and/or crane activities, scheduling of inspections, and recordkeeping

FORMS:

- Crane, Hoist, and Sling Inspection Checklist
- Crane, Hoist, and Sling Inspection Record
- Crane, Hoist, and Sling Maintenance Testing & Inspection Requirements
- Crane, Hoist, and Sling Requirements for Construction and Installation
- Training Attendance Roster

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- 1. Purpose**
- 2. Scope**
- 3. Responsibilities**
- 4. Procedure**
- 5. Safety Information**
- 6. Training Information & Requirements**
- 7. Definitions**

Overhead Cranes, Hoists, and Slings

1. **Purpose.** Each facility or site which uses overhead cranes, hoists and slings require processes in place to ensure proper procurement, maintenance, testing, inspection and safe operation of internally used overhead cranes and hoists, and sling equipment. Mobile cranes (like those used outside at construction sites) are excluded.
2. **Scope.** This program applies to all company owned, leased or operated overhead cranes, hoists, and slings.
3. **Responsibilities.**
 - 3.1 Management and Supervisor:
 - 3.1.1 Purchase only equipment that is approved by the American National Standards Institute (ANSI B-30.2).
 - 3.1.2 Test equipment as needed or required, or contract with the installation firm or manufacturer to perform required tests.
 - 3.1.3 Ensure operators inspect equipment daily or before each use.
 - 3.1.4 Assess the operations to assure that cranes and hoists are operating properly.
 - 3.1.5 Assess operator behavior to assure that equipment is used properly. Retrain or replace operators whose behavior exhibits deficiencies.
 - 3.1.6 Train operators, inspectors, and assure the Crane and Hoist Designated Person has the appropriate knowledge and skills to perform their required duties.
 - 3.1.7 Assure that repairs, modifications and maintenance of crane and hoist equipment are performed in a timely manner, and on a regular basis. Modifications must be approved by a professional engineer or the manufacturer.
 - 3.2 Crane Operators:
 - 3.2.1 Operators will conduct visual crane and hoist inspections frequently (daily or before each use is recommended, although monthly inspection is the minimum). A crane and hoist inspection form is provided for this purpose.
 - 3.2.2 Cranes that have been idle for a period of one month or more will be inspected by the designated "Hoist & Crane Designee" before the crane is put back into service.
 - 3.2.3 Operators' skills, knowledge, and operating behaviors are routinely assessed by Supervisors. Deficiencies will be addressed through re-training or replacement of the operator.

3.2.4 Appropriate preventive maintenance inspection cycles are established, based on manufacturer's recommendations and/or the Hoist & Crane Designee recommendations. Modifications made must be approved by a professional engineer or the manufacturer.

3.2.4.1 Follow all company work practices and manufacturer's recommendations to ensure safe operation of the equipment and ancillary materials.

3.3 Crane and Hoist Designee:

3.3.1 This person must have qualifications that meet the approval of the Hoist & Crane regulations. In addition, this person must understand the maintenance qualifications, frequency of inspection, documentation and recordkeeping requirements. It is recommended that this person be (or have access to) a professional engineer to provide appropriate consultation on load capacity and other approvals required.

3.3.2 Be responsible for inspections, documentation and records for cranes, hoists and slings used at the company.

3.3.3 Provide inspections for cranes that have been idle for one month or more.

3.3.4 Assure registration stickers with appropriate registration numbers are affixed to the crane, hoist and/or sling.

3.3.5 Assure cranes are affixed with their rated load capacity.

3.3.6 Provide approvals for (or consult with a professional engineer or the manufacturer to approve) any activity where the rated load of a crane may be exceeded. In no case may a hoist's rated load capacity be exceeded.

3.4 Manufacturer or Installer:

3.4.1 Provide for initial testing of cranes, hoists and slings. Testing includes hoisting and lowering, trolley travel, bridge travel, limit switches and locking and safety devices, and rated load testing.

3.4.2 Provide consultation services for loading capacity, modifications, repairs and other items as needed or required.

3.4.3 Provide all repairs and service for slings.

3.5 Maintenance Personnel:

3.5.1 Perform required preventive maintenance services on crane and hoist equipment, per manufacturer's recommendations. Slings must be repaired and serviced *only* by the manufacturer.

- 3.5.1.1 Adjustments of operating mechanisms, limit switches, control systems, brakes and power sources may be performed by company personnel, under the direction of either a professional engineer or other designated person who has the qualifications to perform such repairs on crane and hoist equipment.
- 3.5.1.2 Repairs must be made to cranes and hoists only under the approval and oversight of either the manufacturer or a professional engineer.

4. Procedure.

4.1 General:

- 4.1.1 Cranes and hoists are procured through and registered with the site designated unit or through the outside company contracted to manage hoists and cranes. The Hoist & Crane Designee will apply a registration sticker with the hoist or crane's designated registration number. This sticker must remain legible from the floor.
- 4.1.2 Load testing, hoisting and lowering, trolley travel, bridge travel and limit locking and safety devices must be performance tested (in accordance with ANSI B-30.2b) upon initial installation or after any modifications or alterations to the equipment. Testing does not need to be performed for change-outs of chain, wire rope or cables.
- 4.1.3 Operators and their supervisors are properly trained for the operations they are expected to perform and on the equipment to which they are assigned. (Training is required to be documented.). Operation of any overhead crane or hoist without proper training and authorization is forbidden.

4.2 Safe Work Practices for Crane and Hoist Operators:

- 4.2.1 At a minimum, operators will:
 - 4.2.1.1 Pay constant attention to hoist/crane while load is suspended.
 - 4.2.1.2 Never exceed the rated load.
 - 4.2.1.3 Never leave a suspended load unattended.
 - 4.2.1.4 Position/center load for balance.
 - 4.2.1.5 NOT perform side-pull lifts.
 - 4.2.1.6 NOT lift with kinked or damaged chain, cable, or rope.
 - 4.2.1.7 NOT lift loads over people.

- 4.2.1.8 IMMEDIATELY stop and report any malfunctioning device to Supervisors. IN THE EVENT OF IMMEDIATE DANGER, lower the load, lock out the crane power source, and immediately contact the site emergency number. If unable to safely lower the load, control the immediate area while others contact emergency responders.
- 4.2.1.9 For cab-operated cranes, maintain cab access clear and clean and perform documented monthly inspections of cab fire extinguisher.
- 4.2.1.10 Follow direction from persons trained to provide correct hand signals when assisted lifts are conducted.
- 4.2.1.11 Never allow persons to ride hook or load.
- 4.2.2 Be responsible and accountable for the safety of the load, regardless of who attached it.
- 4.3 Safe Work Practices for Sling Operators:
 - 4.3.1 Slings that are damaged or defective will not be used.
 - 4.3.2 Slings will not be shortened with knots or bolts or other makeshift devices.
 - 4.3.3 Sling legs will not be kinked.
 - 4.3.4 Slings will not be loaded in excess of their rated capacities.
 - 4.3.5 Slings used in a basket hitch will have the loads balanced to prevent slippage.
 - 4.3.6 Slings will be securely attached to their loads.
 - 4.3.7 Slings will be padded or protected from the sharp edges of their loads.
 - 4.3.8 Suspended loads will be kept clear of all obstructions.
 - 4.3.9 All employees will be kept clear of loads about to be lifted and of suspended loads.
 - 4.3.10 Hands or fingers will not be placed between the sling and its load while the sling is being tightened around the load.
 - 4.3.11 Shock loading is prohibited.
 - 4.3.12 A sling will not be pulled from under a load when the load is resting on the sling.
 - 4.3.13 Before being lifted completely from its resting position, loads will be checked for proper balance.
 - 4.3.14 Unapproved makeshift slings such as fan belts will never be used.

4.4 Handling Loads:

4.4.1 Size of load.

4.4.1.1 The crane may not be loaded beyond its rated load except for testing purposes.

4.4.2 Attaching the load.

4.4.2.1 Ropes must be free from kinks or twists and not be wrapped around the load.

4.4.2.2 Loads are attached to the block hook by slings or other approved devices, taking care that the slings clear all obstacles.

4.4.3 Moving the load.

4.4.3.1 Loads must be secure and balanced in the sling or lifting device before it is lifted (even more than a few inches).

4.4.3.2 Before starting check for the following:

4.4.3.2.1 Hoist rope is not kinked.

4.4.3.2.2 Multiple part lines are not to be twisted around each other.

4.4.3.2.3 Hooks are brought over the load to prevent swinging.

4.4.3.3 During hoisting care will be taken that:

4.4.3.3.1 There is no sudden acceleration or deceleration.

4.4.3.3.2 The load does not contact any obstructions.

4.4.3.4 Cranes may not be used for side pulls.

4.4.3.5 Employees may not be on the hook (riding it or gliding with it) during movement.

4.4.3.6 Loads may not be carried over people.

4.4.3.7 Operators must test the brakes when the rated load capacity of the crane or hoist is approached. Testing is by raising the load a few inches and applying the brakes.

4.4.3.8 At least two full wraps of rope must remain on the drum at all times.

4.4.3.9 When two or more cranes are used to lift a load one qualified responsible person must be designated to be in charge of the operation. They will analyze the operation and instruct all personnel involved in the proper positioning, rigging of the load, and the movements to be made.

4.4.3.10 Operators must remain at the controls at all times when loads are suspended.

4.4.3.11 A warning signal must activate when the bridge starts and when the load or hook approaches personnel.

4.4.4 Hoist limit switches.

4.4.4.1 Upper limit switches must be no-load tested at the beginning of each operator's shift. Extreme care must be used; the block is "inched" into the limit or run in at slow speed. If the switch does not operate properly, the crane may not be used until repaired.

4.4.4.2 The hoist limit switch, which controls the upper limit of travel of the load block, may never be used as an operating control.

4.5 Markings:

4.5.4 All cranes, hoists and slings will be labeled with their registration number by the Hoist & Crane Designee. These registration numbers must be legible from the floor.

4.5.5 Monorails must be labeled with their rated weight load capacity. Multiple hoists applied to a single monorail may not exceed the total rated capacity of the monorail without specific approval of the Hoist & Crane Designee. Markings must be legible from the floor.

4.5.6 Hoists and slings must be marked with their rated weight load capacity. Under no circumstances may a rated capacity be exceeded on a hoist. Markings must be legible from the floor.

4.5.7 Cranes are required to be marked with their rated weight load capacity on each side of the crane. Markings must be legible from the floor. If more than one number appears on the marking (e.g. 20/5) the larger number is the total rated capacity and will not be exceeded.

4.6 Repairs/Modifications and Testing:

4.6.4 Cranes and Hoists

4.6.4.1 All repairs and modifications to new and existing crane and hoist systems are made by a professional engineer or the manufacturer.

4.6.4.2 Adjustments to crane and hoist equipment may be performed by qualified personnel under the direct instruction of either a professional engineer or the manufacturer.

- 4.6.4.3 Cranes must be tested upon initial installation and after alterations.
- 4.6.5 Slings
 - 4.6.5.1 Sling repairs and modifications must be made by the manufacturer.

5. Safety Information.

5.1 Cranes and Hoists:

- 5.1.1 General (See Crane and Hoist Construction and Installation Requirements form for more detailed information.)
 - 5.1.1.1 Wind indicators and rail clamps for outdoor storage bridges will be in place. A visible or audible alarm must be provided to warn the operator of winds exceeding a set velocity. (Velocity is set based on the capabilities of the crane.)
 - 5.1.1.2 Clearance from any obstruction must be maintained at a minimum of 3 inches overhead and 2 inches laterally.
 - 5.1.1.3 Passageways and walkways (including those used to maintain crane equipment) must be free from obstruction, and be located so they do not jeopardize the safety of any employee on the walkway.
 - 5.1.1.4 Parallel cranes must have adequate space between bridges so that hoisted materials and the crane equipment is not at risk.
 - 5.1.1.5 If there is at least 48 inches of headroom available, foot-walks should be provided on cab-operated cranes along the length of the bridge.
 - 5.1.1.6 Controls must be visible (well lighted) and located within convenient reach of the operator when facing the load and/or direction of travel of the cab. Load hook must be in full view at all times.
 - 5.1.1.7 Fire extinguishers may be of any type except Carbon Tetrachloride. Cab operators must be trained and familiar with their use.
 - 5.1.1.8 Brakes (control and holding types) must be provided that adequately slow and stop the crane, and which hold the load.
 - 5.1.1.9 Electrical equipment and components will comply with OSHA's Electrical Safety requirements.
 - 5.1.1.10 Hoisting equipment (sheaves, ropes and hooks) will be smooth and free from defects or damage. They must be inspected frequently.
 - 5.1.1.11 Warning devices and alarms must be installed for all cranes (except floor operated cranes) that have power traveling mechanisms.

- 5.1.1.12 Ladders must be free from obstruction and other encumbrances during use. Articles that are too large for pockets or belt attachments must be lifted and lowered by a hand line.
- 5.1.1.13 Cabs must be kept neat so that personal items do not interfere with the operation or access to controls. Tools, oil cans, waste, extra fuses, and other necessary articles should be stored in a tool box.

5.2 Slings:

- 5.2.1 General (See Crane Hoist and Sling Maintenance Testing and Inspection form for more detailed information.)
 - 5.2.1.1 Operators must be trained by the manufacturer or other certified agency.
 - 5.2.1.2 Slings and their components must be inspected daily, periodically and on a regular schedule.
 - 5.2.1.3 Damaged equipment may not be used until repaired by the manufacturer.
 - 5.2.1.4 Slings and their components must have identification permanently affixed that designates the size, grade rated capacity and reach.
 - 5.2.1.5 Slings must be manufacturer tested before being placed into service.
 - 5.2.1.6 Slings are rated for temperature ranges. If materials or temperatures exceed this range, the sling or component must be re-tested by the manufacturer.
 - 5.2.1.7 Types of slings include:
 - 5.2.1.7.1 Alloy steel chain
 - 5.2.1.7.2 Wire rope
 - 5.2.1.7.3 Metal mesh
 - 5.2.1.7.4 Natural or Synthetic fiber rope
 - 5.2.1.7.5 Synthetic web

6. Training and Information.

- 6.1 All employees working near crane, hoist and sling operations must be made aware of the hazards associated with the use of the equipment.
 - 6.1.1 Specialized or one-time lifts must have information and training provided prior to the lift.

- 6.2 Initial training must occur for crane, hoist and sling operators prior to initial job assignment and use of equipment. Training includes:
 - 6.2.1 Pre-operational inspection requirements (including verification of markings on the equipment and components).
 - 6.2.2 Specific operational requirements.
 - 6.2.3 Principles of operations.
 - 6.2.4 Hazard recognition associated with the work.
 - 6.2.5 Load determination and balancing.
 - 6.2.6 Process to remove equipment or components from service.
- 6.3 Training must be documented. Documentation must be retained as long as the operator is required to use the equipment.
 - 6.3.1 Training for cranes and hoists is performed by the manufacturer or other certified agency.
 - 6.3.2 Training for sling *use* may be provided by an experienced employee who has had previous training provided by the manufacturer, although it is more common for the manufacturer or installer of the sling to provide the required operator training.
 - 6.3.3 Training for sling inspection is provided to operators by the manufacturer.
- 6.4 Refresher training is identical to initial training and is required when there is a change in the job assignment or equipment used, when procedures change and when operator behavior warrants retraining.
- 6.5 Operators must be physically and mentally capable of performing their duties and understanding the safe use of cranes, hoists and slings.
- 6.6 Fire extinguishers may be of any type except Carbon Tetrachloride. Cab operators must be trained and familiar with their use.

7. Definitions.

- *Hoist & Crane Designee* - If a designee is utilized for approval of hoist and/or crane activities, they must have qualifications that meet the approval of the Hoist & Crane regulations. In addition, this person must understand the maintenance qualifications, frequency of inspection, documentation and recordkeeping requirements. It is recommended that this person be (or have access to) a professional engineer to provide appropriate consultation on load capacity and other approvals required.

- *Qualified person* - A person who, by possession of a recognized degree or a certificate of professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated the ability to solve or resolve problems relating to the subject matter and work.
- *Designated* - Selected by management as being competent to perform specific duties.
- *Crane* - A mechanism used for lifting or lowering a load and moving it horizontally.
- *Hoist* - A suspended mechanism that exerts a force for lifting or lowering a load. May be part of a crane.
- *Monorail* - A single run of overhead track on which hoists travel.
- *Sling* - A hammock, net or similar device used with hoists or cranes to carry a suspended load.
- *Angle of loading* - The inclination of a leg or branch of a sling measured from the horizontal or vertical plane as shown in Fig. N-184-5 of 29 CFR 1910.184; provided that an angle of loading of five degrees or less from the vertical may be considered a vertical angle of loading.
- *Basket hitch* - A sling configuration whereby the sling is passed under the load and has both ends, end attachments, eyes or handles on the hook or a single master link.
- *Braided wire rope* - A wire rope formed by plaiting component wire ropes.
- *Bridle wire rope sling* - A sling composed of multiple wire rope legs with the top ends gathered in a fitting that goes over the lifting hook.
- *Cable laid endless sling mechanical joint* - A wire rope sling made endless by joining the ends of a single length of cable laid rope with one or more metallic fittings.
- *Cable laid grommet-hand tucked* - An endless wire rope sling made from one length of rope wrapped six times around a core formed by hand tucking the ends of the rope inside the six wraps.
- *Cable laid rope* - A wire rope composed of six wire ropes wrapped around a fiber or wire rope core.
- *Cable laid rope sling mechanical joint* - A wire rope sling made from a cable laid rope with eyes fabricated by pressing or swaging one or more metal sleeves over the rope junction.
- *Choker hitch* - A sling configuration with one end of the sling passing under the load and through an end attachment, handle or eye on the other end of the sling.
- *Coating* - An elastomer or other suitable material applied to a sling or to a sling component to impart desirable properties.
- *Cross rod* - A wire used to join spirals of metal mesh to form a complete fabric. (See Fig. N-184-2 of 29 CFR 1910.184.)

- *Designated* - Selected or assigned by the employer or the employer's representative as being qualified to perform specific duties.
- *Equivalent entity* - A person or organization (including an employer) which, by possession of equipment, technical knowledge, and skills, can perform with equal competence the same repairs and tests as the person or organization with which it is equated.
- *Fabric (metal mesh)* - The flexible portion of a metal mesh sling consisting of a series of transverse coils and cross rods.
- *Female handle (choker)* - A handle with a handle eye and a slot of such dimension as to permit passage of a male handle thereby allowing the use of a metal mesh sling in a choker hitch. (See Fig. N-184-1 of 29 CFR 1910.184.)
- *Handle* - A terminal fitting to which metal mesh fabric is attached. (See Fig. N-184-1 of 29 CFR 1910.184.)
- *Handle eye* - An opening in a handle of a metal mesh sling shaped to accept a hook, shackle or other lifting device. (See Fig. N-184-1 of 29 CFR 1910.184.)
- *Hitch* - A sling configuration whereby the sling is fastened to an object or load, either directly to it or around it. Link is a single ring of a chain.
- *Male handle (triangle)* - A handle with a handle eye.
- *Master coupling link* - An alloy steel welded coupling link used as an intermediate link to join alloy steel chain to master links. (See Fig. N-184-3 of 29 CFR 1910.184.)
- *Master link or gathering ring* - A forged or welded steel link used to support all members (legs) of an alloy steel chain sling or wire rope sling. (See Fig. N-184-3 of 29 CFR 1910.184.)
- *Mechanical coupling link* - A non-welded, mechanically closed steel link used to attach master links, hooks, etc., to alloy steel chain.
- *Proof load* - The load applied in performance of a proof test.
- *Proof test* - A nondestructive tension test performed by the sling manufacturer or an equivalent entity to verify construction and workmanship of a sling.
- *Rated capacity or working load limit* - The maximum working load permitted by the provisions of this section.
- *Reach* - The effective length of an alloy steel chain sling measured from the top bearing surface of the upper terminal component to the bottom bearing surface of the lower terminal component.
- *Selvage edge* - The finished edge of synthetic webbing designed to prevent unraveling.
- *Sling* - An assembly which connects the load to the material handling equipment.

- *Sling manufacturer* - A person or organization that assembles sling components into their final form for sale to users.
- *Spiral* - A single transverse coil that is the basic element from which metal mesh is fabricated. (See Fig. N-184-2 of 29 CFR 1910.184.)
- *Strand laid endless sling-mechanical joint* - A wire rope sling made endless from one length of rope with the ends joined by one or more metallic fittings.
- *Strand laid grommet-hand tucked* - An endless wire rope sling made from one length of strand wrapped six times around a core formed by hand tucking the ends of the strand inside the six wraps.
- *Strand laid rope* - A wire rope made with strands (usually six or eight) wrapped around a fiber core, wire strand core, or independent wire rope core (IWRC).
- *Vertical hitch* - A method of supporting a load by a single, vertical part or leg of the sling. (See Fig. N-184-4 of 29 CFR 1910.184.)

CRANE, HOIST, AND SLING INSPECTION RECORD				
Type and Identification	Rated Capacity	Inspection Date	Findings	Inspector Name and Company

CRANE, HOIST, AND SLING MAINTENANCE TESTING AND INSPECTION REQUIREMENTS

INSPECTION DOCUMENTATION

- All inspections will be documented.
- All documentation will be maintained until any action items or notations are addressed or for one year, whichever is longer.
- Records will be maintained by either the company safety officer or the supervisor or manager responsible for the crane, hoist or sling

CRANES AND HOISTS

Testing

- Operational tests.
 - Prior to initial use, all new and altered cranes are tested to insure the following functions:
 - Hoisting and lowering.
 - Trolley travel.
 - Bridge travel.
 - Limit switches, locking and safety devices.
 - The trip setting of hoist limit switches is determined by tests with an empty hook traveling in increasing speeds up to the maximum speed. The actuating mechanism of the limit switch must be located so that it will trip the switch, under all conditions, in sufficient time to prevent contact of the hook or hook block with any part of the trolley.
- Rated load test.
 - Test loads may not be more than 125% of the rated load unless otherwise recommended by the manufacturer. Test reports are placed on file and available.

Maintenance

- Preventive maintenance.
 - A preventive maintenance program based on the crane manufacturer's recommendations must be established.
- Maintenance procedure.
 - Before adjustments and repairs are started on a crane the following precautions are taken:
 - The crane to be repaired is run to a location where it will cause the least interference with other cranes and operations in the area.
 - All controllers are at the off position.
 - The main or emergency switch is open (off) and locked.
 - Warning or "out of order" signs are placed on the crane, also on the floor beneath or on the hook where visible from the floor.
 - Where other cranes are in operation on the same runway, rail stops or other suitable means are provided to prevent interference with the idle crane.
 - After adjustments and repairs have been made, the crane may not be operated until all guards have been reinstalled, safety devices reactivated and maintenance equipment removed.
- Adjustments and repairs.
 - Any unsafe condition disclosed by the inspection requirements is corrected before operation of the crane is resumed. Adjustments and repairs are done only by designated personnel.
 - Adjustments shall be maintained to assure correct functioning of components. The following are examples:
 - All functional operating mechanisms.
 - Limit switches.
 - Control systems.
 - Brakes.
 - Power plants.

- Repairs or replacements are provided promptly as needed for safe operation. The following are examples:
 - Crane hooks showing defects are discarded. Repairs by welding or reshaping are not generally recommended. If such repairs are attempted they are only be done under competent supervision and the hook must be tested to the load requirements before further use.
 - Load attachment chains and rope slings showing defects.
 - All critical parts which are cracked, broken, bent, or excessively worn.
 - Pendant control stations are kept clean and function labels kept legible.

Rope inspection.

- Running ropes. A thorough inspection of all ropes must be made at least once a month and documented, which includes the date of inspection, the signature of the person who performed the inspection and an identifier for the ropes which were inspected. The documentation is kept on file and readily available. Any deterioration, resulting in appreciable loss of original strength, must be carefully observed and determination made as to whether further use of the rope would constitute a safety hazard. Some of the conditions that could result in an appreciable loss of strength are the following:
 - Reduction of rope diameter below nominal diameter due to loss of core support, internal or external corrosion, or wear of outside wires.
 - A number of broken outside wires and the degree of distribution or concentration of such broken wires.
 - Worn outside wires.
 - Corroded or broken wires at end connections.
 - Corroded, cracked, bent, worn, or improperly applied end connections.
 - Severe kinking, crushing, cutting, or unstranding.
- Other ropes. All rope which has been idle for a period of a month or more due to shutdown or storage of a crane on which it is installed are given a thorough inspection before use. This inspection is for all types of deterioration and is performed by an responsible person whose approval is required for further use of the rope. Documentation must be maintained and available for inspection which includes the date of inspection, the signature of the person who performed the inspection and an identifier for the rope which was inspected.

SLINGS

Sling Inspections.

- Training. Sling operators will be trained by the sling manufacturer or installer (or other certified agency) to perform sling inspections.
- Daily inspections. The sling, all fastenings, and attachments must be inspected for damage or defects by the operator each day before being used.
- Periodic inspections. Supervisors will determine and schedule additional inspections periodically during sling use where service conditions warrant. A thorough periodic inspection is made based on frequency of sling use; severity of service conditions; nature of lifts being made; and experience gained on the service life of slings used in similar circumstances.
- Scheduled inspections. Scheduled inspections with all assigned sling inspectors will be performed. The inspections will be conducted on an annual basis at a minimum.
- Damaged/unserviceable slings. Slings found to be damaged or unserviceable will be immediately removed from service and disposed of.

Requirements for Specific Types of Slings.

Alloy steel chain slings.

- Sling identification. Alloy steel chain slings must have permanently affixed durable identification stating size, grade, rated capacity, and reach.
- Attachments. Hooks, rings, oblong links, pear shaped links, welded or mechanical coupling links or other attachments are marked with their rated capacity (at least equal to that of the alloy steel chain with which they are used) or the sling must be limited to the rated capacity of the weakest component. Makeshift links or fasteners formed from bolts, rods, or other such attachments shall not be used.

- Inspections. A thorough periodic inspection of alloy steel chain slings in use must be made regularly based on frequency of sling use; severity of service conditions; nature of lifts being made; and experience gained on the service life of slings used in similar circumstances. Such inspections are performed annually. Records of the most recent month in which each alloy steel chain sling was thoroughly inspected must be maintained and be available for employees, OSHA personnel, or other persons having a need to know. Inspection of alloy steel chain slings are performed by trained sling inspectors only and include a thorough inspection for wear, defective welds, deformation, and increase in length. Where such defects or deterioration are present, the sling must be immediately removed from service.
- Proof testing. Before use each new, repaired, or reconditioned alloy steel chain sling, (including all welded components in the sling assembly), is proof tested by the sling manufacturer. The certificate of the proof test and shall be retained and made available to employees.
- Sling use. Alloy steel chain slings shall not be used with loads in excess of their rated capacities, or used only in accordance with the manufacturer's recommendations.
- Safe operating temperatures. Alloy steel chain slings must be permanently removed from service if they are heated above 1000°F. When exposed to service temperatures in excess of 600°F, maximum working load limits permitted are reduced in accordance with the chain or sling manufacturer's recommendations.
- Repairing and reconditioning alloy steel chain slings. Worn or damaged alloy steel chain slings or attachments must be repaired before use. When welding or heat testing is performed, they must be proof tested by the sling manufacturer. Mechanical coupling links or low carbon steel repair links can not be used to repair broken lengths of chain.
- Effects of wear. If the chain size at any point of any link is less than that stated the regulatory limits set in Table N-184-2 of 29 CFR 1910.184, the sling must be removed from service.
- Deformed attachments. Alloy steel chain slings with cracked or deformed master links, coupling links, or other components must be removed from service. Slings must be removed from service if hooks are cracked, have been opened more than 15 percent of the normal throat opening measured at the narrowest point, or twisted more than 10 degrees from the plane of the unbent hook.

Wire rope slings.

- Sling use. Wire rope slings may not be used with loads in excess of their rated capacity, or in accordance with the manufacturer's recommendations.
- Minimum sling lengths. Cable laid, 6 x 19, and 6 x 37 slings have a minimum clear length of wire rope 10 times the component rope diameter between splices, sleeves, or end fittings. Braided slings have a minimum clear length of wire rope 40 times the component rope diameter between the loops or end fittings. Cable laid grommets, strand laid grommets, and endless slings have a minimum circumferential length of 96 times their body diameter.
- Safe operating temperatures. Fiber core wire rope slings of all grades must be permanently removed from service if they are exposed to temperatures in excess of 200°F. When non-fiber core wire rope slings of any grade are used at temperatures above 400°F or below minus 60°F, recommendations of the sling manufacturer regarding use at that temperature must be followed.
- End attachments. Welding of end attachments, except covers to thimbles, is performed prior to the assembly of the sling. All welded end attachments are proof tested to twice their rated capacity prior to initial use. Certificates of the proof test will be retained and made available.
- Removal from service. Wire rope slings must be immediately removed from service if any of the following conditions are present:
 - Ten randomly distributed broken wires in one rope lay or five broken wires in one strand in one rope lay.
 - Wear or scraping of one-third the original diameter of outside individual wires.
 - Kinking, crushing, bird caging or any other damage resulting in distortion of the wire rope structure.
 - Evidence of heat damage.
 - End attachments that are cracked, deformed or worn.
 - Hooks that have been opened more than 15 percent of the normal throat opening measured at the narrowest point or twisted more than 10 degrees from the plane of the unbent hook.
 - Corrosion of the rope or end attachments.

Metal mesh slings.

- Sling marking. Each metal mesh sling must have a durable marking that states the rated capacity for vertical basket hitch and choker hitch loading permanently affixed.
- Handles. Handles have a rated capacity at least equal to the metal fabric and exhibit no deformation after proof testing.
- Attachments of handles to fabric. The fabric and handles are joined so that:
 - The rated capacity of the sling is not reduced.
 - The load is evenly distributed across the width of the fabric.
 - Sharp edges will not damage the fabric.
- Sling coatings. Coatings which diminish the rated capacity of a sling may not be applied.
- Sling testing. All new and repaired metal mesh slings, including handles, may not be used unless proof tested by the manufacturer at a minimum of 1 1/2 times their rated capacity. Elastomer impregnated slings are proof tested before coating.
- Proper use of metal mesh slings. Metal mesh slings may not be used to lift loads in excess of their rated capacities or are used only in accordance with the manufacturer's recommendations.
- Safe operating temperatures. Metal mesh slings which are not impregnated with elastomers may be used in a temperature range from minus 20°F to plus 550°F without decreasing the working load limit. Metal mesh slings impregnated with polyvinyl chloride or neoprene may be used only in a temperature range from zero degrees to plus 200°F. For operations outside these temperature ranges or for metal mesh slings impregnated with other materials, the sling manufacturer's recommendations must be followed.
- Repairs. Metal mesh slings which are repaired may not be used unless repaired by a metal mesh sling manufacturer. Once repaired each sling is permanently marked or tagged, or a written record maintained to indicate the date and nature of the repairs and the person or organization that performed the repairs. Records of repairs must be available.
- Removal from service. Metal mesh slings must be immediately removed from service if any of the following conditions are present:
 - A broken weld or broken brazed joint along the sling edge.
 - Reduction in wire diameter of 25% due to abrasion or 15% due to corrosion. Lack of flexibility due to distortion of the fabric.
 - Distortion of the female handle so that the depth of the slot is increased more than 10%.
 - Distortion of either handle which decreased the eye width more than 10%.
 - A 15% reduction of the original cross sectional area of metal at any point around the handle eye.
 - Distortion of either handle out of its plane.

Natural and synthetic fiber rope slings.

- Sling use. Fiber rope slings made from conventional three strand construction fiber rope may not be used with loads in excess of the rated capacities or are used only in accordance with manufacturer's recommendations. Fiber rope slings have a diameter of curvature that is specified by regulation.
- Safe operating temperatures. Natural and synthetic fiber rope slings, except for wet frozen slings, may be used in a temperature range from minus 20°F to plus 180°F without decreasing the working load limit. For operations outside this temperature range and for wet frozen slings, follow the manufacturer's recommendations.
- Splicing. Spliced fiber rope slings may not be used unless they have been spliced in accordance with the following minimum requirements and in accordance with any additional recommendations of the manufacturer:
 - Manila rope eye splices consist of at least three full tucks, and short splices of at least six full tucks, three on each side of the splice center line.
 - Synthetic fiber rope, eye splices consist of at least four full tucks, and short splices of at least eight full tucks, four on each side of the center line.
 - For fiber ropes and for eye and short splices, the strand end tails may not be trimmed flush with the surface of the rope when the end tails are immediately adjacent to the full tucks. For fiber ropes under one inch in diameter, the tail shall project at least six rope diameters beyond the last full tuck. For fiber rope one inch in diameter and larger, the tail projects at least six inches beyond the last full tuck. Where a projecting tail interferes with the use of the sling, the tail is tapered and spliced into the body of the rope using at least two additional tucks (which will require a tail length of approximately six rope diameters beyond the last full tuck).
 - Fiber rope slings have a minimum clear length of rope between eye splices equal to 10 times the rope diameter.
 - Knots shall not be used in lieu of splices.

- Clamps not designed specifically for fiber ropes may not be used for splicing.
- For all eye splices, the eye is of such size to provide an included angle of not greater than 60° at the splice when the eye is placed over the load or support.
- End attachments. Fiber rope slings can not be used if end attachments in contact with the rope have sharp edges or projections.
- Removal from service. Natural and synthetic fiber rope slings are immediately removed from service if any of the following conditions are present:
 - Abnormal wear.
 - Powdered fiber between strands.
 - Broken or cut fibers.
 - Variations in the size or roundness of strands.
 - Discoloration or rotting.
 - Distortion of hardware in the sling.
- Repairs. Only fiber rope slings made from new rope may be used. Use of repaired or reconditioned fiber rope slings is prohibited.

Synthetic web slings.

- Sling identification. Each sling is marked or coded to show the rated capacities for each type of hitch and type of synthetic web material.
- Webbing. Synthetic webbing is of uniform thickness and width and selvage edges may not be split from the webbing width.
- Fittings. Fittings are of a minimum breaking strength equal to that of the sling and free of all sharp edges that could in any way damage the webbing.
- Attachment of end fittings to webbing and formation of eyes. Stitching is the only method used to attach end fittings to webbing and to form eyes. The thread must be in an even pattern and contain a sufficient number of stitches to develop the full breaking strength of the sling.
- Sling use. Synthetic web slings may not be used with loads in excess of the rated capacities or are used only in accordance with the manufacturer's recommendations.
- Environmental conditions. When synthetic web slings are used, the following precautions shall be taken:
 - Nylon web slings can not be used where fumes, vapors, sprays, mists or liquids of acids or phenolics are present
 - Polyester and polypropylene web slings can not be used where fumes, vapors, sprays, mist, or liquids of caustics are present.
 - Web slings with aluminum fittings can not be used where fumes, vapors, sprays, mist, or liquids of caustics are present.
- Safe operating temperatures. Synthetic web slings of polyester and nylon may not be used at temperatures in excess of 180°F. Polypropylene web slings may not be used at temperatures in excess of 200°F.
- Repairs. Synthetic web slings which are repaired must not be used unless repaired by a sling manufacturer. Each repaired sling is proof tested by the manufacturer to twice the rated capacity prior to its return to service. The employer must retain a certificate of the proof test and make it available. Slings, including webbing and fittings, which have been repaired in a temporary manner may not be used.
- Removal from service. Synthetic web slings must be immediately removed from service if any of the following conditions are present:
 - Acid or caustic burns.
 - Melting or charring of any part of the sling surface.
 - Snags, punctures, tears or cuts.
 - Broken or worn stitches.
 - Distortion of fittings.

CRANE, HOIST, REQUIREMENTS FOR CONSTRUCTION AND INSTALLATION

- **Cabs**
 - Controls must be visible (well lighted) and located within convenient reach of the operator when facing the load and/or direction of travel of the cab. Load hook must be in full view at all times.
 - Clearance must be at least 3 inches from any fixed structures at any point during movement.
 - Access must be convenient via a walkway or fixed ladder or stairway. Fixed ladders must comply with ANSI 14.3 requirements.
 - Fire extinguishers may be of any type except Carbon Tetrachloride. Cab operators must be trained and familiar with their use.
- **Foot-walks and Ladders**
 - If there is at least 48 inches of headroom available, foot-walks should be provided on cab-operated cranes along the length of the bridge.
 - The inner edge of the foot-walk must extend to the outside edge of the girder's lower cover plate.
 - Foot-walks must be able to withstand 50 lbs sq/ft of load at any point, and have anti-slip surfaces.
 - Standard toe-boards and guardrails will be provided.
 - Gantry cranes must have permanent fixed ladders or stairs from the ground to the cab with rigid handrails and anti-slip surfaces.
- **Stops, Bumpers, Rail Sweeps and Guards**
 - Trolley stops must be fixed in place to limit the travel of the trolley. Stops must be located equal to the wheel radius.
 - Bumpers (or sleeve bearings to slow the rate of speed) must be provided, for both the trolley and the load, where there is a possibility of the trolley or materials striking another object (including another trolley or load).
 - Deceleration rate for loads must be 3ft/s/s or less when the load is traveling at 20% of the rated load speed, and be able to stop when the crane is traveling at 40% of the rated load speed.
 - Deceleration rate for trolleys must be 4.7 ft/s/s when traveling at 1/3 of the rated load speed
 - Bumpers must be mounted so there is no direct shear on the bolts and so that there is a minimal hazard of falling parts if the crane should fail.
 - Rail sweeps that extend below the top rail and project in front of truck wheels are required on bridge trucks.
 - Guards of all types will be secure and capable of withstanding a 200 pound load.
 - Guards for hoisting ropes are required if the ropes are near enough to get fouled or chafe on loads or parts or if they can contact the bridge conductors.
 - Guards must be provided if exposed moving parts may present a hazard. Examples include gears, set screws, projecting keys, chains, sprockets or other components.
- **Brakes**
 - Hoist Brakes (self-setting or holding brakes) must be provided that applies braking directly to the motor shaft or gear train.
 - Control brakes will be provided to prevent over speeding (unless the angle of load is such that it can not accelerate in the lowering direction – such as a worm-gear hoist).
 - Holding brakes must engage automatically when the power is removed. Brake drums/discs must have smooth surfaces and be located so they can be adjusted as needed. Brakes must be capable of stopping the load at the following rates without thermal damage for the frequency used:
 - 125% when used with brakes other than mechanical.
 - 100% when used with mechanical brakes
 - 100% if two holding brakes are provided.

- Cranes that carry hot metal must have two holding brakes in place.
- Control brakes must be regenerative, dynamic or counter-torque type and be capable of stopping the load at safe lowering speeds without thermal damage.
- Trolley and Bridge foot-brakes must have anti-slip surfaces and may not require more than 70 lbs of force to engage. Brakes can be electrical, pneumatic, hydraulic, or gravity fed. Brake drums/discs must have smooth surfaces and be located so they can be adjusted as needed. They must release when pressure is removed from the pedal.
- Trolley and bridge brakes must be capable of stopping a full load within a distance (in feet) equal to 10% of the load speed in feet per minute. Brakes must have the thermal capacity for the frequency of use and be located to enable service or maintenance. Holding brakes, if used, will allow for a drift point in the control circuit.
- Trolley brakes may have drag-brakes to eliminate "load creep" when the power is off.
- Bridge brakes must have holding brakes. Floor, remote and pulpit operated crane bridges must have non-coasting mechanical drive brakes.
- **Electric Equipment**
 - General
 - Wiring and equipment installations must comply with 29CFR1910 Subpart S for Electrical Safety requirements.
 - Control circuit voltage shall not exceed 600 volts for a.c. or d.c. current.
 - The voltage at pendant push-buttons shall not exceed 150 volts for a.c. and 300 volts for d.c.
 - Where multiple conductor cable is used with a suspended pushbutton station, the station must be supported in some satisfactory manner that will protect the electrical conductors against strain.
 - Pendant control boxes shall be constructed to prevent electrical shock and shall be clearly marked for identification of functions.
 - Equipment.
 - Electrical equipment shall be so located or enclosed that live parts will not be exposed to accidental contact under normal operating conditions.
 - Electric equipment shall be protected from dirt, grease, oil, and moisture.
 - Guards for live parts shall be substantial and so located that they cannot be accidentally deformed so as to make contact with the live parts.
 - Controllers.
 - Cranes not equipped with spring-return controllers or momentary contact pushbuttons shall be provided with a device which will disconnect all motors from the line on failure of power and will not permit any motor to be restarted until the controller handle is brought to the "off" position, or a reset switch or button is operated.
 - Lever operated controllers shall be provided with a notch or latch which in the "off" position prevents the handle from being inadvertently moved to the "on" position. An "off" detent or spring return arrangement is acceptable.
 - The controller operating handle shall be located within convenient reach of the operator.
 - As far as practicable, the movement of each controller handle shall be in the same general directions as the resultant movements of the load.
 - The control for the bridge and trolley travel shall be so located that the operator can readily face the direction of travel.
 - For floor-operated cranes, the controller or controllers, if rope operated, shall automatically return to the "off" position when released by the operator.
 - Pushbuttons in pendant stations shall return to the "off" position when pressure is released by the crane operator.
 - Automatic cranes shall be so designed that all motions shall fail-safe if any malfunction of operation occurs.
 - Remote-operated cranes shall function so that if the control signal for any crane motion becomes ineffective the crane motion shall stop.

- Resistors.
 - Enclosures for resistors shall have openings to provide adequate ventilation, and shall be installed to prevent the accumulation of combustible matter too near to hot parts.
 - Resistor units shall be supported so as to be as free as possible from vibration.
 - Provision shall be made to prevent broken parts or molten metal falling upon the operator or from the crane.
- Switches.
 - The power supply to the runway conductors shall be controlled by a switch or circuit breaker located on a fixed structure, accessible from the floor, and arranged to be locked in the open position.
 - On cab-operated cranes a switch or circuit breaker of the enclosed type, with provision for locking in the open position, shall be provided in the leads from the runway conductors. A means of opening this switch or circuit breaker shall be located within easy reach of the operator.
 - On floor-operated cranes, a switch or circuit breaker of the enclosed type, with provision for locking in the open position, shall be provided in the leads from the runway conductors. This disconnect shall be mounted on the bridge or footwalk near the runway collectors. One of the following types of floor-operated disconnects shall be provided:
 - Nonconductive rope attached to the main disconnect switch.
 - An under-voltage trip for the main circuit breaker operated by an emergency stop button in the pendant pushbutton in the pendant pushbutton station.
 - A main line contactor operated by a switch or pushbutton in the pendant pushbutton station.
 - The hoisting motion of all electric traveling cranes shall be provided with an over-travel limit switch in the hoisting direction.
 - All cranes using a lifting magnet shall have a magnet circuit switch of the enclosed type with provision for locking in the open position. Means for discharging the inductive load of the magnet shall be provided.
- Runway conductors.
 - Conductors of the open type mounted on the crane runway beams or overhead shall be so located or so guarded that persons entering or leaving the cab or crane foot-walk normally could not come into contact with them.
- Extension lamps.
 - If a service receptacle is provided in the cab or on the bridge of cab-operated cranes, it shall be a grounded three-prong type permanent receptacle, not exceeding 300 volts.
- **Hoisting Equipment**
 - Sheaves
 - Sheave grooves shall be smooth and free from surface defects which could cause rope damage.
 - Sheaves carrying ropes which can be momentarily unloaded shall be provided with close-fitting guards or other suitable devices to guide the rope back into the groove when the load is applied again.
 - The sheaves in the bottom block shall be equipped with close-fitting guards that will prevent ropes from becoming fouled when the block is lying on the ground with ropes loose.
 - Pockets and flanges of sheaves used with hoist chains shall be of such dimensions that the chain does not catch or bind during operation.
 - All running sheaves shall be equipped with means for lubrication. Permanently lubricated, sealed and/or shielded bearings meet this requirement.

- Ropes.
 - In using hoisting ropes, the crane manufacturer's recommendation shall be followed. The rated load divided by the number of parts of rope shall not exceed 20 percent of the nominal breaking strength of the rope.
 - Socketing shall be done in the manner specified by the manufacturer of the assembly.
 - Rope shall be secured to the drum as follows:
 - No less than two wraps of rope shall remain on the drum when the hook is in its extreme low position.
 - Rope end shall be anchored by a clamp securely attached to the drum, or by a socket arrangement approved by the crane or rope manufacturer.
 - Rope clips attached with U-bolts shall have the U-bolts on the dead or short end of the rope.
 - Spacing and number of all types of clips shall be in accordance with the clip manufacturer's recommendation. Clips shall be drop-forged steel in all sizes manufactured commercially. When a newly installed rope has been in operation for an hour, all nuts on the clip bolts shall be retightened.
 - Swaged or compressed fittings shall be applied as recommended by the rope or crane manufacturer.
 - Wherever exposed to temperatures, at which fiber cores would be damaged, rope having an independent wire-rope or wire-strand core or other temperature-damage resistant core shall be used.
 - Replacement rope shall be the same size, grade, and construction as the original rope furnished by the crane manufacturer, unless otherwise recommended by a wire rope manufacturer due to actual working condition requirements.
- Equalizers. If a load is supported by more than one part of rope, the tension in the parts shall be equalized.
- Hooks. Hooks shall meet the manufacturer's recommendations and shall not be overloaded.
- **Warning Devices and Alarms**
 - Except for floor-operated cranes a gong or other effective warning signal shall be provided for each crane equipped with a power traveling mechanism.

CRANE, HOIST, and SLING INSPECTION CHECKLIST					
<ul style="list-style-type: none"> Operators will conduct visual crane and hoist inspections PRIOR to each day's use and immediately report all deficiencies. Inspections need only be conducted on the days of use. If the crane or hoist has been idle for more than 6 months, a full manufacturer's test should be conducted. Inspect integrity of slings and other lifting devices before EACH use. Items listed under "Daily" and "Annual" are to be performed on cranes and/or hoists, as applicable. Items listed under "Monthly" are performed only on cranes, except for load bearing rope, which will be performed on cranes and hoists. 					
ITEM	Daily by Operator	Monthly by qualified person or designee	Annually by Hoist & Crane Designee or manufacturer	DEFICIENCIES TO LOOK FOR	Comments or Notations
All functional operating mechanisms	x	x	x	Maladjustment interfering with operation Excessive wear of components	
Controls	x	x	x	Improper operation	
Safety Devices	x	x	x	Malfunction	
Limit Switches	x	x	x	Check operation with no load	
Hooks	x	x	x	Deformation, chemical damage 15% in excess of normal throat opening 10% twist from plane of unbent hook Cracks	
Safety Latches	x			Deformation or inadequate operation	
Load-bearing ropes	x	x	x	Improper dead-ending, deposits of foreign material, less than 2 full wraps of rope on hoist drum when hook is fully lowered.	
Load-bearing chain	x	x	x	Wear, twist, distortion, improper dead-ending, foreign material (e.g. weld splatters) Stretch	
Bolts, nuts, rivets	x	x	x	Loose or missing rivets	

ITEM	Daily by Operator	Monthly by qualified person or designee	Annually by Hoist & Crane Designee or manufacturer	DEFICIENCIES TO LOOK FOR	Comments or Notations
Drums, sheaves, sprockets	x		x	Cracks, excessive wear	
Pins, bearings, shafts, gears, rollers, locks & clamps			x	Excessive wear, cracks, distortion, corrosion	
Brake System	x		x	Excessive wear, drift, will not hold load	
Electrical Apparatus			x	Pitting, loose wires	
Contactors, limit switches, pushbutton stations			x	Deterioration, contact wear, loose wires	
Hook retaining members (collars, nuts) & pins, welds, or rivets			x	Not tight or secure	
Supporting structure, rails, trolley and other load bearing trolley components	x		x	Continued ability to support imposed loads Bent Hangers, loose hardware	
Warning Labels	x		x	Removed or illegible	
Pushbutton markings	x		x	Removed or illegible	
Capacity Markings	x		x	Removed or illegible	
Below hook lifting attachments. Integrity of slings and other lifting devices* .	x		x	Worn, bent, cracks, damage Improper Operation Improper Labeling	
Fire Extinguishers (cab cranes only)	x			Fire extinguishers not present Inspections not current (within 1 year)	

SLING SAFETY INSPECTION CHECKLIST						
Manufacturer:	Model:	Serial No.:	Reach:	Capacity:	Location:	
COMPONENT UNIT OR PART	C O D E	P R O B L E M	S A T	A D J	R E P	CORRECTIVE ACTION NOTES - SAT = SATISFACTORY - ADJ = ADJUST - REP = REPAIR
CHAIN SLINGS						
CHAIN						
Stretch or wear	D					
Grooving	D					
Twisted or bent links	D					
Cracks	D					
Gouges	D					
Corrosion	D					
Burns	D					
MASTER LINKS						
Stretch or wear	D					
Twisted or bent	D					
Cracks	D					
Gouges	D					
Corrosion	D					
Burns	D					
Hooks:						
Defects or cracks	D/P					
Throat opening - 15%	D					
Twist - 10%	D					
OTHER ITEMS						
Identification tag						
Proper grade 8						
WIRE ROPE SLINGS						
Wire rope:						
Random broken wires/lay (10)	D					
Random broken wires/strand (5)	D					
Wear or scraping	D					
Kinking	D					
Crushing	D					
Bird caging	D					
Distortion of structure	D					
Heat damage	D					
Corrosion	D					
END ATTACHMENTS						
Proper wire rope cups	D					
Cracked	D					
Deformed	D					
Worn	D					
Corrosion	D					
HOOKS						
Defects, cracks, twists	D/P					
Throat opening - 15%	D					

COMPONENT UNIT OR PART	C O D E	PROBLEM	S	A	R	CORRECTIVE ACTION NOTES - SAT = SATISFACTORY - ADJ = ADJUST - REP = REPAIR
			A T	D J	E P	
SYNTHETIC WEB SLINGS						
WEBBING						
Acid or caustic burns	D					
Melting or charring	D					
Snags	D					
Punctures	D					
Tears	D					
Cuts	D					
Broken or worn stitches	D					
FITTINGS						
Cracked	D					
Deformed	D					
Worn	D					
Corrosion	D					
HOOKS						
Defects or cracks	D/P					
Throat openings - 15%	D					
Twist - 10%	D					
METAL, MESH SLINGS						
MESH						
Broken weld	D					
Broken brazed joint	D					
Reduction in diameter	D					
Lack of flexibility	D					
Handle:						
Distortion of either handle	D					
Proper splices	D					
Abnormal wear	D					
Powdered fiber between strand	D					
Broken or cut fibers	D					
Variations in size	D					
Discoloration or rotting	D					
Distortion of hardware	D					
REMARKS						
Inspection code intervals:						
	D	daily				
	M	monthly				
	P	periodically	1 to 12 month intervals, or as specifically recommended by the manufacturer.			
Date of Safety Inspection:				Signature of Inspector:		

PROGRAM OVERVIEW

ELECTRICAL (GENERAL) SAFETY PROGRAM **REGULATORY STANDARD:** *OSHA - 29 CFR 1910.331 - 335* *OSHA - 29 CFR 1926.302, 1926.416-417*

INTRODUCTION: Outlines the general electrical requirements for buildings where employee exposures do not exceed the use of cord and plug equipment. Companies must inspect facilities to ensure compliance with general electrical safety practices. All other types of exposure hazards are contracted or performed by licensed electricians or similarly qualified persons for repair and testing work.

TRAINING:

- Employee training is recommended.

ACTIVITIES:

- Review hazards and determine level of exposures.
- Ensure electrical services are contracted with licensed electricians, if only cord and plug equipment hazards are encountered by employees. Otherwise ensure that safeguards, equipment, and training is provided to employees who encounter other electrical hazards.
- Ensure service panel boxes (circuit breakers and fuses) have covers that remain closed.
- Ensure service panel boxes have clear and unobstructed access for use in emergencies.
- Ensure outlet receptacles and overhead junction boxes have cover plates so that wires are not exposed.
- Ensure that outlets within 3 feet of water sources (sinks, drinking fountains, etc) are GFCI protected.

FORMS:

- Appliance Safety
- Electrical Program Assessment for Buildings and Structures
- Training Attendance Roster

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- 2. Scope**
- 3. Responsibilities**
- 4. Procedure**
- 5. Safety Information**
- 6. Training Information & Requirements**
- 7. Definitions**

Electrical (General) Safety Program

1. **Purpose.** This program outlines the processes to protect employees in their workplaces from hazards associated with electrical energy, for companies that use licensed electricians and contractors for their electrical service needs.
2. **Scope.** This program applies to all employees who use only cord-and-plug type equipment and have no other likely electrical exposures in the workplace.
3. **Responsibilities.**
 - 3.1 Management:
 - 3.1.1 Ensure any modifications to existing equipment meet Electrical Safety Standards
 - 3.1.2 Ensure installations of new equipment are assessed or inspected to assure they meet the electrical safety standard requirements.
 - 3.1.3 Assure employees have exposures only to cord and plug equipment. Any person who has further exposure to live electrical energy must be “qualified” under the requirements of the regulatory standard and appropriately trained, based on the risks presented.
 - 3.1.4 Ensure all contractors who work with electrical parts, components or hazards have a written Electrical Safety Program in place, prior to their beginning work.
 - 3.2 Contractors:
 - 3.2.1 Provide the company with a copy of their written Electrical Safety Program and/or employee training records, upon request.
4. **Procedure.**
 - 4.1 Ensure cord and plug equipment is in good working condition. Inspect for:
 - 4.1.1 Housing integrity (no cracks or breaks)
 - 4.1.2 Wiring integrity (no broken insulation or exposed wires)
 - 4.1.3 Grounding pins (the third prong on the plug) are in place.
 - 4.2 Ensure electrical service panel boxes are clear and unobstructed. Panel box doors must remain in a closed position and any open knockouts must be covered or closed.
 - 4.3 Ensure all outlets in the facility have cover/face plates so that wires are not exposed.
 - 4.4 Ensure any electrical outlets within 3 feet of a tap, faucet, sink or similar water source are GFCI protected.

- 4.5 Extension cords must be used only as temporary power supplies, and are not a replacement for permanent wiring. Extension cords must be used on a GFCI circuit only.

5. Safety Information.

5.1 General:

- 5.1.1 Qualified Employees - Only “Qualified” individuals are allowed to work on or near energized equipment. A process must be in place to ensure that employees performing electrical tasks are qualified and trained as appropriate.
- 5.1.2 Safe Work Practices - Each person is expected to work within the limits of their expertise and training and follow established practices, which are developed according to the hazards and tasks performed. Examples are:
- 5.1.2.1 DO NOT leave exposed electrical hazards unattended
 - 5.1.2.2 Replace covers or protect energized components from inadvertent contact
 - 5.1.2.3 Utilize proper insulation and/or protective equipment and proper tools corresponding to the level of exposure.

5.2 Safety Related Work Practices:

- 5.2.1 Selection and Use of Work Practices. Work practices are designed to prevent shock and other injuries from either direct or indirect contact with live electrical parts and energy.
- 5.2.1.1 Employees are expected to have exposure only to cord and plug equipment, and not live energized parts of equipment. Any other exposure to live energy requires training and qualifications to ensure adequate protection. Employees are instructed to contact their supervisor or manager if there are any electrical issues or concerns in the workplace.
 - 5.2.1.2 Any conductive material must be handled in a manner that prevents contact with energized parts and materials. Procedures and work practices may need to be implemented when long-dimension objects (e.g. tree trimming poles) are used or handled in such areas.
 - 5.2.1.3 Portable ladders must be non-conductive if used near energized materials.
- 5.2.2 Use of Equipment:
- 5.2.2.1 Portable equipment (cord and plug type) must be handled so that it is not damaged. Flexible cords may not be used to raise, lower, pull, move or hang equipment where the insulating jacket could be damaged.

- 5.2.4.1.1 Visual inspection must occur before use. Inspection includes looking for loose parts, deformed pins, and damage to the jacket or insulation. If equipment remains in place, it does not require inspection unless it is relocated.
- 5.2.4.1.2 Damaged equipment must be repaired or replaced prior to use. Repairs may require testing to assure electrical continuity and safety.
- 5.2.4.1.3 Plugs must be the appropriate type for the receptacle. Devices to circumvent this are prohibited (i.e. a three-prong adapter that allows the equipment to be plugged into a two-prong receptacle).
- 5.2.4.1.4 Highly conductive environments (wet or damp locations or hazardous atmospheres) must use only equipment approved for that environment. Employees must not plug equipment in to receptacles in such locations if their hands are wet and equipment is energized. Insulating materials may be required when electrical energy can be conducted through the hands or fingers.
- 5.2.4.2 Power and Lighting Circuits must use the switches, breakers or disconnects to open, reverse or close circuits when live energy is present. Over-current protection may *not* be modified.
- 5.2.4.3 Where flammable or ignitable vapors, gases or dusts are present at any time electrical equipment capable of igniting these materials may not be used.
- 5.2.5 Safeguards for Personal Protection:
 - 5.2.5.1 Insulated tools and equipment are used when contact with live energy is possible. If the insulating capability of tools and equipment could be damaged during use the insulating material must be protected.

6. Training and Information.

- 6.1 None required.

7. Definitions.

- *Conductor* - A wire or other conduit that conducts electricity
- *De-energized* - Free from any electrical connection to an energy source
- *Electrical Personal Protective Equipment and Devices* - Protective equipment that is specifically designed to protect individuals from shock, arc blast, arc flash, etc.
- *Electrical Safety Program* - The program that directs activity appropriate for the voltage, energy level, and circuit conditions, and include safety-related work practices.

- *Energized* - Electrically connected to an energy source.
- *Over-Current Protection* - A device that protects equipment or conductors from current in excess of the rating for the equipment or conductors.
- *Qualified Person* - A person trained and knowledgeable to recognize and avoid electrical hazards of equipment or a specific work method.
- *Safety Related Work Practices* - Methods that are consistent with the nature and extent of electrical hazards that are meant to safeguard employees from injury while working on or near exposed electric conductors or circuit parts that are (or can become) energized.
- *Un-Qualified Person* - An individual that is not permitted to work on electrical equipment because they do not have the necessary skills and/or training to perform the work safely.

APPLIANCE SAFETY (Cord and Plug Equipment)

Consumer products that are commercially available (such as laminators, electric staplers, printers, scanners, food preparation devices, and other such cord and plug devices) are limited at ABC Company to those that have been approved by a Nationally Recognized Testing Laboratory (NRTL) such as Underwriters Laboratory (UL). Their use is limited to the intention of the manufacturer, and is not exceeded.

- **Portable Space Heaters** must be reviewed for use by the building owner or manager and must be UL listed. Review is needed so that HVAC and electrical-loading concerns for the area are addressed.
- Portable Electronic Devices utilized in *hazardous areas* will comply with requirements for intrinsically safe devices.

Definitions Specific to this Section:

Consumer Product or **Commercially Available** – a product that is normally available at stores and is intended for use by consumers

HVAC – Heating, Ventilation and Air Conditioning

NRTL – Nationally Recognized Testing Laboratory – such as UL (Underwriters Laboratory).

Relocatable Power Taps (STRIPS) – A factory supplied multi-receptacle device, which may be switched, have an indicating light, fuses, circuit-breaker or other over-current protection

Procedure:

Management:

- Ensures appliances are turned off when not required **or** at the end of the shift. Where appliances are **required** to be left on, exceptions must be *noted on the appliance* via sticker or other means.
- It is recommended that companies inspect appliances for defects and damage at least annually. As deficiencies are noted, remove the appliance from service and either discard, replace or repair the equipment.

General:

- Appliances:
 - All appliances/equipment covered by this policy shall be listed by a Nationally Recognized Testing Laboratory (NRTL).
 - Appliances/equipment should only be operated within the limitations of their intended use (e.g. coffee makers designed for “house-hold use” should not be repeatedly used on multiple shifts, commercial grade coffee makers should be purchased; laminators should be turned off when not in use, to prevent overheating.) Such intentions of use must be considered when purchasing equipment and industrial-grade equipment may need to be utilized instead of consumer-grade equipment.
 - Manufacturer’s instructions and limitations shall be followed. Modifications to appliances are not allowed, including splicing of flexible cords.
 - All appliances having exposed metal parts which may become energized shall be grounded. Grounding shall be accomplished by a separate conductor within the supply cord. Double Insulated appliances do not require grounding.

- Electrically classified areas are strictly prohibited for small appliance usage. Only equipment specifically rated for use in hazardous areas shall be permitted in the presence of flammable or combustible materials or atmospheres.
- Combustibles shall not be stored within 1 foot (12 inches) of any heat producing appliance and flammables must be at least 5 feet (60 inches) away.
- Appliances shall not be installed in enclosures, when ventilation is required to prevent overheating.
- Branch circuits and cords shall be used appropriately to prevent electrical overloading; some appliances may require a separate electrical circuit.
- Appliances shall be plugged directly into a permanently installed receptacle only. Multiple plug adapters and extension cords are prohibited for use with appliances, unless supplied by the appliance manufacturer specifically for use with that appliance.
- Appliances intended for food/drink storage shall only be installed in areas safe for food consumption and free from exposures to contamination. Food preparation appliances will comply with FDA regulations.
- Portable space heater use must be reviewed by the building owner for HVAC and electrical loading concerns.
- Power Strips or Multi-plug adapter devices:
 - Shall be plugged directly into a permanently installed receptacle.
 - Shall be used for low amperage appliances only and not be used for “high wattage” appliances (high wattage examples include: coffee makers, microwave ovens, portable space heaters, etc.)
 - Shall not be “daisy chained” or linked one to another.
 - Shall not be permanently attached.
 - Shall not be placed on the floor where they present a tripping hazard.
 - Shall be permitted in dry locations only and may not be subject to chips, oil, solvents, liquids, etc.
 - Are not permitted on construction sites or for construction equipment.
- Extension Cords:
 - Three (3) conductor 16 AWG extension cord sets are the minimum size permitted.
 - Extension cords are visually inspected for defects or damage prior to using the cord.
 - Extension cords are not allowed to replace the fixed wiring of a building or structure.
 - All extension cords used during construction, remodeling, maintenance repair or demolition shall be protected by Ground Fault Circuit Interrupters (GFCI) or an Assured Equipment Grounding Conductor Program.

ELECTRICAL SAFETY (GENERAL) PROGRAM ASSESSMENT

Completed by: _____ Date: _____

Requirement Explanation	Yes	No
<p>Equipment that is "hard wired" into the building power supply is maintained, fixed or repaired only by "qualified" individuals who have undergone specific training in electrical hazards and who understand the protective measures and controls needed to perform their tasks safely.</p> <ul style="list-style-type: none"> • The dept. and outside employer (contractor) shall only have "Qualified" personnel working on or near energized electrical equipment. • Servicing and maintenance of electrical equipment may require lockout and tagout procedures. The requirements for locking, tagging and verifying may differ from routine energy isolation procedures. 		
<p>Design/Product Safety – new equipment or major modifications to existing equipment are evaluated for electrical safety hazards and issues prior to purchase and installation.</p>		
<p>Routine Tasks – Employees routinely use cord and plug equipment. Electrical exposure is not commonplace for other reasons in this company. Employees are instructed to notify their supervisor if electrical issues or hazards exist.</p>		
<p>Non-Routine Tasks - such as working on energized equipment. Procedures and training clearly specify that employees are not to undergo this type of task or activity with regard to building or equipment maintenance or repair.</p> <ul style="list-style-type: none"> • Only the employees who are "<u>qualified</u>" are permitted to work on or near energized electrical equipment. Only qualified persons are permitted to verify the absence of voltages using test instruments for electrical LO/TO. • All "<u>non-qualified</u>" employees are to be trained and understand their limitations to working near exposed electrical hazards. Be familiar with safe work practices that are necessary for their safety. 		
<p>Electrical service panel boxes (circuit breakers or fuse boxes) have covers that remain in the closed position when not immediately in use.</p> <ul style="list-style-type: none"> • Boxes must have clear and unobstructed access at all times. (no storage in front of panels or to 3 feet of either side) 		
<p>Electrical service outlets and receptacles have cover plates to protect wiring.</p>		
<p>Electrical outlets and receptacles within 3 feet of any water source (tap, faucet or spigot) are GFCI protected.</p>		

PROGRAM OVERVIEW

EMERGENCY ACTION, EVACUATION AND FIRE PREVENTION SAFETY PROGRAM

REGULATORY STANDARD: OSHA - 29CFR1910.36, .38, .157, .165
NFPA-10

INTRODUCTION: This program is intended to assist in establishing requirements to ensure that fire and other potential emergency situations are evaluated and safety procedures implemented.

TRAINING:

- All employees and supervisors will be trained in emergency actions and their responsibilities including how emergencies are communicated. Training is required initially, and as changes to the workplace, program or employee responsibilities occur
- Conduct drills, if required
- Emergency Response Team members must be trained based on the types of emergencies they will be expected to encounter. Fire fighting techniques, first aid treatment or both may be required, depending upon the duties and responsibilities of the team
- Fire extinguisher users must be trained annually in the general principles of fire extinguisher use and the hazards involved in incipient (beginning) stage fire fighting

ACTIVITIES:

- Identify and evaluate fire hazards
- Identify and evaluate exit routes
- Identify fire wardens and response teams and define responsibilities, if applicable
- Provide emergency equipment as needed
- Write and communicate policies and procedures including Emergency Action and Fire Prevention Programs
- Review program at least annually

FORMS:

- Emergency Action Plan
- Exit and Egress (Life Safety) Requirements
- Fire Drill or Evacuation Assessment
- Fire Prevention Plan
- Monthly Fire Extinguisher Review
- Training Attendance Roster
- Types of Fire Protection Systems

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Emergency Action, Evacuation and Fire Prevention Safety Program

- 1. Purpose.** This program outlines the requirements for the Emergency Action and Fire Prevention Program (EAFP), and for Emergency Evacuation Program in the workplace. It is a federal requirement that all companies have EAFP's (programs must in writing for companies with more than 10 employees).
- 2. Scope.** This program applies to all workplaces, facilities, and sites at the company.
- 3. Responsibilities.**
 - 3.1 Management:
 - 3.1.1 Determine flight or fight response for the company (i.e. will all employees evacuate during fire or spill emergencies, or will some employees be required as part of their job duties to fight a fire, contain a spill or provide medical treatment).
 - 3.1.2 Write Emergency Action and Fire Prevention Programs (EAFP's), including specific procedures or responsibilities for employees and wardens.
 - 3.1.3 Communicate programs to employees and staff.
 - 3.1.4 Review these programs at least annually to assure they remain adequate to the business operations.
 - 3.1.5 Ensure evacuation alarm systems and notifications are in place, and are distinctive and consistent throughout the site. It is recommended that evacuation programs be periodically tested through physical drills (partial evacuation drills and/or full evacuation drills) or via table-top drills or discussions.
 - 3.1.6 Ensure all employees are appropriately trained to the responsibilities they are expected to take during an emergency situation, including how to report a fire or other emergency and what to do during an evacuation.
 - 3.1.7 Ensure evacuation wardens are designated and trained. It is recommended that there be a ratio of at least one warden for every 20 employees.
 - 3.1.8 Ensure that fire extinguishers (if located on-site) are inspected, maintained, tested and of the proper size and type for the area hazards.
 - 3.1.8.1 If employees are expected to use them, annual training is required.
 - 3.1.8.2 If employees are not expected to use them, extinguishers should be marked "For Fire Department Use Only".

- 3.1.9 If utilized, provide on-site emergency response teams with appropriate equipment and training to perform their expected duties.
 - 3.1.9.1 Maintain training documentation for response team members, and documentation for equipment inspection and maintenance.
- 3.1.10 Notify Insurance Carrier of significant changes in staffing and building occupancy.
- 3.1.11 Inspect Fire Doors annually, and keep all fire doors closed. If they must be held open due to production or operation-specific requirements, they must be fitted with automated releases in accordance with state building codes. Maintain documentation for the life of the fire door.
- 3.2 Employees:
 - 3.2.1 Attend initial training, and refresher training as required.
 - 3.2.2 Evacuate, or perform expected tasks prior to evacuation, during an emergency.
- 3.3 Wardens (evacuation assistance):
 - 3.3.1 Attend appropriate training.
 - 3.3.2 Follow established procedures to assist in the safe and orderly evacuation of employees.
 - 3.3.3 Report either the all-clear or problems to the incident commander or other designated person at the command post.
- 3.4 On-site Response Teams (as appropriate or designated):
 - 3.4.1 Provide emergency response to fires, spills or medical emergencies, as designated.
 - 3.4.2 Attend appropriate training to maintain appropriate certifications.
 - 3.4.3 Ensure emergency response equipment is functioning and adequate to the response(s) required.
- 3.5 Safety Officer (as needed or required):
 - 3.5.1 Assist in the development and implementation of this program.

4. Procedure.

- 4.1 Emergency Action Programs:
 - 4.1.1 May be combined with Fire Prevention Programs into one document that serves both purposes.

- 4.1.2 Must be in writing, kept at the workplace and available for employees to review.
 - 4.1.2.1 Companies with 10 or fewer employees may communicate the program orally, rather than in writing.
- 4.1.3 Programs must include:
 - 4.1.3.1 Procedures for reporting a fire or other emergency.
 - 4.1.3.2 Procedures for emergency evacuation, including types of evacuations and assigned evacuation routes. (Posted, color coded evacuation route maps are highly recommended for each area of the building or structure.)
 - 4.1.3.3 Procedures to be followed by employees who remain to operate or shut down critical operations before they evacuate (power systems, water supplies, ammonia tanks, chemical processes that must be shut down in sequence, etc.).
 - 4.1.3.4 Procedures, assigned areas and responsibilities of evacuation wardens, if utilized.
 - 4.1.3.5 Procedures to account for all employees after evacuation.
 - 4.1.3.6 Procedures to be followed by employees who perform rescue or medical duties (on-site response teams).
 - 4.1.3.7 The name or job title of the person(s) who may be contacted by employees who need more information about the program, or an explanation of their duties and responsibilities under the program.
- 4.1.4 An alarm system must be maintained. The system must have a distinctive signal for each type of alarm (i.e. evacuation alarms must sound the same throughout the site).
- 4.1.5 Wardens (or evacuation assistance) must be designated and properly trained to assist in a safe and orderly evacuation of other employees.
- 4.1.6 Programs should address the types of emergencies that are reasonably likely to occur (fire, chemical spills, severe weather, etc.).
- 4.2 Fire Prevention Programs:
 - 4.2.1 May be combined with Emergency Action Programs into one document that serves both purposes.
 - 4.2.2 Must be in writing, kept at the workplace and available for employees to review.
 - 4.2.2.1 Companies with 10 or fewer employees may communicate the program orally, rather than in writing.

4.2.3 Programs must include:

- 4.2.3.1 A listing of all the major fire hazards in the building or facility
- 4.2.3.2 Proper handling and storage procedures for hazardous materials
- 4.2.3.3 Potential ignition sources and their control measures
- 4.2.3.4 The type of fire protection equipment necessary to control each major hazard
- 4.2.3.5 Procedures to control accumulation of flammable and combustible waste materials
- 4.2.3.6 Procedures for maintenance (regular, scheduled) of any heat-producing equipment and their safeguards to prevent accidental fires
- 4.2.3.7 The name or job title of employees who are responsible for maintaining equipment to prevent or control sources of ignition or fires
- 4.2.3.8 The name or job title of employees who are designated as responsible for controlling any fuel source hazards (flammable liquid tanks, fuel tanks, propane tanks, etc.)

4.3 Evacuation and Notification:

- 4.3.1 Alarms and Signals to notify employees of an emergency evacuation are distinctive in sound and consistent throughout the site.
 - 4.3.1.1 Alarms may be automatic or verbally provided in person or through a public address system, but they must be able to be understood by all employees.
 - 4.3.1.2 The same sound or wording must be used throughout the site.
 - 4.3.1.3 Employees must be trained or informed of the sounds or wording used.
- 4.3.2 Evacuation Routes will be established for each area of the building or site.
 - 4.3.2.1 Employees will be trained and informed of their work-area route.
 - 4.3.2.2 It is highly recommended that maps be posted at each area of the building to assist employees and others in determining their evacuation routes. Maps should be color coded, with the evacuation route in red.
 - 4.3.2.3 Off-site job locations will have evacuation routes determined and communicated to employees who work at these off-site locations.

- 4.3.3 Relocation Points will be established for employees to congregate during an evacuation. Designated relocation points assist in assuring that all employees are accounted for.
 - 4.3.3.1 Employees will be trained in their respective relocation point during initial (or refresher) training.
 - 4.3.3.2 Supervisors or other specifically designated people at each relocation point will be responsible for assuring that all employees have been accounted for.
 - 4.3.3.2.1 An accounting for the relocation point will be made to the incident commander or other designated person at the command post.
 - 4.3.3.3 Off-site job locations will have relocation points determined and communicated to employees who work at these off-site locations before the job commences or the employee reports to the site.
 - 4.3.3.4 Where appropriate, severe weather relocation points (shelters or arrangements with neighboring facilities) will be communicated to employees during the training.
- 4.3.4 Return to Work Signals will be provided once it is safe for employees to re-enter the workplace. Each supervisor or other designated person at each relocation point will be aware of the signal used, and be watchful for it.
- 4.3.5 Evacuation Wardens
 - 4.3.5.1 “Sweep” the assigned area to assure that all employees are appropriately evacuated.
 - 4.3.5.2 Carry out any other assigned duties, prior to evacuating.
 - 4.3.5.3 Report either “all clear” or any problems to the incident commander or other person designated under the company’s EAFP prior to reporting to their assigned relocation point.

5. Safety Information.

- 5.1 Means of Egress (exits and exit paths):
 - 5.1.1 All employees must be able to safely exit the building in a direct path and within a reasonable time frame.
 - 5.1.2 There are specific requirements for exits, paths to exits, exit signs, aisle widths and for stairways. These “life safety” codes must be considered during renovation, construction or when re-arranging a work area. For more information reference the attached documentation on Life Safety.

- 5.1.3 All exits, aisles and exit paths, and stairways must be kept clear and unobstructed. No storage is allowed that will restrict the access or use of the exit path below the required widths. No storage is allowed that will block or obstruct stairs or exit doors.
 - 5.1.4 All exits and the paths to them must be clearly visible or have visible signs that indicate the location of the exit.
 - 5.1.5 Locks or fastening devices to keep exit doors closed and locked from the inside (preventing the use of the door as an exit) are prohibited in almost every workplace structure (mental and correctional institutions are two exceptions). Doors that could be mistaken for an exit, but are not exits must be marked "Not an Exit" or "Closet" or with similar markings so that they will not be mistaken for an exit in an emergency.
 - 5.1.6 Emergency lighting, signs and exits must meet requirements for the number of exits, the location and size of signs and the amount of illumination required.
- 5.2 Fire Alarms and Detection:
- 5.2.1 Fire alarms are required in buildings where the location of the fire will not provide adequate warning to employees and other occupants (i.e. multi-floor buildings or segregated work spaces).
 - 5.2.2 Alarms must be loud enough to be heard above the ambient noise level of the work area and activate in time to provide adequate warning for the work area occupants to safely evacuate.
 - 5.2.3 Alarms and signals must be tested or maintained to assure they remain in working order.
 - 5.2.4 Buildings undergoing construction and renovation (where employees are still working and occupying the work areas) must have appropriate (or alternate) alarms and fire prevention systems that are at least equal to those required for the occupancy and type of hazards in the area. This includes hazards inherent to the work area and tasks performed, as well as any additional hazards caused by the construction or renovation.
- 5.3 Fixed Fire Suppression Equipment:
- 5.3.1 All fixed suppression equipment must be maintained and tested by trained persons. The local fire department may provide or be able to be contracted to perform this maintenance and testing. Specific employees may be designated and trained for this service, depending upon the maintenance and testing requirements for the system.
 - 5.3.2 There are various types of fixed suppression equipment. Each type must be specifically designed for the types of fires likely to be encountered. These types are:
 - 5.3.2.1 Automatic sprinklers that discharge water into an area when heat or smoke causes the valve (sprinkler head) to open. Sprinkler heads must be kept free from any obstruction (at least 18" clearance vertically and horizontally).

- 5.3.2.2 Standpipe systems include fixed water supplies (risers) with a hose and nozzle. These systems are usually recessed in walls or found in stairwells. Standpipe systems are for use by trained fire-fighting personnel only.
- 5.3.2.3 Dry chemical systems are discharged in rooms or over a specific process (like an electrical system). Pre-discharge alarms are required where vision could be obscured that would affect employee evacuation.
- 5.3.2.4 Gaseous agents are normally used in enclosed rooms and spaces. Depending on the agent used to suppress the fire, pre-discharge alarms are required. Where employee evacuation can not occur within a specific time frame, specific agents are prohibited from being used as suppression agents.
- 5.3.2.5 Water spray and foam systems are usually utilized for a specific process hazard (like a kitchen grease pit or solvent tank). They discharge a chemical-foam that will “blanket” the fire or area with foam to “smother” the fire.

5.4 Portable Fire Extinguishers:

- 5.4.1 The Two Extinguisher Rule: Fire extinguishers are for controlling small, incipient fires. NEVER should more than two (2) extinguishers be used to control a fire. If the fire is not controlled with two extinguishers, it is no longer considered an incipient fire and should ONLY be extinguished by trained Firefighters or by fixed fire suppression systems.
- 5.4.2 Classes. There are four classes or types of Fire Extinguishers. Each class has distance requirements that are required for employees to access them. These types and distances are:
 - 5.4.2.1 Class A – used on ordinary combustibles (wood, paper, cloth, etc.). Extinguishers must be 75 ft. or less from the hazard.
 - 5.4.2.2 Class B – used for flammable or combustible liquids (gasoline, paint, solvents, propane). Distance must be 50 ft. or less from the hazard.
 - 5.4.2.3 Class C – used for electrical equipment and must be 50 ft. or less from the hazard.
 - 5.4.2.4 Class D – used for metals (magnesium, potassium and sodium). Extinguishers must be 75 ft. or less from the hazard.
- 5.4.3 General. Extinguishers must be located so they are clearly visible, readily accessible to the employees or persons designated and trained to use them, and located so they are protected from damage by moving equipment.
 - 5.4.3.1 Extinguishers must be maintained in a fully charged and operable condition, and kept in their designated locations.

- 5.4.3.2 Extinguishers must be appropriate to the type (or class) of fire hazard likely to be found in the work area.
- 5.4.3.3 Standard signs and floor markings may be utilized to increase visibility.
- 5.4.3.4 Extinguishers should be located along normal paths of travel but protected from the direct line of traffic to avoid injury to personnel or mechanical damage.
- 5.4.3.5 Extinguishers are not required in workplaces where all employees will be required to evacuate the facility (total evacuation) upon the initial alarm sounding, unless extinguishers are required by a specific regulatory standard (i.e. welding, confined space, and some flammable liquid usages).
- 5.4.4 Inspection and Testing. Extinguishers must be visually inspected monthly. Extinguishers must be maintained annually. Extinguishers must be physically (hydrostatically) tested every 5 years or 12 years depending on the type of extinguisher. When removed from service for maintenance or testing, or due to corrosion or damage, they must be replaced with an equivalent protective system.
 - 5.4.4.1 Documentation of the inspection, maintenance and testing may be kept with the extinguisher or in a separate system, provided the records are accessible to employees or agencies that may be required to review these records. Documentation must be kept for the life of the extinguisher.
- 5.4.5 Employee Training
 - 5.4.5.1 Where extinguishers are located, but employees will not be required to use them, employees should be informed that they are for trained fire fighter use only. It is recommended that these extinguishers also be marked “For Fire Department Use Only”.
 - 5.4.5.2 Where employees will be required to use extinguishers, employees must be trained annually in the general principles of fire extinguisher use and the hazards involved in incipient (beginning) stage fire fighting.
- 5.5 Fire Brigades and On-Site Response Medical Teams (as appropriate):
 - 5.5.1 Fire Brigades and Medical Response teams must be trained to the level or type of emergency they will likely encounter. In most cases, verified training is required, and documentation must be maintained with periodic or annual refresher training.
 - 5.5.2 Team members must be physically capable of performing their duties (including the use of respiratory protection, where required). Employees with known physical conditions (heart disease, emphysema or epilepsy) or known mental or physical disabilities that would impair their ability to perform the expected duties may be required to be approved by a licensed physician prior to being allowed to participate on the team.

- 5.5.3 Teams must be provided with adequate equipment and protective clothing to perform their duties.
 - 5.5.4 Equipment and clothing must be maintained in good working order. Equipment removed from service must be promptly repaired or replaced, or else team members must be informed that the equipment is no longer available.
 - 5.5.5 Teams must be organized, with either elected or appointed leaders, and have specific written procedures that outline their responsibilities (and limitations) with regard to emergency response at the workplace.
- 5.6 Hot Work, Open Flame Work or Spark Producing Equipment:
- 5.6.1 **Permission and Permits.** Any hot work or work with open flames should be performed only with the permission of company management. (Approvals may be required by the landlord or building owner, if different than company ownership.) Such work should be done only under specific restrictions and limitations to prevent fires or other hazards. This information and any restrictions or limitations should be documented. A signed permit system is recommended that outlines the details of the work and the restrictions or limitations.
 - 5.6.2 **Permanent Hot Work/Open Flame Permission -** Permanent permission should be obtained for areas where hot work/open flame is regularly used, such as metal and welding shops or special laboratories and work areas.
 - 5.6.2.1 Areas should be physically inspected by individuals who are knowledgeable about the hazards of the area and appropriate fire protection systems for these hazards. Annual re-inspection for the duration of the permit/permission is recommended, at a minimum.
 - 5.6.3 **Temporary Hot Work/Open Flame Permission -** Allows only specified personnel to perform a single operation. Areas where one-time use of flames is required (such as maintenance and construction operations, in areas such as buildings, sheds, yard areas, and streets and parking lots) should have areas physically inspected for fire hazards by a knowledgeable person.
 - 5.6.4 **Special Situations and Equipment:**
 - 5.6.4.1 Thermogrip Solder Tongs, Electric Soldering Irons, Flameless Heat Guns are prohibited in areas where flammable vapors or gases, or combustible dusts are present.
 - 5.6.4.2 Electric or Other Spark/Heat-Producing Tools in High-Fire Hazard Areas require special permission.
 - 5.6.4.3 Pressure Vessels - All burning or welding operation, emergency or otherwise, are prohibited on any pressure vessel unless specific approval has been obtained from a qualified engineering specialist or the lead welder.

5.6.4.4 Contractors - shall obtain Hot Work/Open Flame Permits through the manager or supervisor in charge of the job or process.

6. Training and Information.

- 6.1 Evacuation Programs must be reviewed with each employee:
 - 6.1.1 When the program is developed or when it is changed
 - 6.1.2 Upon initial assignment to a work area
 - 6.1.3 When the workplace changes (construction or remodeling) that require a different evacuation route
 - 6.1.4 When an employee's responsibilities under the program change.
- 6.2 Fixed Suppression Systems. Employees where fixed suppression equipment agents activate (non-water systems) must be specifically trained in the alarm signal, and any protective equipment and controls needed to ensure their safety. They must have (and be trained to) specific evacuation programs from the area of discharge.
- 6.3 Emergency Response Team members must be trained based on the types of emergencies they will be expected to encounter. Fire fighting techniques, first aid treatment or both may be required, depending upon the duties and responsibilities of the team.
- 6.4 Fire extinguisher users must be trained annually in the general principles of fire extinguisher use and the hazards involved in incipient (beginning) stage fire fighting.

7. Definitions.

- *Brigades* – A workplace team of employees who are specifically designated to respond and fight incipient fires.
- *Fixed Suppression Equipment* – Fire extinguishing systems that are affixed in place. For example: sprinkler systems.
- *Command Post* – A designated location that is set up for communications and direction of emergency responders.
- *Incident Commander* – The person designated to direct the activities of an emergency response. This person normally remains at the command post.

EMERGENCY ACTION PLAN				
COMPANY NAME:			DATE:	
SITE ADDRESS:		PLAN COMPLETED BY:		
Emergency Escape Procedures and Escape Route Assignments:				
Procedures to be followed by employees who remain to operate critical operations before they evacuate:				
Procedures to account for employees after evacuation is complete (e.g. crew leader counts crew – reports status to emergency services):				
Employee rescue or medical duties:				
Methods to report fires and other emergencies:				
Person(s) to contact for questions regarding site Emergency Action Plan or employee duties under Plan (name and phone number):				
Emergency Type	Notification Method <small>(Automatic, Pull Box, Phone)</small>	Site Contact	Emergency Services Number	Procedures to Follow Upon Alarm/Notification
FIRE				Evacuate to:
TORNADO				
EARTHQUAKE				
CHEMICAL SPILL/RELEASE				
MEDICAL EMERGENCY				

EXIT AND EGRESS (LIFE SAFETY) REQUIREMENTS

This document defines and outlines the minimum requirements for safe means of egress from fire and other emergency situations as outlined in Federal Regulations (29CFR1910.36-38 and associated Appendix B, and the Life Safety Code - NFPA101), additional Federal, State or Local codes may need to be considered. Elements of means of egress must be included in any written Emergency Action or Fire Prevention Plan. Provisions for accommodations for special needs individuals should also be given consideration and provided for.

Responsibilities:

	<i>Exits/Exit Paths Clear and Unobstructed</i>	<i>Exit Markings</i>	<i>Fire Doors and Hardware</i>	<i>Occupancy and Exit Capacity</i>	<i>Written Plan</i>	<i>Training</i>
<i>Employees</i>	X					X (receive)
<i>Area Management</i>	X	X	X		X	X (provide)
<i>Landlords</i>	X	X		X	X	
<i>Safety</i>	X					X (provide)

General - Life Safety exits and exit paths shall comply with OSHA, NFPA Life Safety and State and Local codes.

- Assure that exits and paths are clear and unobstructed at all times. Materials are not to be placed or stored in exit paths, stairwells or hallways.
- Fire, exit, stair and smoke-stop doors and dampers will be kept closed at all times, except for those equipped with approved automatic releasing hold-open devices installed and maintained in accordance with regulatory requirements and guidelines.
- ALL penetration through fire rated walls and other enclosures will be sealed with a material that will maintain the integrity and rating of the wall.
- Assure that furnishings and/or decorations do not obstruct exits, access to exits, paths to exits, or the visibility of an exit. Flammable decorations and furnishings are prohibited in, on or near exits (and along egress routes).
- Mirrors are prohibited on or near exit doors, to prevent confusion in an emergency.
- Assure aisles are appropriately marked or designated.

Occupancy Changes

- Notify the building owner, building manager and/or landlord if operations or personnel occupancy or classifications change to assure the capacity for safe discharge from exits is maintained. The number and capacity of exits, based on building or floor occupancy must be sufficient to allow safe egress from the building.

Exit Arrangement and Discharge

- Exits must have a clear direction of travel and discharge to safe, clear spaces, not encumbered by traffic or other hazards. These areas of refuge must be of adequate size to accommodate the maximum personnel occupancy.
- External exit paths must be maintained free of ice and snow, and any other obstructions.
- Exits and egress routes shall be arranged to prevent travel through an area of higher hazard without fire-rated corridors or other protective barriers in place.
- Exits may not be through an area with locking mechanisms, unless the exit serves only that room i.e. bathrooms or kitchens).

Doors and Hardware

- Report any broken or defective doors or hardware to the area management, building management and/or landlord for immediate repair. Doors and hardware must be permanently affixed or integral to the building, and constructed of approved components.
- Doors, passageways or stairways that are not exits, but could be mistaken for exits, shall be marked "Not an Exit" or with some other sign or indication of use.
- Alarmed doors, not normally used as exits during normal operations, but may be useable as exits during an emergency, shall be marked "*Do Not Block, Door to be Used in an Emergency*", or an equivalent statement.
- Exit doors will swing in the direction of exit travel
- Rated doors shall be constructed of approved components and not modified or altered in any fashion.
- Repairs and modifications to fire rated doors must be made with hardware that will not compromise the integrity of the fire rating. Holes will not be drilled for such purposes as hanging signs. Holes shall be plugged in an appropriate manner.

Hazardous Material Storage

- No flammable or explosive material (or other high hazard chemicals or substances) will be brought into an area not normally classified for those substances without adequate safety precautions and specific safeguards. (For example, compressed gas cylinders, gaylords of combustible material, etc.) A safety review will be conducted prior to any of these materials being brought on-site.

Exit Signs and Lighting

- Report faulty, inadequate or broken exit lighting to area management, the building manager and/or landlord. Adequate and reliable illuminated exit lighting must be maintained at all times. Emergency lighting must be provided for all components of egress (with battery backup, as required). Where reduction of normal lighting is permitted (i.e. darkrooms) alternative measures may be used.
- E X I T letters shall be legible and not less than 6" high, with each letter not less than 3/4" wide and contrast with existing decorations and furnishings. Arrows indicating the direction of travel will be included when the path of travel is not readily apparent.

Exit Enclosures (Stairwells, lobbies, etc.)

- Exit enclosures will have an approved fire rated door, will comply with approved fire resistance ratings and will have guards or railings on open sides.
- Enclosures will have level surface floors with stairs or ramps provided when not substantially level. Enclosures will have a permanent, straight path of travel with no dead ends in excess of 20 feet.
- Enclosures will comply with OSHA, Life Safety Code, State or Local codes and regulations, including height and headroom requirements.

Alarms and Fire Protection Systems

- Emergency Evacuation Alarm, Fire Alarm and Sprinkler systems will be maintained in good operating condition. Maintenance would include, but not be limited to: testing frequency, inspection, maintaining an 18 inch clearance around and below all sprinkler heads, and assurance that ceiling tiles remain in place.
- Alarms will be less than 100dB but greater than the ambient noise levels in the area so they can be adequately heard.

Emergency Evacuation and Fire Prevention Plans

- All employees, occupants, tenants and visitors will review their written plans upon initial assignment, whenever there are changes to the plan or when their responsibilities under the plan are changed. It is recommended that the plan be reviewed by all occupants at least annually.
- Paths of egress will be included in the site or building's written plans, or be posted throughout the building where they are accessible to employees throughout the building. Floor plans or workplace maps, if used, should clearly show the route of egress. Color codes these maps as applicable.
- Operating areas, in conjunction with the building's owner, manager or landlord, will establish specific types of evacuations, if applicable (i.e. partial building evacuations).
- Training will be provided to all persons who have additional duties or responsibilities under the Emergency Evacuation and Fire Prevention plans.
- All employees and occupants should participate in evacuation drills at least annually

Other

- Conference rooms, Auditoriums and other areas of assembly with a capacity of greater than 50 people will have posted occupancy signs.
- Fire Retarding Paints and Coverings, if used, will be renewed at intervals sufficient to maintain the retarding properties.

Safety Signs and Aisle Markings - The marking of interior aisles to provide unrestricted movement of personnel and material handling equipment in open manufacturing or storage areas is required. It is the responsibility of each area to assure aisles are properly marked and markings are readily visible. Consult with safety professionals for any deviations from this information.

Marking Requirements

- All aisles will be marked with painted lines, tape or other acceptable markers.
- All aisle widths will be dimensioned from the outside edges of the lines or markers
- The type of aisle-marking system used depends on the floor finish, type of traffic, anticipated length of service and exposure to water, chemicals, etc.
- PAINTED LINES are recommended for rough surfaces and areas of abrasive traffic. The lines will be between 3 and 4 inches in width.
- MARKERS are recommended on smooth-surfaced floors subject to foot traffic and trucking. In areas subject to chemical exposure (e.g. solvents, acids and heavy abrasive traffic) different types of markers may be tried until the most suitable one is identified. Use 3 inch diameter pressure sensitive (vinyl is recommended) dots spaced at 12 ½ inch centers. Dots may be applied by hand, or may also be ordered in rolls for application by automatic dispensing machines.
- TAPE is recommended for lines on smooth-surfaced floors for temporary or small marking jobs. Use 2 inch wide pressure-sensitive white (or other appropriate color). Vinyl is recommended.
- Where white lines do not give enough contrast, black-and-white lines (or markers of contrasting colors) may be substituted.
- At no time shall any materials be allowed to protrude onto or over the outside of the aisle lines.

Aisle, Door and Stairway Width Requirements:

Type of Aisle	Aisle Width
Pedestrian Side Aisle	1.1 m (44")
Pedestrian Main Aisle	1.5 m (6')
Truck - Ride-on Counterbalance	3.2 m (10'-6") to 3.7 m (12') depending upon truck capacity
Truck - Ride-on Straddle	2.4 m (8')
Truck - Walkie Counterbalance	2.9 m (9'-6") - 3.2 m (10'-6") depending upon truck capacity
Truck - Walkie Straddle	2.1 m (7')
Truck - Walkie Pallet/Platform	2.1 m (7')
NOTE: Aisle widths are dependent upon the configuration of the truck. The above widths are given only as a general guide. Consult with regulatory guidelines (NFPA-101) for more details.	
Exit doors	81 cm (32") each door – minimum or as wide as any staircase that serves the exit.
Stairs	112 cm (44") - minimum

Definitions:

- **Area Management** - Persons responsible for supervision or management of employees
- **Written Plan** - Building Emergency Action or Fire Prevention Plans.
- **CFR** - Code of Federal Regulations (OSHA regulations)
- **Egress** - A continuous and unobstructed way of exit travel from any point in a building or structure to a public way (or safe area of refuge), and consists of three distinct parts: the way of exit access, the exit, and the way of exit discharge.

FIRE DRILL OR EVACUATION ASSESSMENT						
Evacuation Start time:		Evacuation End time:		Total time for evacuation process:		
Evacuation Routes Marked:		<input type="checkbox"/> Yes <input type="checkbox"/> No		Exit Signs Visible or Evacuation Routes Posted:		
				<input type="checkbox"/> Yes <input type="checkbox"/> No		
Was the building completely evacuated?					<input type="checkbox"/> Yes	<input type="checkbox"/> No
Was the evacuation signal heard in every area of the building?					<input type="checkbox"/> Yes	<input type="checkbox"/> No
Did all employees meet at their designated relocation point?					<input type="checkbox"/> Yes	<input type="checkbox"/> No
Have procedures for the handicapped been addressed?					<input type="checkbox"/> Yes	<input type="checkbox"/> No
Did all equipment (stairwell doors, alarms, etc.) function properly?					<input type="checkbox"/> Yes	<input type="checkbox"/> No
Problem or Issue Noted And Corrective Action To Be Taken:						
Name of Person Responsible for Corrective Action:				Completed Date:		
Additional Comments/Requirements:						
Evaluator's Name:				Signature:		

FIRE PREVENTION PLAN	
COMPANY NAME:	
SITE ADDRESS OR LOCATION:	
ASSESSMENT DATE:	Completed by:
List all major fire hazards in the building or facility (>25 gallons of flammable liquids, large amounts of combustibles, etc.):	
Describe the type of fire protection equipment necessary to control each major hazard (sprinkler systems, extinguishers, etc.):	
Reference specific written procedures for the proper handling and storage of hazardous materials:	
Ignition sources within 30 feet of flammable materials require control measures (list control measures):	
Reference specific written procedures to control accumulation of flammable and combustible waste materials:	
Reference specific written procedures for regular maintenance of any heat-producing equipment and their safeguards to prevent accidental fires:	
Identify the job title of employees who are responsible for maintaining heat-producing equipment to prevent or control sources of ignition or fires:	
Identify the job title of employees who are responsible for controlling any fuel source hazards (flammable liquid, fuel or propane tanks, etc.):	

TYPES OF FIRE PROTECTION SYSTEMS

(Alarm Systems and Fire Protective Devices)

The company enacts measures, in compliance with Federal, State and Local regulations as well as accepted NFPA and ANSI guidelines, to protect its personnel, property and the environment. Such measures include fire suppression systems, enforced smoking policies, restrictions on the use of open flames, procedures on company-owned fire extinguishers, alarms and alarm system networks, and the inspection and maintenance of fire doors. Restrictions on portable electric devices in hazardous areas may be detailed in another procedure, if applicable.

Fire Doors - Companies should inspect and maintain fire doors based upon recognized fire and life safety standards from the National Fire Protection Association (NFPA), Federal regulations and State Uniform Fire Prevention, Building Codes and Insurance Specifications. Fire doors may not be obstructed, or blocked in an open position.

- Inspections - Annual Fire Door inspections can only be conducted by factory authorized technicians.
- Fire doors shall be tested and inspected annually, according to manufacturer's specifications for full closure doors, and any fire doors provided with automatic releases.
 - Doors may not be blocked or wedged open. The use of tape, wire, rope, or chains to hold doors open is forbidden.
 - Hardware and all moving parts are in good working order.
 - Doors, when closed, fit tight against the buck-frame and latch properly.
 - Automatic hold-open devices are in the proper position, fusible links are unpainted and all hardware is in good working condition.
 - The door and buck-frame are in good condition. Particular attention should be given to vertical guides for rolling steel fire doors.
 - Barriers designed to prevent the piling of material against sliding doors are in good condition.
 - Devices designed for the automatic closing or the self-closing of fire doors are in good operating condition.
 - Material is not stored in doorways or openings.
- Maintenance - Repairs and adjustments must be made immediately to ensure proper fire door operation at all times. Repairs may need to be made by factory authorized technicians.
 - Replacement of damaged doors and damaged wired glass.
 - Replacement or repair of any damaged or defective automatic release hold-open devices.
 - Only approved hardware is used.
 - Lubrication in accordance with manufacturer's recommendations.

Fire Alarm Systems - are generally heat or smoke activating devices which trigger an alarm system or some other protective action. There are specific requirements for these systems. ALARM SYSTEMS provide notice or warning for necessary emergency action. Alarms must be capable of being perceived above ambient noise or light levels by all employees, and be distinctive and recognizable as a signal to evacuate. Operational management shall explain to each employee the preferred means of reporting emergencies (pull box alarm, calling 911, etc.), and shall establish procedures for sounding emergency alarms. Alarms must meet requirements for Installation and restoration, and Maintenance and Testing.

- Special Definitions:
 - Types of Alarms
 - Life Safety Alarms - alarm devices or systems that monitor fire detection and suppression systems, building evacuation, perimeter security, and personnel duress situations.
 - Non-Life Safety Alarms - alarms monitoring other critical operations, processes and areas; including alarms designated as supervisory to life safety systems.

- Alarm Systems –
 - Safety Alarm System (SAS) - Provides notification for emergency response via automatic detectors, as well as manually operated indications of duress alarms.
 - Simplex - Provides monitoring of alarms designated as supervisory to life safety functions, as well as monitoring non-life safety alarms signals.
 - Fire Alarm Pull-Box system - Provides notification for emergency response via manually operated fire alarm boxes (includes Gamewell and Simplex pull stations).
 - Matrix - Provides access control for company perimeters along with individual building premises. This system also provides monitoring for non-life safety alarms and alarms designated as supervisory to life safety functions.
 - Trunked radio - 800 mhz radio system providing two-way communications for site emergency response groups. It also provides a "man-down" alarm feature. Radios equipped with this feature may be utilized as a lone operator "duress" alarm systems.
 - Local Life Safety Alarm System - Provides life safety alarm annunciation, coordination, and control for individual building premises.
- Steps:
 - Alarm System components of all life safety systems at company sites shall be designed in conjunction with qualified, professional engineers.
 - Fire and Emergency Services providers and the company insurance carrier may oversee the installation and maintenance of all life safety systems at company sites.
 - Any impairment to the fire protection systems shall be coordinated by the Fire and Emergency Services provider.
 - Any requests to install additional fire protection alarm systems must be approved by the company insurance carrier.

Automatic Fire Protection Systems –

- AUTOMATIC SYSTEMS are usually overhead systems which, upon activation, spray water or other extinguishing material over a specified range. The specific requirements which automatic sprinkler systems must meet are: Design, Maintenance, Acceptance tests, Hose connections, Protection of piping, Drainage, Sprinklers, sprinkler alarms, and Sprinkler spacing.
- FIXED EXTINGUISHING SYSTEMS are permanently installed systems which utilize extinguishing agents, designed and approved to extinguish fires through either partial or total flooding of an area.
- DRY/WET CHEMICAL SYSTEMS must have agents or components that are compatible with the hazard they are protecting. Dry chemical extinguishing agents of different compositions may not be mixed together. Where chemical discharge may obscure vision the employer shall provide a pre-discharge employee alarm.
- GASEOUS AGENT SYSTEMS are used for initial supply and replenishment shall be of the type approved for the system's application. The designed concentration of gaseous agents must be maintained until the fire has been extinguished or is under control; and employees may not be exposed to toxic levels of gaseous agent or its decomposition products. The designed extinguishing concentration must be reached within a specified time limit, depending upon the agent used. A pre-discharge employee alarm capable of being perceived above ambient light or noise levels must be utilized. Where egress from an area cannot be accomplished within specified time limitations, certain agents may not be used.
- **Responsibilities:**
 - A qualified engineer or safety professional should perform inspections per code and insurance specifications, and the company should retain all pertinent documentation.
 - Special Applications (Fixed Systems) - Fixed Extinguishing Systems are normally found in cafeteria ducts and fryer systems, foam systems, explosion suppression systems, and large CO2 systems. They must have documented semi-annual inspections, and be serviced at least annually.
 - Fire and Emergency Services providers should follow an established process for sprinkler system impairments and coordinate these efforts.

- **Steps:**
 - **Automatic Sprinkler Systems** - These are the most reliable and widely used system in industry. They extinguish or control the size of a fire (and are sometimes equipped to automatically transmit an alarm to a centralized Communication Center. The system usually consists of:
 - one or more sources of water under pressure
 - water shut-off valves –
 - Manual Shut-off Valves shall be operated only by personnel authorized by the Fire and Emergency Services provider
 - sprinkler heads
 - alarms
 - Alarms are devices that detect flow of water in the system and transmit an electrical signal to a centralized Communication Center and in some instances activate a local audible signal. The device is actuated when any of the following occur:
 - opening of a sprinkler head
 - opening of a valve in a deluge system
 - breakage or leakage of a sprinkler line
 - low air alarms (specialized systems only)
 - use of a safety shower (in some areas)
 - opening of the "High Point" test valve
 - 2" drain test for residual pressure.
 - **Wet-Pipe systems**
 - Protect office areas, production areas, laboratories and warehouses if freezing temperatures are not encountered.
 - Water is always in the system and is immediately discharged through the sprinkler heads when actuated by heat at their rated temperature.
 - **Anti-Freeze**
 - Protect Small unheated areas, where it may be impractical to install separate dry-pipe systems. (e.g. refrigerated rooms, coolers, loading docks).
 - Usually an extension of a wet-pipe system to which an anti-freeze solution is added to the section of sprinkler pipe in the unheated area to prevent freeze-up. Recommended maximum number of heads on these systems is 20 per system.
 - **Dry-Pipe**
 - Protect larger areas subject to freezing temperatures, such as unheated buildings and larger refrigerated rooms.
 - Lines are filled with pressurized air rather than water. The water valve is held closed by the air pressure, but opens automatically upon activation of a sprinkler head.
 - **Pre-Action**
 - Protect areas where water may damage product or equipment, such as in electronic or computer areas, electrical control rooms and telephone switch rooms.
 - Similar to the Dry-pipe system except that detectors are installed in conjunction with the sprinkler heads. When the smoke detector activates or when the rate of temperature rise exceeds a predetermined setting, the detector opens a valve allowing water to enter the system, but water will not be discharged until heat opens a sprinkler head.
 - **Deluge**
 - Protect areas where a quick wet-down of a complete area is necessary, such as a cooling tower, outside flammable liquid storage area or handling area.
 - Open sprinkler heads are used in this system. The main valve which admits water into the system is normally closed, but opens in response to heat-actuated sensors located throughout the area being protected.

- **Carbon Dioxide (CO2) Systems** – Carbon Dioxide is a colorless, odorless and electrically non-conductive inert gas that extinguishes fires by displacing oxygen in the fire zone. It is effective only when the carbon dioxide blankets the fire.
 - Normally installed over flammable-liquid coating stations and also in some electronic equipment rooms, to provide localized protection.
 - Appropriate training of personnel who may work or access areas where CO2 systems are in place must be performed.
 - Prior to activating a CO2 system, suitable safeguards shall be provided to ensure that no one will enter or be trapped inside an area of heavy CO2 discharge.
- **Dry Chemical Systems** - consist of specific materials or powders stored in pressurized cylinders. The chemical particles extinguish a fire mainly by inhibiting the combustion chain.
 - Normally installed in kitchen or cafeteria areas where grease fires may occur.
- **Wet Chemical Systems** - consist of specific materials stored in pressurized cylinders. The chemical particles extinguish a fire mainly by inhibiting the combustion chain.
 - Normally installed in kitchen or cafeteria areas where grease fires may occur.

Smoking

- In all cases, the company should comply with Federal, State, County and Local ordinances and regulations with regard to smoking in the workplace. In some areas, possession of flame producing devices, such as lighters or matches may be restricted based on the hazards of the operational area. Smoking and use of tobacco and tobacco products may be restricted to designated areas or prohibited, based on the site policy of the company.

Portable Electronically-Operated Devices used in Hazardous Areas

- May be restricted or prohibited in certain operational areas of the company.

Definitions:

- **Portable Electric Devices** - devices capable of releasing electrical or thermal energy (except electrostatic) that could ignite a flammable vapor or combustible dust. These devices include, but are not limited to: Measuring instruments, Communications devices, Photographic equipment, Computation devices, Sound recording and amplifying devices, and miscellaneous devices such as prosthetic devices, flashlights, matches and lighters.
- **Alarm Systems** - alarms and alarm network systems which are designed to transmit and receive alarms monitoring critical or substantial loss potential conditions, including areas where human health or the environment may be at risk.
- **FSS** - Fire Suppression Systems

PROGRAM OVERVIEW

EYE WASH STATION AND SAFETY SHOWER SAFETY PROGRAM

REGULATORY STANDARD: OSHA - 29 CFR 1910.151

INTRODUCTION: Ensures the existence of suitable facilities for quick drenching or flushing of the eyes and body where potential exposure to injurious or corrosive materials exists. It highlights procedures and training requirements and defines installation and design specifications.

TRAINING:

- All employees and supervisors who are exposed to, work with or near corrosive or injurious materials must be instructed on the use of eye wash stations and safety showers to ensure the features and operations of the unit are fully understood in the event of an emergency.

ACTIVITIES:

- Assess area hazards to determine where eye wash stations and safety showers are required
- Install eye wash stations and safety showers, as required
- Ensure appropriate signs are placed to indicate the location of eye wash stations and safety showers, and operating instructions are placed at the units
- Conduct inspections of installed safety equipment

FORMS:

- Activation and Inspection Eye Wash Station Form
- Activation and Inspection Safety Shower Form
- Program Assessment Eye Wash Station and Safety Shower
- Training and Attendance Roster Eye Wash and/or Safety Shower

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- 1. Purpose**
- 2. Scope**
- 3. Responsibilities**
- 4. Procedure**
- 5. Safety Information**
- 6. Training and Information**
- 7. Definitions**

Eye Wash Station and Safety Shower Safety Program

1. **Purpose.** The company requires that emergency shower and/or eye wash station facilities shall be provided whenever operations may result in personnel coming into contact with injurious corrosive materials. This program provides requirements for the use and maintenance of emergency showers and eye wash stations.
2. **Scope.** Applies to all eye wash station and safety shower units and installations at the company or on company job site locations.
3. **Responsibilities.**
 - 3.1 Managers and Supervisors:
 - 3.1.1 Assess area hazards to determine where eye wash stations and safety showers are required to be installed.
 - 3.1.2 Install eye wash stations and safety showers.
 - 3.1.3 Ensure appropriate signs are placed to indicate the location of eye wash stations and safety showers, and operating instructions are placed at the units.
 - 3.1.4 Ensure employees who work with injurious or corrosive materials are trained in the use of eye wash stations and safety showers.
 - 3.1.5 Provide the resources for and manpower required for maintenance and testing of eye wash stations and safety showers.
 - 3.2 Employees:
 - 3.2.1 Attend training upon initial assignment and as workplace changes occur, as appropriate.
 - 3.2.2 Assist, as needed or required, in the installation, maintenance or testing of eye wash stations and safety showers.
 - 3.2.3 Notify supervision of any problems or deficiencies noted during eye wash station or safety shower inspection, maintenance or testing.
 - 3.3 Safety Officer (as needed or required):
 - 3.3.1 Assist in the hazard assessment of the facility and the needs or requirements for eye wash stations and safety showers.
 - 3.3.2 Assist in the installation, maintenance or testing of eye wash stations and safety showers.
 - 3.3.3 Assist in employee training in the use of eye wash stations and safety showers.

4. Procedure.

4.1 Hazard Assessment:

- 4.1.1 Conduct Hazard Assessments to identify injurious or corrosive materials in the work area and to determine the need for eye wash stations and/or emergency showers. Material Safety Data sheets may assist in this identification process.
- 4.1.2 Conduct Hazard Assessments whenever work process changes or building renovation/occupancy affect the operation or requirements of emergency eye wash stations and showers.
- 4.1.3 Document this assessment, as needed, on the Certificate of Hazard Assessment.

4.2 Installation and Maintenance:

- 4.2.1 Ensure that emergency eye wash station and/or emergency showers are initially installed to meet the manufacturer's specifications and are tested and maintained in good operating condition whenever hazard assessments indicated the need for this equipment. Manufacturing installation instructions normally accompany the unit.
- 4.2.2 Existing single nozzle designed eyewash installations requiring maintenance or repair shall be replaced with an approved dual nozzle design. Any new eyewash installation shall be of an approved dual nozzle design.
- 4.2.3 Out-of-service units shall be tagged and all personnel in the area informed; before removing tag and returning the unit into service, a performance test shall be conducted to ensure proper operation.
- 4.2.4 Potable water is preferred, but non-potable water is acceptable provided it is clean and that appropriate signs are posted.
- 4.2.5 Where possible, water should be kept at tepid temperature (65°F - 95°F).
- 4.2.6 Distance from the hazard must be not more than a 10 second walking distance (approximately 100 feet).
- 4.2.7 Drainage should be provided for shower units to prevent additional hazardous situations from occurring.

4.3 Recordkeeping:

- 4.3.1 Document the activation of emergency eye wash station and/or emergency shower equipment. A log book attached or near the equipment, or a sticker affixed to the unit will suffice.
- 4.3.2 Document the employee training.

4.4 Activation and Testing:

- 4.4.1 Testing should be performed upon initial installation and this documentation should remain with the unit (via log book or sticker).
- 4.4.2 Showers with monitored or supervised systems (or other performance verification equivalent) on the line to assure water pressure or flow (such as pressure monitors or flow gauges) require activation and testing on initial installation and activation at least annually thereafter. (NOTE: If eye wash station or shower is connected to a controlled alarm system, notification prior to activation/testing shall be made to the site or designated unit responsible for receiving the alarm to prevent summoning emergency response units).
- 4.4.3 Showers with no monitoring system require activation at least annually (however, monthly is recommended depending upon the potential hazards encountered in the area), and annual testing.
- 4.4.4 Eye wash stations, Eye/Face units for plumbed units, must be activated weekly; Self-contained units will be activated per manufacturer's instructions.
 - 4.4.4.1 As part of the activation procedure, check for sharp projections and contamination on the nozzle area; activation should flow water 3 to 6 inches from the nozzle.

NOTE: The use of Drench hoses and Personal eyewash equipment (eyewash bottles) supports plumbed and self-contained equipment, but these SHALL NOT be used as a replacement for them. If they are used, employees shall be properly instructed on their use and limitations.

4.5 Housekeeping:

- 4.5.1 Emergency eye wash station and/or emergency shower equipment must retain a clear path to the equipment. Supervision should be notified of obstructed paths.
- 4.5.2 Equipment must be kept in a clean and sanitary condition. Eye wash station caps or covers may be used, provided they meet regulatory requirements and are removed by the water pressure of the unit upon activation.

4.6 Notification:

- 4.6.1 Emergency response personnel and supervision should be immediately notified of any emergency eye wash station and/or emergency shower equipment activation, other than testing.

- 5. Safety Information.** This information is applicable to standard equipment. *Where applicable to the workplace, there are additional requirements to be met for barrier free equipment with reference to the Americans with Disability Act and access to equipment for handicapped individuals.*

5.1 Valve Actuators.

5.1.1 For all equipment:

- 5.1.1.1 Shall be large enough to be easily located by the user, with a highly visible sign, and in a well lighted area (Darkrooms and Dark areas are an exception to this requirement).
- 5.1.1.2 Shall activate in 1 second or less.
- 5.1.1.3 Once activated shall remain on until intentionally shut off without requiring the use of the operators hands.
- 5.1.1.4 Shall be protected from freezing.
- 5.1.1.5 Shall be protected, as much as possible, from airborne or other contaminants without impeding the use of the equipment or requiring a separate motion to remove.
- 5.1.1.6 Shall have instructions posted to assist users.
- 5.1.1.7 Shall be free of projections or sharp objects which may be injurious to the user.
- 5.1.1.8 Shall be constructed of materials that will not corrode in the presence of flushing fluid.

5.1.2 Showers:

- 5.1.2.1 The activation handle shall not be located more than 69" from the surface on which the user stands. An extension device should be constructed to accommodate activation of the shower for persons with disabilities or persons in wheelchairs.

5.2 Spray.

5.2.1 For all equipment:

- 5.2.1.1 Whenever practical, equipment should deliver tepid or tempered water. Temperature of the flushing fluid should not exceed 100 degrees Fahrenheit (38 degrees Celsius).
- 5.2.1.2 In circumstances where chemical reaction is accelerated by flushing fluid temperature, a medical advisor should be consulted for the optimum temperature for each application.

5.2.1.3 While cold flushing fluid temperatures provide immediate cooling after chemical contact, prolonged exposure to cold fluids may affect the ability to maintain adequate body temperature and can result in the premature cessation of the equipment usage.

5.2.2 Showers:

5.2.2.1 Deliver a spray pattern of 20 inches in diameter at 60 inches from the surface on which the user stands.

5.2.2.2 Located at least 16 inches from any obstruction.

5.2.2.3 Fluid must be substantially dispersed throughout the pattern.

5.2.2.4 Delivers 20 gallons per minute for a minimum of 15 minutes.

5.2.3 Eye wash stations:

5.2.3.1 Delivers a spray pattern of 4" across (3-6" away from each nozzle).

5.2.3.2 Fluid must be substantially dispersed throughout the pattern.

5.2.3.3 Delivers 0.4 gallons per minute for a minimum of 15 minutes.

5.2.4 Eye/Face units:

5.2.4.1 Delivers a spray pattern of 4" in length.

5.2.4.2 Fluid must be substantially dispersed throughout the pattern.

5.2.4.3 Delivers 3 gallons per minute for a minimum of 15 minutes.

5.3 Delivery System.

5.3.1 For all equipment:

5.3.1.1 Constructed of materials that will not corrode in the presence of flushing fluid.

5.3.1.2 Designed so as not to be injurious to the user.

5.3.1.3 Shall have no sharp projections or objects.

5.3.1.4 Shall be protected from contamination.

5.3.1.5 Shall be protected from freezing.

5.3.1.6 The water supply must be continuous and uninterruptible for the required duration.

5.3.2 Showers:

- 5.3.2.1 At least 1 inch pipe to deliver flow, supply lines may be 1.25 inch line.
- 5.3.2.2 Shower Assembly shall be 82-96 inches in height from the surface on which the user stands.
- 5.3.2.3 Enclosures, if used, will have a minimum of 34 inches in diameter.
- 5.3.2.4 Shall have supply lines which deliver 30 lbs. per-square-inch of pressure at maximum flow.

5.3.3 Eye wash stations:

- 5.3.3.1 Designed to provide enough room to allow the eyelids to be held open with hands.
- 5.3.3.2 Provide fluid to both eyes simultaneously.
- 5.3.3.3 New installations or modifications shall have 2 sets of parallel lines painted or adhered to back surface of eyewash. These lines will be set 1.25 inches and 3.25 inches apart from the center of the eyewash and are designed to assist the user in guiding the eyes into the stream. The unit should deliver the flushing fluid between these lines.
- 5.3.3.4 Shall have supply lines which deliver a minimum pressure of 30 psi and a maximum pressure of 90 psi at maximum flow.
- 5.3.3.5 Shall be 33-45 inches from the surface on which the user stands and shall be at least 6 inches from the wall or other obstruction.

5.3.4 Eye/face units:

- 5.3.4.1 Designed to provide enough room to allow the eyelids to be held open with hands.
- 5.3.4.2 Shall be 33-45 inches from the surface on which the user stands and shall be at least 6 inches from the wall or other obstruction.
- 5.3.4.3 Shall have supply lines which deliver a minimum pressure of 30psi and a maximum of 90psi at maximum flow.

5.4 Location.

5.4.1 For all equipment:

- 5.4.1.1 Not more than a 10 second unobstructed walking distance from the hazard (approximately 100 feet in a straight line).

5.4.2 Showers:

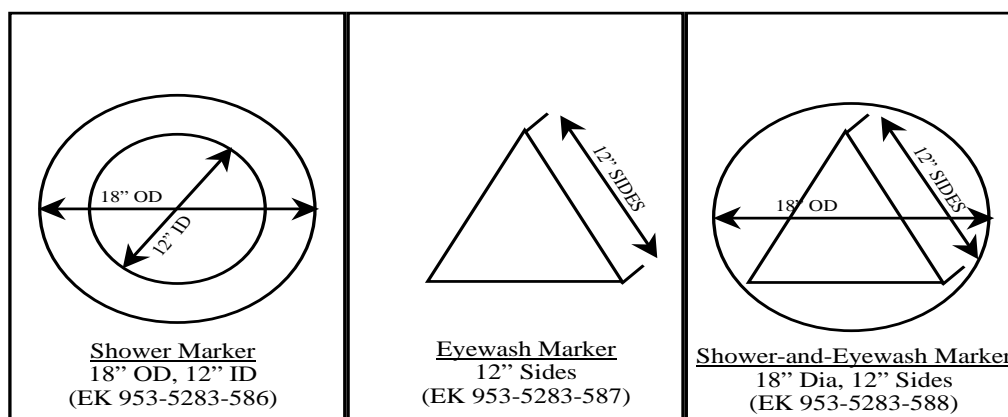
5.4.2.1 16 inches from any obstruction or wall (minimum).

5.4.3 Eye wash stations:

5.4.3.1 If a highly hazardous or corrosive material is used, the eye wash station should be in the direct vicinity of the hazard to facilitate immediate use.

5.5 Floor Markings.

5.5.1 Are RECOMMENDED - Should be clearly marked with yellow, as shown:



5.6 Additional Information.

5.6.1 Users of emergency eye wash stations should hold eye(s) open and roll eyeballs to apply flushing fluid to all parts of the eye and under the eyelids.

5.6.2 Combination units should comply with all of the above requirements and each piece (shower, eye wash station, and eye/face) should operate simultaneously.

5.6.3 Personal Eyewash Bottles and Drench hoses are designed to supplement the use of Emergency Eye wash stations and Showers and are not designed to replace them.

6. Training Information and Requirements.

6.1 All employees who are exposed to, work with or work in proximity to injurious or corrosive materials shall be trained in the use of emergency eye wash stations and showers as follows:

6.1.1 Location of the equipment.

6.1.2 Hazardous conditions which require the equipment use.

6.1.3 Operation of equipment.

6.1.4 Providing emergency assistance to others.

6.1.5 Employees should be aware not to store materials or product in front of, near or in the pathway to equipment or to cover floor markings.

7. Definitions.

- *Activation* - Activation consists of turning the unit on to assure water flow (to flush the line).
- *gpm* - Gallons Per Minute.
- *Monitored or Supervised System* - a water or flow line with alarm systems or flow gauges which will notify some authority when flow is decreased or interrupted.
- *Testing* - Testing consists of turning the unit on, checking flow rate, flow pattern, spread, assuring components of the equipment are operating properly, and verifying that all signs, labels or markings are legible, visible and appropriate.

PROGRAM ASSESSMENT EYE WASH STATION	
Completed by: _____ Date: _____	
ITEM	ACCEPTABLE?
Eyebath Station Access and Signage	
Are signs in place to indicate the location of the equipment?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are floor markings in place to prevent storage near the station?	<input type="checkbox"/> YES <input type="checkbox"/> NO
The inside of the unit is marked where the eyes should be held, or where the spray pattern will fall?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Is the path or aisle way to reach the station clear and unobstructed (10 second/100 feet distance from hazards, or direct vicinity for corrosives)?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are operating instructions posted at the station?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Is a sign or logbook available to document station inspections and tests?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Plumbed Units	
Is the unit activated weekly?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Units are free from any sharp projections?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Nozzle area is clean and uncontaminated?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Flow is between three and six inches from the nozzle	<input type="checkbox"/> YES <input type="checkbox"/> NO
Valve actuators (used to activate or turn on the unit) are large enough to be easily located by the user?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Units activate in one second or less when turned on?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Units remain active until intentionally turned off?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Units are protected from freezing?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Units are made of materials that will not corrode or rust?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Units are fully tested annually (for temperature, spray pattern and volume)?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Water temperature from the unit does not exceed 100°F	<input type="checkbox"/> YES <input type="checkbox"/> NO
Spray pattern is four inches across (3-6 inches from each nozzle) with the fluid dispersed throughout the pattern (spray pattern is full and constant)?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Units deliver 0.4 gallons per minute for a minimum of 15 minutes?	<input type="checkbox"/> YES <input type="checkbox"/> NO
If connected to an emergency notification system, is this system tested at the same time the unit activation occurs?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Portable or Wall-Mounted Units	
Units are tested, in accordance with the manufacturer's recommendations?	<input type="checkbox"/> YES <input type="checkbox"/> NO

PROGRAM ASSESSMENT SAFETY SHOWER	
Completed by: _____ Date: _____	
ITEM	ACCEPTABLE?
Safety Shower Access and Signage	
Are signs in place to indicate the location of the equipment?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are floor markings in place to prevent storage near the station?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Is the path or aisle way to reach the station clear and unobstructed (10 second/100 feet distance from hazards, or direct vicinity for corrosives)?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are operating instructions posted at the station?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Is a sign or logbook available to document station inspections and tests?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Plumbed Units	
Is the unit activated monthly (if no automatic alarm system)?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Is the unit activated at least once per year? (if automatic alarm system)	<input type="checkbox"/> YES <input type="checkbox"/> NO
Units are free from any projections or obstructions within 16 inches?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Nozzle area is clean and uncontaminated?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Is the valve actuator located 69 inches or less from the floor surface?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Valve actuators (used to activate or turn on the unit) are large enough to be easily located by the user?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Units activate in one second or less when turned on?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Units remain active until intentionally turned off?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Units are protected from freezing?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Units are made of materials that will not corrode or rust?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Units are tested yearly (for water temperature, spray pattern and volume)?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Water temperature from the unit does not exceed 100°F	<input type="checkbox"/> YES <input type="checkbox"/> NO
Spray pattern is twenty inches in diameter with the fluid dispersed throughout the pattern (spray pattern is full and constant)?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Units deliver 20 gallons per minute for a minimum of 15 minutes?	<input type="checkbox"/> YES <input type="checkbox"/> NO
If connected to an emergency notification system, is this system tested at the same time the unit activation occurs?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Stand Alone Units	
Units are tested, in accordance with the manufacturer's recommendations?	<input type="checkbox"/> YES <input type="checkbox"/> NO

TRAINING ATTENDANCE ROSTER EYE WASH and/or SAFETY SHOWER

Eye Wash Station Training Includes: <ul style="list-style-type: none"> Medical Response Responsibilities Maintenance and Activation Housekeeping and Clearance How to use eye wash stations 	Safety Shower Station Training Includes: <ul style="list-style-type: none"> Medical Response Responsibilities Maintenance and Activation Housekeeping and Clearance How to use safety shower stations
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<u>INSTRUCTOR:</u>	<u>DATE:</u>	<u>LOCATION:</u>
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NAME (Please Print) FIRST - MI - LAST	SIGNATURE	Training Type
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By signing below, I attest that I have attended the safety training for the topic indicated, and will abide by the safety information, procedures, rules, regulations and/or company policy as presented and instructed.

		<input type="checkbox"/> Eye Wash <input type="checkbox"/> Safety Shower
		<input type="checkbox"/> Eye Wash <input type="checkbox"/> Safety Shower
		<input type="checkbox"/> Eye Wash <input type="checkbox"/> Safety Shower
		<input type="checkbox"/> Eye Wash <input type="checkbox"/> Safety Shower
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		<input type="checkbox"/> Eye Wash <input type="checkbox"/> Safety Shower
		<input type="checkbox"/> Eye Wash <input type="checkbox"/> Safety Shower

Name of Interpreter, if utilized: _____

PROGRAM OVERVIEW

FIRST AID AND EMERGENCY MEDICAL RESPONSE SAFETY PROGRAM

REGULATORY STANDARD: *OSHA* - 29 *CFR* 1910.151
- 29 *CFR* 1926.23, 1926.50

INTRODUCTION: This program is designed to assist the company to insure that medical personnel are readily available for emergency response and applies to all company facilities and employees, including any on-site emergency medical response personnel.

TRAINING:

- All employees and supervisors trained on how to summon emergency assistance
- Where required, employees trained in the use of emergency eyebaths and safety showers
- Any on-site emergency response teams trained appropriately in skills and bloodborne pathogens

ACTIVITIES:

- Determine if on-site first aid or emergency response teams or designated and trained personnel are required (if ambulance or EMT/fire department is more than 3-4 minutes away)
- Designate, train and equip emergency response personnel, if appropriate
- Establish agreements with local ambulance or fire/EMT services to provide emergency medical response, if appropriate
- Evaluate potential for injuries and implement hazard controls where possible
- Write and communicate policies and procedures

FORMS:

- Required only if incident: Exposure Incident Report

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First Aid and Emergency Medical Response Safety Program (Including Industrial Burns)

- 1. Purpose.** This program is designed to provide guidance and information to companies with regard to first-aid and emergency medical response situations. Included in this program is information on the treatment and prevention of industrial burns.
- 2. Scope.** This program applies to all company facilities and employees, including any on-site emergency medical response personnel.
- 3. Responsibilities.**
 - 3.1 Management:
 - 3.1.1 Determine if on-site first aid or emergency response teams or designated and trained personnel are required. If trained emergency medical response (an ambulance or EMT/fire department) is more than 5 minutes from the facility or site, a certified and trained first aid response person is required to be present at the work site for each work shift.
 - 3.1.1.1 Designate, train and equip emergency response personnel, if appropriate. Training is at no cost to the employee and is provided at a reasonable time and place whenever possible; OR
 - 3.1.1.2 Establish agreements with local ambulance or fire/EMT services to provide emergency medical response, if appropriate.
 - 3.1.2 Inform employees on how to summon emergency assistance.
 - 3.1.3 In conjunction with the Safety Officer and/or Human Resources, notify the injured/ill employee's family of the incident, as needed or required.
 - 3.2 Employees:
 - 3.2.1 Summon emergency medical assistance, when required.
 - 3.2.2 Notify management, as soon as possible.
 - 3.2.3 Notify the Safety Officer or Human Resources as soon as possible after the emergency response personnel have taken charge of the situation.
 - 3.3 Safety Officer (as needed or required):
 - 3.3.1 Assist in the development and implementation of this program.
 - 3.3.2 In conjunction with management and/or Human Resources, notify the injured/ill employee's family of the incident.

3.4 On-Site Medical Response Team/Person (as appropriate):

- 3.4.1 Attend Basic First Aid or EMT training.
- 3.4.2 Attend Bloodborne Pathogen training.
- 3.4.3 Maintain training.
- 3.4.4 Provide basic first aid for injured or ill employees who require assistance.
- 3.4.5 Maintain supplies and equipment, as needed, for emergency response.

4. Procedure.

4.1 Summoning Emergency Response Personnel:

- 4.1.1 Employees must be informed of the proper procedure to summon emergency medical assistance from their work area or job site (e.g. telephoning “911” or another number).
 - 4.1.1.1 It is highly recommended that if summoning assistance is other than “dial 911”, that the emergency phone number be placed on each telephone to assist employees during an emergency.
- 4.1.2 Information should be provided to the emergency service provider on:
 - 4.1.2.1 The nature of the injury/illness, if known.
 - 4.1.2.2 The specific location (company address or specific work area) of the injured employee.
 - 4.1.2.3 Any other pertinent details of the incident.
 - 4.1.2.4 Any procedures or escorts required to enter the facility.
- 4.1.3 If possible, remain with the injured or ill employee to provide comfort and support. Designate another employee to meet the emergency response personnel, if appropriate.

4.2 Potential for Industrial Burns:

- 4.2.1 Jobs where there is potential injury from either chemical burns or heat producing equipment that may cause burns to the skin or body must be evaluated and appropriate control measures put into place to protect employees from these hazards.
 - 4.2.1.1 Control measures include engineering and design controls to prevent contact (insulating materials or enclosures), administrative controls (procedures, substitution of less hazardous materials or equipment), or personal protective equipment (gloves, clothing, other PPE).

- 4.2.2 Training is provided to employees on the heat or chemical hazards of the task or activity, and the first aid procedures for treatment.
- 4.2.3 Signs are posted in areas where there is a reasonable likelihood of burn injury from heat producing equipment.
 - 4.2.3.1 Signs should read “Danger – Heat-Hazard Area. Thermal Protective Clothing or Equipment required, or similar language.
 - 4.2.3.2 Signs must be in English, although additional languages may be used in addition to English.
- 4.3 Control Measures for Reducing Heat or Burn Injury:
 - 4.3.1 Engineering Controls - should reduce heat levels to the lowest level reasonably achievable.
 - 4.3.1.1 Controls include:
 - 4.3.1.1.1 Placement of shielding or barriers between equipment and employees
 - 4.3.1.1.2 Isolating heat sources through enclosures
 - 4.3.1.1.3 Mechanizing or modifying processes or operations
 - 4.3.2 Administrative Controls - should be implemented when engineering controls can not reduce heat to the desired level.
 - 4.3.2.1 Controls include:
 - 4.3.2.1.1 Limiting the amount of time workers spend performing the task or activity
 - 4.3.2.1.2 The use of specialized tools to the extent possible
 - 4.3.2.1.3 Enforcement of specific written procedures that outline the steps to safely work with the heat producing equipment.
 - 4.3.3 Protective Equipment - should be implemented after it has been determined that engineering and administrative controls can not reduce heat exposures to the desired levels.
 - 4.3.3.1 Protective equipment includes:
 - 4.3.3.1.1 Heat resistant gloves and clothing
 - 4.3.3.1.2 Respiratory protection.

5. Safety Information.

5.1 Eyebaths and Safety Showers:

5.1.1 Where eyes or body of any person can be exposed to injurious, corrosive or highly hazardous chemicals, or where these chemicals are used or stored in the workplace, facilities for the quick drenching of eyes and the body are required.

5.1.1.1 Equipment must meet the requirements of the American National Standards Institute (ANSI) for Eyebaths and Safety Showers ANSI Z358.1

5.1.2 Employees will be trained in the use of emergency eyebaths and safety showers, as needed or required.

5.2 Types of Burns:

5.2.1 Correct assessment of a burn's severity is one of the first critical steps in properly treating and managing the injury. Burns are classified both by their depth and amount of body surface area injured. First, second, and third degree burns identify the layers of skin damaged while the terms minor, moderate and critical describe both the depth and extent of the tissue injured.

5.2.1.1 First-degree burns. These are burns involving only the outer layers of the epidermis. Characterized by redness, itching, and burning, these burns are generally considered minor and don't require the attention of a physician. Mild sunburns are typical first-degree burns.

5.2.1.2 Second-degree burns. These are burns that damage both the epidermis and the dermis (second layer of skin). These burns cause blisters and are prone to infection, often requiring medical attention. Second-degree burns are also sub-classified as superficial or deep dermal depending on the extent of injury. Burns are also described by their cause, such as thermal, chemical, electrical, radiation, and flash.

5.2.1.3 Third-degree burns. These are burns that destroy both the epidermis and the dermis. These burns are distinguished by their dry surface and pearly white or charred appearance. Third-degree burn patients often experience no pain following their injury because nerve endings are impaired. Third-degree burns always require the attention of a hospital burn center.

5.2.1.4 Thermal (heat burns). These are burns that are caused by contact with substances at temperatures above the boiling point of water. These burns often occur in conjunction with other types of burns.

5.2.1.5 Chemical burns. These are burns that are caused by contact with materials such as sodium hydroxide, phenol, sulfuric or hydrochloric acid. These corrosive substances generate heat, creating a thermal burn in addition to a chemical burn.

- 5.2.1.6 Electrical burns. These are burns that are common among gas and electrical workers and are also considered thermal burns because heat is created while the current passes through the body. These burns are more treacherous than they first appear because the body conducts the electrical current to the heart, muscular and vascular system causing extensive internal damage. Because they may be electrocuted themselves, bystanders are strongly cautioned against touching these types of burn victims until the electrical source has been removed.
- 5.2.1.7 Sun-burns. These are the most common type of radiation burns. Other sources of ultraviolet or nuclear radiation can also cause burns.
- 5.2.1.8 Flash-burns. These are burns that are usually minor cornea injuries, the consequences of looking directly into an extremely bright light. Welders and those working with high-powered electrical equipment often experience this syndrome. Flash burn symptoms include watery eyes, searing pain and photophobia (a marked sensitivity to light), occurring four to six hours following the injury. Although flash burns are regarded as more of an annoyance than a serious injury, prolonged exposure to a powerful light source without protective eyewear can result in permanent blindness.

6. Training and Information.

- 6.1 Employees will be trained in:
 - 6.1.1 How to summon emergency medical assistance.
 - 6.1.2 The use of emergency eyebaths and safety showers, as needed or required.
 - 6.1.3 The use of personal protective equipment and other controls required to reduce heat exposure levels.
 - 6.1.4 The basic first aid treatment of the various types of burns if they work with heat exposure hazards, as needed or required.
- 6.2 On-site emergency response personnel will be trained (and certified) in basic first aid or EMT level response, and annually in the requirements of the Bloodborne pathogens standard. Certifications must be maintained appropriately.

7. Definitions.

- *EMT* – Emergency Medical Technician.

FIRST AID KIT SUPPLY REQUIREMENTS

Based on the number of employees the following items should be available in First Aid Kits located at the job site. (Kits are required for California Construction sites)

First Aid Kit <i>Required</i> Supplies:	1-5 Employees	6-15 Employees	16-200 Employees	Over 200 Employees
Adhesive dressings	X	X	X	X
Adhesive tape rolls, 1-inch wide	X	X	X	X
Eye dressing packet	X	X	X	X
1-inch gauze bandage roll or compress	X	X	X	X
2-inch gauze bandage roll or compress	X	X	X	X
4-inch gauze bandage roll or compress	X	X	X	X
2-inch square sterile gauze pads	X	X	X	X
4-inch square sterile gauze pads	X	X	X	X
Sterile surgical pads suitable for pressure dressings			X	X
Triangular bandages	X	X	X	X
Safety pins	X	X	X	X
Tweezers and scissors	X	X	X	X
*Additional equipment to be readily available, but not necessarily in First Aid Kit:				
Cotton-tipped applicators			X	X
Forceps			X	X
Emesis basin			X	X
Flashlight			X	X
Magnifying glass			X	X
Portable oxygen and its related breathing equipment				X
Tongue depressors				X
Appropriate Record Forms	X	X	X	X
Up-to-date First Aid Textbook, Manual, or Equivalent	X	X	X	X

PROGRAM OVERVIEW

FLAMMABLE AND COMBUSTIBLE LIQUIDS SAFETY PROGRAM

REGULATORY STANDARD: OSHA - 29 CFR 1910.106-108

OSHA - 29 CFR 1926.152

NFPA 30 Flammable and Combustible Liquids Code

NFPA 45 Fire Protection for Laboratories using Chemicals

INTRODUCTION: General requirements for the handling and storing of flammable and combustible liquids. This program details the requirements for venting, grounding and bonding, and labeling containers. It defines the requirements for spill and fire control and establishes training requirements.

TRAINING:

- Any employee working in a bulk storage area (>25 gallons which is not stored inside an approved cabinet) or who dispenses flammable or combustible liquids must understand the hazard potential and protective measures to be taken. Training must occur upon initial assignment and as changes occur that increase exposures.

ACTIVITIES:

- Evaluate operations for presence of flammable and combustible liquids
- Determine and implement correct storage requirements
- Determine protective measures and emergency response procedures
- Ensure containers are clearly labeled and inspected before use
- Arrange for appropriate waste disposal

FORMS:

- Program Assessment
- Training Attendance Roster

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- 2. Scope**
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- 6. Training Information & Requirements**
- 7. Definitions**

Flammable and Combustible Liquids Safety Program

1. **Purpose.** The provisions in this program are intended to reduce the hazard associated with the handling, use and storage of flammable and combustible liquids to a degree consistent with reasonable safety. Compliance with this standard does not eliminate all hazards in the use flammable and combustible liquids. The company will review and evaluate this safety program:
 - 1.1 On annual basis, or more frequently as needed.
 - 1.2 When changes occur to 29 CFR 1910.106 that prompt revision of this document.
 - 1.3 When facility operational changes occur that require a revision of this document.
 - 1.4 When there is an accident or close call that relates to this topic.
2. **Scope.** The program applies to all locations where flammable and combustible liquids are used, handled or stored at company facilities and company job-sites.
3. **Responsibilities.**
 - 3.1 Management/Supervisors:
 - 3.1.1 Determine if a flammable storage room is legally necessary. It is allowable to maintain up to 25 gallons of Class IA flammable liquids 120 gallons of Class 1B, 1C, II or III liquids in containers 660 gallons of Class 1B, 1C, II or III liquids in a single portable tank in any one-fire area.
 - 3.1.2 Ensure that all storage and dispensing locations have detailed written emergency instructions for each location. Each instruction will detail the emergency actions to be taken in the event of fire, spill, leak, power failure, failure of any safety system (including detection/monitoring and ventilation systems) and any other emergency condition affecting the safe operation of the area.
 - 3.1.3 Ensure that written emergency instructions and appropriate signs are posted at the entrance to all storage and dispensing location, or in a conspicuous manner in the area.
 - 3.1.4 Assure that arrangements are made with qualified emergency response agencies or with employees who are trained in emergency first-responder and spill clean up.
 - 3.1.5 Train employees and staff members in the procedures to be followed, the hazards of the materials, and any emergency response duties they may be required to perform.
 - 3.1.6 Ensure containers, tanks and other storage vessels are properly labeled.
 - 3.1.7 Ensure storage rooms and containers meet the requirements.

- 3.1.8 Ensure dispensing of liquids is performed properly.
- 3.1.9 Provide spill control and fire control systems for the storage and dispensing areas.
- 3.1.10 Provide adequate secondary containment for tanks and storage drums (or other bulk containment vessels) as needed or required.

3.2 Employees:

- 3.2.1 Handle flammable and combustible liquids in accordance with written procedures and this program.
- 3.2.2 Label containers and tanks, as needed or required.
- 3.2.3 Perform spill or fire control procedures, as training and responsibilities require.

3.3 Safety Officer (as needed or required):

- 3.3.1 Assist in the development and implementation of this program.

4. Procedure.

4.1 Handling of Flammable and Combustible Liquids (General Requirements):

- 4.1.1 Flammable liquids will be kept in covered containers when not actually in use
- 4.1.2 There will be no open flames or other sources of ignition within the vapor path of any flammable or combustible chemical used on company premises.
- 4.1.3 Transfer of liquids will be accomplished by using a closed piping system, by gravity through a self-closing valve, or by safety cans.
- 4.1.4 The quantity of flammable and combustible liquids in any area should not exceed the amount required for one day or one shift or 120 gallons (NFPA 33).
- 4.1.5 *NO SMOKING* signs will be posted in all locations where flammable or combustible liquids are used or stored. Supervisors will strictly enforce this policy.
- 4.1.6 The transfer of flammable liquids will be done using appropriate bonding and grounding of containers.
- 4.1.7 Containers supplying spray nozzles (i.e., spray guns, etc.) will be kept closed.
- 4.1.8 There will be no sources of ignition (flame or spark producing) in any area where flammable liquids are used, or within 20 ft. unless separated by a partition.
- 4.1.9 Hot surfaces (steam pipes, etc.) will not be located in areas where combustible residues may accumulate without approved fire protection controls.

- 4.1.10 Electrical equipment located within areas where combustible residues may accumulate will be approved for Class I Div 1 locations. Electrical equipment adjacent to a spraying area in areas where combustible residues may accumulate and not separated by a partition will be approved for Class I Div 2 locations.
- 4.1.11 Portable lamps will not be used in any spraying area unless it is specifically designed for a maintenance operation. If used for maintenance, they must be intrinsically safe and conform to Class I Div 1 locations.
- 4.1.12 Areas using Class I liquids will be ventilated at a rate of not less than one cubic foot per minute per sq. ft. of floor area.
- 4.1.13 Maintenance operations involving hot work or the use of spark producing tools may be done if the area has been proven safe (see hot work/welding safety procedures) and the work is supervised.
- 4.1.14 Housekeeping, i.e., cleaning of spills and leakage control. These requirements will be closely monitored. Supervisors will strictly control housekeeping in areas where flammable and combustible liquids are used or stored.
- 4.1.15 Waste or residue will be stored in approved covered metal containers.
- 4.1.16 Flammable liquids must be kept in covered containers when not actually in use.
- 4.1.17 Where flammable or combustible liquids are used or handled, except in closed containers, means will be provided to dispose promptly and safely of leakage or spills.
- 4.1.18 Class I liquids may be used only where there are no open flames or other sources of ignition within the possible path of vapor travel.
- 4.1.19 Storage Cabinets (Approved and Listed with no modifications)
 - 4.1.19.1 Sprinklers are not required.
 - 4.1.19.2 No more than three cabinets per fire area.
 - 4.1.19.3 Cabinets shall be stable and pose no potential of overturning.
 - 4.1.19.4 Ventilation – may be required under certain conditions. Open containers or venting of containers may require ventilation, due to the Lower Explosive Limit (LEL) potential or possible health risks. If venting is required, see NFPA 30 for details. If no venting is required, the vent openings should be kept tightly capped with the metal bungs provided for this purpose.
 - 4.1.19.5 Grounding is not required unless dispensing operations are present or where conditions exist that could result in the concentration of vapors.

4.1.20 Open steel shelving - Solvents in approved safety cans only.

Container Type	Flammable Liquids			Combustible Liquids	
	1A	1B	1C	II	III
Glass	1 pt	1qt	1 gal	1 gal	5 gal
Safety Can	2 gal	5 gal	5 gal	5 gal	5 gal
Metal Drum DOT Spec	60 gal	60 gal	60 gal	60 gal	60 gal
*Class IA and Class IB liquids may be stored in glass containers of not more than one-gallon capacity only if the required purity would be affected by storage in metal containers or if the liquid would cause excessive corrosion of the metal container.					

4.2 Tank Storage (Bulk Storage Above and Below Ground):

4.2.1 Bulk Storage. Bulk storage of flammable or combustible liquids requires a hazard assessment be conducted to determine specific requirements. Some general rules for each class of chemical include:

4.2.1.1 Class I liquids may be stored in closed containers or in storage tanks above ground outside of buildings or underground and maintained in accordance with OSHA, EPA, NFPA and DOT requirements. A site-specific assessment must be made.

4.2.1.2 Class II and III liquids may be stored in containers or tanks within buildings or in above- or below-ground tanks outside of buildings and maintained in accordance with OSHA, EPA, NFPA and DOT requirements. A site-specific assessment must be made.

4.2.1.3 If rooms containing Class I liquids are heated it will be done by the use of steam or hot water or other approved intrinsically safe method. A site-specific assessment must be made.

4.2.1.4 Ventilation will be provided for all pumping and dispensing operations taking place within a room. This applies to Class I liquids only. If natural ventilation is not adequate then mechanical ventilation must be used. A site-specific assessment must be made.

4.2.2 Aboveground Tanks. Local fire inspection personnel will be consulted when determining aboveground tank placement and fire control configurations.

4.2.2.1 Spacing (shell-to-shell) between aboveground tanks.

4.2.2.1.1 The distance between any two flammable or combustible liquid storage tanks must not be less than 3 feet.

- 4.2.2.1.2 The distance between any two adjacent tanks must not be less than one-sixth the sum of their diameters. When the diameter of one tank is less than one-half the diameter of the adjacent tank, the distance between the two tanks must not be less than one-half the diameter of the smaller tank.
 - 4.2.2.1.3 Where crude petroleum in conjunction with production facilities are located in non-congested areas and have capacities not exceeding 126,000 gallons (3,000 barrels), the distance between such tanks must not be less than 3 feet.
 - 4.2.2.1.4 Where unstable flammable or combustible liquids are stored, the distance between such tanks must not be less than one-half the sum of their diameters.
 - 4.2.2.1.5 When tanks are compacted in three or more rows or in an irregular pattern, greater spacing or other means must be provided so that inside tanks are accessible for firefighting purposes.
 - 4.2.2.1.6 The minimum separation between a liquefied petroleum gas container and a flammable or combustible liquid storage tank must be 20 feet, except in the case of flammable or combustible liquid tanks operating at pressures exceeding 2.5 p.s.i.g. or equipped with emergency venting which will permit pressures to exceed 2.5 p.s.i.g. Suitable means must be taken to prevent the accumulation of flammable or combustible liquids under adjacent liquefied petroleum gas containers such as by diversion curbs or grading. When flammable or combustible liquid storage tanks are within a diked area, the liquefied petroleum gas containers must be outside the diked area and at least 10 feet away from the centerline of the wall of the diked area. The foregoing provisions must not apply when liquefied petroleum gas containers of 125 gallons or less capacity are installed adjacent to fuel oil supply tanks of 550 gallons or less capacity.
- 4.2.2.2 Normal venting for aboveground tanks.
- 4.2.2.2.1 Atmospheric storage tanks must be adequately vented to prevent the development of vacuum or pressure sufficient to distort the roof of a cone roof tank or exceeding the design pressure in the case of other atmospheric tanks, as a result of filling or emptying, and atmospheric temperature changes.

- 4.2.2.2.2 Normal vents must be sized either in accordance with The American Petroleum Institute Standard 2000 (1968), Venting Atmospheric and Low-Pressure Storage Tanks; or other accepted standard.
- 4.2.2.2.3 Must be at least as large as the filling or withdrawal connection, whichever is larger but in no case less than 1 1/4 inch nominal inside diameter.
- 4.2.2.2.4 Low-pressure tanks and pressure vessels must be adequately vented to prevent development of pressure or vacuum, as a result of filling or emptying and atmospheric temperature changes, from exceeding the design pressure of the tank or vessel. Protection must also be provided to prevent overpressure from any pump discharging into the tank or vessel when the pump discharge pressure can exceed the design pressure of the tank or vessel.

4.3 Warehousing (Bulk Storage not in Tanks):

- 4.3.1 General. Flammable and combustible liquids storage rooms where dispensing does not occur is called Warehousing. The following considerations (as a minimum) apply:
 - 4.3.1.1 Access Ways to Permit Approach of Fire Control Apparatus
 - 4.3.1.2 Alerting/warning systems
 - 4.3.1.3 Chemical compatibility
 - 4.3.1.4 Emergency evacuation
 - 4.3.1.5 Emergency rescue
 - 4.3.1.6 Emergency response by firefighters
 - 4.3.1.7 Fire suppression systems
 - 4.3.1.8 Ingress and Egress
 - 4.3.1.9 Intrinsically safe lighting, ventilation, heating and other equipment
 - 4.3.1.10 Recovery actions
 - 4.3.1.11 Signage
 - 4.3.1.12 Sources of ignition
 - 4.3.1.13 Spacing and quantity limitations

4.3.1.14 Spill containment and control measures

4.3.1.15 Written emergency safety programs and procedures

4.3.2 Storage Rooms or Areas.

FIRE PROTECTION	FIRE RESISTANCE	MAXIMUM FLOOR AREA	TOTAL ALLOWABLE QTY PROVIDED GALS/SQ FT/FLOOR AREA
YES	2 Hour	500 sq. ft.	10
NO	2 Hour	500 sq. ft.	4
YES	1 Hour	150 sq. ft.	5
NO	1 Hour	150 sq. ft.	2
Note: Fire protection system will be sprinkler, water spray, carbon dioxide, or other approved system.			

4.3.2.1 Where openings to other rooms or buildings exist, they will be provided with noncombustible liquid tight raised sills or ramps at least 4 in. in height or the room will be 4 in. below the surrounding floor or an open grated trench draining to a safe location will be used.

4.3.2.2 Openings to rooms will be provided with approved self-closing fire doors. (Doors may be left open during material handling operations if they are designed to close automatically in a fire).

4.3.2.3 Windows, if any, will be fire windows and will be designed to close automatically in a fire.

4.3.2.4 Wiring and equipment located inside the storage room will be approved for Class I of flammable or combustible liquid stored.

4.3.2.5 The ventilation inside the room will configured to provide at least six air changes per hour. This will be accomplished either by gravity or mechanical exhaust. Note: If no mechanical exhaust is provided, then it is almost certain that the required exchange rate is not being met. All storage rooms will be reviewed to ensure an air inlet exists and additional NFPA guidelines for proper design.

4.3.2.6 If mechanical ventilation exists, it will be controlled by a switch located outside the door. The ventilation and lighting fixtures will be operated by the same switch.

4.3.2.7 If Class I flammables are dispensed, a pilot light (indicator light at switch) will be installed adjacent to the switch to confirm live voltage to the circuit.

4.3.2.8 An aisle of at least three feet wide will be maintained for ease of ingress and egress, separation of materials, fire safety and movement of materials.

- 4.3.2.9 Containers over 30 gallons capacity will not be stacked.
 - 4.3.2.10 Dispensing will be accomplished with the use of approved pumps or if by gravity, then through a self-closing valve.
 - 4.3.2.11 A fire extinguisher will be located outside the door of the room.
 - 4.3.2.12 No smoking or open flames are allowed in flammable and combustible liquids storage areas.
 - 4.3.2.13 Water-reactive materials will not be stored in the same room as flammable and combustible liquids.
 - 4.3.2.14 Adequate warning signs will be installed as required.
 - 4.3.2.15 Class I flammable liquids will not be permitted in basement areas.
- 4.3.3 Storage Inside Buildings.
- 4.3.3.1 General. Containers in piles must be separated by pallets or equivalent means to provide stability and to prevent stress on container walls. Portable tanks stored over one tier high must be designed to nest securely and adequate materials handling equipment must be available to handle tanks safely at the upper tier level.
 - 4.3.3.2 Egress, Access and Fire Protection. Flammable or combustible liquids must not be stored so as to limit use of exits, stairways, or areas normally used for the safe egress of people. Aisles of at least 3 feet wide must be provided where necessary for reasons of access to doors, windows or standpipe connections. No pile may be closer than 3 feet to the nearest beam, chord, girder, or other obstruction, and must be 3 feet below sprinkler heads or other overhead fire protection systems.
 - 4.3.3.3 Containers. The storage of flammable or combustible liquids in containers or portable tanks must comply with 29 CFR §1910.
 - 4.3.3.4 Office areas. Storage is prohibited except where required for maintenance and operation of building and operation of equipment. Such storage must be kept in closed metal containers stored in a storage cabinet or in safety cans or in an inside storage room not having a door that opens into that portion of the building used by the public.
 - 4.3.3.5 Leaking containers. Leaking containers must be removed to a storage room or taken to a safe location outside the building and the contents transferred to an undamaged container.

4.3.4 The maximum allowable size of containers is as follows:

CONTAINER TYPE	FLAMMABLE LIQUIDS			COMBUSTIBLE LIQUIDS	
	Class IA	Class IB	Class IC	Class II	Class III
Glass or approved plastic:	1 pt	1 qt	1 gal	1 gal	1 gal
Metal (other than DOT drums):	1 gal	5 gal	5 gal	5 gal	5 gal
Safety cans:	2 gal	5 gal	5 gal	5 gal	5 gal
Metal drums (DOT specifications):	60 gal	60 gal	60 gal	60 gal	60 gal
Approved portable tanks:	660 gal	660 gal	660 gal	660 gal	660 gal

4.3.5 Storage in Outside Buildings.

4.3.5.1 Where quantity stored exceeds 1,100 gallons, a minimum distance of 10 feet between buildings and nearest container of flammable or combustible liquid must be maintained.

4.3.5.2 Spill containment. The storage area must be graded in a manner to divert possible spills away from buildings or other exposures or must be surrounded by a curb at least 6 inches high. When curbs are used, provisions must be made for draining of accumulations of ground or rainwater or spills of flammable or combustible liquids. Drains must terminate at a safe location and must be accessible to operation under fire conditions.

4.3.5.3 Security. The storage area must be protected against tampering or trespassers where necessary and must be kept free of weeds, debris and other combustible material not necessary to the storage.

4.3.5.4 If the storage building is located 50 feet or less from a building or line of adjoining property that may be built upon, the exposing wall must be a blank wall having a fire-resistance rating of at least 2 hours.

4.4 Drum Storage (6-55 gallon):

4.4.1 General considerations. Accidents may occur during handling of drums and other flammable and combustible liquids containers. Hazards include detonations, fires, explosions, vapor generation and physical injury resulting from moving heavy containers by hand and working around stacked drums, powered industrial trucks and deteriorated drums. While these hazards are always present, proper work practices, such as minimizing handling and using equipment and procedures that isolate workers from such hazardous substances, can minimize the risks to employees.

4.4.2 Inspection requirements.

4.4.2.1 The appropriate procedures for handling drums depend on the drum contents. Thus, prior to any handling, drums should be visually inspected to gain as much information as possible about their hazards. Things to look for include:

4.4.2.1.1 Symbols, words, or other marks on the drum indicating that it contains flammable or combustible liquids.

4.4.2.1.2 Signs of deterioration such as corrosion, rust and leaks.

4.4.2.1.3 Signs that the drum is under pressure such as swelling and bulging.

4.4.2.1.4 Drum type.

4.4.2.1.5 Configuration of the drumhead.

4.4.2.1.6 Chemical compatibility with other chemicals in the area.

4.4.3 Handling drums. The following procedures can be used to maximize worker safety during drum handling and movement:

4.4.3.1 Personnel should be trained in proper lifting and moving techniques to prevent back injuries.

4.4.3.2 Ensure powered industrial trucks used in the movement of the materials have a rated load capacity high enough to handle the anticipated loads, and make sure the vehicle can operate smoothly on the available road surface.

4.4.3.3 Before moving anything, determine the most appropriate sequence in which the various drums and other containers should be moved. For example, small containers may have to be removed first to permit entry and movement of drums.

4.4.3.4 Ensure that operators have a clear view when carrying drums. Where necessary, have workers available to guide the operator's motion.

4.4.4 Bulging Drums.

4.4.4.1 Pressurized drums are extremely hazardous. Wherever possible, do not move drums that may be under internal pressure, as evidenced by bulging or swelling.

- 4.4.4.2 If a pressurized drum has to be moved, whenever possible handle the drum with a grappler unit constructed for explosive containment. Either move the bulged drum only as far as necessary to allow seating on firm ground, or carefully over pack the drum. Exercise extreme caution when working with or adjacent to potentially pressurized drums.
- 4.4.5 Leaking, Open and Deteriorated Drums. If a drum containing a liquid cannot be moved without rupture, immediately contact your supervisor or manager. The emergency response team will be summoned for any spill condition.
- 4.4.6 Grounding and bonding. Buildup of static electricity charges on containers and people is a dangerous source of sparks that can touch off flash fires wherever flammable liquids are being transferred or used.
 - 4.4.6.1 Grounding. A readily accessible connection to an earth ground will be installed in all company storage and dispensing areas.
 - 4.4.6.2 Bonding. A readily accessible connection from a grounded drum to a container being filled will be installed on all drums or bulk containers used to dispense flammable or combustible liquids. This procedure is not necessary when self-bonding containers are used. If it is unclear if the container is self-bonding, use a bonding strap in the dispensing process.
- 4.4.7 Drip pans. Drip pans should be positioned below each drum faucet to catch spills or any possible drippings from a worn or damaged faucet.
- 4.4.8 Drum venting. Drums containing flammable or combustible liquids will be vented to relieve pressure buildup due to heat and also to prevent creation of a vacuum when liquid is being drained off or the drum is subjected to sudden cooling.
- 4.4.9 Drum faucets. Drum faucets will be of the self-closing type. Non self-closing types will not be used by the company.
- 4.5 Flammable Liquid Storage Cabinet Requirements:
 - 4.5.1 Maximum capacity. Not more than 60 gallons of Class I or Class II liquids, or more than 120 gallons of Class III liquids may be stored in a storage cabinet.
 - 4.5.2 Fire resistance. Storage cabinets used by the company must be designed and constructed to meet NFPA 251-1969 requirements.
 - 4.5.3 Labeling. Cabinets must be labeled in conspicuous lettering, "Flammable - Keep Fire Away."
 - 4.5.4 ONLY approved flammable liquid storage cabinets shall be used. Approvals must be from a nationally recognized testing laboratory such as FM or UL.

- 4.5.5 Inspections shall be performed to ensure good housekeeping practices, that stored materials are compatible, and that quantities are not exceeded.
- 4.5.6 Do not drill holes in the cabinet, or otherwise modify the cabinet. Sprinkler protection for the interior of the rated flammable liquids storage cabinets will not be required if the area for which the cabinet and its location conforms with NFPA 13, NFPA 30 and insurance carrier requirements.
- 4.5.7 Storage Capacity.

Storage	Maximum Quantity
Safety Can	5 Gallons or less
Safety Can on Open Steel Shelving (area must be sprinklered)*	25 Gallons or less, Class IA Liquid
Flammable Cabinet	120 gallons total per cabinet. No more than 3 cabinets per fire area. Limited to 60 Gallons or less of Class IA Liquid
Flammable Liquid Storage Room	Amounts normally approved by Insurance Carrier

Note: For complete limits, refer to 29CFR1910.106 or NFPA30

- 4.5.8 Deviations - Any exceedance from the above quantity guidelines shall require a formal safety review with the potential inclusion of the company's insurance carrier. Any deviation from regulatory compliance shall be approved and documented by the Authority Having Jurisdiction.
 - 4.5.9 Where the use and handling of flammable or combustible liquids is only incidental to the principal business, the quantity of liquid that may be located outside of a flammable storage cabinet in any one fire area of a building shall not exceed 25 gallons of Class IA liquids in approved containers or 120 gallons of Class IB, IC, II, or III liquids in approved containers.
- 4.6 Small Container Storage (5 gallon or less):

- 4.6.1 Static Bonding and Grounding
 - 4.6.1.1 Ensure safety cans are provided and used, as appropriate.
 - 4.6.1.2 Ensure all containers are electrically boded and grounded to prevent static spark discharges whenever flammable or combustible liquids are transferred.
 - 4.6.1.3 Ensure electrical bond is made before any filling holes are opened or the flow started. Maintain bond until flow is completed and all filling holes are closed.

4.6.2 Transfer of Flammable/Combustible Liquids

4.6.2.1 Use gravity flow or an approved pump to transfer flammable or combustible liquids. The use of compressed air in the container is prohibited.

4.6.3 Labeling

4.6.3.1 All dedicated safety cans shall display the name of the contents, either painted on or by use of pressure sensitive labels.

4.6.3.2 An HMIS or NFPA chemical hazard labels shall be affixed to all safety cans.

4.6.3.3 Safety cans that are filled at a central dispensing station should be labeled with the can user's work area location and telephone number.

4.6.4 Storage

4.6.4.1 Open Shelf storage of safety cans containing flammable or combustible liquids is permissible. Departments must contact their safety representative for prior review of location and quantity limitations.

4.6.4.2 Flammable Liquid Storage Cabinets, if used, shall be installed in compliance with all federal, state and local regulatory guidelines. Local safety professionals can assist in this compliance review.

4.6.5 Waste Disposal

4.6.5.1 For disposal information refer to the EPA or equivalent State Department Website, or contact your local safety representative.

4.6.6 Inspection

4.6.6.1 Before each filling, inspect the can to determine if it:

4.6.6.1.1 Is approved

4.6.6.1.2 Has a closure that operates properly (spring, tension, and alignment).

4.6.6.1.3 Has a correct content-identification label, if a dedicated can.

4.6.6.1.4 Has an appropriate chemical hazard label.

4.6.6.1.5 Is labeled with the user's work are location and telephone number, where applicable.

- 4.6.6.1.6 Has all required parts, including flame arrestors. If flame arrestor has been removed, the can no longer has a listing and must be removed from service.
- 4.6.6.1.7 Is free of dents or evidence of corrosion that could interfere with safe and proper use.
- 4.6.6.2 Inspect waste liquid cans EACH TIME they are emptied.
- 4.6.7 Testing for Leaks
 - 4.6.7.1 After filling a safety can, check for leaks at seams (Check for accumulation of moisture along all welded joints) and leaks from gaskets.
- 4.6.8 Defective Equipment
 - 4.6.8.1 Tag any can that fails to pass inspection and/or testing with a "DEFECTIVE EQUIPMENT" tag and remove from service until repairs are made. If repair of the defect is prohibited or is not feasible or satisfactory, render the can unusable and ship to metal salvage.
- 4.6.9 Repairs
 - 4.6.9.1 Repairs to safety cans shall not be made, including soldering or flattening of dents. New cans should be purchased.
 - 4.6.9.2 Any modification of a safety can will result in the loss of the cans' listing.
- 4.6.10 Types of Safety Cans
 - 4.6.10.1 Plastic cans are not approved for use except as waste solvent containers for highly corrosive service. Any other use requires prior approval of the local safety provider or the Fire and Emergency Services provider. Plastic cans in use must not be transported outside the building.
 - 4.6.10.2 Bench-top cans are used for saturating sponges and wiping cloths, cleaning small parts, and for moistening swabs. The spring mounted flame arrestor and dasher is depressed by hand to provide access to the fluid. Upon release, it returns to the normal position and excess fluid drains back into the can.
 - 4.6.10.2.1 Gloves, compatible with the liquid in the bench-top can, should be worn. Safety representatives can assist in selecting the appropriate gloves.
 - 4.6.10.2.2 Except for the plunger can, cover all bench-top cans containing liquids when not in use, to minimize escape of vapors.

- 4.6.10.3 Dispensing cans are equipped with nozzles or faucets to facilitate pouring liquids into containers with small fill openings
- 4.6.10.4 Storage cans have only one opening for both filling and pouring, and are used mainly for temporary storage and for pouring liquids into containers with large fill openings.
- 4.6.10.5 Viscous-Liquid Cans are not equipped with a flame arrestor. Approvals are limited to storing and dispensing viscous fluids (e.g. adhesives) or suspensions (e.g. emulsions) which would clog a flame-arresting screen.
- 4.6.10.6 Waste-Liquid cans are used for the accumulation and disposal of flammable or combustible liquid waste material. The cans are equipped with a latch to keep the fill cap open while adding waste material. The latch must be released immediately thereafter to prevent escape of vapors. Cans used for the disposal of viscous fluids or suspensions may have the flame arrestor removed.

4.7 Dispensing of Liquids into Approved Containers

- 4.7.1 Any container into which flammable or combustible liquids are dispensed, must be of an approved type.
- 4.7.2 Class I and Class II liquids shall be drawn from or transferred into vessels, containers, or portable tanks within a building from:
 - 4.7.2.1 Original shipping containers with a capacity of 5 gal. (18.92 L) or less.
 - 4.7.2.2 Safety cans.
 - 4.7.2.3 Closed piping systems.
 - 4.7.2.4 Portable tank or container by means of a device drawing through an opening in the top of the tank or container.
 - 4.7.2.5 A listed self-closing valve or self-closing faucet by gravity.
 - 4.7.2.6 Transferring by air pressure is prohibited.
- 4.7.3 Design, construction and capacity of flammable liquids storage cabinets shall be listed on the equipment. Those liquids not having a designation shall be listed as "U" and treated as Class 1A/F-4. Grounding and bonding of containers is required for all dispensing activities.
- 4.7.4 Flammable or combustible liquids must be drawn from or transferred into vessels, containers, or portable tanks within a building only through a closed piping system, from safety cans, by means of a device drawing through the top, or from a container or portable tanks by gravity through an approved self-closing valve. Transferring by means of air pressure on the container or portable tanks is prohibited.

5. Safety Information.

5.1 Spill Control:

5.1.1 Spill control equipment will be maintained in each area where storage and/or dispensing is conducted. This equipment will include as a minimum:

5.1.1.1 Spill Control Broom

5.1.1.2 Chemical Neutralizers

5.1.1.3 Personnel Protective Equipment

5.1.1.4 Absorbent Pads

5.1.1.5 Shovels, Brooms, Mops, Pails

5.1.2 Employee trained in spill response and control measures are authorized to use spill control equipment as needed or required, to contain or control and clean up spills of flammable or combustible liquids.

5.1.3 Employees not trained in spill response and control measures will summon the appropriate person or agency to provide containment, control and clean up.

5.1.4 Spilled materials are generally considered as waste and may need to be disposed of as a hazardous waste and may need special controls, documentation and procedures.

5.2 Fire Control:

5.2.1 Portable and special equipment. Portable fire extinguisher and control equipment must be provided in such quantities and types as are needed for the special hazards of operation and storage. At least one portable fire extinguisher having a rating of not less than 12-B units must be located outside of, but not more than 10 feet from, the door opening into any room or area used for storage

5.2.2 Sprinklers. When sprinklers are provided, they will be installed in accordance with NFPA requirements. Water must be available in volume and at adequate pressure to supply water hose streams, foam-producing equipment, automatic sprinklers, or water spray systems as the need is indicated by the special hazards of operation, dispensing and storage.

5.2.3 Special extinguishers. Special extinguishing equipment such as that utilizing foam, inert gas, or dry chemical must be provided as the need is indicated by the special hazards of operation dispensing and storage. Materials that will react with water must not be stored in the same room with flammable or combustible liquids.

5.2.4 Distance and Spacing Requirements.

5.2.4.1 Within 200 ft. of each portable tank, there must be a 12-ft. wide access way to permit approach of fire control apparatus.

5.2.4.2 The distances listed apply to properties that have protection for exposures as defined. If there are exposures, and such protection for exposures does not exist, the distances in column 4 must be doubled.

5.2.4.3 When total quantity stored does not exceed 50 percent of maximum per pile, the distances may be reduced 50 percent, but not less than 3 ft.

5.2.5 Open flames and smoking. Open flames, ignition sources and smoking is not be permitted in flammable or combustible liquid storage areas.

5.3 Drainage and Ventilation:

5.3.1 Drainage.

5.3.1.1 Emergency drainage systems will be provided to direct flammable or combustible liquid leakage and fire protection water to a safe location. This may require curbs, scuppers, or special drainage systems to control the spread of fire.

5.3.1.2 Emergency drainage systems, if connected to public sewers or discharged into public waterways, will be equipped with traps or separator.

5.3.2 Ventilation.

5.3.2.1 Class I liquids must be ventilated at a rate of not less than 1 cubic foot per minute per square foot of solid floor area. This must be accomplished by natural or mechanical ventilation with discharge or exhaust to a safe location outside of the building. Provision must be made for introduction of makeup air in such a manner as not to short circuit the ventilation. Ventilation must be arranged to include all floor areas or pits where flammable vapors may collect.

5.3.2.2 Equipment used in a building and the ventilation of the building must be designed so as to limit flammable vapor-air mixtures under normal operating conditions to the interior of equipment, and to not more than 5 feet from equipment which exposes Class I liquids to the air.

5.3.3 Maintenance. All fire protection systems will be adequately maintained and periodically inspected and tested to make sure they are always in satisfactory operating condition, and they will serve their purpose in time of emergency.

5.3.4 Sources of Ignition.

5.3.4.1 Adequate precautions must be taken by all employees' to prevent the ignition of flammable vapors. Sources of ignition include but are not limited to open flames; lightning; smoking; cutting and welding; hot surfaces; frictional heat; static, electrical, and mechanical sparks; spontaneous ignition, including heat-producing chemical reactions; and radiant heat.

5.3.5 Grounding. Class I liquids must not be dispensed into containers unless the nozzle and container are electrically interconnected.

5.4 Special Hazards:

5.4.1 Where the need is indicated by special hazards of operation, flammable or combustible liquid processing equipment, major piping, and supporting steel must be protected by approved water spray systems, deluge systems, approved fire-resistant coatings, insulation, or any combination of these.

5.5 Classes of Flammable and Combustible Liquids:

5.5.1 **FLAMMABLE LIQUIDS** are defined as liquids having flash points below 100F (37.8C) and a vapor pressure not exceeding 40 psia (276 kPA, 2.76 bar) at 100F (37.8C).

5.5.1.1 Flammable liquids are Class I liquids, and are subdivided as follows:

5.5.1.1.1 **CLASS 1A LIQUIDS** are those having flash points below 73F (22.8C) and a boiling point below 100F (37.8C).

5.5.1.1.2 **CLASS 1B LIQUIDS** are those having flash points below 73F (22.8C) and boiling points at or above 100F (37.8C).

5.5.1.1.3 **CLASS 1C LIQUIDS** are those having flash points at or above 73F (22.8C) and below 100F (37.8C).

5.5.2 **COMBUSTIBLE LIQUIDS** are liquids having flash points at or above 100F (37.8C).

5.5.2.1 Combustible liquids are either Class II or Class III liquids and are subdivided as follows:

5.5.2.1.1 **CLASS II LIQUIDS** are those having flash points at or above 100F (37.8C) and below 140F (60C).

5.5.2.1.2 **CLASS IIIA LIQUIDS** are those having flash points at or above 140F (60C) and below 200F (93.4C).

5.5.2.1.3 CLASS IIIB LIQUIDS are those having flash points at or above 200F (93.4C).

NFPA rating	Flash Point	Boiling Point
IA	<73F	<100F
IB&IC	<73F/>73F	>100F/<100F
II & IIIA	>100F but <200F	NA
IIIB	>200F	NA

Container Size				
NFPA	Glass	Safety Cans	Metal Drums	Approved Metal Tank
IA	1 PINT	2 GALLON	60 GALLON	660 GALLON
IB&IC	1 QUART	5 GALLON	60 GALLON	660 GALLON
II & IIIA	1 GALLON	5 GALLON	60 GALLON	660 GALLON
IIIB	5 GALLON	5 GALLON	60 GALLON	660 GALLON

NFPA	Incidental Use**	Storage in Cabinets
IA	25 GAL	60 GAL
IB&IC	120 GAL	60 GAL
II & IIIA	120 GAL	60 GAL
IIIB	120 GAL	120 GAL

** Store one shift's supply or the quantity in this table whichever is smaller

5.6 Housekeeping:

- 5.6.1 General. Maintenance and operating practices must be in accordance with established procedures that will tend to control leakage and prevent the accidental escape of flammable or combustible liquids. Spills must be cleaned up promptly.
- 5.6.2 Access. Adequate aisles must be maintained for unobstructed movement of personnel and so that fire protection equipment can be brought to bear on any part of flammable or combustible liquid storage, use, or any unit physical operation.
- 5.6.3 Waste and residue. Combustible waste material and residues in a building or unit operating area must be kept to a minimum, stored in covered metal receptacles and disposed of daily.
- 5.6.4 Clear zones. Ground area around buildings and unit operating areas must be kept free of weeds, trash, or other unnecessary combustible materials.

5.7 Recordkeeping:

- 5.7.1 Records will be kept for the following items and duration(s)
 - 5.7.1.1 Waste disposal information - 5 years or per State or Federal guidelines, whichever is longer.
 - 5.7.1.2 Inspection reports (informal audits) – until superseded or a formal audit takes place, whichever is longer.
 - 5.7.1.3 Audit reports (formal audits) – 3 years or until all corrective actions are completed, whichever is longer.
 - 5.7.1.4 Training records – until superseded or for the duration of employee assignment.

6. Training and Information.

- 6.1 All employees working with flammable and combustible liquids will receive initial training applicable to their areas of responsibility. Training will establish employee proficiency in hazard control methods and procedures, as necessary.
- 6.2 Training includes:
 - 6.2.1 Instruction in the purpose and use of applicable procedures. (Including employees are not directly affected by the use or storage of flammable and combustible materials but who require instruction about the procedures, and prohibitions relating to use and storage.)
 - 6.2.2 Recognition and control of applicable hazards.
 - 6.2.3 Use of personal protective equipment.
- 6.3 Training is performed:
 - 6.3.1 Whenever there is a change in their job assignments, a change in equipment or processes that present a new hazard, or when there is a change in these procedures.
 - 6.3.2 Whenever an audit or inspection reveals, or there is reason to believe, that there are deviations from or inadequacies in the employee's knowledge or use of these procedures.

7. Definitions.

- Fire Area - An area of a building separated from the remainder of the building by construction, having a fire resistance of at least 1 hr and having all communicating openings properly protected.

- Incidental Storage or use of Liquids - The use, handling and storage of liquids that is incidental to the operations. This can be further defined as the quantity of liquid that may be located outside of an inside liquid storage room or storage cabinet or in any one fire area of a building shall not exceed:
 - A supply for one shift, in safety cans or original shipping containers
 - 25 gallons of Class IA liquids in containers
 - 120 gallons of Class IB, IC, II, or III liquids in containers
 - Quantities for totes and portable tanks (Contact Insurance Carrier)
- Inside Liquid Storage Area - A room or building used for the storage of liquids in containers separated from other types of occupancies.
- Listed - Equipment or materials included in a list published by nationally recognized testing laboratories acceptable to the authority having jurisdiction and concerned with product evaluation, that maintains periodic inspection of production of listed approved equipment or materials and whose listing states either that the equipment or material meets appropriate standards or has been tested and found suitable for use in a specified manner.
- Safety Can - An approved, closed, metal container of not more than 5 gallons capacity, having a self-closing cap on the fill and pouring spouts, and may have a flame-arresting screen (viscous-liquid cans are not equipped with flame-arrestors and Waste-Liquid cans may have a latch to keep the fill cap open while adding waste material). The cap must be capable of safety relieving internal pressure when the can is exposed to fire or excessive heat.
 - Approved - Any container having the approval of Underwriters laboratory (UL) and or Factory Mutual (FM).
 - Closed - Sealed by means of a self-closing cap, so that neither liquid nor vapor will escape at ambient temperatures and pressures, or when tipped.
 - Flame-Arresting Screen - A perforated metal screen threaded into the fill and pouring spouts of safety cans to prevent ignition of the contents from external sources.
 - Self-Closing Cap Assembly - A gasket closure for the fill and pouring spouts. The cap is held open by applying hand-pressure on a spring-loaded lever and closes upon release.
- Storage Cabinets - Maximum Capacity. Not more than 60 gallons of Class I or Class II liquids nor more than 120 gallons of Class III liquids may be stored in a storage cabinet. The design and construction shall be based on 29 CFR 1910 Subpart H and NFPA-30. Not more than three storage cabinets shall be located in any one-fire area.

FLAMMABLE LIQUID STORAGE PROGRAM ASSESSMENT		
Unit Assessed:	Assessor:	Date:
Description of Requirement		Compliant?
General		
Are flammable liquid storage tanks (greater than 55 gallons) in conformance with OSHA 1910.106 and EPA requirements?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Are liquids appropriately classified in accordance with NFPA guidelines? Flammable Liquids <ul style="list-style-type: none"> • Class 1A = FP<73 & BP<100 • Class 1B = FP<73 & BP 100+ • Class 1C = FP 73-100 Combustible Liquids <ul style="list-style-type: none"> • Class II = FP 100-139 • Class IIIA = FP 140-199 • Class IIIB = FP 200+ 		<input type="checkbox"/> Yes <input type="checkbox"/> No
Are storage and dispensing areas frequently inspected to ensure that materials are properly stored and dispensed, materials are compatible, and quantities are not exceeded?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Are flammable liquids stored in the appropriate type of container and within restricted amounts? Glass: <ul style="list-style-type: none"> • Glass...1A=1pt; 1B=1qt; 1C&II=1gal; III=5 gal • Safety Can...1A = 2 gal; all others = 5gal • DOT Metal Drum...60 gallon for all classes • Metal Tanks---660 gallon for all classes 		<input type="checkbox"/> Yes <input type="checkbox"/> No
Are flammable liquid storage quantities limited, based on the liquid's Class? <ul style="list-style-type: none"> • Class 1A - 25gal incidental and 60gal per cabinet • Class 1B and 1C - 120gal incidental and 60gal per cabinet • Class II and IIIA - 120gal incidental and 60gal per cabinet • Class IIIB - 120gal incidental and 120gal per cabinet • Storage Rooms <150 square feet = 5gal per sq. ft. • Storage Rooms >150<500 sq. ft. = 10gal per sq.ft. • Storage Rooms >500 sq. ft. = contact FES/ins. carrier 		<input type="checkbox"/> Yes <input type="checkbox"/> No
Storage Amounts		
Are safety cans limited to 5 gallons or less of a Class 1A liquid?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Are safety cans located on open steel shelving in a sprinkler-protected areas limited to 5 cans of 5 gallons (25 gallon maximum) of a Class 1A liquid?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Are safety cans (full or partially full) prohibited from being stored in areas not protected by sprinkler systems or other equivalent automatic fire protection?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Are flammable storage cabinets limited to 60 gallons or less of a Class 1A liquid?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Are flammable liquid storage cabinets limited to a maximum of three per fire area?		<input type="checkbox"/> Yes <input type="checkbox"/> No
For flammable liquid storage rooms, has the insurance carrier set and agreed upon the limits for amounts and types of materials stored?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Are flammable liquid storage limits for cans, cabinets and rooms enforced by the company?		<input type="checkbox"/> Yes <input type="checkbox"/> No

Description of Requirement	Compliant?
Does the FES (Fire and Emergency Services) provider and the insurance carrier agree upon any deviations from these set limits?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are MSDS's immediately available for any flammable liquid that is stored, dispensed or used?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are amounts in excess of 25 gallons of Class IA liquids or 120 gallons of Class IB, IC, II or III liquids stored in a flammable storage cabinet?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Flammable Cabinet Requirements	
Are flammable storage cabinets limited to 60 gallons or less of a Class 1A liquid? (120 gallons max per cabinet of class I, II and IIIA liquids, of this not more than 60 gallons can be Class I and II.)	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are flammable liquid storage cabinets limited to a maximum of three per fire area? (additional group of 3 may be stored in the same area if separated by 100+ feet.)	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are flammable liquid storage limits for cans, cabinets and rooms enforced by the company?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Does the FES (Fire and Emergency Services) provider and the insurance carrier agree upon any deviations from these set limits?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Sprinklers are not generally required in approved, listed flammable cabinets, however, based on the amounts and types of storage, when required, are the activation systems and components in good working order?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are cabinets stable and pose no potential for overturning?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Where cabinet venting is not required, are vent openings tightly closed and capped with the metal bungs provided with the cabinet?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Where cabinet venting is required to maintain an LEL (Lower Explosive Limit), does the cabinet venting system conform to the requirements of NFPA-30?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Is design, construction and capacity requirements posted on the cabinet?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are all cabinets of the approved type? Approval being from UL, FM or other NRTL (nationally recognized testing laboratory).	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are all cabinets without modifications or holes drilled in them? (Modifications without NRTL approval may nullify the effectiveness of the cabinet, and render it as an inappropriate storage cabinet.)	<input type="checkbox"/> YES <input type="checkbox"/> NO
Safety Can Requirements	
Are all safety cans inspected prior to filling or dispensing to ensure they: <ul style="list-style-type: none"> • Are of the approved type (UL/FM/NRTL) • Have closures that operate properly (spring, tension, alignment) • Have correct labeling information (contents and hazard rating codes) • Have all the required parts, including flame arrestors. (Without flame arrestors, the can is no longer listed and approved for flammable liquid storage or handling) • Are free of dents or corrosion that could interfere with the safe and proper use of the can. 	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are all safety cans labeled with the name of the contents (by adhesive sticker or paint)?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Is the can label maintained in legible condition?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are NFPA, HMIS or other equivalent hazard rating system labels affixed to the container?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are cans which are not used in the immediate area labeled with the user's name and contact information? (recommended not required)	<input type="checkbox"/> YES <input type="checkbox"/> NO
After initial dispensing and prior to transportation to the user work area, is the can checked for leaks at seams (potentially indicated by accumulation of moisture along welded joints) and leaks at the gaskets?	<input type="checkbox"/> YES <input type="checkbox"/> NO

Description of Requirement	Compliant?
Are cans inspected each time they are emptied?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are defective cans immediately tagged and removed from service until repaired or destroyed? (Note most repairs are prohibited, including soldering or flattening of dents, and will result in loss of the can's listing approval)	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are plastic cans restricted to corrosive substances or for quantities of 2.5 gallons or less?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are bench-top cans used only for saturating sponges, cloths or similar products, or for small parts cleaning?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are bench top cans equipped with a spring mounted flame arrestors and hand-pressable dasher that provides access to the liquid?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Do bench top can dashers automatically return to normal position allowing excess fluid to drain back into the can, once the liquid is dispensed?	<input type="checkbox"/> YES <input type="checkbox"/> NO
When bench-top cans are used, are gloves (compatible with the liquid dispensed) used to protect the user's skin?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are bench-top cans covered when not in use to prevent or minimize escaping vapors?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are cans equipped with only one opening that is used for both filling and pouring?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are safety cans primarily limited to temporary storage of flammable liquids, and not used as permanent storage devices?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are special viscous-liquid cans used for storing and dispensing viscous-liquids or suspension fluids? (These do NOT have flame arrestors, as the liquid is too thick and would clog the arresting screen)	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are waste liquid cans (equipped with a latch to keep the fill cap open while adding waste material) used only for the accumulation and disposal of flammable or combustible liquid wastes?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are latches on waste liquid cans immediately closed once waste materials are added, to prevent the escape of vapors?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are flame arrestors present on all waste liquid cans (except viscous liquid waste cans where the arrestor may become clogged)?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Laboratory and Other Specialized Environments	
Does laboratory storage of flammable liquids conform to the requirements of NFPA-45?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Where the presence of hazardous vapors or combustible dusts requires, are electronic portable devices restricted or prohibited in areas?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Where the presence of hazardous vapors, combustible dusts or large amounts of flammable liquid requires, are flame producing devices restricted or prohibited in areas?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Dispensing into Safety Cans or Other Approved Containers	
Are Class I and II liquids only dispensed from: <ul style="list-style-type: none"> • 5 gal original shipping containers • safety cans • closed piping systems • portable tanks/containers provide it is drawn through the top • tanks or containers with a self-closing valve or faucet (by gravity or approved pump) 	<input type="checkbox"/> YES <input type="checkbox"/> NO
Is air-pressure transfer prohibited?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Is grounding and electrically bonding of containers required for all dispensing activities to prevent static spark discharge during transfer?	<input type="checkbox"/> YES <input type="checkbox"/> NO

Description of Requirement	Compliant?
Is electrical bond made prior to opening any filling holes and starting flow, and is bond maintained until filling holes are closed?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are all dispensing cans equipped with nozzles or faucets to facilitate pouring liquids into containers with small fill-openings?	<input type="checkbox"/> YES <input type="checkbox"/> NO
TANKS SECTION	
Structure and Materials of Construction	
Are tanks made of steel (exception for when the liquids properties prohibit the use of steel)? [1910.106b1i]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are tanks designed to meet the specifications of good engineering practice?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are steel tanks constructed via welding, rivets, caulking, brazing (non-ferrous filler metal), bolts or combinations therein?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are any atmospheric tanks built to UL-142 (limited to 2.5psig emergency venting and 1psig normal operating pressures), or built to APIS-12A, B or F standards?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are any low-pressure tanks built to APIS-620 or ASME Boiler and Pressure Vessel codes?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Is suitable corrosion protection provided either by design, materials of construction or additional measures?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Tank Operating Pressures AST's	
Is it ensured that any atmospheric tanks do not store liquids at temperatures/pressures above their boiling point?	<input type="checkbox"/> YES <input type="checkbox"/> NO
For low pressure tanks and vessels, is a system in place to ensure that the operating pressure does not exceed tank limits?	<input type="checkbox"/> YES <input type="checkbox"/> NO
For pressure vessels, is a system in place to ensure that the operating pressure does not exceed design limits?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Tank Distances AST's	
For Above-Ground Storage Tanks (AST's) is a distance of at least three feet maintained between tanks or 1/6 th the sum of the tank diameters (1/2 the sum for unstable liquids), whichever is greater?	<input type="checkbox"/> YES <input type="checkbox"/> NO
In all cases, is enough space between tanks to assure adequate fire protection?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Is the distance between any LP-gas container and flammable liquid storage at least 20 feet?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are flammable liquids prevented from accumulating underneath LP-gas vessels?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Tank Venting and Gauge Openings AST's	
Are AST's adequately vented to prevent vacuum or pressure increases that may distort the tank or exceed design-pressure specifications?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are AST vents sized in accordance with APIS-2000 or an equivalent standard?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are AST vents at least 1 ¼ inch inside diameter or as large as the filling/withdrawal connection (whichever is larger)?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are tanks with multiple withdrawal/filling connections vented adequately to allow for simultaneous flow?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are low-pressure tanks adequately vented to prevent the development of a pressure or vacuum that exceeds design-pressure specifications?	<input type="checkbox"/> YES <input type="checkbox"/> NO

Description of Requirement	Compliant?
Are low-pressure tanks that use dispensing pumps protected from overpressure of the pump into the tank?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are vents for tanks and pressure vessels that contain any class I liquid normally kept closed?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are flame arrestors installed on tanks and pressure vessels that contain Class 1A liquids? (Class 1B and 1C liquids may have them omitted in cases where they obstruct and potentially cause damage to the tank)	<input type="checkbox"/> YES <input type="checkbox"/> NO
Do all AST's have emergency devices to relieve excessive internal pressure from an internal fire? (Vertical AST's may have roof construction/attachment to facilitate the emergency venting)	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are all AST emergency venting devices of sufficient capacity to prevent tank shell rupture from the side(s) or bottom during an internal fire? [see 29CFR1910.106(b)2v(c,d,e) and Table H-10 for calculation formulas and limits]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Do tank vents s have the required airflow rate? [29CFR1910.106(b)2v(f)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are all tank vent outlets designed to relieve pressure at levels greater than 2.5psig, and arranged so that the discharge prevents tank overheating should the vented vapors be ignited?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Do all tank vents have the opening pressure, full-open pressure, flow capacity stamped on them?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Do gauge openings have a vapor-tight cap or cover?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are fill pipes designed and installed to minimize static electricity generation?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Do fill pipes terminate within 6 inches of the bottom of the tank and are installed to minimize vibration?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are filling and emptying connections located at least 5 feet away from buildings, and in areas free from ignition sources?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are filling and emptying connections closed and liquid-tight when not in use?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Tank Vent Piping, and Drainage AST's	
Do AST tanks that have class 1A liquids have vents at least 12 feet in height and a safe distance from any public access way, and at least 5 feet from any building?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are vent pipes of adequate size to handle the capacity of discharge?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are flammable liquids prevented from accumulating underneath LP-gas vessels?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Is any tank drainage system capable of preventing leaks or discharges from reaching adjoining property or waterways?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Is secondary containment (natural drainage or dike, or manmade containment) capable of handling at least the volume of the largest tank?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Is secondary containment so located so that if the discharge was to ignite, that any fire will not seriously expose tanks or adjoining property?	<input type="checkbox"/> YES <input type="checkbox"/> NO
For Dike Containment, are walls made of earth, steel concrete or solid masonry?	<input type="checkbox"/> YES <input type="checkbox"/> NO
For Dike Containment, are walls liquid tight and able to withstand a full hydrostatic head?	<input type="checkbox"/> YES <input type="checkbox"/> NO
For Dike Containment with Earthen Walls, are walls at least 3 feet in height have a flat section at the top at least 2 feet wide and less than 6 feet high from the interior grade?	<input type="checkbox"/> YES <input type="checkbox"/> NO
For Dike Containment with Earthen Walls, do walls have appropriate slope based on the soil classification of the earthen material? NOTE: For classifications see 29CFR1926 Subpart P Appendix A.	<input type="checkbox"/> YES <input type="checkbox"/> NO

Description of Requirement	Compliant?
Installation UST's	
For any new or replacement tank installation is: <ul style="list-style-type: none"> • Care taken not to undermine the foundation/structure of the building • Engineering ensured (and in writing) that the load of the building can not be transmitted to the tank • The tank at least 1 foot outside any building and at least 3 feet from a property line for Class 1 liquids, and 1 foot for Class II and III liquids? 	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are tanks set on firm foundations and surrounded by well-tamped inert materials?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are tanks lowered with care so as not to roll them, break welds, puncture or damage the tank or its coatings?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are tanks covered with at least 2 feet of earth (or 1 foot of earth covered by 4 inches of reinforced concrete)?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are tanks located over roadways or access roads covered with at least 3 feet of earth or 18 inches of well-tamped earth plus 6 inches of reinforced concrete (or 8 inches of asphaltic concrete)?	<input type="checkbox"/> YES <input type="checkbox"/> NO
If asphaltic concrete is used, does the asphalt extend at least 1 foot horizontally beyond the outline of the tank in all directions?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Is corrosion protection provided by applied coating, cathodic protection or corrosion resistant materials of construction?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Venting UST's	
Are vents of adequate size to prevent backflow during filling and at least 1 ¼ inch nominal inside diameter?	<input type="checkbox"/> YES <input type="checkbox"/> NO
For Class 1 liquids vents must be located so the discharge pipes: <ul style="list-style-type: none"> • Are outside of buildings • Are higher than the pipe fill opening • Are at least 12 feet in height above ground level • Vent only upward to disperse vapors • Remain unobstructed by back flow prevention devices • Prevent vapors from entering building openings • Prevent vapors from being trapped under eaves and obstructions • Have flame arrestors or vacuum and pressure relief devices (if they are <10 ft in length or >2 inches in diameter) 	<input type="checkbox"/> YES <input type="checkbox"/> NO
Do vents for Class II and III liquids terminate outside buildings and at a point higher than the fill opening?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are vent opening higher than snow levels?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are vents covered with screens, bends or other devices to minimize ingress of foreign materials? (Recommended, not required)	<input type="checkbox"/> YES <input type="checkbox"/> NO
Is vent piping so located so that liquid drains toward the tank?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Is vent piping so located to prevent accumulation of liquid in a sag, bend or trap?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Is vent piping located to minimize physical or environmental damage?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Does the tank end of the vent piping enter through the top of the tank?	<input type="checkbox"/> YES <input type="checkbox"/> NO
If manifolded, are pipe sizes adequate to discharge the vapors if tanks are filled simultaneously?	<input type="checkbox"/> YES <input type="checkbox"/> NO

Description of Requirement	Compliant?
Tank Openings (Other than vents) UST's	
Are openings vapor or liquid tight?	<input type="checkbox"/> YES <input type="checkbox"/> NO
If manually gauged and independent of the fill pipe, is the opening provided with a liquid-tight cap or cover?	<input type="checkbox"/> YES <input type="checkbox"/> NO
If manually gauged and independent of the fill pipe AND located inside a building, is the opening protected against overflow and vapor release via a spring-loaded check valve or other approved equivalent device?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Do fill and discharge lines enter the tank only at the top?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are all fill lines sloped toward the tank?	<input type="checkbox"/> YES <input type="checkbox"/> NO
For Class 1B and 1C liquids, is the pipe designed and installed to minimize static electricity (i.e. terminates w/in 6 inches of the bottom of the tank)?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are all filling and emptying connections located at least 5 feet from the outside of any building opening and free from contact with any potential ignition sources?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are filling and emptying connections kept closed and liquid tight when not in use?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are all filling and emptying connections properly identified?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Inside Building UST's	
Are emergency vents constructed with strong roof seams (weak roof seams are not permitted on inside UST's)?	<input type="checkbox"/> YES <input type="checkbox"/> NO

PROGRAM OVERVIEW

FORKLIFT/POWERED INDUSTRIAL TRUCK (PIT) SAFETY PROGRAM

REGULATORY STANDARD: OSHA - 29 CFR 1910.178

INTRODUCTION: This program addresses employee training, certification, truck requirements, battery charging and changing, and general operation including loading & unloading, parking and refueling of powered industrial trucks (forklifts, powered pallet jacks, sit-down, stand-up straddles, order pickers, and other special use materials handling equipment) powered by either electric motors or internal combustion engines.

TRAINING:

- Forklift and Pallet Jack operators trained (classroom)
- Forklift and Pallet Jack operators undergo practical exam in the workplace

ACTIVITIES:

- Ensure operators inspect equipment each work shift the lift is used
- Ensure operators are trained to operate the lift
- Ensure forklift operators are issued licenses (renewed every 3 years)

FORMS:

- Forklift Operator Daily Inspection Checklist
- Forklift Operator Evaluation Worksheet.
- Forklift Operator Certification Log
- Forklift Operating Use Requirements
- Training Completion Certificate
- Training Wallet Cards
- Program Assessment
- Pallet Jack Daily Inspection Checklist
- Pallet Jack Operator Evaluation Assessment
- Training Attendance Roster
- Truck Designations and Truck Use in Hazardous Atmospheres
- Operating Rules Poster (California)

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- 1. Purpose**
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Forklift/Powered Industrial Truck (PIT) Safety Program

- 1. Purpose.** This document defines the process for managing powered industrial trucks (forklifts, walk-behinds, sit-down, stand-up straddles, order pickers, and other special use materials handling equipment) powered by either electric motors or internal combustion engines.
- 2. Scope.** Applies to all locations where Powered Industrial Trucks (PITs) and similar equipment are used or maintained. This procedure covers operator selection, training, equipment operations, and maintenance. Man-lifts, scissor lifts and other personnel lifting equipment are covered in a separate procedure.
- 3. Responsibilities.**
 - 3.1 Management will:
 - 3.1.1 Identify the tasks that require a PIT.
 - 3.1.2 Assure the correct type of equipment is purchased.
 - 3.1.3 Document workplace specific procedures that outline the operation, and limitations, of PIT use on company premises.
 - 3.1.4 Assure operators are initially trained and relicensed every 3 years.
 - 3.1.5 Ensure vehicle inspections take place at required intervals.
 - 3.1.6 Assure appropriate aisle space and turning distances are maintained.
 - 3.1.7 Annually evaluate the PIT Program to assure it is relevant and functioning properly.
 - 3.1.8 California requires the Operating Rules poster be displayed in the work area.
 - 3.2 Safety Officer must (as needed):
 - 3.2.1 Work with the management to assure appropriate PPE and emergency equipment is provided.
 - 3.2.2 Assist in the development of workplace specific PIT operation rules and procedures.
 - 3.2.3 Evaluate the course content of the various PIT training courses, assuring they meet the requirements of the OSHA standard, and any additional company requirements as outlined in this procedure.
- 4. Procedure.**
 - 4.1 Facility Requirements:
 - 4.1.1 Any use of a PIT must be in accordance with the requirements and limits identified in the owner's manual from the manufacturer. Develop and document appropriate workplace specific rules and procedures, where required.

- 4.1.2 Maintain appropriate aisle spacing; consider the width requirements of the equipment, any approved aisle storage and pedestrian aisle-width requirements.
- 4.1.3 Lighting (2 lumens per ft²) must be available or directional lighting must be provided on the vehicle.
- 4.1.4 Where noxious gas can accumulate from the vehicle exhaust, additional ventilation may be required.
- 4.1.5 Chocks used and brakes must be applied (or other positive protection provided) to prevent movement during loading and unloading for any highway trucks, railcars or similar vehicles.
- 4.1.6 Dock-boards and bridge-plates that meet OSHA requirements must be provided, as needed.
- 4.1.7 Emergency eyebaths, safety showers and PPE requirements:
 - 4.1.7.1 Charging Areas Only: Eye baths and safety showers are generally not required. PPE is generally not required for this task.
 - 4.1.7.2 Charging and Watering Stations: Eye baths and safety showers are generally not required; no additional PPE is generally required for this task. In situations where a battery is over filled or has boiled over and a spill results the following PPE will be required for clean-up: Neoprene gloves, chemical face shield, neoprene apron and safety glasses with side shields. All spills must be reported to area management at which time operations can decide if they want the emergency responders to clean up the spill, or if employees have the skills, equipment and training to respond.
 - 4.1.7.3 In California, eyebaths and safety showers, and either safety glasses with side shields or goggles are required for PIT battery charging or watering stations for any vehicle that is not rated EE or EX (explosion resistant). The only exception is in the automotive servicing and parts stores if neutralizing equipment is available, or if adequate water is available or if the transfer system is entirely a closed system and acids are handled separately.
 - 4.1.7.4 Battery Changing Areas:
 - 4.1.7.4.1 Eye baths are required.
 - 4.1.7.4.2 An alternative means of quick drenching (for example a water hose, or emergency shower) must also be available in the event of a splash to the body.
 - 4.1.7.4.3 The PPE required for this task are: safety glasses, neoprene gloves, apron, chemical face shield and steel toed safety shoes.

- 4.1.7.4.4 Overhead cranes or hoisting equipment must be provided for changing batteries.
- 4.1.7.4.5 Flushing and neutralizing equipment must be provided to assist the spill response and clean-up to flush any spilled electrolyte.
- 4.1.7.5 Electrolyte Handling/Addition: Eye baths and safety showers are required. The PPE required for this task are: safety glasses with side shields (or goggles), neoprene gloves, apron and chemical face shield. Flushing and neutralizing equipment must be provided to assist the spill response and clean-up to flush any spilled electrolyte.
- 4.1.8 California businesses must include in the training program, must post and must enforce a set of operating rules for the operators. This must occur at the time of initial assignment and at least annually thereafter.
 - 4.1.8.1 Copies of these operating rules for California must be conspicuously posted in either English or Spanish (so they can be understood by the majority of the employees).

4.2 PIT Vehicle Requirements:

- 4.2.1 Restraint systems such as seat belts must be worn at all times when operating PITs, equipped with such devices.
- 4.2.2 Ensure that all equipment is inspected at the beginning of each user's shift. Operators should look for equipment operational deficiencies and other items that would impact the safe use and operation of the truck. Inspections should be documented. Use the inspection checklist form included with this program, or an equivalent document.
- 4.2.3 Ensure defective equipment is immediately removed from service (including all electric, mechanical, and hydraulic components) and repaired by authorized personnel.
- 4.2.4 All trucks must be labeled, and this label maintained in a legible and readable condition. The label must indicate that the truck was approved by a recognized testing laboratory (such as UL, FM or other agency) and meets ANSI requirements for PITs.
 - 4.2.4.1 Attachments supplied by the manufacturer must be labeled with the truck weight and maximum elevation allowed.
- 4.2.5 Platforms attached to the forks of a PIT for elevating personnel must be reviewed and approved (by either the safety officer or company management) before use. Consideration should be given to using scissors lifts or boom lifts for these activities.
 - 4.2.5.1 When personnel are elevated in PITs they must be protected from falls. "Order Pickers" and "Man-A-Board" type vehicles generally have an operator position that is protected by guardrails. If the operator leaves this position they must be provided with fall protection.

- 4.2.6 Modifications to vehicles are not allowed without manufacturer's written approval.
- 4.2.7 Where provided on EE or EX rated PITs, the cover of the battery compartment must be closed and locked.

4.3 Truck Operations:

- 4.3.1 Trucks shall not be driven up to anyone.
- 4.3.2 People may not pass underneath raised forks, or any portion of the truck.
- 4.3.3 Only trained, licensed employees may drive or ride on PITs.
- 4.3.4 Arms and legs (and other body parts) must remain inside the running lines of the PIT during operation and movement.
- 4.3.5 When the operator dismounts from the vehicle, the load or forks must be fully lowered, the controls neutralized and the brakes set. The power must be shut off if the vehicle is considered unattended (i.e. operator is out of view of the PIT or more than 25 feet away).
- 4.3.6 Safe distances from the edge of ramps or platforms must be maintained in dock areas. PITs may not be used to assist in the opening or closing freight doors.
- 4.3.7 Headroom overhead installations, lights, pipes, sprinkler heads, etc. maintained.
- 4.3.8 An overhead guard will be used when there are hazards from falling objects. It should be noted that an overhead guard is intended to offer protection from the impact of small packages, boxes, bagged material, etc., not to withstand impact of a full load.
- 4.3.9 A load backrest extension may be used to prevent the load from falling rearward.
- 4.3.10 Only approved industrial trucks shall be used in hazardous locations.
- 4.3.11 Fire aisles, access to stairways, and fire equipment shall be kept clear.
- 4.3.12 Three truck lengths, at least, will be maintained when more than one PIT is used.
- 4.3.13 Standard roadway driving rules apply (stay to the right, no passing at intersections, stop at corners and crosswalks, negotiate turns at a slower speed, etc.).
- 4.3.14 Operators are required to face the direction of travel, keeping a clear view of the travel path. If the load being carried obstructs the forward view, the operator will travel with the load trailing. If ramps or inclines >10% are encountered, the driver will turn the load to the front to prevent the load from slipping.
- 4.3.15 Where possible, loads should be tilted back and raised only as far as necessary to clear the floor surface.

- 4.3.16 Under all conditions, the speed of the vehicle should be so that it can safely stop. Wet and slippery surfaces must be considered when gauging the speed of the vehicle. Loose objects on the floor should be avoided.
- 4.3.17 Elevators should be entered slowly, only after assuring they are leveled. While on an elevator, PIT controls should be shut off and brakes set. Hand trucks should enter the elevator with the load end forward.
- 4.3.18 Dock-boards and bridge plates must never have their rated capacity exceeded.
- 4.3.19 Stunt driving and horseplay is not permitted.
- 4.4 Records and Documentation:
 - 4.4.1 Workplace specific training (initial and retraining) records. An *Operator Evaluation Form* must be retained. (A sample form is provided with this program, this or an equivalent form **must** be retained as documentation of the operator evaluation).
 - 4.4.2 Training records for current operators **must** be retained for the duration they will operate the vehicle. Records *should* be retained for 3 years after this point or until superceded by records for retraining.
 - 4.4.3 It is *recommended* that operators read and sign the “PIT Operator Performance Requirements” form to indicate that they understand and will adhere to the safety rules set forth when operating a PIT.

5. Safety Information.

- 5.1 Battery Charging:
 - 5.1.1 Add acid into water, not water into acid.
 - 5.1.2 Performed in designated areas only.
 - 5.1.3 Ventilation provided for battery off-gassing.
 - 5.1.4 Vent caps function to dissipate heat during charging.
 - 5.1.5 PIT parked and brake applied before charging.
 - 5.1.6 Smoking and other ignition sources are prohibited in the area (30 feet recommended).
 - 5.1.7 Metallic tools must be kept away from the tops of batteries.
- 5.2 Battery Changing:
 - 5.2.1 Hoisting equipment provided for changing batteries.
 - 5.2.2 PIT parked and brake applied before charging.
 - 5.2.3 Metallic tools must be kept away from the tops of batteries.

5.3 Electrolyte handling:

- 5.3.1 Spill Protective Equipment provided for flushing and neutralizing electrolyte.
- 5.3.2 Carboy tilter or siphon system provided for handling electrolyte.
- 5.3.3 Open flames may not be used to view or check electrolyte levels.

5.4 Fuel Tanks:

- 5.4.1 May not be filled while the engine is running.
- 5.4.2 Spill must be carefully washed away or completely evaporated before restarting.
- 5.4.3 Fuel caps must be in place before starting and at all times (except during filling).
- 5.4.4 Leaks must be corrected before use; leaking vehicles must be immediately removed from service. Repairs must be made by authorized persons only.
- 5.4.5 Liquid fuels such as gasoline and diesel fuel must be handled in accordance with NFPA standards for Flammable and Combustible Liquids.
- 5.4.6 Liquefied petroleum gas (LP Gas) storage and handling must be in accordance with NFPA standards for the Storage and Handling of Liquefied Petroleum Gases.

5.5 Safety Guards:

- 5.5.1 High Lift Rider trucks must be fitted with an overhead guard, unless operating conditions do not permit.
- 5.5.2 If the type of load presents a hazard, fork trucks will be equipped with a vertical load backrest extension.

5.6 Dock-boards and Bridge plates:

- 5.6.1 All dock-boards and bridge plates must be strong enough to carry the load imposed.
- 5.6.2 Portable dock-boards will be secured in position, either by being anchored or equipped with devices which will prevent their slipping.
- 5.6.3 Powered dock-boards shall be designed and constructed in accordance with US Department of Commerce standards for Commercial Industrial Lifts and Hinged Loading Ramps.
- 5.6.4 Handholds, or other effective means, shall be provided on portable dock-boards to permit safe handling.
- 5.6.5 Positive protection shall be provided to prevent trucks, trailers, railroad cars and other vehicles from being moved while dock-boards or bridge plates are in position.

6. Training and Information.

6.1 Initial Training:

6.1.1 Must occur before operators are allowed to operate a PIT unsupervised, and such operations may not endanger either the operations or the trainee. Training includes:

6.1.1.1 Initial information (classroom, discussion, interactive computer or video)

6.1.1.2 Evaluation and instruction on the operation of the PIT at the workplace

6.1.2 Initial Training must provide for:

6.1.2.1 PIT operation training provides skills and knowledge related to the specific truck the operator is authorized to drive. These include: truck controls, steering, vehicle stability and capacity, inspections, refueling or charging/changing of batteries, and any specific operating limitations. It also must include training in the use of any attachments.

6.1.2.2 An evaluation of the operator, in the workplace, performing typical PIT, personnel and burden carrier operations must occur initially (and again every 3 years). An *Operator Evaluation Form* must be used to document the evaluation of PIT operators. This form should be "customized" by the area where the PIT is used, to include appropriate workplace specific aspects of PIT operations, as mentioned above. A sample form is provided with this program.

6.1.2.2.1 Suggested topics for "customization" of the workplace evaluation form include: ramps and surfaces, narrow aisles, movement and manipulation of loads, visibility, pedestrian awareness, ventilation issues for exhaust fumes, uses in hazardous (classified) locations, elevators, dark or low light conditions, PPE, restraint systems, and emergency equipment procedures.

6.1.3 Each operator's performance should be evaluated on an ongoing basis to ensure PITs are operated as designed and in a safe manner. Retraining in the relevant topics and documented performance evaluations (to ensure operators understand the retraining) are required when; the operator is observed to be operating unsafely, there is an accident or near-miss, an evaluation reveals unsafe truck operation, a different type of truck or one with different controls is utilized, or a condition changes in the workplace that could affect safe truck operation.

6.1.4 If desired, require all operators to sign a statement signifying that they understand and agree to comply with *Operator Performance Requirements*.

6.2 Refresher Training:

6.2.1 Refresher training must be provided to PIT Operators that is at least equivalent to the initial training when the following occur:

- 6.2.1.1 Operators are observed to operate the vehicle in an unsafe manner
- 6.2.1.2 Operators are involved in an accident or near-miss incident
- 6.2.1.3 Operator evaluations determine that retraining is required
- 6.2.1.4 Operators are assigned to a different type of vehicle
- 6.2.1.5 Conditions in the workplace change which impact the vehicle operation e

6.3 Licensing (every 3 years):

6.3.1 Formal performance evaluations must be conducted and documented at least every 3 years. This evaluation should be "customized" by the area using the PIT, to include appropriate workplace specific aspects of PIT operations. Documentation is required to be retained as part of the regulations. Evidence that the operator took the class (via sign in sheet or other similar evidence) is **not** a substitute for a retained and documented *Operator Evaluation Form*. An *Operator Evaluation* form or equivalent must be used to document the evaluation.

6.3.2 All operator training and evaluation shall be conducted by persons who have the knowledge, training, and experience to train powered industrial truck operators and evaluate their competence in the workplace. A trained operator, who has knowledge of the application and use of the PIT at the workplace, may be competent to perform the evaluation and training for new operators.

7. Definitions.

- *PIT* - A Powered Industrial Truck such as a forklift or fork-truck, tractor, platform lift truck, motorized hand truck or other specialized industrial truck powered by an electric motor or internal combustion engine.

FORKLIFT OPERATOR DAILY INSPECTION CHECKLIST		
ACCELERATOR, TRANSMISSION & SERVICE BRAKES	ENERGY SYSTEM	MAST & TILT CYLINDERS
	<i>[Battery Powered]:</i>	
<input type="checkbox"/> Forklift accelerates smoothly	<input type="checkbox"/> Battery mounting secure	<input type="checkbox"/> Lifts carriage to maximum height
<input type="checkbox"/> Brakes slow forklift without jerking or locking	<input type="checkbox"/> Battery casing in good shape	<input type="checkbox"/> Lowers carriage to just above floor
<input type="checkbox"/> Brakes not too soft	As Needed: <input type="checkbox"/> All connections secure <input type="checkbox"/> Proper fluid level <input type="checkbox"/> Vent holes are clear	<input type="checkbox"/> Carriage moves smoothly & completely
<input type="checkbox"/> Forklift moves forward properly		PARKING BRAKES
<input type="checkbox"/> Forklift moves backward properly		<input type="checkbox"/> Parking brake prevents movement
<input type="checkbox"/> Backup signal sounds when moving in reverse	<i>[Gas, Propane, Diesel]:</i>	
CARRIAGE/MAST/BACKREST	<input type="checkbox"/> Tanks undamaged (cracks, welds, other damage)	STEERING
<input type="checkbox"/> No visible damage	<input type="checkbox"/> Valves and couplings okay	<input type="checkbox"/> Wheel turns while stopped
<input type="checkbox"/> Secure mountings	<input type="checkbox"/> Mounting hardware secure	<input type="checkbox"/> Wheel turns while moving
<input type="checkbox"/> No broken welds	ENGINE	<input type="checkbox"/> Wheel turns forklift smoothly & precisely
<input type="checkbox"/> Roller tracks lubricated	<input type="checkbox"/> No visible leaks underneath	<input type="checkbox"/> No strange noise or hesitation
CHAINS	GUARDS	IDENTIFICATION PLATE
<input type="checkbox"/> Clean & lubricated with no visible wear with equal tension	<input type="checkbox"/> No broken welds or visible damage, mountings secure	<input type="checkbox"/> Readable
COMPONENT TIRES	HORNS & LIGHTS	REACH LIFT
<input type="checkbox"/> No excessive wear splitting or missing material	<input type="checkbox"/> Working properly	<input type="checkbox"/> No damage to harness
<input type="checkbox"/> Wheel nuts and rim condition good	FORKS	Deficiencies Noted and Reported or Comments:
<input type="checkbox"/> No separation of rubber and rim	<input type="checkbox"/> Centered on carriage and equally spaced	
<input type="checkbox"/> Proper tires and/or tire pressure	<input type="checkbox"/> No cracks or other damage	
CYLINDERS/HYDRAULIC LINES	<input type="checkbox"/> Locking pins work correctly	
<input type="checkbox"/> Hydraulic fluid at proper levels	GAUGES	
<input type="checkbox"/> No damage to or fluid leaking from lift & tilt cylinders	<input type="checkbox"/> All gauges work properly	
<input type="checkbox"/> Cylinder mounting hardware secure	<input type="checkbox"/> All indicators work properly	
<input type="checkbox"/> Hydraulic lines and hoses okay	<input type="checkbox"/> Moving parts work smoothly & properly	
<input type="checkbox"/> Secure fitting connections		
SIGNATURE:		DATE:

FORKLIFT OPERATOR EVALUATION ASSESSMENT					
<i>This form (or its equivalent) must be retained for records management for 3 years or until superseded.</i>					
Equipment Operated (make/model):					
Name of Operator:			Employee Identification#:		Date:
Signature of Operator:			Signature of Evaluator:		
YES	NO	Activity	YES	NO	Activity
<input type="checkbox"/>	<input type="checkbox"/>	Performs pre-shift checks			
UNDERSTANDS CONTROLS					
<input type="checkbox"/>	<input type="checkbox"/>	Forward/reverse	<input type="checkbox"/>	<input type="checkbox"/>	Service brake
<input type="checkbox"/>	<input type="checkbox"/>	Lift/tilt	<input type="checkbox"/>	<input type="checkbox"/>	Instrumentation
<input type="checkbox"/>	<input type="checkbox"/>	Steering technique	<input type="checkbox"/>	<input type="checkbox"/>	Attachment
<input type="checkbox"/>	<input type="checkbox"/>	Parking brakes			
TRUCK HANDLING					
<input type="checkbox"/>	<input type="checkbox"/>	Smooth starts/stops	<input type="checkbox"/>	<input type="checkbox"/>	Smooth/controlled turns
<input type="checkbox"/>	<input type="checkbox"/>	Inching/plugging	<input type="checkbox"/>	<input type="checkbox"/>	Clears obstacles safely
<input type="checkbox"/>	<input type="checkbox"/>	Approach is square	<input type="checkbox"/>	<input type="checkbox"/>	Proper maneuvering speed
<input type="checkbox"/>	<input type="checkbox"/>	Proper fork height	<input type="checkbox"/>	<input type="checkbox"/>	Looks in travel direction
DOCK EQUIPMENT/AREA					
<input type="checkbox"/>	<input type="checkbox"/>	Checks/secures dock board	<input type="checkbox"/>	<input type="checkbox"/>	Rail car wheel chocks
<input type="checkbox"/>	<input type="checkbox"/>	Checks/secure wheel chocks	<input type="checkbox"/>	<input type="checkbox"/>	Trailer/railcar brakes on
<input type="checkbox"/>	<input type="checkbox"/>	Walks trailer before entry	<input type="checkbox"/>	<input type="checkbox"/>	Nose jack in place, if required
PARKING PROCEDURES					
<input type="checkbox"/>	<input type="checkbox"/>	Lowers forks/tips on floor	<input type="checkbox"/>	<input type="checkbox"/>	Dismounts safely
<input type="checkbox"/>	<input type="checkbox"/>	Truck in neutral	<input type="checkbox"/>	<input type="checkbox"/>	Uses wheel chocks on ramps
<input type="checkbox"/>	<input type="checkbox"/>	Applies parking brake	<input type="checkbox"/>	<input type="checkbox"/>	Turns off fuel supply
<input type="checkbox"/>	<input type="checkbox"/>	Power shut off			
LOAD HANDLING					
<input type="checkbox"/>	<input type="checkbox"/>	Lift/lower technique	<input type="checkbox"/>	<input type="checkbox"/>	Proper tilt:
<input type="checkbox"/>	<input type="checkbox"/>	Load centered on forks	<input type="checkbox"/>	<input type="checkbox"/>	a) Traveling
<input type="checkbox"/>	<input type="checkbox"/>	Load against backrest	<input type="checkbox"/>	<input type="checkbox"/>	b) Pickup/placement
<input type="checkbox"/>	<input type="checkbox"/>	Smooth starts/stops	<input type="checkbox"/>	<input type="checkbox"/>	Travels with load low
<input type="checkbox"/>	<input type="checkbox"/>	Proper truck speed	<input type="checkbox"/>	<input type="checkbox"/>	Use of attachment: _____
<input type="checkbox"/>	<input type="checkbox"/>	Proper load placement	All unique or potentially hazardous environmental conditions in the workplace that could affect safe operation that are listed below have been reviewed:		
<input type="checkbox"/>	<input type="checkbox"/>	Proper fork spread			
<input type="checkbox"/>	<input type="checkbox"/>	Proper truck capacity			
SAFETY					
<input type="checkbox"/>	<input type="checkbox"/>	Uses horn as required	<input type="checkbox"/>	<input type="checkbox"/>	Keeps body parts inside truck
<input type="checkbox"/>	<input type="checkbox"/>	Wears seatbelt	<input type="checkbox"/>	<input type="checkbox"/>	Uses proper travel on ramps
<input type="checkbox"/>	<input type="checkbox"/>	Uses intersection mirrors	<input type="checkbox"/>	<input type="checkbox"/>	Stacks straight and square
<input type="checkbox"/>	<input type="checkbox"/>	Stops at major intersections	<input type="checkbox"/>	<input type="checkbox"/>	Uses proper operational speed
<input type="checkbox"/>	<input type="checkbox"/>	Yields right-of-way	<input type="checkbox"/>	<input type="checkbox"/>	Uses truck-being-loaded sign
<input type="checkbox"/>	<input type="checkbox"/>	Knows how to fuel truck	<input type="checkbox"/>	<input type="checkbox"/>	Lowers load ASAP

FORKLIFT OR PALLET JACK OPERATOR USE REQUIREMENTS

POLICY

All Powered Industrial Truck (PIT) operators are required to sign this document to indicate understanding and compliance with these requirements. Signed copies of this form are to be kept in the personnel files of active employees as long as the employee may operate a powered industrial truck.

PERFORMANCE REQUIREMENTS

Powered Industrial Truck operators shall:

- Immediately inform supervision of any change, or suspected change, in medical condition which may affect the ability to safely operate a PIT (e.g., vision problems, vertigo, etc.).
- Immediately inform supervision of the use of prescription or over-the-counter drugs which may impair ability to safely operate PIT.
- Not, under any circumstances, attempt to operate a PIT while under the influence of alcohol or illegal drugs.
- Perform vehicle safety inspections at the start of each shift of operation.
- Remove defective equipment from service and report to supervision.
- Wear required personal protective equipment.
- Utilize restraint systems when the PIT is equipped with them.
- Obey stop signs and be prepared to immediately stop vehicle.
- Always lower picked loads to floor level prior to forward/reverse travel.
- Sound horn when approaching intersections or blind corners.
- Always seat load against fork stops before forward/reverse travel.
- Keep all body parts inside operator compartment when in movement.
- Maintain safe distance from edges of ramps, docks, platforms, and other similar working surfaces.
- Ensure vehicles to be loaded/unloaded are chocked or restrained by devices designed to prevent movement.
- Utilize co-worker support for safe operations when the pick/put-away activity results in blind spots.
- Read and be familiar with contents of manufacturer's manual for the particular PIT being operated.
- Never tamper with the equipment or equipment components (e.g., seatbelts.)
- Obey limitations and specifications identified on PIT nameplate, to include, but not limited to: electrical classifications and limitations; lifting capacity; truck and load weight in relationship to operating surfaces; reach in relationship to load and mast tilt.
- Yield right-of-way to pedestrians at all times.
- Maintain vehicle speed appropriate for conditions, as related to:
 - direction of travel
 - proximity of pedestrians
 - corners, intersections, and blind spots
 - load security
 - floor conditions
 - building structures and equipment
- Refrain from using PITs designed for internal building use outside of the building.
- Operate PITs only in approved locations.
- Do not use PITs to transport personnel or to transport operator beyond designated areas simply for personal convenience.

Employee Name:	Employee Signature:	Date:
Supervisor Name:	Supervisor Signature:	Date:

CERTIFICATE OF TRAINING

This certifies that _____
Employee Name

has successfully completed

Forklift/Powered Industrial Truck (PIT) Training

on _____
Date

Company Name

Signature of Trainer or Authorized Company Representative


COMPANY: _____

THIS IS TO CERTIFY THAT _____
HAS BEEN SUCCESSFULLY TESTED AND TRAINED IN
FORKLIFT OPERATIONS USE AND CARE AND IS
QUALIFIED TO USE A FORKLIFT.

OPERATOR SIGNATURE DATE

CERTIFIER SIGNATURE DATE

LICENSE CONTROL NUMBER _ _ _ _ _




COMPANY: _____

THIS IS TO CERTIFY THAT _____
HAS BEEN SUCCESSFULLY TESTED AND TRAINED IN
FORKLIFT OPERATIONS USE AND CARE AND IS
QUALIFIED TO USE A FORKLIFT.

OPERATOR SIGNATURE DATE

CERTIFIER SIGNATURE DATE

LICENSE CONTROL NUMBER _ _ _ _ _




COMPANY: _____

THIS IS TO CERTIFY THAT _____
HAS BEEN SUCCESSFULLY TESTED AND TRAINED IN
FORKLIFT OPERATIONS USE AND CARE AND IS
QUALIFIED TO USE A FORKLIFT.

OPERATOR SIGNATURE DATE

CERTIFIER SIGNATURE DATE

LICENSE CONTROL NUMBER _ _ _ _ _




COMPANY: _____

THIS IS TO CERTIFY THAT _____
HAS BEEN SUCCESSFULLY TESTED AND TRAINED IN
FORKLIFT OPERATIONS USE AND CARE AND IS
QUALIFIED TO USE A FORKLIFT.

OPERATOR SIGNATURE DATE

CERTIFIER SIGNATURE DATE

LICENSE CONTROL NUMBER _ _ _ _ _




COMPANY: _____

THIS IS TO CERTIFY THAT _____
HAS BEEN SUCCESSFULLY TESTED AND TRAINED IN
FORKLIFT OPERATIONS USE AND CARE AND IS
QUALIFIED TO USE A FORKLIFT.

OPERATOR SIGNATURE DATE

CERTIFIER SIGNATURE DATE

LICENSE CONTROL NUMBER _ _ _ _ _




COMPANY: _____

THIS IS TO CERTIFY THAT _____
HAS BEEN SUCCESSFULLY TESTED AND TRAINED IN
FORKLIFT OPERATIONS USE AND CARE AND IS
QUALIFIED TO USE A FORKLIFT.

OPERATOR SIGNATURE DATE

CERTIFIER SIGNATURE DATE

LICENSE CONTROL NUMBER _ _ _ _ _



INSTRUCTIONS FOR USE

1. Develop a numbering system for use with the control numbers, as applicable (not required).
2. Designate a Forklift Trainer/Certifier to conduct the training and testing of all company Forklift Operators.
3. Operator signature is the operator of the lift, the Certified Signature is the person who administered the practical exam.
4. After all information is filled in, consider laminating the card

FORKLIFT PROGRAM ASSESSMENT	
Completed by: _____ Date: _____	
Description of Requirement	Compliant
PIT Program Requirements	Compliant
Are all operators appropriately trained for the type of PIT they are using?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Have all operators (including contractors) been evaluated in the local work area prior to being allowed to operate a PIT unsupervised?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are operators periodically observed and evaluated in the workplace and, if deficiencies are noted, retrained?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are any operators who have experienced an accident or near miss or who have been observed operating a PIT in an unsafe manner, (or where work/PIT operations have significantly changed) been prohibited from operating a PIT until being retrained?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Have documented performance evaluations been conducted on each PIT operator within the last 3 years?	<input type="checkbox"/> Yes <input type="checkbox"/> No
If used, are signed "Operator Performance Requirements" statements on file for each operator?	<input type="checkbox"/> Yes <input type="checkbox"/> No
PIT Workplace Requirements	Compliant
Are ONLY appropriately rated PITs used in designated hazardous areas?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Do all PITs capable of lifting over 72", have overhead guards?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are load backrests utilized when there is a danger of a load falling rearward?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are personnel-lifting PITs fitted with a safety platform firmly secured to the lifting carriage or forks, and, as necessary, overhead protection for the personnel on the platform?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are any modifications made to the PIT approved by the manufacturer and the truck appropriately labeled?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are any PITs with front-end attachments marked to identify the attachment and show the weights at maximum elevation with the load laterally centered?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are the markings legible and maintained in good condition?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Is directional lighting provided where general lighting is less than 2 lumens per square foot?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are there sufficient safe clearances in aisles, at loading docks, through doorways, turns and passageways?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are clearance limit signs posted where appropriate?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are any open pits, dock ways, ditches, etc. appropriately guarded and marked?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Is sufficient overhead clearance from lights, pipes, sprinkler systems, etc. maintained in PIT operating areas?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Maintenance	Compliant
Are all PITs not in safe operating condition removed from service?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are all repairs made by authorized personnel?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are all PITs examined prior to use or at the start of each shift by the operator?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are all PITs maintained in a clean condition, free of excess oil, grease or lint?	<input type="checkbox"/> Yes <input type="checkbox"/> No

Description of Requirement	
PIT – Dock-boards and Bridge plates	Compliant
Are portable and powered dock-boards strong enough to carry the load imposed on them?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are portable dock-boards secured in position, by anchoring or anti-slip devices?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are handholds provided on portable dock-boards?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Is positive protection (i.e. wheel chocks, brakes, fixed jacks or other means) provided to prevent any railroad car, or truck movement while dock-boards or bridge plates are in position or use?	<input type="checkbox"/> Yes <input type="checkbox"/> No
PIT Battery Charging and Storage	Compliant
Are all battery charging installations protected from potential damage by equipment?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are all battery charging installations adequately ventilated?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Do all battery <u>changing</u> installations have facilities for flushing and neutralizing spilled electrolyte?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Is a conveyor, hoist or equivalent equipment provided for handling batteries?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are carboy tilters or siphons provided for handling electrolyte in PIT maintenance shops?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Is the addition of battery acid done according to a procedure and by trained individuals?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are all PITs properly positioned and brakes (including parking brakes) applied before changing or charging batteries?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are battery compartment covers kept open to dissipate heat during charging?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are open flames and electric arcs prohibited in or near charging facilities?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are tools and other metal objects kept away from the tops of uncovered batteries?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Safe Use Requirements - General	Compliant
Are all PITs operated at safe speeds, which permit stops and turns in a safe manner?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are safe distance requirements (3 truck lengths) maintained from other vehicle traffic during travel?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Do operators and riders avoid placing arms or legs between the uprights of the mast or outside the running lines of the PIT?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Passing at intersections, blind spots or other locations where hazards may be present avoided?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Do operators slow down and sound the horn at cross aisles and other locations where vision is obstructed?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Do drivers slow down on wet or slippery floors?	<input type="checkbox"/> Yes <input type="checkbox"/> No
When loads obstruct the forward view are PIT operators required to travel with the load trailing?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are grade changes of greater than 10% maneuvered with the load upgrade?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are all load and load engaging means tilted back, if applicable, and raised only as far as necessary to clear the road surface on all grades?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are all load engaging means fully lowered, controls neutralized, power shut off, and brakes set (and wheels chocked on inclines) when any PIT is left unattended? (unattended is when the operator is more than 25 ft away from the PIT or the PIT is out of the operator's view of sight.)	<input type="checkbox"/> Yes <input type="checkbox"/> No

Description of Requirement	
Safe Use Requirements - Loads	Compliant
Are all handled loads stable and safely arranged?	<input type="checkbox"/> Yes <input type="checkbox"/> No
When loads cannot be centered, are additional safety precautions and care taken during handling?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are load weights carried and handled by PITs within the weight restrictions for the PIT/PBC?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are all long, high or multiple tiered loads adjusted appropriately?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are load-engaging means (i.e. pallets) placed under the load where possible?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are PIT masts carefully tilted backward to stabilize the load whenever appropriate (without excessive tilt)?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Except when picking up a load or placing a load in rack or stack, is tilting forward with the load engaging means elevated prohibited?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Safe Use Requirements– Dock-plates, Trailer Loading, Elevators	Compliant
Are dockboards or bridgeplates properly secured prior to use?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Is care taken to drive slowly over dockboards and bridgeplates, and their rated capacities never exceeded?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are elevators entered squarely and approached slowly?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Once on an elevator, does the PIT operator neutralized controls, shut the power off and set the brakes, prior to elevator operation?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Do motorized hand trucks always enter elevators with load-ends forward?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Do operators check to assure the vehicle being loaded or unloaded is properly set, blocked, jacked or otherwise prevented from movement prior to loading or unloading?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are trucks, trailers and railroad cars checked for floor breaks or weakness prior to driving the PIT onto the vehicle?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Safe Use Requirements – Hazardous Locations	Compliant
Exhaust from PIT's is controlled to a safe level when they are used indoors or in other situations where exposure to personnel is potentially harmful.	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are only specially approved PITs used in hazardous locations?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are battery compartments locked closed on "EX" rated PITs in hazardous areas?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Safe Use Requirements - Pedestrians	Compliant
Are pedestrians prohibited from passing underneath an elevated portion of any truck, whether loaded or empty?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Do PIT operators defer to pedestrians in aisles, where appropriate?	<input type="checkbox"/> Yes <input type="checkbox"/> No

PALLET JACK OPERATOR DAILY INSPECTION CHECKLIST		
ACCELERATOR, TRANSMISSION & SERVICE BRAKES	ENERGY SYSTEM <i>[Battery Powered]:</i>	MAST & TILT CYLINDERS
<input type="checkbox"/> Vehicle accelerates smoothly	<input type="checkbox"/> Battery casing closed	<input type="checkbox"/> Lift carriage to maximum height
<input type="checkbox"/> Brakes slow without jerking or locking	<input type="checkbox"/> Vehicle has been removed from the charging system before activation	<input type="checkbox"/> Lower carriage to just above floor
<input type="checkbox"/> Vehicle moves forward/backward properly	FORKS	<input type="checkbox"/> Carriage moves smoothly & completely
COMPONENT TIRES	<input type="checkbox"/> Centered on carriage and equally spaced	PARKING BRAKES
<input type="checkbox"/> No excessive wear splitting or missing material	<input type="checkbox"/> No cracks or other damage	<input type="checkbox"/> Parking brake prevents movement
<input type="checkbox"/> Wheel nuts and rim condition good	<input type="checkbox"/> Locking pins work correctly	STEERING
IDENTIFICATION PLATE	GAUGES	<input type="checkbox"/> Wheel turns while stopped
<input type="checkbox"/> Readable	<input type="checkbox"/> All gauges work properly	<input type="checkbox"/> Wheel turns while moving
	<input type="checkbox"/> All indicators work properly	<input type="checkbox"/> Wheel turns Forklift smoothly & precisely
	<input type="checkbox"/> Moving parts work smoothly & properly	<input type="checkbox"/> No strange noise or hesitation
Deficiencies Noted and Reported or Comments:		
Date:	Signature:	

PALLET JACK OPERATOR EVALUATION ASSESSMENT					
<i>This form (or its equivalent) must be retained for records management for 3 years or until superseded.</i>					
Equipment Operated (make/model):					
Name of Operator:			Employee Identification#:		Date:
Signature of Operator:			Signature of Evaluator:		
YES	NO	Activity	YES	NO	Activity
<input type="checkbox"/>	<input type="checkbox"/>	Performs pre-shift checks			
UNDERSTANDS CONTROLS					
<input type="checkbox"/>	<input type="checkbox"/>	Forward/reverse	<input type="checkbox"/>	<input type="checkbox"/>	Service brake
<input type="checkbox"/>	<input type="checkbox"/>	Lifting/raising	<input type="checkbox"/>	<input type="checkbox"/>	Instrumentation
<input type="checkbox"/>	<input type="checkbox"/>	Steering technique	<input type="checkbox"/>	<input type="checkbox"/>	Attachment
<input type="checkbox"/>	<input type="checkbox"/>	Parking brakes			
TRUCK HANDLING					
<input type="checkbox"/>	<input type="checkbox"/>	Smooth starts/stops	<input type="checkbox"/>	<input type="checkbox"/>	Smooth/controlled turns
<input type="checkbox"/>	<input type="checkbox"/>	Inching/plugging	<input type="checkbox"/>	<input type="checkbox"/>	Clears obstacles safely
<input type="checkbox"/>	<input type="checkbox"/>	Approach is square	<input type="checkbox"/>	<input type="checkbox"/>	Proper maneuvering speed
<input type="checkbox"/>	<input type="checkbox"/>	Proper fork height	<input type="checkbox"/>	<input type="checkbox"/>	Looks in travel direction
DOCK EQUIPMENT/AREA					
<input type="checkbox"/>	<input type="checkbox"/>	Checks/secures dock board	<input type="checkbox"/>	<input type="checkbox"/>	Rail car wheel chocks
<input type="checkbox"/>	<input type="checkbox"/>	Checks/secure wheel chocks	<input type="checkbox"/>	<input type="checkbox"/>	Trailer/railcar brakes on
<input type="checkbox"/>	<input type="checkbox"/>	Walks trailer before entry	<input type="checkbox"/>	<input type="checkbox"/>	Nose jack in place, if required
PARKING PROCEDURES					
<input type="checkbox"/>	<input type="checkbox"/>	Power shut off	<input type="checkbox"/>	<input type="checkbox"/>	Parks in safe area
LOAD HANDLING					
<input type="checkbox"/>	<input type="checkbox"/>	Load against backrest	<input type="checkbox"/>	<input type="checkbox"/>	Proper load placement
<input type="checkbox"/>	<input type="checkbox"/>	Smooth starts/stops	<input type="checkbox"/>	<input type="checkbox"/>	Proper fork spread
<input type="checkbox"/>	<input type="checkbox"/>	Proper truck speed	<input type="checkbox"/>	<input type="checkbox"/>	Proper truck capacity
Comments:					
SAFETY					
<input type="checkbox"/>	<input type="checkbox"/>	Uses horn as required	<input type="checkbox"/>	<input type="checkbox"/>	Uses proper travel on ramps
<input type="checkbox"/>	<input type="checkbox"/>	Uses intersection mirrors	<input type="checkbox"/>	<input type="checkbox"/>	Stacks straight and square
<input type="checkbox"/>	<input type="checkbox"/>	Stops at major intersections	<input type="checkbox"/>	<input type="checkbox"/>	Yields right-of-way

FORKLIFT (PIT) TRUCK DESIGNATIONS/TRUCK USE IN HAZARDOUS ATMOSPHERES

There are eleven (11) different designations for PITs. They are: **D, DS, DY, E, ES, EE, EX, G, GS, LP, and LPS.**

- The **D** designated units are units similar to the G units except that they are diesel engine powered instead of gasoline engine powered.
- The **DS** designated units are diesel powered units that are provided with additional safeguards to the exhaust, fuel and electrical systems. They may be used in some locations where a D unit may not be considered suitable.
- The **DY** designated units are diesel powered units that have all the safeguards of the DS units and in addition do not have any electrical equipment including the ignition and are equipped with temperature limitation features.
- The **E** designated units are electrically powered units that have minimum acceptable safeguards against inherent fire hazards.
- The **ES** designated units are electrically powered units that, in addition to all of the requirements for the E units, are provided with additional safeguards to the electrical system to prevent emission of hazardous sparks and to limit surface temperatures. They may be used in some locations where the use of an E unit may not be considered suitable.
- The **EE** designated units are electrically powered units that have, in addition to all of the requirements for the E and ES units, the electric motors and all other electrical equipment completely enclosed. In certain locations the EE unit may be used where the use of an E and ES unit may not be considered suitable.
- The **EX** designated units are electrically powered units that differ from the E, ES, or EE units in that the electrical fittings and equipment are so designed, constructed and assembled that the units may be used in certain atmospheres containing flammable vapors or dusts.
- The **G** designated units are gasoline powered units having minimum acceptable safeguards against inherent fire hazards.
- The **GS** designated units are gasoline powered units that are provided with additional safeguards to the exhaust, fuel, and electrical systems. They may be used in some locations where the use of a G unit may not be considered suitable.
- The **LP** designated unit is similar to the G unit except that liquefied petroleum gas is used for fuel instead of gasoline.
- The **LPS** designated units are liquefied petroleum gas powered units that are provided with additional safeguards to the exhaust, fuel, and electrical systems. They may be used in some locations where the use of an LP unit may not be considered suitable.

Forklift (PIT) Trucks for Hazardous (Classified) Atmospheres

The atmosphere or location shall have been classified as to whether it is hazardous or non-hazardous prior to the consideration of industrial trucks being used and the correct type of industrial truck required shall be as provided for any hazardous classified locations.

- Power-operated industrial trucks shall not be used in atmospheres containing hazardous concentration of acetylene, butadiene, ethylene oxide, hydrogen (or gases or vapors equivalent in hazard to hydrogen, such as manufactured gas), propylene oxide, acetaldehyde, cyclopropane, diethyl ether, ethylene, isoprene, or unsymmetrical dimethyl hydrazine (UDMH).
- Power-operated industrial trucks shall not be used in atmospheres containing hazardous concentrations of metal dust, including aluminum, magnesium, and their commercial alloys, other metals of similarly hazardous characteristics, or in atmospheres containing carbon black, coal or coke dust except proved power-operated industrial trucks designated as EX may be used in such atmospheres.
- In atmospheres where dust of magnesium, aluminum or aluminum bronze may be present, fuses, switches, motor controllers, and circuit breakers of trucks shall have enclosures specifically approved for such locations.
- Only approved power-operated industrial trucks designated as EX may be used in atmospheres containing acetone, acrylonitrile, alcohol, ammonia, benzene, benzol, butane, ethylene dichloride, gasoline, hexane, lacquer solvent vapors, naphtha, natural gas, propane, propylene, styrene, vinyl acetate, vinyl chloride, or xylenes in quantities sufficient to produce explosive or ignitable mixtures and where such concentrations of these gases or vapors exist continuously, intermittently or periodically under normal operating conditions or may exist frequently because of repair, maintenance operations, leakage, breakdown or faulty operation of equipment.
- Power-operated industrial trucks designated as DY, EE, or EX may be used in locations where volatile flammable liquids or flammable gases are handled, processed or used, but in which the hazardous liquids, vapors or gases will normally be confined within closed containers or closed systems from which they can escape only in case of accidental rupture or breakdown of such containers or systems, or in the case of abnormal operation of equipment; also in locations in which hazardous concentrations of gases or vapors are normally prevented by positive mechanical ventilation but which might become hazardous through failure or abnormal operation of the ventilating equipment; or in locations which are adjacent to Class I, Division 1 locations, and to which hazardous concentrations of gases or vapors might occasionally be communicated unless such communication is prevented by adequate positive-pressure ventilation from a source of clear air, and effective safeguards against ventilation failure are provided.

Forklift (PIT) Trucks for Hazardous (Classified) Atmospheres

- In locations used for the storage of hazardous liquids in sealed containers or liquified or compressed gases in containers, approved power-operated industrial trucks designated as DS, ES, GS, or LPS may be used. This classification includes locations where volatile flammable liquids or flammable gases or vapors are used, but which, would become hazardous only in case of an accident or of some unusual operating condition. The quantity of hazardous material that might escape in case of accident, the adequacy of ventilating equipment, the total area involved, and the record of the industry or business with respect to explosions or fires are all factors that should receive consideration in determining whether or not the DS or DY, ES, EE, GS, LPS designated truck possesses sufficient safeguards for the location. Piping without valves, checks, meters and similar devices would not ordinarily be deemed to introduce a hazardous condition even though used for hazardous liquids or gases. Locations used for the storage of hazardous liquids or of liquified or compressed gases in sealed containers would not normally be considered hazardous unless subject to other hazardous conditions also.
- Only approved power operated industrial trucks designated as EX shall be used in atmospheres in which combustible dust is or may be in suspension continuously, intermittently, or periodically under normal operating conditions, in quantities sufficient to produce explosive or ignitable mixtures, or where mechanical failure or abnormal operation of machinery or equipment might cause such mixtures to be produced.
- The EX classification usually includes the working areas of grain handling and storage plants, room containing grinders or pulverizers, cleaners, graders, scalpers, open conveyors or spouts, open bins or hoppers, mixers, or blenders, automatic or hopper scales, packing machinery, elevator heads and boots, stock distributors, dust and stock collectors (except all-metal collectors vented to the outside), and all similar dust producing machinery and equipment in grain processing plants, starch plants, sugar pulverizing plants, malting plants, hay grinding plants, and other occupancies of similar nature; coal pulverizing plants (except where the pulverizing equipment is essentially dust tight); all working areas where metal dusts and powders are produced, processed, handled, packed, or stored (except in tight containers); and other similar locations where combustible dust may, under normal operating conditions, be present in the air in quantities sufficient to produce explosive or ignitable mixtures.
- Only approved power-operated industrial trucks designated as DY, EE, or EX shall be used in atmospheres in which combustible dust will not normally be in suspension in the air or will not be likely to be thrown into suspension by the normal operation of equipment or apparatus in quantities sufficient to produce explosive or ignitable mixtures but where deposits or accumulations of such dust may be ignited by arcs or sparks originating in the truck.
- Only approved power-operated industrial trucks designated as DY, EE, or EX shall be used in locations which are hazardous because of the presence of easily ignitable fibers or flyings but in which such fibers or flyings are not likely to be in suspension in the air in quantities sufficient to produce ignitable mixtures.

Forklift (PIT) Trucks for Hazardous (Classified) Atmospheres

- Only approved power-operated industrial trucks designated as DS, DY, ES, EE, EX, GS, or LPS shall be used in locations where easily ignitable fibers are stored or handled, including outside storage, but are not being processed or manufactured. Industrial trucks designated as E, which have been previously used in these locations may be continued in use.
- On piers and wharves handling general cargo, any approved power-operated industrial truck designated as Type D, E, G, or LP may be used, or trucks which conform to the requirements for these types may be used.
- If storage warehouses and outside storage locations are hazardous only the approved power-operated industrial truck specified for such locations shall be used. If not classified as hazardous, any approved power-operated industrial truck designated as Type D, E, G, or LP may be used, or trucks which conform to the requirements for these types may be used.
- If general industrial or commercial properties are hazardous, only approved power-operated industrial trucks specified for such locations shall be used. If not classified as hazardous, any approved power-operated industrial truck designated as Type D, E, G, or LP may be used, or trucks which conform to the requirements of these types may be used.

Converted industrial trucks. Power-operated industrial trucks that have been originally approved for the use of gasoline for fuel, when converted to the use of liquefied petroleum gas fuel, may be used in those locations where G, GS or LP, and LPS specifically-designated trucks are specified.

PROGRAM OVERVIEW

GENERAL SAFETY AWARENESS PROGRAM

REGULATORY STANDARD: *OSHA General Duty Clause*

INTRODUCTION: This program assists in establishing clear company goals and objectives for safety. It provides for the identification, evaluation and mitigation of safety hazards. It establishes employee training requirements and details general work rules, recordkeeping, emergency evacuation planning, audits and inspections and records retention.

TRAINING:

- Recommended training for an overview of workplace hazards.

ACTIVITIES:

- Ensure the workplace is maintained free of a hazard to which employees of the employer were exposed
- Inspect the workplace for hazards that are likely to cause death or serious physical harm
- Ensure processes are in place to correct hazards

FORMS:

- General Safety Rules
- New Employee Safety Orientation Training
- Training Attendance Roster
- Verification for Supply Requirements for First Aid Kits

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- 2. Scope**
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- 4. Procedure**
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General Safety Awareness Program

1. **Purpose.** This document provides a written general safety program for the company. This program is designed to establish clear company goals and objectives and will be communicated to all employees.
2. **Scope.** Applies to all employees at company facilities and sites.
3. **Responsibilities.**
 - 3.1 Area Management will:
 - 3.1.1 Identify and evaluate any safety hazards.
 - 3.1.2 Prioritize and address safety hazards based on risk level.
 - 3.1.3 Provide reasonable solutions to reduce or eliminate recognized safety hazards.
 - 3.1.4 Enforce federal, state and company safety rules and regulations in the workplace.
 - 3.2 Employees will:
 - 3.2.1 Report safety concerns and hazards to your Supervisor.
 - 3.2.2 Participate in the resolution of the recognized safety hazards, as needed or required.
 - 3.2.3 Conduct their work activities in a safe manner.
 - 3.2.4 Abide by all the safety rules and regulation established by the company.
 - 3.2.5 Assist in maintaining their work area in a clean and neat condition.
 - 3.3 Safety Representative must (as needed):
 - 3.3.1 Provide assistance to management in the resolution of recognized safety hazards.
4. **Procedure.**
 - 4.1 General Work Rules:
 - 4.1.1 General Duty Clause
 - 4.1.1.1 OSHA's general duty clause states that companies must provide a place of employment that is free from recognized hazards.
 - 4.1.1.2 Each employee is responsible to comply with the standards and regulations that are applicable to their work activities.

4.1.2 Housekeeping

- 4.1.2.1 Every safety management program includes standards for general housekeeping. Housekeeping ensures that materials and contaminants do not accumulate and cause hazards to employee safety and health.
- 4.1.2.2 Workplaces will be cleaned on a regular basis.
- 4.1.2.3 Restrooms will be kept in a sanitary condition.
- 4.1.2.4 Materials will be stored in designated areas and not allowed to accumulate in places where employee safety could be at risk (i.e. aisles, corridors, stairwells, near exits, around machinery or equipment where employees work, etc.).
- 4.1.2.5 Tools and equipment will be stored in their appropriate places.
- 4.1.2.6 Chemicals will be handled according to their instructions. Spills or leaks will be cleaned up immediately and prevented from reoccurring.
- 4.1.2.7 Protective equipment will be used, as needed or required.

4.2 Written Standard Operating Procedures:

- 4.2.1 Job Hazard Analysis (Identifying Hazards) - Each job task will be reviewed for safety hazards. Recognized safety hazards will be prioritized and addressed based on their risk level.
- 4.2.2 Written Procedures
 - 4.2.2.1 Develop written procedures outlining the steps to take to reduce or eliminate recognized safety hazards. These procedures must identify when the use of personal protective equipment (PPE) is necessary.
 - 4.2.2.2 All companies must have:
 - 4.2.2.2.1 Emergency Evacuation and Fire Prevention Programs (written if >10 employees).
 - 4.2.2.2.2 Hazard Communication Program in workplaces where chemicals are used or stored.
 - 4.2.2.3 Written procedures are required if there are exposures to:
 - 4.2.2.3.1 Blood or bloodborne pathogens
 - 4.2.2.3.2 Hazardous chemical exposures
 - 4.2.2.3.3 Confined spaces

- 4.2.2.3.4 Control of hazardous energy (Lock-out/Tag-Out)
- 4.2.2.3.5 Live electrical energy (>50 volts)
- 4.2.2.3.6 Noise levels >85 dBa
- 4.2.2.3.7 Laboratories
- 4.2.2.3.8 Forklifts
- 4.2.2.3.9 PPE required activities
- 4.2.2.3.10 Physical hazards
- 4.2.2.3.11 Radiation
- 4.2.2.3.12 Respiratory hazards
- 4.2.2.3.13 Shipping and handling of hazardous materials
- 4.2.2.3.14 Lasers (>Class 2)

4.3 Recordkeeping (Accident and Incident Investigation and Reporting):

- 4.3.1 Incidents are work-related activities that cause concern for the health or safety of employees. All accidents and injuries (and work-related illnesses) are considered incidents.
- 4.3.2 Reporting of incidents is required for many companies. Specific information about incidents must be identified and recorded on specific OSHA forms.
- 4.3.3 Investigation may be required to determine some information that is required to be reported.
- 4.3.4 Exemptions from Recordkeeping exist for some industries in general and for employers with fewer than 10 employees. For a full listing of exempted industries, see the OSHA website at www.OSHA.gov, or reference the listing in the OSHA Recordkeeping Exemption Listing form associated with this program.

4.4 Emergency Evacuation Planning:

- 4.4.1 All companies must have a program for emergency evacuation of their employees.
- 4.4.2 Companies with more than 10 employees must have this information in writing.
- 4.4.3 Companies should post their evacuation routes to assist employees and others during an evacuation situation.

- 4.4.4 A review of the emergency action program must occur for every employee when the program is developed, upon initial assignment or new hire, when the employee's responsibilities under the program change and whenever the program is changed.
- 4.4.5 Any employees that have specific duties and requirements under the program (i.e. assisting others, locking sensitive information, area searchers or wardens, etc.) must be specifically trained in their duties and responsibilities.

4.5 Hazard Communication:

- 4.5.1 Every employee exposed or potentially exposed to hazardous chemicals in the workplace must be trained and informed of the hazards of those chemicals and the measures to be used to protect themselves from exposure. This training must occur initially and whenever changes to hazards in the workplace occur.
- 4.5.2 Material Safety Data Sheets are required for all hazardous chemicals or mixtures used or stored in the workplace.
- 4.5.3 A hazardous chemical inventory list must be maintained at the workplace (either one master listing or individual area listings) that list the hazardous materials by name (as it appears on the MSDS) the manufacturer's name and phone number and any "common names" that the company may call the product (if they are different than the MSDS name).
- 4.5.4 A written program must be present in the workplace describing how the requirements of the regulation are implemented.
- 4.5.5 All hazardous chemicals must have labels indicating the name, manufacturer and hazards of the hazardous components of the product.

4.6 Electrical Safety

- 4.6.1 Any exposure greater than 50 volts requires electrical safety training and information be provided to employees. Employees with such exposure require the knowledge to understand the magnitude of the hazard they are exposed to and the measures needed to prevent injury from such exposure.
- 4.6.2 All electrical installations and equipment must meet the installation and maintenance requirements under the National Electrical Code.
 - 4.6.2.3 Companies must ensure that electrical service panel boxes and equipment shutoffs are clear and unobstructed at all times for use during an emergency.
 - 4.6.2.4 Electrical service panel boxes must have covers and those covers must remain in the closed position when the panel is not being accessed.
 - 4.6.2.5 Electrical sources and outlets within 3 feet of any water source (such as a sink or drinking fountain) must be GFCI (Ground Fault Circuit Interrupt) protected.

4.7 Audits and Inspections:

- 4.7.1 Safety audits are formal reviews of employee activities, workplace processes and systems, and documentation. Audits normally use pre-established or written protocols or inspection reports to assure that the written procedures and process flows indicate what the employees are supposed to do, and that employees are following the procedures as written. Audits will normally have a final written summary report of the non-conformances that is presented to management. Each finding or non-conformance will have corrective actions assigned by management to correct the deficiency in the system.
- 4.7.2 Inspections are informal reviews of employee activities, workplace processes, systems and documentation. Inspections may use pre-established written checklists, or may be even less-formal. The checklists are normally in a yes/no format that indicates whether or not the activity or process is compliant with what is required. Inspection findings are generally discussed with area supervisors or management, and the retention of the checklist (to assure that the items have been corrected before the next inspection) is normally the only documentation maintained.
- 4.7.3 Some regulations require that procedures or activities be inspected, and that the inspection documentation be retained for a specified period of time. However, inspection reports are generally kept only until all action items are addressed or they are superseded by subsequent inspection reports.

4.8 Communications:

- 4.8.1 Employees are encouraged to voice concerns and suggestions to their supervisors or to the Safety Officer. These communications can be verbal or written.
- 4.8.2 Management will provide employee training as the need arises or regulations require.

4.9 Safety Committee:

- 4.9.1 Some states require safety committees if companies have more than 20 employees. It is generally recommended that any company with more than 20 employees establish a safety committee.
- 4.9.2 Committees should meet at least quarterly and be comprised of at least 3 employees. A member of management and/or the safety officer may serve as additional members of the committee. The committee chairperson should not be a member of management or the company Safety Officer.
- 4.9.3 Safety committees should discuss safety concerns at the company. They may be charged with performing area inspections, injury report reviews and investigations, training, or other safety-related duties that are appropriate to the business needs of the company.

4.10 Records Retention:

- 4.10.1 Training Records are maintained until they are superseded by new training.
- 4.10.2 Audit Reports are kept for 5 years or until all findings are corrected, whichever is longer.
- 4.10.3 Inspection Reports are kept until all findings are corrected, the reports are superseded by new reports, or for a duration specified by a specific regulation, whichever is longer.
- 4.10.4 OSHA 300 logs and associated Injury and Illness Records are kept for 5 years.
- 4.10.5 Certain hazardous chemical exposure records (e.g. cancer causing agents, benzene, asbestos, and mercury) and biological exposure records (e.g. needle stick injuries of contaminated blood or body fluids) are kept for the duration of employment plus 30 years.
- 4.10.6 Other safety records are generally kept only until the actions that are required to be taken are complete.

5. Safety Information.

5.1 Ventilation

- 5.1.1 General building ventilation systems are usually adequate to remove particulate matter and circulate fresh air throughout the building. Ventilation concerns are generally caused by:
 - 5.1.1.3 faulty filters in fresh air ducts
 - 5.1.1.4 corridors leading from outside areas (where dust and particulate matter can be drawn into the building)
 - 5.1.1.5 enclosed rooms where several printers or copiers are located in a small space (due to paper dust and/or toner dust being generated).

5.2 Lighting. The role of proper lighting is to provide a safe, comfortable and efficient visual environment. The following safe lighting criteria will be used to evaluate lighting conditions in office areas.

- 5.2.1 Bare light sources will not be placed in the visual working field of any employee. Light sources will be properly shielded in these instances.
- 5.2.2 The luminance and reflectance of surfaces of furnishings, shades, louvers, acoustic screens, will be considered to reduce their reflectance.
- 5.2.3 Windows will be covered where appropriate.
- 5.2.4 Wall surface colors and degree of reflectance will be appropriate to the work area.

- 5.2.5 Furniture should be arranged so that the luminaire is beside rather than in front of the operator. Light will then be directed across the work surface rather than into the worker's eyes.
- 5.3 Eye Strain. Adjusting the screen for the minimum amount of glare and best contrast will reduce the amount of eyestrain our employees' experience.
 - 5.3.1 Monitor/VDT problems. Correct placement of the VDT can relieve stress on the neck and shoulders. Adjust the monitor so screens can be read with the head up and facing forward (at about eye level). Employees with bifocals should be able to read without tilting their head. Distance is key in that employees should not have to move to focus.
 - 5.3.2 Glare and contrast. The two major sources of eye strain from working with a VDT are glare and poor contrast. Most offices have diffused overhead lighting to reduce screen glare, but glare from windows or other light sources, like lamps, should be shielded. Blinds can be closed to reduce light glare. Desks and work areas can be repositioned to reduce glare, or the brightness and contrast controls on a VDT can be adjusted.
 - 5.3.3 Minimizing Eye Strain. Reading from a VDT for hours at a time can be very hard on the eyes. The characters on a VDT screen are not as sharp as print on paper--they are almost always a little bit fuzzy. They are also always moving, and even though they may not move enough to notice, they move enough to make focusing difficult. Employees should be encouraged to take micro breaks or switch to other non-computer based tasks to reduce eye strain.
 - 5.3.4 Supervisor involvement. Encourage employees to have their eyes examined annually--more often if they are having vision problems or if their eyes feel tired at the end of the day. Even when VDT work does not cause a vision problem, the strain of reading from a monitor for long periods will make it difficult for employees to continue ignoring uncorrected or undercorrected vision problems they might already have.
- 5.4 Ergonomic Improvements. Ergonomic improvements can dramatically improve worker safety and productivity. Employees are most likely to work efficiently and accurately when they do not have to strain. Supervisors should be given adequate training in recognition and control of ergonomic improvements.
 - 5.4.1 Problem recognition. Supervisors should know the symptoms of Cumulative Trauma Disorders (CTD) and recognize when the stress involved in a particular job has the potential for contributing to a CTD. Make sure employees are working in the best way possible.
 - 5.4.2 Cumulative trauma disorders. The most common CTDs are *Tendinitis* (inflammation of a tendon, usually at the wrist or elbow), *Carpal Tunnel Syndrome (CTS)* (caused by pressure on the nerve in the wrist) symptoms include numbness, difficulty holding objects and restricted movement), and *lower back problems* (sprains caused improper lifting, or improper seating or poor work station design).

5.4.3 Data entry. Data entry is probably the biggest contributor to CTS. With the fingers resting on the home keys of the keyboard, and shoulders relaxed, the employee's wrists and forearms should be in a straight line and more or less parallel to the floor. Surface or chair height adjustments may help (so employees type or write with body erect with feet flat on the floor.

5.3.3.1 The edge of the seat should not contact the back of the knees. Arm rests and keyboard wrist rests can be provided to relieve the pressure on the upper body. Footrests can assist in relieving strain on the back. Keyboard placement or copy stands, and telephone headsets may improve working postures. Back supports or lumbar supports on chairs can help prevent strain. Repetitive force and lifting can be minimized to prevent injury, or frequent breaks can be offered. Employees should be encouraged to take "stretch breaks" even if only for a minute or two.

5.3.4 Supervisor involvement. Make changes slowly, one at a time, and follow up on the effects. Observation and open communication with employees are our two most valuable tools for reducing the risks of ergonomic disorders in the workplace. If an employee has symptoms of a CTD, encourage him or her to get medical attention and work with the employee to find out if changes should be made in the job design.

5.4 Disciplinary Actions for Willful Unsafe Acts. Employees who willfully endanger themselves or the safety of their co-workers will be subject to the disciplinary action procedures stipulated by company policy or the Employee Handbook.

6. Training and Information.

6.1 Employee Orientation and General Safety Training:

6.1.1 All new employees will be provided with a general safety orientation upon initial assignment. This orientation will include:

6.1.1.1 A review of the employee responsibilities with regard to workplace safety and an overview of the general safety workplace rules.

6.1.1.2 The hazards that may be encountered in the workplace.

6.1.1.3 The process for reporting hazards, accidents, injuries and near-misses.

6.1.1.4 It is additionally recommended that the orientation include information on office safety and ergonomics.

6.1.2 Employees who transfer or change jobs within the company will be provided with work area specific training in the hazards they may encounter.

7. Definitions.

➤ *MSDS* - Material Safety Data Sheets.

- *CTD* - Cumulative Trauma Disorder is a medical condition caused by repetitive forces or motion.
- *CTS* - Carpal Tunnel Syndrome is a medical disease that affects the nerves in the wrist.
- *VDT* - Visual Display Terminals like computer monitoring equipment.

GENERAL SAFETY RULES FOR ALL DEPARTMENTS

The company establishes the following safety rules as General Safety Rules for all departments/sections:

- Never operate any machine or equipment unless you are authorized and trained to do so. Obtain full instructions and training from your Supervisor before operating an unfamiliar machine.
- Do not operate defective equipment or broken hand tools. Report them to your Supervisor immediately. Frayed or damaged electrical cords should be replaced.
- Never start on any hazardous job without being completely familiar with the safety techniques that apply to it. Check with your Supervisor if in doubt.
- Make sure all safety attachments are in place and properly adjusted before operating any machine.
- Do not operate any machine or equipment at unsafe speeds. Shut off equipment that is not in use.
- Wear all protective garments and equipment necessary to be safe on the job. Wear proper shoes; sandals or other open-toed or thin-soled shoes should not be worn.
- Do not wear loose, flowing clothing or long hair while operating moving machinery.
- Never repair or adjust any machine or equipment unless you are specifically authorized to do so by your Supervisor or specifically trained to do so.
- Never oil, clean, repair, or adjust any machine while it is in motion.
- Never repair or adjust any electrically driven machine without specific Lock-Out/Tag-Out training.
- Put tools and equipment away when they are not in use.
- Do not lift items that are too bulky or too heavy to be handled by one person. Ask for assistance.
- Keep all aisles, stairways, and exits clear of materials, storage, equipment, and spillage.
- Do not place equipment and materials so as to block emergency exit routes, fireboxes, sprinkler shutoffs, machine or electrical control panels, or fire extinguishers.
- Stack all materials neatly and make sure piles are stable.
- Keep your work area, machinery and all company facilities that you use clean and neat.
- Do not participate in horseplay, or tease or otherwise distract fellow workers. Do not run on company premises - always walk.
- Power-truck operators must be properly trained and licensed to operate the vehicle.
- Filing cabinets, desks, storage cabinets, and other storage devices should have drawers closed when not in use to prevent tripping hazards.
- Extension cords are temporary measures only and should not replace permanent wiring. Cords should be placed so that they are flush to the ground and do not present a tripping hazard. Electrical outlets should be properly used and never overloaded.
- Burned out light bulbs should be replaced immediately.
- Never take chances. If you're unsure, you're unsafe!

NEW EMPLOYEE SAFETY ORIENTATION TRAINING LIST			
Employee's Name:		Date assigned:	Department:
Job Title:			
Supervisor's Name:		Date of Review:	Signature:
Instructions to Supervisor: Check all boxes that apply. Review the duty requirements of the new employee and select the safety topics that the employee must be trained on.			
<i>SAFETY TOPIC</i>	<i>EMPLOYEE SIGNATURE</i>	<i>DATE</i>	<i>TRAINER</i>
<input type="checkbox"/> Accident Reporting Procedures			
<input type="checkbox"/> Back Safety			
<input type="checkbox"/> Bloodborne Pathogens Exposure			
<input type="checkbox"/> Burn Safety			
<input type="checkbox"/> Chemical Safety Awareness			
<input type="checkbox"/> Compressed Gas Safety			
<input type="checkbox"/> Confined Spaces Awareness			
<input type="checkbox"/> Crane and Sling Safety			
<input type="checkbox"/> Disciplinary Actions for Unsafe Acts			
<input type="checkbox"/> Electrical Safety Awareness			
<input type="checkbox"/> Emergency Action Plan			
<input type="checkbox"/> Eye and Face Protection			
<input type="checkbox"/> Fall Protection Awareness			
<input type="checkbox"/> Fire Extinguisher			
<input type="checkbox"/> Fire Prevention			
<input type="checkbox"/> Flammable/Combustible Liquids			
<input type="checkbox"/> Food/Beverage Consumption on Duty			
<input type="checkbox"/> Forklift Safety Awareness			
<input type="checkbox"/> Hand & Power Tool Safety			
<input type="checkbox"/> Hazard Communication			
<input type="checkbox"/> Hazard Markings			
<input type="checkbox"/> Hazard Signage			
<input type="checkbox"/> Hearing Conservation			
<input type="checkbox"/> Heat Stress Issues			
<input type="checkbox"/> Housekeeping Requirements			
<input type="checkbox"/> Job Hazard Analysis Awareness			
<input type="checkbox"/> Lock Out Tag Out Awareness			
<input type="checkbox"/> Machine Guarding Awareness			
<input type="checkbox"/> New Products Safety			
<input type="checkbox"/> OSHA Recordkeeping			
<input type="checkbox"/> Personal Protective Equipment			
<input type="checkbox"/> Respiratory Protection			
<input type="checkbox"/> Restricted Areas			
<input type="checkbox"/> Slips, Trips, and Falls Safety			
<input type="checkbox"/> Smoking Restrictions			
<input type="checkbox"/> Spill Prevention and Control			
<input type="checkbox"/> Violent Acts			
<input type="checkbox"/> Waste Disposal Procedures			
<input type="checkbox"/> Welding Safety			

PROGRAM OVERVIEW

HAND AND PORTABLE POWER TOOLS SAFETY PROGRAM

REGULATORY STANDARD: OSHA - 29 CFR 1910.241 – 244
- 29 CFR 1926.300 – 305

INTRODUCTION: Tools can present a variety of hazards including cuts, lacerations, blindness from flying particles, and serious contusions if caught in rotating parts or nip points. Tools must be inspected and, when required, employees trained in the proper use, inspection and maintenance of the tools and their guarding systems. Personal protective equipment (such as safety glasses or gloves) may frequently be required, even if guarding systems are in place.

TRAINING:

- Training is recommended for power tool use
- Training and licensing is required for tools that use explosive charges (powder-actuated)

ACTIVITIES:

- Inspect tools before use to ensure they are in good operating condition. Look for items such as housing integrity, complete insulation on cord systems, and that grounding pins have not been removed from plug-sets.

FORMS:

- Guarding and Safety Requirements
- Program Assessment
- Training Attendance Roster

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Hand and Portable Power Tools

1. **Purpose.** The company requires that hand and portable power tools be purchased, maintained, and used only by qualified personnel who understand the limitations and requirements for the safe use of such tools. This safety program will be reviewed and evaluated:
 - 1.1 On an annual basis or more frequently as needed.
 - 1.2 When changes occur to 29 CFR 1910.221 - 244 that prompt revision of this document.
 - 1.3 When facility operational changes occur that require a revision of this document.
2. **Scope.** Applies to all locations where portable hand and power tools are used or maintained.
3. **Responsibilities.**
 - 3.1 Management/Supervisors:
 - 3.1.1 Purchase only those electrical tools that have been listed by a Nationally Recognized Testing Laboratory (NRTL) such as Underwriter's Laboratory (UL).
 - 3.1.2 Ensure that procedures are in place to conduct visual inspections of tools prior to use.
 - 3.1.3 If testing is required (e.g., GFCI testing before each use) procedures will be in place to ensure compliance.
 - 3.1.4 Ensure that employees using tools understand and follow manufacturer's instructions, routinely inspect tools, and use them only for the purpose for which they were designed.
 - 3.1.5 Be aware of and make available, as appropriate, ergonomically designed tools for repetitive tasks and for those jobs for which a job hazard analysis or ergonomic assessment indicates a need for such tools.
 - 3.1.6 Ensure that a maintenance program is in place to identify and repair defective or unsafe tools. Repairs to portable electrical tools may only be made by an authorized manufacturer's tool service/repair group or by the approved company sources.
 - 3.1.7 Training may be conducted as part of an apprenticeship program or in other recognized training forums.
 - 3.1.8 Employees who indicate they have had prior training will be required to demonstrate understanding and capabilities prior to being assigned to work.
 - 3.1.9 Retain manufacturer's instructions for training/reference purposes.
 - 3.1.10 Ensure that periodic assessments and inspections of tools and tool use are performed.

3.2 Employees:

- 3.2.1 Use only company provided or approved tools. Tools brought from home must have prior permission from the company and may be subject to inspection.
- 3.2.2 Attend training, as needed or required, for tool use.
- 3.2.3 Report incidents, accidents or signs and symptoms of injury to your supervisor.

3.3 Safety Officer (as needed or required):

- 3.3.1 Assist in the development and implementation of this program.

4. Procedure.

4.1 General Requirements:

- 4.1.1 No one will use an unsafe/defective tool. Tools that are damaged or defective will be removed from service.
- 4.1.2 Hand and power tools that may generate sparks or high temperatures will not be used in areas that are hazardous due to the presence of flammable or combustible materials.
- 4.1.3 The company is responsible for supplying proper power and specialized application tools for employee use.
- 4.1.4 Only qualified/trained personnel will operate powder-actuated tools.
- 4.1.5 Before a job is started, the supervisor or designee will ensure that the employee is fully aware of the hazards associated with the particular tool to be used.
- 4.1.6 Either Ground Fault Circuit Interrupter (GFCI) Protection or an Assured Equipment Grounding Conductor Program will be provided for all 120V (or greater) powered tools.
- 4.1.7 Adapters that interrupt the continuity of the equipment grounding conductor will not be used (e.g., 3-wire to 2-wire adapter.)
- 4.1.8 Double-insulated tools do not require an equipment grounding conductor (3rd wire) in the cord, but they do require GFCI protection.
- 4.1.9 Modifications will not be made to any tool or related equipment. Follow site or business unit established procedures when repairs are necessary.
- 4.1.10 Do not abuse power cords or hoses. Never carry tools by the cord or hose or yank to disconnect. Protect cords and hoses from heat, oil, and sharp edges.
- 4.1.11 Cords and hoses will be routed in such a manner as to not create a tripping hazard.

4.2 Types of Tools Appropriate for Use:

4.2.1 Ensuring the type of tool is appropriate for the job requires:

- 4.2.1.1 Recognition of applicable hazards associated with the work to be completed.
- 4.2.1.2 Tool determination and additional requirements.
- 4.2.1.3 Procedures for removal of a tool from service.
- 4.2.1.4 Where tools are used which could present a hazard to anyone other than the user, all other employees will be instructed concerning hazards.

4.2.2 Tool identification. Tools having identification numbers will be checked for legibility.

4.3 Pre-Use Safety:

4.3.1 Use the correct tool for the job.

4.3.2 Tools producing 100 dB (A) of noise will be labeled with a "Hearing Protection Required" sticker or tag.

4.3.3 Remove adjusting keys and wrenches before connecting to the power supply.

4.4 Pre-Use Inspection:

4.4.1 Prior to each use, visually inspect all portable electric tools and accessories for damages or defects, per the following:

4.4.1.1 Portable electric tools-check:

- 4.4.1.1.1 Tool general condition.
- 4.4.1.1.2 Cord for damage or deterioration.
- 4.4.1.1.3 Cord grip tightness.
- 4.4.1.1.4 Plug cap condition (grounding prong integrity).
- 4.4.1.1.5 Inspect extension cords and equipment for loose parts and damaged cords.
- 4.4.1.1.6 Portable GFCI's - Test per manufacturer's specifications.

4.4.1.2 Before using the tool, check workplace for nails, defects, or similar hazards/imperfections.

- 4.4.1.3 Attachment Plug/Connector Body/Cord; check for:
 - 4.4.1.3.1 General condition
 - 4.4.1.3.2 Cord grip tightness
 - 4.4.1.3.3 Grounding Prong integrity
 - 4.4.1.3.4 Polarization integrity
 - 4.4.1.3.5 Condition of outer cord jacket. Cord will not be spliced and must be replaced if outer jacket is damaged
 - 4.4.1.3.6 Boot and visible parts of body for damage, loose parts, or deterioration
 - 4.4.1.3.7 Portable lights-check
 - 4.4.1.3.8 Handle, guard and other visible parts for damage, loose parts or deterioration
 - 4.4.1.3.9 Lamp (should be rough-service type)
 - 4.4.1.3.10 Low voltage lights (12 volts) to ensure that transformer has not been by-passed. Check lamp voltage rating.

4.5 In-Use Safety:

- 4.5.1 Dress appropriately for the job
 - 4.5.1.1 Do not wear loose clothing or dangling jewelry.
 - 4.5.1.2 Confine long hair in a hair-net, cap, or fasten securely to the back of the head.
 - 4.5.1.3 Use extreme care when wearing gloves.
 - 4.5.1.4 Safety glasses are the minimum requirement when using any tool; additional PPE requirements may be necessary depending upon tool being used and job application (e.g., face shield, side shields, goggles, etc.)
 - 4.5.1.5 Use hearing protection if required.
- 4.5.2 Use all tools per manufacturer's recommendations.
- 4.5.3 Keep cutting tools in good condition. Sharpen/replace when necessary.
- 4.5.4 Never use fingers to pull or dislodge chips or turnings from tools or parts. Use pliers, rakes, or hooks.

- 4.5.5 In some areas, compressed gas lines have been installed for specific uses. Be sure that air powered tools are hooked up only to lines supplied for the purpose.
 - 4.5.6 Do not set down or carry a portable power tool in any way so that the starting-trigger or button can be accidentally struck.
 - 4.5.7 Appropriate precautions will be utilized when tools are used in a wet location (e.g., electrically insulated gloves).
- 4.6 Post-Use Safety:
- 4.6.1 Disconnect tools when not in use.
 - 4.6.2 Never lubricate, clean, repair, or adjust a tool while it is connected to a power source.
 - 4.6.3 After a job is finished, clean all scrap and debris from the work table and surrounding area. Use proper receptacles.
 - 4.6.4 Take care of all tools. Keep them sharp and clean. Follow manufacturer's instructions for lubricating, changing accessories, and inspection.
- 4.7 Repair:
- 4.7.1 All electric tool repairs will be made by a factory authorized tool repair service or company designated portable power tool repair service.
 - 4.7.2 The only exception is cord plugs and connector bodies that may be replaced by a qualified person with an electrical background. Upon completion of plug or body replacement, ground integrity will be tested.
 - 4.7.3 No repairs will be made to portable GFCIs.

5. Safety Information.

- 5.1 Specialized Applications:
- 5.1.1 Hand and power tools that may generate sparks or high temperatures will not be used in areas that are hazardous due to the presence of flammable or combustible materials. Use of non-sparking tools will be required unless monitoring ensures levels below 25% of the lower explosive limit (LEL). For more information, reference Portable Electronic Devices in Hazardous Areas.
 - 5.1.2 Training for use of a powder actuated tool is provided by the manufacturer (usually HILTI).
 - 5.1.2.1 A license is issued after training; individuals using powder actuated tools must have the license on their person when using the tool.
 - 5.1.2.2 A record of training will be kept in personnel training files or equivalent recordkeeping system.

5.2 Power Tool Precautions:

- 5.2.1 Power tools can be hazardous when improperly used. The company uses several types based on the power source they use such as electric, liquid fuel, hydraulic, pneumatic, and powder-actuated. The following precautions will be taken by employees to prevent injury.
 - 5.2.1.1 Power tools will always be operated within their design limitations.
 - 5.2.1.2 Eye protection, gloves, and safety footwear are recommended during operation.
 - 5.2.1.3 Store tools in an appropriate dry location when not in use.
 - 5.2.1.4 Work only in well illuminated locations.
 - 5.2.1.5 Tools will not be carried by the cord or hose.
 - 5.2.1.6 Cords or hoses will not be yanked to disconnect it from the receptacle.
 - 5.2.1.7 Cords and hoses will be kept away from heat, oils, and sharp edges or any other source that could result in damage.
 - 5.2.1.8 Tools will be disconnected when not in use, before servicing, and when changing accessories such as blades, bits, and cutters.
 - 5.2.1.9 Observers will be kept at a safe distance at all times from the work area.
 - 5.2.1.10 Work will be secured with clamps or a vice where possible to free both hands to operate tools.
 - 5.2.1.11 To prevent accidental starting, employees should be continually aware not to hold the start button while carrying a plugged in tool.
 - 5.2.1.12 Tools will be maintained in a clean manner and properly maintained in accordance with the manufacturer's guidelines.
 - 5.2.1.13 Ensure that proper shoes are worn and that the work area is kept clean to maintain proper footing and good balance.
 - 5.2.1.14 Ensure that proper apparel is worn. Loose clothing, ties, or jewelry can become caught in moving parts.
 - 5.2.1.15 Tools that are damaged will be removed from service immediately and tagged "Do Not Use". They will be reported and turned over to the job site supervisor or Safety Officer for repair or replacement.
 - 5.2.1.16 Cracked saws. All cracked saws will be removed from service.

- 5.2.1.17 Grounding. Portable electric power tools will meet the electrical requirements of this safety program and 29 CFR 1910.331 - 335.
- 5.2.1.18 Compressed air used for cleaning. Compressed air will not be used for cleaning purposes except where reduced to less than 30 p.s.i. and then only with effective chip guarding and personal protective equipment.

5.3 Methods of Guarding:

- 5.3.1 One or more methods of guarding will be provided where required to protect the operator and other employees in the area from hazards such as those created by point of operation, in-running nip points, rotating parts, flying chips and sparks. Examples of guarding methods are barrier guards, two-hand tripping devices, electronic safety devices, etc. The guard will be such that it does not offer an accident hazard in itself. Employees will:
 - 5.3.1.1 Inspect tools without guards for signs of guard removal. If it is evident that a guard is required, tag-out the tool and obtain a replacement. Tools will not be energized during inspection.
 - 5.3.1.2 Inspect tools having guards for proper operation and maintenance prior to use. Tools will not be energized during inspection.
 - 5.3.1.3 Never remove a guard during use.

5.4 Self Assessment:

- 5.4.1 Each division/work unit should conduct a self-assessment to assess compliance with this standard and develop action plans to correct deficiencies. See Section 6 for more information.

6. Training and Information.

6.1 Powder Actuated Tools:

- 6.1.1 Users of powder-actuated tools must be licensed and trained.
- 6.1.2 Training may be conducted as part of an apprenticeship program or in other recognized training forums.
- 6.1.3 Employees who indicate they have had prior training will be required to demonstrate understanding and capabilities prior to being assigned to work.
- 6.1.4 Manufacturer's instructions will be retained for training/reference purposes.

6.2 Initial and Re-Training:

6.2.1 This safety program will be provided to and read by all employees receiving training. Training will be conducted on an as needed basis or when the following conditions are met:

6.2.1.1 Re-training will be provided for all authorized and affected employees whenever (and prior to) there being a change in their job assignments, a change in the type of tools used, or when a known hazard is added to the work environment.

6.2.1.2 Additional re-training will also be conducted whenever a periodic inspection reveals (or whenever there is sufficient reason to believe) there are deviations from or inadequacies in the employee's knowledge or use of tools.

6.2.1.3 The re-training will reestablish employee proficiency and introduce new or revised methods and procedures, as necessary.

6.3 Verification:

6.3.1 The company will verify that employee training has been accomplished and is being kept up to date. The documentation will contain each employee's name and dates of training.

7. Definitions.

- *Powder Actuated Tools* – A tool that uses an explosive charge to drive a bolt or nail. Normally used in concrete construction or steel erection. Electrically powered nail guns are not considered a powder actuated tool.

HAND AND PORTABLE POWER TOOL GUARDING AND SAFETY REQUIREMENTS

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- **Portable Circular Saws**

- All portable, power-driven circular saws having a blade diameter greater than 2 in. will be equipped with guards above and below the base plate or shoe.
- The upper guard shall cover the saw to the depth of the teeth, except for the minimum arc required to permit the base to be tilted for bevel cuts. (Does not apply to circular saws used in the meat industry for meat cutting purposes).
- For authorized use the following conditions must be met.
 - An upper guard must cover the entire blade of the saw.
 - A retractable lower guard must cover the teeth of the saw.
 - Except when it makes contact with the work material, the lower guard must automatically return to the covering position when the tool is withdrawn from the work.

- **Power Abrasive Wheel Tools**

- Abrasive wheels shall be used only on tools/equipment provided with safety guards. (A safety guard is an enclosure designed to restrain the pieces of the grinding wheel and furnish all possible protection in the event that the wheel is broken in operation.)
 - Exceptions. These requirements do not apply to the following classes of wheels and conditions:
 - Wheels used for internal work while within the work being ground.
 - Mounted wheels used in portable operations 2 inches and smaller in diameter. Mounted wheels, usually 2 inch diameter or smaller, and of various shapes, may be either organic or inorganic bonded abrasive wheels. They are secured to plain or threaded steel mandrels. (Organic wheels are wheels which are bonded by means of an organic material such as resin, rubber, shellac, or other similar bonding agent.)
 - Types 16, 17, 18, 18R, and 19 cones, and plugs, and threaded-hole pot balls where the work offers protection.
- Guard covers. Employees will ensure that a safety guard covers the spindle end, nut, and flange projections. The safety guard shall be mounted so as to maintain proper alignment with the wheel and the strength of the fastenings shall exceed the strength of the guard.
 - Exception. Safety guards on all operations where the work provides a suitable measure of protection to the operator may be so constructed that the spindle end, nut, and outer flange are exposed. Where the nature of the work is such as to entirely cover the side of the wheel, the side covers of the guard may be omitted.
 - Exception. The spindle end, nut, and outer flange may be exposed on portable machines designed for and used with type 6, 11, 27, and 28 abrasive wheels, cutting off wheels, and tuck pointing wheels. (Tuck pointing wheels, usually Type 1, are reinforced organic bonded wheels which have diameter, thickness and hole size dimension. They are subject to the same limitations of use and mounting as Type 1 wheels. Limitation: Wheels used for tuck pointing should be reinforced, organic bonded. Tuck pointing is the removal, by grinding, of cement, mortar, or other nonmetallic jointing material. The term reinforced as applied to grinding wheels shall define a class of organic wheels which contain strengthening fabric or filament. The term reinforced does not cover wheels using such mechanical additions as steel rings, steel cup backs or wire or tape winding.)
 - Type 1 straight wheels have diameter, thickness, and hole size dimensions and should be used only on the periphery. Type 1 wheels shall be mounted between flanges. Limitation: Hole dimension (H) should not be greater than two-thirds of wheel diameter dimension (D) for precision, cylindrical, centerless, or surface grinding applications. Maximum hole size for all other applications should not exceed one-half wheel diameter.

- Cup wheels. Cup wheels (Types 6 and 11) shall be protected by:
 - Safety guards as specified.
 - Special "revolving cup guards" which mount behind the wheel and turn with it. They shall be made of steel or other material with adequate strength and shall enclose the wheel sides upward from the back for one-third of the wheel thickness. The mounting features shall conform to all regulations. It is necessary to maintain clearance between the wheel side and the guard. The clearance shall not exceed one-sixteenth.
 - Type 6 cup wheels have specific diameter, thickness, hole-sizes, rim thickness, and back thickness dimensions. Grinding is always performed on rim face, W dimension. Limitation: Minimum back thickness, E dimension, should not be less than one-fourth T dimension. In addition, when unthreaded hole-wheels are specified, the inside flat, K dimension, must be large enough to accommodate a suitable flange.
 - Type 11 flaring cup wheels have double diameter dimensions D and J, and in addition have thickness, hole size, rim and back thickness dimensions. Grinding is always performed on rim face, W dimension. Type 11 wheels are subject to all limitations of use and mounting listed for Type 6 straight sided cup wheels definition
- General safety precautions.
 - Before being mounted it should be inspected closely and sound- or ring- tested to be sure that it is free from cracks or defects. To test, wheels should be tapped gently with a light non-metallic instrument. If they sound cracked or dead they could fly apart in operation and so must not be used. A sound and undamaged wheel will give a clear metallic tone or ring.
 - Employees will not locate themselves directly in front of the wheel as it accelerates to full operating speed.
 - Employees will always use eye protection.
 - Power will be turned off when not in use.
 - Hand held grinders are never placed in vises.
 - Mounting and inspection of abrasive wheels.
 - Immediately before mounting, all wheels shall be closely inspected and sounded by the user using the ring test to make sure they have not been damaged in transit, storage, or otherwise. The spindle speed of the machine shall be checked before mounting of the wheel to be certain that it does not exceed the maximum operating speed marked on the wheel.
 - Grinding wheels shall fit freely on the spindle and remain free under all grinding conditions. A controlled clearance between the wheel hole and the machine spindle (or wheel sleeves or adaptors) is essential to avoid excessive pressure from mounting and spindle expansion. To accomplish this, the machine spindle shall be made to nominal (standard) size plus zero minus .002 inch, and the wheel hole shall be made suitably oversize to assure safety clearance under the conditions of operating heat and pressure.
 - All contact surfaces of wheels, blotters, and flanges shall be flat and free of foreign matter.
 - When a bushing is used in the wheel hole it shall not exceed the width of the wheel and shall not contact the flanges.
 - Excluded machinery. Natural sandstone wheels and metal, wooden, cloth, or paper discs having a layer of abrasive on the surface are not covered by these requirements.
- **Vertical Portable Grinders**
 - Supervisors will ensure all employees are thoroughly familiar with and use strict work practices in accordance with the manufacturer instructions. Safety guards used on machines known as right angle head or vertical portable grinders shall have a maximum exposure angle of 180 and the guard shall be located between the operator and the wheel during use. Adjustment of guard shall be such that pieces of an accidentally broken wheel will be deflected away from the operator. (See 29 CFR 1910.243, Figure P-4.)
 - Other portable grinders. The maximum angular exposure of the grinding wheel periphery and sides for safety guards used on other portable grinding machines shall not exceed 180 and the top half of the wheel shall be enclosed at all times.
 - Portable grinding is a grinding operation where the grinding machine is designed to be hand held and may be easily moved from one location to another.
- **Portable Belt Sanding Machines**
 - Supervisors will ensure that all belt sanding machines used by their personnel be provided with guards at each nip point where the sanding belt runs onto a pulley. These guards will effectively prevent the hands or fingers of the operator from coming in contact with the nip points. The unused run of the sanding belt shall be guarded against accidental contact.

- **Pneumatic Power Tools and Hoses**
 - Supervisors will ensure all employees are thoroughly familiar with and use strict work practices in accordance with the manufacturer instructions. Prior to use the following requirements will be complied with:
 - Tool retainer. A tool retainer will be installed on each piece of utilization equipment which, without such a retainer, may eject the tool.
 - Air-hoses. Hose and hose connections used for conducting compressed air to utilization equipment will be compatible with the pressure and service to which they are subjected.
- **Explosive Actuated Fastening Tools**
 - General safety precautions: Supervisors will ensure all employees are thoroughly familiar with and use strict work practices in accordance with the manufacturer instructions.
 - Operators and assistants using tools shall be safeguarded by wearing eye protection.
 - Head and face protection shall be used as required by working conditions.
 - Before using a tool, the employee will inspect it to determine to his satisfaction that it is clean, that all moving parts operate freely, and that the barrel is free from obstructions.
 - When a tool develops a defect during use, the operator shall immediately cease to use it until it is properly repaired.
 - Tools will not be loaded until just prior to the intended firing time. Neither loaded nor empty tools are to be pointed at any workmen.
 - No tools shall be loaded unless being prepared for immediate use and will not be left unattended.
 - Misfire instructions (general).
 - Know the manufacturers instructions.
 - Hold the tool in the operating position for at least 30 seconds.
 - Try to operate the tool a second time.
 - Wait another 30 seconds, holding the tool in the operating position; then proceed to remove the explosive load in strict accordance with the manufacturer instructions.
 - A tool will never be left unattended in a place where it would be available to unauthorized persons.
 - Fasteners will not be driven into very hard or brittle materials including but not limited to cast iron, glazed tile, surface-hardened steel, glass block, live rock, face brick, or hollow tile.
 - Driving into materials easily penetrated will be avoided unless such materials are backed by a substance that will prevent the pin or fastener from passing completely through and creating a flying-missile hazard on the other side.
 - Low-velocity tools. Only tools meeting the design specifications of 29 CFR 1910.243 will be used. Employees contemplating purchase of low-velocity tools will consult the OSHA Regulatory Standard before final tool selection. The manufacturer's inspection criteria will be followed for pre-use inspection.
 - Low-velocity piston type tools. Only tools meeting the design specifications of 29 CFR 1910.243 will be used. Employees contemplating purchase of low-velocity piston type tools will consult the OSHA Regulatory Standard before final tool selection. The manufacturer's inspection criteria will be followed for pre-use inspection.
 - A low-velocity piston tool is a tool that utilizes a piston designed to be captive to drive a stud, pin, or fastener into a work surface. It will not cause such stud, pin, or fastener to have a mean velocity in excess of 300 feet per second when measured 6.5 feet from the muzzle end of the barrel.
 - Fasteners will not be driven directly into materials such as brick or concrete closer than 3 inches from the unsupported edge or corner or into steel surfaces closer than one-half inch from the unsupported edge or corner, unless a special guard, fixture, or jig is used. (Exception: Low-velocity tools may drive no closer than 2 inches from an edge in concrete or one-fourth inch in steel.)
 - When fastening other materials, such as a 2X4 inch wood section to a concrete surface, it is permissible to drive a fastener of no greater than 7/32 inch shank diameter not closer than 2 inches from the unsupported edge or corner of the work surface.
 - Fasteners will not be driven through existing holes without positive guides for accurate alignment.
 - No fastener will be driven into a spalled area caused by an unsatisfactory fastening.
 - Tools will not be used in an explosive or flammable atmosphere.
 - All tools will be used with the correct shield, guard, or attachment recommended by the manufacturer. Protective shields or guards are devices or guards attached to the muzzle end of the tool, which is designed to confine flying particles
 - Any tool found not in proper working order will be immediately removed from service and turned over to the job site supervisor for repair in accordance with the manufacturer's specifications.

- High-velocity tools. Only tools meeting the design specifications of 29 CFR 1910.243 will be used. Employees contemplating purchase of high-velocity tools will consult the OSHA Regulatory Standard before final tool selection. The manufacturer's inspection criteria will be followed for pre-use inspection.
 - High-velocity tools are tools or machines which, when used with a load, propels or discharges a stud, pin, or fastener, at velocities in excess of 300 feet per second when measured 6.5 feet from the muzzle end of the barrel, for the purpose of impinging it upon, affixing it to, or penetrating another object or material. (A stud, pin, or fastener is a fastening device specifically designed and manufactured for use in explosive-actuated fastening tools.)
 - A hammer-operated piston tool--low-velocity type, is a tool which, by means of a heavy mass hammer supplemented by a load, moves a piston designed to be captive to drive a stud, pin, or fastener into a work surface, always starting the fastener at rest and in contact with the work surface.
- **Power Lawnmowers**
 - Supervisors will ensure all employees are thoroughly familiar with and use strict work practices in accordance with the manufacturer instructions. General requirements:
 - Power lawnmowers will have power-driven chains, belts, and gears so positioned or otherwise guarded to prevent the operator's accidental contact therewith during normal starting, mounting, and operation of the machine.
 - A shutoff device will be provided to stop operation of the motor or engine. This device will require manual and intentional reactivation to restart the motor or engine.
 - All positions of the operating controls will be clearly identified.
 - The words "Caution. Be sure the operating control(s) is in neutral before starting the engine" shall be clearly visible at an engine starting control point on self-propelled mowers.
 - The mower blade will be enclosed except on the bottom and the enclosure shall extend to or below the lowest cutting point of the blade in the lowest blade position.
 - Guards which must be removed to install a catcher assembly will be affixed to the mower near the opening stating that the mower will not be used without either the catcher assembly or the guard in place.
 - The word "Caution" (or stronger wording) will be placed on the mower at or near each discharge opening.
 - Proper precautions will be taken when refueling mowing equipment.
 - Mowing equipment will never be left unattended while running.
 - Will constantly be mindful of persons working near the operation of the mower.
- **Jacks**
 - Jack. A jack is an appliance for lifting and lowering or moving horizontally a load by application of a pushing force. Jacks may be either lever and ratchet or screw and hydraulic types.
 - The operator will make sure that the jack used has a rating sufficient to lift and sustain the load. The rating of a jack is the maximum working load for which it is designed to lift safely that load throughout its specified amount of travel.
 - To raise the rated load of a jack, the point of application of the load, the applied force, and the length of lever arm should be those designated by the manufacturer for the particular jack considered.
 - The rated load will be legibly and permanently marked in a prominent location on the jack by casting, stamping, or other suitable means.
 - In the absence of a firm foundation the base of the jack will be blocked. If there is a possibility of slippage of the cap, a block shall be placed in between the cap and the load.
 - The operator will watch the stop indicator, which shall be kept clean, in order to determine the limit of travel. The indicated limit will never be overrun.
 - After the load has been raised, it will be cribbed, blocked, or otherwise secured at once.
 - Hydraulic jacks exposed to freezing temperatures shall be supplied with adequate antifreeze liquid.
 - All jacks shall be properly lubricated at regular intervals.

HAND AND PORTABLE POWER TOOL PROGRAM ASSESSMENT		
Unit Assessed:	Assessor:	Date:
Description of Requirement		Compliant?
Purchase of Tools		
Are all electrical tools been listed by a Nationally Recognized Testing Laboratory (NRTL) such as Underwriters Laboratory (UL)?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Are all tools company owned or leased (no personally owned tools)?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Are modifications made to tools required to be inspected by a qualified person to assure the modifications meet existing electrical standards?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Tool Inspection		
Are procedures are in place to conduct visual inspections of tools prior to use?		<input type="checkbox"/> Yes <input type="checkbox"/> No
If testing is required (e.g., GFCI testing before each use), are procedures in place to ensure compliance?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Safe Work Practices		
Do employees understand and follow manufacturer's instructions?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Are tools routinely inspected prior to use?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Do employees use the tools only for the purpose for which they were designed and intended?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Are ergonomically designed tools (for repetitive tasks and for those jobs for which a job hazard analysis or ergonomic assessment indicates a need for such tools) made available, as appropriate?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Do employees understand that unsafe behavior while using tools shall result in corrective action (e.g., retraining, disciplinary action)?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Are employees fully aware of the hazards associated with the particular tool and task before a job is started?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Are tools producing 100 dB (A) of noise labeled with a "Hearing Protection Required" sticker?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Are adjusting keys and wrenches removed before connecting to the power supply?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Are users of power tools appropriately dressed for the job (i.e. no loose clothing/jewelry, long hair is confined, gloves and other PPE are worn as appropriate)?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Are tools (pliers, rakes, or hooks) used to pull or dislodge chips or turning from tools or parts (not fingers)?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Are air powered tools hooked up only to lines supplied for the purpose (i.e. not compressed gas lines)?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Are tools carried in a way that prevents the starting trigger or button from being accidentally actuated?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Are appropriate precautions utilized when tools are used in a wet location (i.e. GFCI and appropriate gloves and other PPE)?		<input type="checkbox"/> Yes <input type="checkbox"/> No

Description of Requirement	Compliant?
Are tools disconnected when not in use?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are all tools disconnected from the power source prior to lubricating, cleaning, or adjustment?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are the manufacturer's instructions for lubricating, changing accessories, and inspection followed?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Maintenance and Repair	
Is a maintenance program in place to identify and repair defective or unsafe tools?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are repairs to portable electrical tools only made by an authorized manufacturer's tool service/repair group or by the approved company tool repair service?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are tools that are damaged or defective removed from service?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Training	
Is training conducted (as part of an apprenticeship program or other Company recognized training forums)?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Can employees who indicate they have had prior training demonstrate understanding and capabilities prior to being assigned to work?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are manufacturer's instructions retained for training/reference purposes?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Specialized Applications	
Are hand and power tools that may generate sparks or high temperatures prohibited from use in areas that are hazardous due to the presence of flammable or combustible materials?	<input type="checkbox"/> Yes <input type="checkbox"/> No
In hazardous locations, is the use of non-sparking tools required (unless monitoring ensures levels below 25% of the lower explosive limit (LEL))?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Has training in the use of a powder-actuated tools been provided by the manufacturer?	<input type="checkbox"/> Yes <input type="checkbox"/> No
For such powder-actuated tools, is a license issued after training?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Do individuals using powder-actuated tools have the license on their person when using the tool?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Is a record of powder-actuated tool training kept in personnel files (or equivalent recordkeeping system)?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Electrical Applications and Safeguards	
Is either Ground Fault Circuit Interrupter (GFCI) Protection or an Assured Equipment Grounding Conductor Program provided for all 120V (or greater) powered tools?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are adapters that interrupt the continuity of the equipment-grounding conductor prohibited (e.g., 3-wire to 2-wire adapter)?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Do double-insulated tools require GFCI protection (they do not require an equipment-grounding conductor (3rd wire) in the cord)?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are power cords or hoses kept in good operating condition and not abused during use (i.e. yanked for disconnect, protected from heat, oil and sharp edges)?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are cords and hoses routed in such a manner as to not create a tripping hazard?	<input type="checkbox"/> Yes <input type="checkbox"/> No

PROGRAM OVERVIEW

HAZARD COMMUNICATION SAFETY PROGRAM

REGULATORY STANDARD: *OSHA - 29 CFR 1910.1200*
- 29 CFR 1926.59

INTRODUCTION: Outlines the requirements for ensuring evaluation of the hazards of all chemicals imported into, produced, or used in the workplace. It establishes means for communicating hazard information to all affected workers. This program allows for hazard identification and has requirements for material safety data sheets (MSDS). It outlines labeling requirements and details employee training requirements, including non-routine task training. The program also defines communication requirements for contractors and vendors.

TRAINING:

- All employees and contractors must be made aware of the hazards they may encounter and the precautions they must take to protect themselves from these hazards.
- Employees or contractors must be trained on initial assignment and whenever any new physical, chemical or health hazards are introduced, when non-routine tasks or procedures are required, or when employees are working with or near unlabeled piping systems that contain hazardous chemicals.

ACTIVITIES:

- Determine if hazardous chemicals are present in the workplace
- Ensure the availability of a Material Safety Data Sheet (MSDS) for each hazardous chemical or mixture in the workplace
- Ensure a Hazardous Chemical Inventory List is maintained
- Evaluate the hazards for each chemical or mixture used and/or stored in the workplace
- Ensure proper labeling of chemical containers
- Complete the written program
- Employees trained
- Process to evaluate and document any new hazards or changes
- Personal protective equipment identified

FORMS:

- Chemical Inventory List
- Hazard Communication Written Program
- Program Assessment
- Training Attendance Roster
- As needed:
 - Michigan Specific Information
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Hazard Communication Program

1. **Purpose.** To provide an effective, written hazard communication program in compliance with company, State and Federal regulatory requirements. Hazard Communication applies to all chemicals and mixtures purchased, manufactured, used, and/or stored by the company to which employees, contractors, tenants or visitors may be exposed. (Note that Laboratories, as defined by OSHA regulations, are not covered under this program.)
2. **Scope.** This program applies to all operations at company facilities and job-sites. This program does not apply to articles, food or beverage items, or consumer products normally purchased at consumer markets, provided they are used as intended by the manufacturer of the material, and the duration and frequency of exposure is as intended based on normal product use. (For example: if window cleaner is used to clean windows, then this program does not apply, however, if it is used for another reason, or blended with another material, then this program applies).

3. Responsibilities.

3.1 Management (or their designee) must:

- 3.1.1 Perform a hazard determination. The company is required to determine the hazards of any products or chemicals they *manufacture and/or sell*. Such items require the company to produce and maintain up-to-date Material Safety Data Sheets (MSDS), and provide these to suppliers and customers with initial shipment, when changes occur, or upon request. An MSDS must include:
 - 3.1.1.1 Identity of the product, as used on the label (its chemical or common name, and hazardous ingredients or hazardous components)
 - 3.1.1.2 Physical and chemical characteristics (i.e. vapor pressure, flashpoint, pH)
 - 3.1.1.3 Health Hazards (signs, symptoms or associated medical conditions)
 - 3.1.1.4 Primary routes of entry (inhalation, ingestion, absorption)
 - 3.1.1.5 OSHA, ACGIH or other exposure limits known
 - 3.1.1.6 Toxicological information, including carcinogenicity
 - 3.1.1.7 Safe handling precautions (hygiene practices, spill or leak clean-up, etc.)
 - 3.1.1.8 Control measures (PPE, ventilation, etc.)
 - 3.1.1.9 Emergency and First-aid procedures
 - 3.1.1.10 Date of last revision to the MSDS
 - 3.1.1.11 Name address and telephone number of the manufacturer, including emergency contact information.

- 3.1.2 Ensure a Chemical Inventory List is maintained either for the company as a whole, or for each department or work area. (See FORM for a Chemical Inventory List Template.) Chemical lists must include:
 - 3.1.2.1 The trade-name of the chemical or material as it appears on the MSDS
 - 3.1.2.2 The name of the chemical or material (if it is different than the manufacturer's trade name)
 - 3.1.2.3 The manufacturer's name
 - 3.1.2.4 The manufacturer's telephone number
 - 3.1.2.5 Emergency contact information (company name and telephone number) if different than the manufacturer
- 3.1.3 Evaluate the hazards for each chemical or mixture *used or stored* in the workplace.
 - 3.1.3.1 Determine if the quantity or type of chemical presents a hazard to the employees, the nature of the hazards, and the means that employees will use to protect themselves from these hazards.
 - 3.1.3.2 This information is generally found on the Material Safety Data Sheet (MSDS) for the product. A safety professional or certified industrial hygienist may assist in this evaluation.
- 3.1.4 Maintain a written hazard communication program. (See the attached form for a sample program template.) This program must contain or describe:
 - 3.1.4.1 A list of hazardous chemicals
 - 3.1.4.2 Access to and maintenance of a current MSDS
 - 3.1.4.3 Labeling procedures
 - 3.1.4.4 Protective measures
 - 3.1.4.5 Training program elements
 - 3.1.4.6 Provisions for contractors (multi-employer workplaces)
 - 3.1.4.7 Procedures for evaluating the hazards of any non-routine tasks (e.g. one-time chemical uses) and for evaluating any unlabeled pipes in the work area that contain hazardous chemicals

- 3.1.5 Assure labels and other forms of warning are affixed to chemical containers, as appropriate.
 - 3.1.5.1 Full labeling: All containers must be labeled with the chemical name, appropriate hazard warnings and the manufacturer name and address. Vendor labels should be in compliance. Such labels may not be defaced or covered.
 - 3.1.5.2 Shortened labeling: May be used for *process materials* and must contain the chemical identity (referenced back to the MSDS), and appropriate hazard warnings and the MSDS.
 - 3.1.5.3 Labels should be on all containers at all times. However, labels are not required for portable containers provided they are immediately used by the employee on that work-shift *and* remain in the direct control of the employee at all times.
 - 3.1.5.4 All labels must be in legible English. Other languages may be used, provided a label in English is also provided.
 - 3.1.5.5 Pipes or piping systems that contain a hazardous chemical shall be identified to employees by at least one (1) readily accessible label, sign, placard, written operating instructions, process sheet, batch ticket or substance identification system.
- 3.1.6 Assure Material Safety Data Sheets (MSDS) for each chemical used in the workplace are:
 - 3.1.6.1 Readily accessible and available by employees on each work shift
 - 3.1.6.2 Written in English
 - 3.1.6.3 Obtained from the manufacturer or supplier of the chemical or material before it is used at the workplace, if one did not accompany the shipment
 - 3.1.6.4 Kept for the duration of employment plus 30 years if chemical *over-exposures* have occurred
 - 3.1.6.5 Kept for the duration of its use or storage, at a minimum. (It is recommended that all MSDS's be kept for the duration of employment of person using the material.)
 - 3.1.6.6 Kept in a single area and filed alphabetically by name (recommended), however, current copies may be kept in each work area
- 3.1.7 Train and inform employees on initial assignment and whenever a new physical, chemical or health hazard is introduced into the workplace, or when non-routine tasks or procedures are required. Training includes:
 - 3.1.7.1 The information required in the OSHA Standard

- 3.1.7.2 Identification of the work areas where chemicals are used
 - 3.1.7.3 The location and availability of the written program, chemical inventory list(s), and MSDS
 - 3.1.7.4 Information on the methods used to detect the presence or release of chemicals in the workplace (monitors, alarm systems, odors, visual appearance, etc.)
 - 3.1.7.5 The physical and health hazard information of the chemicals present
 - 3.1.7.6 The measures employees can take to protect themselves from identified chemical hazards (procedures, personal protective equipment, etc.)
 - 3.1.7.7 The labeling system used in the workplace
 - 3.1.7.8 The details of this program
 - 3.1.8 Develop and implement a method of communication between any contractors and the company which describes and outlines:
 - 3.1.8.1 The method used to communicate hazards and precautions
 - 3.1.8.2 The method used to access an MSDS
 - 3.1.8.3 The method used to communicate emergency situations
 - 3.1.8.4 The labeling methods used
 - 3.1.9 Review this program annually to assure the above requirements are met.
 - 3.1.10 Businesses in Michigan must post signs throughout the workplace for any new chemical used or stored at the facility. A copy of this poster and required elements of the posting is included on a form within this hazard communication program.
 - 3.1.11 Businesses in Minnesota must comply with additional requirements outlined on the appropriate form within this hazard communication program.
- 3.2 Employees must:
- 3.2.1 Attend Hazard Communication Training upon initial assignment, and when changes to the workplace hazards occur (through process changes or a change of work assignment).
 - 3.2.2 Re-label any containers into which hazardous chemicals or mixtures are transferred. Labeling includes the name of the material, manufacturer name and phone number, and appropriate hazard warnings. Such containers do not require labeling if they are portable containers which will be immediately used by the employee on that work-shift and which remains in the direct control of the employee at all times
 - 3.2.3 Inform management of any changes to chemicals or chemical uses.

3.3 Safety Officer must (as needed or required):

3.3.1 Assist in the development and maintenance of the written program or training requirements.

3.3.2 Assist in the determination and evaluation of chemical hazards in the workplace.

4. Procedure.

4.1 General:

4.1.1 Determine if hazardous chemicals are present in the workplace

4.1.2 Ensure the availability of a Material Safety Data Sheet (MSDS) for each hazardous chemical or mixture in the workplace

4.1.3 Ensure a Hazardous Chemical Inventory List is maintained

4.1.4 Evaluate the hazards for each chemical or mixture used and/or stored in the workplace

4.1.5 Ensure proper labeling of chemical containers

4.1.6 Create and maintains a written program

4.1.7 Train employees

4.1.8 Maintain a process to evaluate and document any new hazards or changes to the workplace that would affect the above requirements, including any non-routine tasks or procedures, or unlabeled piping systems that contain hazardous chemicals.

4.2 Personal Protective Equipment Requirements:

4.2.1 Based on the types of hazardous materials at the workplace, employees must be provided with personal protective equipment.

4.2.1.1 Training must be provided as needed for protective equipment use.

4.2.2 Personal Protective Equipment includes: Gloves, Eyewear, Head or Foot protection, Protective Clothing, Respiratory Protection, Hearing Protection and Other Equipment such as Eyebath Stations or Emergency Showers

4.2.2.1 Tools and receptacles for maintenance and disposal must be provided and employees informed in their use.

4.2.2.2 Eyebaths must be approved types (personal eyewash bottles are NOT approved equipment, stations must be either permanently plumbed or portable stations that are capable of delivering a set amount of flushing fluid for 15 minutes.).

5. Safety Information.

5.1 Trade Secret Information

5.1.1 Trade Secrets are products which, when the chemical identity of the product is revealed, would jeopardize the manufacturer's competitive advantage. Trade secret materials (and requests to reveal trade secret information) must comply with the requirements of OSHA 1910.1200(i) and Appendix D. Trade Secret information must be revealed to a health care professional when either:

5.1.1.1 A medical emergency exists, or

5.1.1.2 In a non-emergency situation, when a healthcare or safety professional, toxicologist or similar person provides a detailed written request *and* one of the following situations occurs:

5.1.1.2.1 A hazard exposure evaluation depends upon the information

5.1.1.2.2 To conduct sampling to determine exposure levels (including medical surveillance or pre-assignment) to potentially exposed employees

5.1.1.2.3 To provide medical treatment to exposed employees

5.1.1.2.4 To assess PPE requirements for exposed employees

5.1.1.2.5 To design or assess engineering controls for exposed employees

5.1.1.2.6 To conduct health assessment and health-effect studies

5.1.1.2.7 Signed confidentiality statements may be required.

5.2 Required Documentation and Records:

5.2.1 Material Safety Data Sheets (preferably a master file in a single location).

5.2.2 Chemical Inventory Lists.

5.2.3 Training Records.

5.3 Obsolete MSDS's or Discontinued Products:

5.3.1 MSDS's for products no longer *used* at company facilities and job-sites are kept on file in a "discontinued MSDS" file for at least 5 years from the last date of use.

5.3.2 MSDS's for chemicals and products no longer *made* by the company are kept on file for at least 30 years, and appropriate information is made available upon written request.

6. Training and Information.

- 6.1 All employees and contractors must be made aware of the hazards they may encounter and the precautions they must take to protect themselves from these hazards.
- 6.2 Employees or contractors must be trained on initial assignment and whenever any new physical, chemical or health hazards are introduced, when non-routine tasks or procedures are required, or when employees are working with or near unlabeled piping systems that contain hazardous chemicals. Training includes:
 - 6.2.1 The information required in the OSHA Standard
 - 6.2.2 Identification of the work areas where hazardous chemicals are used
 - 6.2.3 The location and availability of the written program, chemical inventory list(s), and MSDS.
 - 6.2.4 Information on the methods and observations used to detect the presence or release of chemicals (monitors, alarm systems, odors, visual appearance, etc.) including any "non-routine" tasks that employees may be asked to periodically perform which are beyond their regularly assigned duties
 - 6.2.5 The physical and health hazard information of the chemicals present
 - 6.2.6 The measures employees can take to protect themselves from identified chemical hazards (procedures, personal protective equipment, etc.)
 - 6.2.7 The labeling system used in the workplace
 - 6.2.8 The details of this program
 - 6.2.9 The requirements of use, handling, storage and disposal of any Personal Protective Equipment

7. Definitions.

- *Article* - A product whose use is dependant upon the product's size and shape and which does not constitute a hazard. (i.e. furniture, toys, packaging, etc.)
- *Laboratory* - A facility where relatively small quantities of hazardous chemicals are used on a non-production basis. The following conditions must be met:
 - Chemical manipulations are carried out on a "laboratory scale"
 - Multiple chemical procedures or chemicals are used
 - The procedures involved are not part of a production process, nor in any way simulate a production process
 - "Protective laboratory practices and equipment" are available and in common use to minimize the potential for employee exposure to hazardous chemicals

- *MSDS* - Material Safety Data Sheets are reference documents that outline the product information, hazards and other required elements for hazardous chemicals or materials. These documents are produced by the manufacturer of the chemical or material and must be maintained at any workplace where they are used or stored.

- *Process Materials* - Chemicals that are routinely used in a chemical process or as part of a mixture for a chemical process.

HAZARD COMMUNICATION WRITTEN PROGRAM

The purpose of this written program is to document how the Hazard Communication requirements are met.

General:

_____ is responsible for the initial and ongoing activities to keep this Hazard Communication Program current.

The location of the written program is: _____

The location of the list of hazardous chemicals is: _____

The location of the Material Safety Data Sheets (MSDSs) is: _____

The list of hazardous chemicals, the written program, and the MSDSs are required to be accessible to employees at all times. If electronic access is provided, describe the process for accessing this information: _____.

If an MSDS is not received at the time of purchase or shipment, an MSDS will be obtained either through the manufacturer's website, by calling the manufacturer or supplier, or by writing the company. If the MSDS is not available, OSHA may be contacted or notified.

_____ is responsible for ensuring that MSDSs are received.

Hazard Warning Labels:

Original manufacturer's labels are general used to ensure updated information on chemical hazards is made available.

_____ is responsible for ensuring that all hazardous chemicals in the workplace have appropriate labels (original manufacturer's labels, or written/printed labels (such as HMIS, NFPA or NAFTA code labels) affixed by our company. If an alternative system to the hazard warning statements are used, describe the system used: _____.

_____ is responsible for ensuring any containers shipped or taken off our company premises have appropriate labels, which include the identity of the chemical, appropriate hazard warning statements, and the name and address of manufacturer or responsible party.

MSDS for Company Made or Manufactured Chemicals:

_____ is responsible for ensuring that MSDSs are created and written for every hazardous chemical that the company makes, mixes or manufactures.

_____ is responsible for ensuring that any MSDSs are shipped to another company who purchases or is provided with our company-specific chemicals or mixtures.

Non-Routine Tasks and Unlabeled Pipes:

_____ is responsible for ensuring that any **new or non-routine tasks** are identified and training is appropriately provided. MSDSs and chemical label reviews are used as part of this hazard evaluation and identification.

The methods used to inform employees of the hazards of **non-routine tasks**, and the hazards associated with chemicals contained in **unlabeled pipes** in their work areas are as follows:

Contractors:

_____ is responsible for supplying an MSDS, upon request. Contractors working at our sites or locations will be provided with an MSDS for any chemical used or stored at the facility, upon request. Describe the methods used to provide on-site access to MSDS:

Describe how you communicate information about your labeling system, if different than that used by contractors or subcontractors for types of labeling: _____

Methods used to inform any precautionary measures that need to be taken to protect employees during the workplace's normal operating conditions and in foreseeable emergencies: _____

Off-Site Work:

Employees working at other sites may request an MSDS for any chemical they may be exposed to. During training or orientation, our employees are informed of how to request information on the elements of that location's written hazard communication program, including material safety data sheet information, labeling, non-routine work hazards and unlabeled pipes.

_____ is responsible for ensuring that this occurs, as needed.

Information and Training:

_____ is responsible for identifying employees who need training.

_____ is responsible for conducting training upon initial assignment.

The hazard communication training must cover the following items, at a minimum:

- Information on the operations where hazardous chemicals are present
- The location and availability of this written program, list of hazardous chemicals, and MSDS
- How to detect releases of hazardous chemicals (monitoring equipment, visual determination, odor, equipment sensors, etc).
- The physical and health hazards of chemicals in the work area, including any unlabeled chemical pipes.
- The measures that employees can take to protect themselves from these hazards.

The details of the Hazard Communication Program, including the explanation of the labeling system and MSDS.

_____ is responsible for ensuring that these elements are covered in the training program.

Completed by: _____ Date: _____

HAZARD COMMUNICATION PROGRAM ASSESSMENT CHECKLIST

Assessor:		Date:
Requirement Explanation	Elements to Verify	Compliant?
It is the employee's right, to know about the hazards of chemicals they may be exposed to, and the measures to protect themselves from these hazards.	Employees understand the requirements of the Hazard Communication Program	<input type="checkbox"/> Yes <input type="checkbox"/> No
Hazard Communications Program requires that at least one person in the company be assigned or designated to coordinate the program.	Responsibilities have been assigned for tasks, including: <ul style="list-style-type: none"> ➢ Developing the written program ➢ Implementing the written program ➢ Maintaining the written program 	<input type="checkbox"/> Yes <input type="checkbox"/> No
Develop, implement and maintain a written hazard communication program that contains or describes: <ul style="list-style-type: none"> • List of chemicals • Access to and maintenance of a current MSDS • Labeling procedures • Protective measures • Training program elements • Provisions for contractors (multi-employer workplaces) • Procedures for non-routine tasks and unlabeled pipelines 	A prepared written program is available (using the provided template or an equivalent document)	<input type="checkbox"/> Yes <input type="checkbox"/> No
	The written program is available to employees	<input type="checkbox"/> Yes <input type="checkbox"/> No
	A written list of hazardous chemicals, using an identity that is referenced on the MSDS, is available to all employees	<input type="checkbox"/> Yes <input type="checkbox"/> No
	The written chemical list is kept current	<input type="checkbox"/> Yes <input type="checkbox"/> No
	Copies of any previous versions of the chemical list are retained for 3 years	<input type="checkbox"/> Yes <input type="checkbox"/> No
Assure labels and other forms of warning are affixed to the containers, as appropriate. <ul style="list-style-type: none"> • Full labeling: All containers must be labeled with the chemical name, appropriate hazard warnings and the manufacturer name and address. Vendor labels should be in compliance. Such labels may not be defaced or covered. • Shortened labeling: may be used for process materials and must contain the chemical identity (easily referenced back to the MSDS), and appropriate hazard warnings (e.g. HMIS codes) and readily available MSDS that are consistent with the training program. • Not required for portable containers which will be immediately utilized by the employee on that work-shift and which remain in the direct control of the employee at all times. 	Containers and pipelines in the workplace are labeled properly	<input type="checkbox"/> Yes <input type="checkbox"/> No
	Containers leaving the workplace are labeled properly	<input type="checkbox"/> Yes <input type="checkbox"/> No
	Labels on containers are updated when there is new hazard information	<input type="checkbox"/> Yes <input type="checkbox"/> No

Requirement Explanation	Elements to Verify	How Met / Records, Procedures
Assure Material Safety Data Sheets (MSDS) for each chemical used in the workplace are readily accessible to employees on each work shift, and are written in English.	Current MSDS for each hazardous chemical and mixture in the work area are present	<input type="checkbox"/> Yes <input type="checkbox"/> No
	MSDS are readily available to workers in the work area during the work shift	<input type="checkbox"/> Yes <input type="checkbox"/> No
	MSDS are provided to other employers when shipping chemicals to them	<input type="checkbox"/> Yes <input type="checkbox"/> No
Assure MSDS are retained for at least as long as employees who use them are employed (longer for any material involved in an overexposure incident).	MSDS are maintained for at least the duration of employment for any employee using the material.	<input type="checkbox"/> Yes <input type="checkbox"/> No
	MSDS for chemicals involved in overexposure incidents are maintained for the duration of employment plus 30 years.	<input type="checkbox"/> Yes <input type="checkbox"/> No
Train and inform employees on initial assignment and whenever a new physical, chemical or health hazard is introduced.	Employees are trained in the Hazard Communication Program upon initial assignment	<input type="checkbox"/> Yes <input type="checkbox"/> No
	Employee training is updated when there is a new physical or health hazard	<input type="checkbox"/> Yes <input type="checkbox"/> No
	Employees are trained when there is a new or non-routine task	<input type="checkbox"/> Yes <input type="checkbox"/> No
	Initial employee training includes all required elements	<input type="checkbox"/> Yes <input type="checkbox"/> No
Develop and implement a method of communication between the contractor and the company which describes and outlines: <ul style="list-style-type: none"> • the method used to communicate hazards and precautions • the method used to access MSDS • the method used to communicate emergency situations • the labeling methods utilized. 	Contractors in your workplace are informed of: the hazards and precautions, the labeling system used, how to access MSDS, and emergency procedures	<input type="checkbox"/> Yes <input type="checkbox"/> No
Assure that the company has evaluated and determined the hazards of any new or existing chemicals.	Chemicals and mixtures produced or imported are evaluated to determine if they are hazardous	<input type="checkbox"/> Yes <input type="checkbox"/> No
Hazard Communication Program Features - For Those Who Ship Chemicals Out of the Workplace The company is required to determine the hazards of any products or chemicals they manufacture and/or sell. This information is generally found on the Material Safety Data Sheet (MSDS) for the product.	Step 1: List a representative sampling of chemicals that are being shipped from the workplace. Include chemicals: <ul style="list-style-type: none"> • repackaged • supplied in the original container • raw materials • products 	<input type="checkbox"/> Yes <input type="checkbox"/> No
	Step 2: Verify that each container is labeled, tagged, or marked with <ul style="list-style-type: none"> • the identity of the hazardous chemical • appropriate hazard warnings • name and address of the chemical manufacturer, importer, and other responsible party • information that does not conflict with Federal Department of Transportation (DOT) requirements 	<input type="checkbox"/> Yes <input type="checkbox"/> No
	Step 3: Verify that a material safety data sheet is sent with the shipped container or has been sent prior to the time of shipment.	<input type="checkbox"/> Yes <input type="checkbox"/> No

Requirement Explanation	Elements to Verify	How Met / Records, Procedures
Hazard Communication Program Features - For those who Manufacture and/or Use Chemicals	Step 1: List a 10% representative sampling of chemicals in the work area/workplace. Include chemicals: <ul style="list-style-type: none"> • with the most potential exposure • used in the most hazardous areas • that are in a variety of containers • that are manufactured by vendors and by the company (if applicable) 	<input type="checkbox"/> Yes <input type="checkbox"/> No
Best Management practices suggest that the effectiveness of the program and its corresponding training be VERIFIED. These steps will assist in that process.	Step 2: List 5-20 people in the work area/workplace. Use a cross section of employees including: <ul style="list-style-type: none"> • contract, summer, and supplemental employees • most and least senior employees • learning, hearing, or visually impaired • non-English-speaking employees • those working in out-of-the-way places/times and on multiple shifts 	<input type="checkbox"/> Yes <input type="checkbox"/> No
	Step 3: Using the list from Step 1, verify that: <ul style="list-style-type: none"> • the current MSDS are accessible • the chemicals on the chemical list • the containers in the workplace are labeled with the identity of the contents and hazard warnings. 	<input type="checkbox"/> Yes <input type="checkbox"/> No
	Step 4: Ask each person listed from Step 2: <ul style="list-style-type: none"> • what the most hazardous operations in their work area/ workplace are • what chemical(s) pose the most potential for exposure • to explain the health and physical hazards and protective measures they use for chemicals in Step 1 • what methods and observations they use to detect a release of hazardous chemical • where the chemical list, MSDS file and written program are located • where they go for additional information to locate MSDS for some of the chemicals in Step 1 	<input type="checkbox"/> Yes <input type="checkbox"/> No

PROGRAM OVERVIEW

MACHINE GUARDING SAFETY PROGRAM **REGULATORY STANDARD: OSHA - 29 CFR 1910.212 - 244**

INTRODUCTION: Defines types & methods of point of operation guarding and training requirements.
It outlines the requirements for inspections of machine guarding systems.

TRAINING:

- Recommended for most workplaces
- Training is required where guards must be removed, or whenever forging equipment is used.

ACTIVITIES:

- Identify risk factors for machinery operations
- Ensure original guards or equivalent measures are in place.
- Ensure safeguarding practices are implemented for any non-routine task where existing guarding practices are insufficient to protect operators.

FORMS:

- Evaluation
- Program Assessment
- Using Presence Sensing Devices (light curtains)
- Training Attendance Roster

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Machine Guarding Safety Program

1. **Purpose.** Each site or location shall have a process in place to ensure that machines and equipment are provided with guarding systems in order to eliminate or control employee exposure to hazards. This program outlines the principles and performance requirements of machine safeguarding.
2. **Scope.** This program applies to each type of machine, powered tool or equipment that requires guarding. Equipment and machines include saws and similar large powered tools, mechanical equipment, conveyor systems, and heat producing machines.
 - 2.1 Exclusions: Welding equipment, portable powered tools and mechanical presses are not covered in this program, and have their own separate programs based on regulatory requirements for this type of equipment and operation.
3. **Responsibilities.**
 - 3.1 Management will ensure that:
 - 3.1.1 Procedures are in place for safeguarding machines and equipment during normal operations.
 - 3.1.2 New and modified equipment is purchased with or provided with guards.
 - 3.1.3 Safeguarding features shall be reviewed or approved by competent personnel during:
 - 3.1.3.1 the design phase of capital projects
 - 3.1.3.2 before newly purchased equipment is placed into service
 - 3.1.3.3 prior to relocation or refurbishment of existing equipment
 - 3.1.4 Safeguarding and safeguarding-devices are maintained.
 - 3.1.5 Routine preventive maintenance and inspection procedures are established, based on an inventory of applicable machines, to ensure proper operation of safeguarding devices and equipment.
 - 3.1.6 Operators receive initial training in specific safeguarding operations and the need for maintaining integrity of such safeguards.
 - 3.1.6.1 Retraining shall be provided whenever there is a change to safeguards or procedures or when employee behavior indicates such a need.
 - 3.1.6.2 Only qualified and trained operators, maintenance, and set-up personnel are authorized to perform adjustments, repairs, and set-ups.
 - 3.1.6.3 Only qualified and trained employees are authorized to interface with moving webs or machine mechanisms and only as outlined by specific written procedures for the equipment.

- 3.1.7 An environment is promoted where operators are encouraged to report unsafe machines and conditions and suggest improvements to management.
 - 3.1.8 Assure employees understand the function and operation of all safety devices and controls on machines to which employees are assigned.
 - 3.1.9 Test safeguarding and control devices prior to the start of each shift. Continuous running machines shall be tested at each period of downtime.
 - 3.1.10 Immediately report malfunctioning, incorrectly positioned, or missing safeguarding. DO NOT operate machinery until the problem is corrected by personnel authorized and qualified to make such repairs.
 - 3.1.11 Interface with moving webs or machine mechanisms ONLY when necessary, when authorized, and in accordance with procedures.
- 3.2 Employees will:
- 3.2.1 Report all unsafe machines and equipment.
 - 3.2.2 Assist, as needed or required, in determining the safeguarding requirements for all machines, tools and equipment that may require them.
 - 3.2.3 Attend training as needed or required.
 - 3.2.4 Understand the function and operation of all safety devices and controls on machines to which they are assigned.
 - 3.2.5 Test safeguarding and control devices prior to the start of each shift as needed or required by procedure.
 - 3.2.6 Immediately report malfunctioning, incorrectly positioned, or missing safeguarding and NOT operate machinery until the problem is corrected by personnel authorized and qualified to make such repairs.
- 3.3 Safety Officer will:
- 3.3.1 Assist as needed or required in the evaluation and implementation of safeguarding requirements.

4. Procedure.

- 4.1 General Requirements for All Guards and Equipment:
- 4.1.1 Guards must be affixed to the machine whenever possible, or otherwise secured. Guards must be positioned and shaped so that they do not present a greater hazard themselves.

- 4.1.2 The point of operation where an employee is exposed to injury requires guarding.
 - 4.1.2.1 The guarding device must conform to standards established for that specific type of machine or be constructed so that the operator is prevented from placing any part of their body in the “danger zone” during the operating cycle or use of the equipment. (Equipment examples that require point of operation guards include: cutters, shears, presses, milling equipment, saws, jointers, rollers, and stationary power-driven equipment.)
 - 4.1.2.2 Special hand tools for placing and removing material may be used to permit easy handling of material, and supplement safeguards, but may not replace machine guarding.
- 4.1.3 Revolving drums, barrels, and containers require interlocked enclosures so that the system cannot revolve unless the guard enclosure is in place.
- 4.1.4 Equipment with blades must be guarded (unless they are fixed in place and higher than 7 feet from the floor surface). Guards may not have openings more than ½ inch.
- 4.1.5 Fixed machinery must be anchored and secured to prevent walking or movement during operation.

4.2 Procedures:

- 4.2.1 Written procedures will be developed and implemented for all machines, tools and equipment that require guarding.
- 4.2.2 Procedures will include the type of machine, type of guard, uses and reasoning for guards, inspection requirements, preventive maintenance requirements (including any Lock-out/Tag-out LOTO requirements for service or maintenance), and specific steps for maintenance and service. Regularly serviced and maintained equipment will include the time intervals for services in the procedure.
- 4.2.3 Non-routine tasks or tasks that are not normally performed at the company or with the equipment will have specific procedures written and implemented before the activity takes place. These non-routine procedures will include an evaluation of the anticipated hazards, the use of machine guards, tools and protective equipment to reduce or eliminate any hazards that are anticipated, and emergency shut down procedures.

4.3 New or Altered Equipment Review:

- 4.3.1 Each piece of machinery or equipment will be reviewed for safeguarding requirements when they are purchased, installed, or when they undergo significant changes to their structure or use.
- 4.3.2 Reviews will be documented and this documentation should be maintained for the life of the equipment.

4.4 Maintenance:

- 4.4.1 Employees who perform service or maintenance (including repair, lubrication, clearing jammed parts or materials, and tool changes) must be trained and knowledgeable about the equipment, the guards and the hazards of the maintenance tasks.
- 4.4.2 Appropriate protective equipment and tools (dogs, tongs, placement boards, etc.) will be provided to maintenance personnel and training provided, where needed or required.
- 4.4.3 Equipment and machinery will be maintained in good operating condition.
- 4.4.4 Machinery that requires regular maintenance and service will be tracked, and such service performed at the required intervals.

5. Safety Information.

5.1 Types of Equipment, Tools and Machinery:

5.1.1 General Equipment

- 5.1.1.1 Guarding must be provided to protect employees and machine operators from hazards such as pinch-points, point-of-operation, in-running nip points, rotating parts, flying chips and sparks. Examples of machine guards are barriers, two-handed tripping devices, interlocks and electronic devices, or specialized tools.

5.1.2 Saws (stationary equipment – not portable)

- 5.1.2.1 Guarding must protect operators from entering the “danger zone” with any part of their body.
- 5.1.2.2 Guarding must be constructed to prevent undue vibration.
- 5.1.2.3 Guarding must be secure, and where needed attached so that the operator can utilize the tool with the materials without undue risk.

5.1.3 Specialized Machinery

- 5.1.3.1 Specific controls must be in place to assure that equipment can not be accidentally tripped to activate the machine.
- 5.1.3.2 If an employee can get caught in or on machine parts (such as blades or in moving chains), these parts require guarding.

- 5.1.3.3 Guards must be inspected regularly. It is recommended that inspections take place before each working shift for regularly used equipment, or before each use for intermittently used equipment, to assure guards are in good operating condition.
- 5.1.3.3.1 Woodworking Machinery – per 29 CFR 1910.213 - Specific guarding is required for the blades, chains or other exposed hazardous parts on ripsaws, crosscut saws and circular saws, swing and radial saws, band-saws, jointers, tenoning machines, shapers, planers, boring equipment, sanders, lathes, cutters and similar machinery.
 - 5.1.3.3.2 Abrasive Wheel machinery (with wheel diameters >2 inches) – per 29 CFR 1910.215 - requires specific size guards and wheel mounting that restrict wheel access, protect operators from flying particles should the wheel break or shatter, and prevent inadvertent wheel movement.
 - 5.1.3.3.3 Mills and Calenders (rubber and plastics industry only) – per 29 CFR 1910.216 - requires either interlocks, sensing devices or location control guards to prevent an operator from reaching through, over, under or around and coming into contact with a roll bite or to be caught between a roll bite and processing materials. Limit stopping devices must be installed to prevent materials from traveling too fast or beyond the machine limits.
 - 5.1.3.3.4 Forging machinery – per 29 CFR 1910.218 - has specific requirement for guarding of hammers presses, and up setters. Also there are specific requirements for materials of construction to assure the equipment and guard are capable of withstanding the forces and pressures required of them.
 - 5.1.3.3.5 Mechanical Power Transmission – per 29 CFR 1910.219 - equipment requires guarding of exposed parts, belts and chains that are more than 7 feet from the floor surface. Guarding requirements include specific distances for guards from the hazard or total enclosure of the hazard. Specific materials are required (and in some cases specific bracing and methods of affixing guarding) to assure that guards can withstand the forces and power applied. Periodic maintenance and inspection is required to assure guards remain in good operating condition.

5.1.3.3.5.1 Guarding is required for flywheels and prime movers, cranes and shafts, pulleys, belts, ropes and chain drives, gears sprockets and chained friction drives, keys setscrews and other projections, collars, bearing, couplings and clutches, and for shifters and poles.

5.1.3.3.6 Press Brakes – per 29 CFR 1910.217 – requires brake monitoring to automatically prevent the activation of a successive stroke if the safe stopping time or distance could fall outside set limitations. Type B and movable barrier device monitors must detect slide top-stop overrun beyond normal limits. Monitors must indicate when brake performance has deteriorated outside set limits and must monitor the brake system on each stroke.

5.2 Types of Guarding:

- 5.2.1 Interlocks are a type of guarding that breaks or opens a power circuit when the guard is not in place to prevent the machine or equipment from activating when the guard or interlock is not engaged. (Examples include copiers and similar office equipment that when the drawer or cabinet is opened to clear a jam or add new materials, the equipment automatically shuts off or powers down, or processing tank covers that shut down a process when opened.)
- 5.2.2 One or Two Hand Tripping Devices are types of guard that require the operator to remove their hand(s) from the material or area of operation to press a button or otherwise activate the machine cycle. These devices are guards that use location of the activation device rather than shielding to assure the operator is in a safe position.
- 5.2.3 Point of Operation Guards are devices that restrict the access to a dangerous area on machines where materials are being processed. Examples include shielding to prevent contact with a jig or saw blade, shielding over a conveyor or process, or enclosures.
- 5.2.4 Light Curtains and other Presence Sensing Devices (PSDs) are devices (usually electronic) that have sensors to detect objects or other obstructions and prevent the machine or equipment from activating or cycling while any object or material is in the path of the sensor. PSDs have very specific regulatory requirements. For more information see the Using Presence Sensing Devices form included with this program.

6. Training and Information.

6.1 General Training:

- 6.1.1 Operators and maintenance personnel will receive initial operations and initial machine safeguarding training prior to operating or maintaining equipment.
- 6.1.2 Where required, Lock-Out/Tag-Out (LOTO) training will be provided.

6.1.3 Refresher training will be provided prior to operating new or modified equipment, when procedures change, or when employee behavior indicates a need for retraining.

6.2 LOTO (Lock-out/Tag-out) Training:

6.2.1 Employees who perform service or maintenance on machinery and equipment (including lubrication, repair, clearing jammed parts or materials, or tool changes) will be trained in LOTO techniques to the “Authorized Employee” level.

6.2.2 Operators who work with or near machines that have such service or maintenance performed will be trained in LOTO techniques to the “Affected Employee” level.

6.2.3 Maintenance staff and operators will be trained in the hazards presented by the tool, machine or equipment and the means and methods used to reduce or eliminate such hazards, including specific tools used.

7. Definitions.

- *Point of operation* - The area on a machine where work is actually performed upon the material being processed.
- *LOTO* – Lock out/tag-out

MACHINE GUARDING EVALUATION OF APPLICABILITY		
Machine Nomenclature:	Serial Number:	Manufacture Date:
Machine Location:	Principal Use:	Date Machine Installed:
INITIAL CONSIDERATIONS		
Can an individual be caught in, on or between two objects?		
Can an individual be struck by an object?		
Can an individual strike against a hazardous object?		
What physical hazards such as heat, cold, line pressures, electrical, chemical and other hazards exist?		
Identify - The point of operation, nip points, shear points, and other mechanical hazard locations.		
Think: Over - Under - Around - Through		
METHODS OF MACHINE SAFEGUARDING		
Indicate: S - Satisfactory I - Needs Improvement/Non Existent (Unsatisfactory) R - Needs Repair (Unsatisfactory)		
GUARDS	DEVICES	FEEDING & EJECTION METHODS
<input type="checkbox"/> Fixed Guards <input type="checkbox"/> -S <input type="checkbox"/> -I <input type="checkbox"/> -R	<input type="checkbox"/> Photoelectric Sensing <input type="checkbox"/> -S <input type="checkbox"/> -I <input type="checkbox"/> -R	<input type="checkbox"/> Automatic Feed <input type="checkbox"/> -S <input type="checkbox"/> -I <input type="checkbox"/> -R
<input type="checkbox"/> Interlocked Guards <input type="checkbox"/> -S <input type="checkbox"/> -I <input type="checkbox"/> -R	<input type="checkbox"/> Radio frequency Sensing <input type="checkbox"/> -S <input type="checkbox"/> -I <input type="checkbox"/> -R	<input type="checkbox"/> Semi-automatic Feed <input type="checkbox"/> -S <input type="checkbox"/> -I <input type="checkbox"/> -R
<input type="checkbox"/> Adjustable Guards <input type="checkbox"/> -S <input type="checkbox"/> -I <input type="checkbox"/> -R	<input type="checkbox"/> Electromech. Sensing <input type="checkbox"/> -S <input type="checkbox"/> -I <input type="checkbox"/> -R	<input type="checkbox"/> Automatic Ejection <input type="checkbox"/> -S <input type="checkbox"/> -I <input type="checkbox"/> -R
<input type="checkbox"/> Self Adjusting Guards <input type="checkbox"/> -S <input type="checkbox"/> -I <input type="checkbox"/> -R	<input type="checkbox"/> Pullback System <input type="checkbox"/> -S <input type="checkbox"/> -I <input type="checkbox"/> -R	<input type="checkbox"/> Semi-automatic Ejection <input type="checkbox"/> -S <input type="checkbox"/> -I <input type="checkbox"/> -R
<input type="checkbox"/> <input type="checkbox"/> -S <input type="checkbox"/> -I <input type="checkbox"/> -R	<input type="checkbox"/> Restraint System <input type="checkbox"/> S <input type="checkbox"/> -I <input type="checkbox"/> -R	<input type="checkbox"/> Robotic <input type="checkbox"/> -S <input type="checkbox"/> -I <input type="checkbox"/> -R
<input type="checkbox"/> <input type="checkbox"/> -S <input type="checkbox"/> -I <input type="checkbox"/> -R	<input type="checkbox"/> Pressure Sens. Body Bar <input type="checkbox"/> -S <input type="checkbox"/> -I <input type="checkbox"/> -R	<input type="checkbox"/> <input type="checkbox"/> -S <input type="checkbox"/> -I <input type="checkbox"/> -R
<input type="checkbox"/> <input type="checkbox"/> -S <input type="checkbox"/> -I <input type="checkbox"/> -R	<input type="checkbox"/> Safety Triprod <input type="checkbox"/> -S <input type="checkbox"/> -I <input type="checkbox"/> -R	<input type="checkbox"/> <input type="checkbox"/> -S <input type="checkbox"/> -I <input type="checkbox"/> -R
<input type="checkbox"/> <input type="checkbox"/> -S <input type="checkbox"/> -I <input type="checkbox"/> -R	<input type="checkbox"/> Safety Tripwire Cable <input type="checkbox"/> -S <input type="checkbox"/> -I <input type="checkbox"/> -R	<input type="checkbox"/> <input type="checkbox"/> -S <input type="checkbox"/> -I <input type="checkbox"/> -R
<input type="checkbox"/> <input type="checkbox"/> -S <input type="checkbox"/> -I <input type="checkbox"/> -R	<input type="checkbox"/> Two-hand Control <input type="checkbox"/> -S <input type="checkbox"/> -I <input type="checkbox"/> -R	<input type="checkbox"/> <input type="checkbox"/> -S <input type="checkbox"/> -I <input type="checkbox"/> -R
<input type="checkbox"/> <input type="checkbox"/> -S <input type="checkbox"/> -I <input type="checkbox"/> -R	<input type="checkbox"/> Two-hand Trip Control <input type="checkbox"/> -S <input type="checkbox"/> -I <input type="checkbox"/> -R	<input type="checkbox"/> <input type="checkbox"/> -S <input type="checkbox"/> -I <input type="checkbox"/> -R
MISCELLANEOUS AIDS	<input type="checkbox"/> Interlocked Gate <input type="checkbox"/> -S <input type="checkbox"/> -I <input type="checkbox"/> -R	OTHER METHODS
<input type="checkbox"/> Audible Warnings <input type="checkbox"/> -S <input type="checkbox"/> -I <input type="checkbox"/> -R	<input type="checkbox"/> Other Gate () <input type="checkbox"/> -S <input type="checkbox"/> -I <input type="checkbox"/> -R	<input type="checkbox"/> <input type="checkbox"/> -S <input type="checkbox"/> -I <input type="checkbox"/> -R
<input type="checkbox"/> Warning Lights <input type="checkbox"/> -S <input type="checkbox"/> -I <input type="checkbox"/> -R	<input type="checkbox"/> Presence-sensing Mats <input type="checkbox"/> -S <input type="checkbox"/> -I <input type="checkbox"/> -R	<input type="checkbox"/> <input type="checkbox"/> -S <input type="checkbox"/> -I <input type="checkbox"/> -R
<input type="checkbox"/> Color Coding <input type="checkbox"/> -S <input type="checkbox"/> -I <input type="checkbox"/> -R	LOCATION/DISTANCING	<input type="checkbox"/> <input type="checkbox"/> -S <input type="checkbox"/> -I <input type="checkbox"/> -R
<input type="checkbox"/> Hand Feeding Tools <input type="checkbox"/> -S <input type="checkbox"/> I <input type="checkbox"/> -R	<input type="checkbox"/> Control Station Position <input type="checkbox"/> -S <input type="checkbox"/> -I <input type="checkbox"/> -R	<input type="checkbox"/> <input type="checkbox"/> -S <input type="checkbox"/> -I <input type="checkbox"/> -R
<input type="checkbox"/> Awareness Barriers <input type="checkbox"/> -S <input type="checkbox"/> -I <input type="checkbox"/> -R	<input type="checkbox"/> Enclosure Fences <input type="checkbox"/> -S <input type="checkbox"/> -I <input type="checkbox"/> -R	<input type="checkbox"/> <input type="checkbox"/> -S <input type="checkbox"/> -I <input type="checkbox"/> -R
<input type="checkbox"/> Holding Fixtures <input type="checkbox"/> -S <input type="checkbox"/> -I <input type="checkbox"/> -R	<input type="checkbox"/> Enclosure Walls <input type="checkbox"/> -S <input type="checkbox"/> -I <input type="checkbox"/> -R	<input type="checkbox"/> <input type="checkbox"/> -S <input type="checkbox"/> -I <input type="checkbox"/> -R
<input type="checkbox"/> Protective Shielding <input type="checkbox"/> -S <input type="checkbox"/> -I <input type="checkbox"/> -R	<input type="checkbox"/> Hazard Accessibility <input type="checkbox"/> -S <input type="checkbox"/> -I <input type="checkbox"/> -R	<input type="checkbox"/> <input type="checkbox"/> -S <input type="checkbox"/> -I <input type="checkbox"/> -R
<input type="checkbox"/> Guard Rails <input type="checkbox"/> -S <input type="checkbox"/> -I <input type="checkbox"/> -R	<input type="checkbox"/> Hazard Positioning OK <input type="checkbox"/> -S <input type="checkbox"/> -I <input type="checkbox"/> -R	<input type="checkbox"/> <input type="checkbox"/> -S <input type="checkbox"/> -I <input type="checkbox"/> -R
<input type="checkbox"/> Mechanical Barriers <input type="checkbox"/> -S <input type="checkbox"/> I <input type="checkbox"/> -R	<input type="checkbox"/> Machine Positioning <input type="checkbox"/> -S <input type="checkbox"/> -I <input type="checkbox"/> -R	<input type="checkbox"/> <input type="checkbox"/> -S <input type="checkbox"/> -I <input type="checkbox"/> -R
<input type="checkbox"/> Appropriate Signage <input type="checkbox"/> -S <input type="checkbox"/> I <input type="checkbox"/> -R	<input type="checkbox"/> Reach Distances Safe <input type="checkbox"/> -S <input type="checkbox"/> -I <input type="checkbox"/> -R	<input type="checkbox"/> <input type="checkbox"/> -S <input type="checkbox"/> -I <input type="checkbox"/> -R
REMARKS CONCERNING EXISTING SAFEGUARDING CONDITIONS		
RECOMMENDATIONS FOR IMPROVEMENT, MODIFICATION OR REPAIR		
Equipment or Machine Safeguarding Requirement:		<input type="checkbox"/> Completed
		Date:
REVIEWERS ACTIONS		
<input type="checkbox"/> All Actions Completed		
Date:		
Reviewer's Name:		

MACHINE GUARDING PROGRAM ASSESSMENT		
Facility or Area:	Assessor:	Date:
Description of Requirement		Compliant?
General Equipment		
Have all machine guards been reviewed/approved by the safety staff or other qualified person?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Are electrical (and other hazardous energy) lock-out and de-energization controls available, where needed?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Are power shutoffs within easy reach of operators?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Are emergency stops within easy reach of operators during normal machine use?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Have all controls for new or relocated machines been tested to assure they are operating properly prior to machine use?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Has the position of controls been reviewed by safety staff?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Does each piece or type of equipment have documented procedures or operations manuals that provide instruction for the safe start-up, operation, or shut-down of the machine?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Is machinery where safeguards must be removed for a specific task operated only by exception, with additional LOTO safeguards in place, and only performed by a qualified or specifically trained operator?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Do all operators understand the function and operation of all safety devices and controls on the machines to which they are assigned?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Are safety devices checked and tested at the beginning of each work shift (or for continuous running machines at each period of down time)?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Safeguard Design Considerations		
Are safety devices checked and tested prior to placing the machine back into service after repair, adjustment or maintenance?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Are operators protected by safeguards from nips, rotating or flying parts, point-of operation hazards, moving chains and gears, chips or sparks?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Do general safeguards prevent any part of the operator's body from being in the danger zone during the operating cycle?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Are safeguards affixed to the machines (or where not feasible, secured elsewhere) to protect the operators from hazards?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Are point-of-operation guards designed and constructed to prevent any part of the body from entering the danger zone during the operating cycle?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Are guards firmly secured, not easily removed, and constructed of appropriate materials for the type of work performed?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Are guards constructed and set so they do not present additional hazards?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Where drums or barrels are revolving (tumble blending) to blend materials, is an enclosure that is interlocked with the drive mechanism present and functioning properly?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Are fans less than seven feet above the floor guarded with an opening no larger than ½ inch?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Is equipment designed for a fixed location secured to prevent tipping, walking or moving?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Are special tools for placing or adjusting materials readily available to supplement protective devices, where required?		<input type="checkbox"/> Yes <input type="checkbox"/> No

Description of Requirement	Compliant?
Mechanical/Power Presses Equipped with Presence-Sensing Devices	
Friction brakes are capable of quickly stopping the operation of the press and of holding the slide in constant position.	<input type="checkbox"/> Yes <input type="checkbox"/> No
Foot pedals are protected to prevent accidental operation of the machine by falling objects or by stepping on the pedals.	<input type="checkbox"/> Yes <input type="checkbox"/> No
Foot pedals have pads with non-slip contact areas.	<input type="checkbox"/> Yes <input type="checkbox"/> No
Foot pedal return spring(s) are of the compression type or are designed to prevent interleaving of spring coils in the event of breakage.	<input type="checkbox"/> Yes <input type="checkbox"/> No
Foot pedal counterweight paths of travel are enclosed.	<input type="checkbox"/> Yes <input type="checkbox"/> No
Hand lever operated power presses have a spring latch on the operating lever.	<input type="checkbox"/> Yes <input type="checkbox"/> No
The operating levers on hand-tripped presses having more than one operating station are interlocked to prevent the tripping of the press except by the concurrent use of all levers.	<input type="checkbox"/> Yes <input type="checkbox"/> No
On machines using part revolution clutches in addition to the above, a red color stop control is used to open the clutch, apply the brake and stop the machine.	<input type="checkbox"/> Yes <input type="checkbox"/> No
The main power disconnect switch on each machine is capable of being locked only in the main OFF position.	<input type="checkbox"/> Yes <input type="checkbox"/> No
The motor start button is protected by a guard, cover, etc., to prevent accidental operation.	<input type="checkbox"/> Yes <input type="checkbox"/> No
Mechanical power press controls have drive motor-starters that automatically disconnect from the power source when there is a power failure.	<input type="checkbox"/> Yes <input type="checkbox"/> No
Electrical clutch/brake control electrical circuits have features that will prevent an accidental ground in the control circuit causing false operation of the press.	<input type="checkbox"/> Yes <input type="checkbox"/> No
The electronic device is operated from a closed electric circuit so that the interruption of current prevents the machinery from cycling.	<input type="checkbox"/> Yes <input type="checkbox"/> No
The facility utilized the formula found in 29CFR1910.217(c) (3) (iii) (e) when determining the safe distance from sensing field to the point of operation.	<input type="checkbox"/> Yes <input type="checkbox"/> No
The device is not used on full revolution mechanical power presses (i.e. can only be used with part revolution mechanical power presses).	<input type="checkbox"/> Yes <input type="checkbox"/> No
Machinery with Two Hand Controls	
Controls are installed and supervised to prevent operation by one hand only.	<input type="checkbox"/> Yes <input type="checkbox"/> No
Controls are located far enough apart to prevent operation with the hand and elbow of one arm.	<input type="checkbox"/> Yes <input type="checkbox"/> No
Separate two-hand controls requiring concurrent activation are provided for each operator when press tasks require two operators.	<input type="checkbox"/> Yes <input type="checkbox"/> No
The facility utilizes the formula found in 29CFR1910.217(c) (d) (vii) (c) to ensure that controls are located far enough from the point of operation to prevent the operator from reaching the danger zone after energizing the controls.	<input type="checkbox"/> Yes <input type="checkbox"/> No

Description of Requirement	Compliant?
Woodworking Machinery (table saws, band saws, etc.)	
All belts, pulleys, gears, shafts and moving parts are guarded in accordance with 29CFR1910.219.	<input type="checkbox"/> Yes <input type="checkbox"/> No
Controls are arranged so that an operator may cut off the power from the machine without leaving their position at the point of operation.	<input type="checkbox"/> Yes <input type="checkbox"/> No
<ul style="list-style-type: none"> • Saws are guarded by an adjustable hood or enclosure capable of adjusting to the size of the material being cut. 	<input type="checkbox"/> Yes <input type="checkbox"/> No
<ul style="list-style-type: none"> • Radial arm saws have a return. 	<input type="checkbox"/> Yes <input type="checkbox"/> No
<ul style="list-style-type: none"> • Disk sanding machines have a guard enclosing the revolving disk. 	<input type="checkbox"/> Yes <input type="checkbox"/> No
Abrasive Wheel Machinery	
The spindle end, nut and flange projections are guarded.	<input type="checkbox"/> Yes <input type="checkbox"/> No
Work rests are in place and kept adjusted close to the wheel (1/8 inch maximum).	<input type="checkbox"/> Yes <input type="checkbox"/> No
The distance between the wheel periphery and the tongue guard does not exceed ¼ inch.	<input type="checkbox"/> Yes <input type="checkbox"/> No
Press Brakes	
Do brake monitors automatically prevent the activation of a successive stroke if the safe stopping time or distance could fall outside set limitations (do they monitor each stroke)?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Do type B and movable barrier device monitors detect slide top-stop overrun beyond normal limits?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Do monitors provide an indication (visual or audible) when brake performance has deteriorated outside set limits?	<input type="checkbox"/> Yes <input type="checkbox"/> No

MACHINE GUARDING USING PRESENCE SENSING DEVICES

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Safety System Validation
Die Setting and Work Set-up
Operator Training

Equipment with a configuration which would allow a person to enter, pass through, and become clear of the sensing field into the hazardous portion of the equipment shall not be used in the PSDI mode of operation. The PSDI mode of operation shall be used only for normal production operations. Die-setting and maintenance procedures shall not be done in the PSDI mode.

- **Brake and clutch requirements.**
 - Equipment with flexible steel band brakes or with mechanical linkage actuated brakes or clutches shall not be used in the PSDI mode.
 - Brake systems on equipment used in the PSDI mode shall have sufficient torque so that each average value of stopping times (Ts) for stops initiated at approximately 45 degrees, 60 degrees, and 90 degrees, respectively, of crankshaft angular position, shall not be more than 125 percent of the average value of the stopping time at the top crankshaft position. Compliance with this requirement shall be determined by using the heaviest upper die to be used on the equipment, and operating at the fastest equipment speed if there is speed selection.
 - Where brake engagement and clutch release is affected by spring action, such springs(s) shall operate in compression on a rod or within a hole or tube, and shall be of non-interleaving design.
- **Pneumatic systems when used in PSDI mode**
 - Air valve and air pressure supply/control.
 - The air supply for pneumatic clutch/brake control valves shall incorporate a filter, an air regulator, and, when necessary for proper operation, a lubricator.
 - The air pressure supply for clutch/brake valves on machines used in the PSDI mode shall be regulated to pressures less than or equal to the air pressure used when making the stop time measurements.
 - Air counterbalance systems.
 - Where equipment has slide counterbalance systems that are used in the PSDI mode, the counterbalance system shall also meet the same requirements.
 - Counterbalances shall be adjusted in accordance with the equipment manufacturer's recommendations to assure correct counterbalancing of the slide attachment (upper die) weight for all operations performed on equipment used in the PSDI mode. The adjustments shall be made before performing the stopping time measurements.
 - Flywheels and bearings. Equipment whose designs incorporate flywheels running on journals on the crankshaft or back shaft, or bull gears running on journals mounted on the crankshaft, shall be inspected, lubricated, and maintained to reduce the possibility of unintended and uncontrolled machine strokes caused by bearing seizure.

- **Brake monitoring**

- Equipment operated in the PSDI mode shall be equipped with a brake monitor. The brake monitor shall be adjusted during installation to prevent successive stroking of the machine if increases in stopping time cause an increase in the safety distances above the established requirements.
- Once the PSDI safety system has been installed and validated, adjustment of the brake monitor shall not be done without prior approval of the validation organization for both the brake monitor adjustment and the corresponding adjustment of the safety distance. The validation organization shall in its installation validation, state that in what circumstances, if any, the employer has advance approval for adjustment, when prior oral approval is appropriate and when prior approval must be in writing. The adjustment shall be done under the supervision of an authorized person whose qualifications include knowledge of safety distance requirements and experience with the brake system and its adjustment. When brake wear or other factors extend machine stopping time beyond the limit permitted by the brake monitor, adjustment, repair, or maintenance shall be performed on the brake or other machine system element that extends the stopping time.
- The brake monitor setting shall allow an increase of no more than 10 percent of the longest stopping time for the machine, or 10 milliseconds, whichever is longer, measured at the top of the stroke.

- **Cycle control and control systems**

- The control system shall incorporate a means of dynamically monitoring for decoupling of the rotary position indicating mechanism drive from the crankshaft. This control shall stop slide motion and prevent successive machine strokes if decoupling occurs, or if the monitor itself fails.
- The mode selection means shall have at least one position for selection of the PSDI mode. Where more than one interruption of the light sensing field is used in the initiation of a stroke, either the mode selection means must have one position for each function, or a separate selection means shall be provided which becomes operable when the PSDI mode is selected. Selection of PSDI mode and the number of interruptions/withdrawals of the light sensing field required to initiate an activation cycle shall be by means capable of supervision by the employer.
- A PSDI set-up/reset means shall be provided which requires an overt action by the operator, in addition to PSDI mode selection, before operation of the machine by means of PSDI can be started.
- An indicator visible to the operator and readily seen by the employer shall be provided which shall clearly indicate that the system is set-up for cycling in the PSDI mode.
- The control system shall incorporate a timer to deactivate PSDI when the machine does not stroke within the period of time set by the timer. The timer shall be manually adjustable, to a maximum time of 30 seconds. For any timer setting greater than 15 seconds, the adjustment shall be made by the use of a special tool available only to authorized persons. Following a deactivation of PSDI by the timer, the system shall make it necessary to reset the set-up/reset means in order to reactivate the PSDI mode.
- Reactivation of PSDI operation following deactivation of the PSDI mode from any other cause, such as activation of the red color stop control, interruption of the presence sensing field, opening of an interlock, or reselection of the number of sensing field interruptions/withdrawals required to cycle the machine, shall require resetting of the set-up/reset means.
- The control system shall incorporate an automatic means to prevent initiation or continued operation in the PSDI mode unless the machine drive motor is energized in the forward direction of crankshaft rotation.
- The control design shall preclude any movement of the slide caused by operation of power on, power off, or selector switches, or from checks for proper operations.
- All components and subsystems of the control system shall be designed to operate together to provide total control system compliance with the requirements of this section.
- Where there is more than one operator of a machine used for PSDI, each operator shall be protected by a separate, independently functioning, presence sensing device. The control system shall require that each sensing field be interrupted the selected number of times prior to initiating a stroke. Further, each operator shall be provided with a set-up/reset means that meets the requirements, and which must be actuated to initiate operation of the machine in the PSDI mode.
- The control system shall incorporate interlocks for supplemental guards, if used, which will prevent stroke initiation or will stop a stroke in progress if any supplemental guard fails or is deactivated.
- The control system shall perform checks for proper operation of all cycle control logic element switches and contacts at least once each cycle. Control elements shall be checked for correct status after power "on" and before the initial PSDI stroke.
- The control system shall have provisions for an "inch" operating means. Die-setting shall not be done in the PSDI mode. Production shall not be done in the "inch" mode.

- o The control system shall permit only a single stroke per initiation command.
- o Controls with internally stored programs (e.g., mechanical, electro-mechanical, or electronic) shall default to a predetermined safe condition in the event of any single failure within the system. Programmable controllers which meet the requirements for controls with internally stored programs stated above shall be permitted only if all logic elements affecting the safety system and point of operation safety are internally stored and protected in such a manner that they cannot be altered or manipulated by the user to an unsafe condition.

- **Environmental requirements**

- o Control components shall be selected, constructed, and connected together in such a way as to withstand expected operational and environmental stresses. Such stresses shall not cause unsafe operation.

- **Safety systems**

- o Equipment used in the PSDI mode shall be operated under the control of a safety system which shall function such that a single failure or single operating error shall not cause injury to personnel.
- o The safety system shall be designed, constructed, and arranged as an integral total system, including all elements of the machine, the controls, the safeguarding and any required supplemental safeguarding, and their interfaces with the operator and that part of the environment which has effect on the protection against point of operation hazards.

- **Safeguarding the point of operation**

- o The point of operation of machines operated in the PSDI mode shall be safeguarded, except that the safety distance requirements shall be used for PSDI operation.
- o PSDI shall be implemented only by use of light curtain (photo- electric) presence sensing devices unless the following requirements have been met:
 - Alternatives to photo-electric light curtains may be used for PSDI when the employer can demonstrate, through tests and analysis by the employer or the manufacturer, that the alternative is as safe as the photo-electric light curtain, that the alternative meets the conditions of this section, has the same long term reliability as light curtains and can be integrated into the entire safety system as provided.
 - Prior to use, both the employer and manufacturer must verify that these requirements and all the other applicable requirements of this section are met and an OSHA-recognized third-party validation organization must review the process to ensure the requirements are met.
 - Three months prior to the operation of any alternative system, the employer must notify the OSHA Directorate of Safety Standards programs of the name of the system to be installed, the manufacturer and the OSHA-recognized third-party validation organization immediately. Upon request, the employer must make available to that office all tests and analyses for OSHA review.
- o Individual sensing fields used to initiate strokes in the PSDI mode shall cover only one side of the machine.
- o Light curtains used for PSDI operation shall have minimum object sensitivity not to exceed one and one-fourth inches (31.75 mm). Where light curtain object sensitivity is user-adjustable, either discretely or continuously, design features shall limit the minimum object sensitivity adjustment not to exceed one and one-fourth inches (31.75 mm). Blanking of the sensing field is not permitted.
- o The safety distance (Ds) from the sensing field of the presence sensing device to the point of operation shall be greater than or equal to the distance determined by the formula:

$$D_s = H_s \times (T_s + T_p + T_r + 2T_m) + D_p$$

Where:

Ds = Minimum safety distance.

Hs = Hand speed constant of 63 inches per second (1.6 m/s).

Ts = Longest machine stopping time, in seconds, computed by taking averages of multiple measurements at each of three positions (45 degrees, 60 degrees, and 90 degrees) of crankshaft angular position; the longest of the three averages is the stopping time to use. (Ts is defined as the sum of the kinetic energy dissipation time plus the pneumatic /magnetic /hydraulic reaction time of the clutch/brake operating mechanism(s).)

Tp = Longest presence sensing device response time, in seconds.

Tr = Longest response time, in seconds, of all interposing control elements between the presence sensing device and the clutch/brake operating mechanism(s).

Tm = Increase in the machine stopping time at the top of the stroke, in seconds, allowed by the brake monitor for brake wear. The time increase allowed is limited to no more than 10 percent of the longest machine stopping time measured at the top of the stroke, or 10 milliseconds, whichever is longer.

Dp = Penetration depth factor, required to provide for possible penetration through the presence sensing field by fingers or hand before detection occurs. The penetration depth factor shall be determined from Graph h-1 using the minimum object sensitivity size.

- The presence sensing device location shall either be set at each tool change and set-up to provide at least the minimum safety distance, or fixed in location to provide a safety distance greater than or equal to the minimum safety distance for all tooling set-ups which are to be used on that machine.
- Where presence sensing device location is adjustable, adjustment shall require the use of a special tool available only to authorized persons.
- Supplemental safeguarding shall be used to protect all areas of access to the point of operation which are unprotected by the PSDI presence sensing device. Such supplemental safeguarding shall consist of either additional light curtain (photo-electric) presence sensing devices or other types of guards.
- Presence sensing devices used as supplemental safeguarding shall not initiate a machine stroke, and shall conform to the requirements of this section, except that the safety distance shall comply with those noted above.
- Guards used as supplemental safeguarding shall conform to the design, construction and application requirements, and shall be interlocked with the machine control to prevent machine PSDI operation if the guard fails, is removed, or is out of position.
- Barriers shall be fixed to the machine frame or bolster to prevent personnel from passing completely through the sensing field, where safety distance or machine configuration is such that personnel could pass through the PSDI presence sensing field and assume a position where the point of operation could be accessed without detection by the PSDI presence sensing device. As an alternative, supplemental presence sensing devices used only in the safeguard mode may be provided. If used, these devices shall be located so as to detect all operator locations and positions not detected by the PSDI sensing field, and shall prevent stroking or stop a stroke in process when any supplemental sensing fields are interrupted.
- Hand tools. Where tools are used for feeding, removal of scrap, lubrication of parts, or removal of parts that stick on the die in PSDI operations:
 - The minimum diameter of the tool handle extension shall be greater than the minimum object sensitivity of the presence sensing device(s) used to initiate machine strokes; or
 - The length of the hand tool shall be such as to ensure that the operator's hand will be detected for any safety distance required by the machine set-ups.
- **Inspection and maintenance**
 - Any machine equipped with presence sensing devices for use in PSDI, or for supplemental safeguarding on machinery used in the PSDI mode, shall be equipped with a test rod of diameter specified by the presence sensing device manufacturer to represent the minimum object sensitivity of the sensing field. Instructions for use of the test rod shall be noted on a label affixed to the presence sensing device.
 - The following checks shall be made at the beginning of each shift and whenever a die change is made:
 - A check shall be performed using the test rod according to the presence sensing device manufacturer's instructions to determine that the presence sensing device used for PSDI is operational.
 - The safety distance shall be checked.
 - A check shall be made to determine that all supplemental safeguarding is in place. Where presence sensing devices are used for supplemental safeguarding, a check for proper operation shall be performed using the test rod according to the presence sensing device manufacturer's instructions.
 - A check shall be made to assure that the barriers and/or supplemental presence sensing devices are operating properly.
 - A system or visual check shall be made to verify correct counterbalance adjustment for die weight according to the equipment manufacturer's instructions, when a machine is equipped with a slide counterbalance system.
 - When equipment used in the PSDI mode have flywheel or bull-gear running on crankshaft mounted journals and bearings, or a flywheel mounted on back shaft journals and bearings, periodic inspections following the equipment manufacturer's recommendations shall be made to ascertain that bearings are in good working order, and that automatic lubrication systems for these bearings (if automatic lubrication is provided) are supplying proper lubrication. On machines with provision for manual lubrication of flywheel or bull-gear bearings, lubrication shall be provided according to the equipment manufacturer's recommendations.
 - Periodic inspections of clutch and brake mechanisms shall be performed to assure they are in proper operating condition. The equipment manufacturer's recommendations shall be followed.
 - When any check of the equipment reveals a condition of noncompliance, improper adjustment, or failure, the equipment shall not be operated until the condition has been corrected by adjustment, replacement, or repair.
 - It shall be the responsibility of the employer to ensure the competence of personnel caring for, inspecting, and maintaining equipment equipped for PSDI operation, through initial and periodic training.

- **Safety system validation**

- Prior to the initial use of any equipment in the PSDI mode, two sets of documented validation are required:
 - The design of the safety system required for the use of a machine in the PSDI mode shall be validated prior to installation. The validated will be by an OSHA-recognized third-party validation organization.
 - Alter a machine that has been equipped with a safety system whose design has been validated, the safety system installation shall be documented by the employer, and then shall be validated by an OSHA-recognized third-party validation organization.
- At least annually thereafter, the safety system on a machine used in the PSDI mode shall be revalidated by the employer and by an OSHA-recognized third-party validation organization. Any machine whose safety system has not been revalidated within the preceding 12 months shall be removed from service in the PSDI mode until the safety system is revalidated.
- A label shall be affixed to the machine as part of each installation validation and the most recent revalidation. The label shall indicate the machine serial number, the minimum safety distance (Ds), the fulfillment of design validation, the employer's signed document, the identification of the OSHA-recognized third-party validation organization, its signed validation, and the date the validation and revalidation are issued.
- Records of the installation validation and the most recent revalidation shall be maintained for each safety system equipped machine by the employer as long as the machine is in use. The records shall include the manufacture and model number of each component and subsystem, the calculations of the safety distance, and the stopping time measurements required. The most recent records shall be made available to OSHA.
- The employer shall notify the OSHA-recognized third-party validation organization within five days whenever a component or a subsystem of the safety system fails or modifications are made which may affect the safety of the system. The failure of a critical component shall necessitate the removal of the safety system from service until it is revalidated, except revalidation by the employer is permitted when a non-critical component or subsystem is replaced by one of the same manufacture and design as the original, or determined by the third-party validation organization to be equivalent by similarity analysis.
- The employer shall notify the OSHA-recognized third-party validation organization within five days of the occurrence of any point of operation injury while a machine is used in the PSDI mode. This is in addition to the report of injury required; however, a copy of that report may be used for this purpose.

- **Die setting and work set-up**

- The PSDI mode shall not be used for die setting or set-up. An alternative manual cycle initiation and control means shall be supplied for use in die setting.
- Following a die change, the safety distance, the proper application of supplemental safeguarding, and the slide counterbalance adjustment (if the machine is equipped with a counterbalance) shall be checked and maintained by authorized persons whose qualifications include knowledge of the safety distance, supplemental safe-guarding requirements, and the manufacturer's specifications for counterbalance adjustment. Adjustment of the location of the PSDI presence sensing device shall require use of a special tool available only to the authorized persons.

- **Operator training**

- The operator training shall be provided to the employee before the employee initially operates the machine and as needed to maintain competence at least annually. It shall include instruction relative to the following items for machinery used in the PSDI mode.
 - The manufacturers recommended test procedures for checking operation of the presence sensing device. This shall include the use of the test rod.
 - The safety distance required.
 - The operation, function and performance of the PSDI mode.
 - The requirements for hand tools that may be used in the PSDI mode.
 - The severe consequences that can result if he or she attempts to circumvent or by-pass any of the safe-guard or operating functions of the PSDI system.
- The employer shall verify that employees have been trained by preparing a documented record which includes the identity of the person trained, the signature of the employer or the person who conducted the training, and the date the training was completed.
 - The documented record shall be prepared at the completion of training and shall be maintained on file for the duration of the employee's employment.
 - The record shall be made available upon request to Occupational Safety and Health.

The requirements for validation are outlined in 29CFR1910 Subpart O and the associated Appendix A.

PROGRAM OVERVIEW

MECHANICAL POWER PRESS SAFETY PROGRAM

REGULATORY STANDARD: OSHA - 29 CFR 1910.217

INTRODUCTION: Establishes the requirements to ensure that the hazards of improper mechanical power press safeguarding are evaluated, safety procedures implemented, and that the proper hazard information is transmitted to all affected workers. It outlines the various types and methods of safe guarding systems and provides for inspections of the equipment. This program does not apply to hydraulic or pneumatic press-brakes, but only to full or partial revolution clutch equipment.

TRAINING:

- Operators must be aware of the hazards encountered and the protective control measures required for use, based on the type of protective system used

ACTIVITIES:

- Determine the hazard presented by the press and the control measures to be used
- Inspect control measures frequently
- Upon installation of presses, ensure time stop studies are performed. It is recommended that these studies be repeated annually to ensure stopping distances and times remain within established limits
- Ensure operators are trained in the safety systems and proper use of the equipment

FORMS:

- Machine Guarding Use of Presence Sensing Devices
- Training Attendance Roster

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- 1. Purpose**
- 2. Scope**
- 3. Responsibilities**
- 4. Procedure**
- 5. Safety Information**
- 6. Training Information & Requirements**
- 7. Definitions**

Mechanical Power Press Safety Program

- 1. Purpose.** This program establishes requirements to ensure that the hazards of improper press safeguarding are evaluated, safety procedures implemented, and that the proper hazard information is transmitted to all affected workers. The company will review this program:
 - 1.1 On an annual basis, or more frequently as needed.
 - 1.2 When changes occur to governing regulatory sources that require revision.
 - 1.3 When changes occur to related company procedures that require a revision.
 - 1.4 When facility operational changes occur that require a revision.
 - 1.5 When there is an accident or close-call that relates to this area of safety.
 - 1.6 Anytime the procedures fail.
- 2. Scope.** This program applies to any company locations where Mechanical Power Presses are used.
- 3. Responsibilities.**
 - 3.1 Management/Supervisors:
 - 3.1.1 Determine the types of guarding to be used
 - 3.1.2 Provide appropriate guards
 - 3.1.3 Ensure employees are trained
 - 3.1.4 Document and maintain records, as needed or required
 - 3.2 Employees:
 - 3.2.1 Attend appropriate training
 - 3.2.2 Follow required procedures
 - 3.2.3 Report missing or unsafe guards
 - 3.3 Safety Officer (as needed or required):
 - 3.3.1 Assist in the development and implementation of this program

4. Procedure.

4.1 General Requirements:

4.1.1 After machine evaluation, guards will be affixed to the machine where possible and secured elsewhere if for any reason attachment to the machine is not possible.

4.1.2 The guard shall be such that it does not offer an accident hazard in itself.

4.2 Control Reliability:

4.2.1 When required by 29 CFR 1910.217, the control system shall be constructed so that a failure within the system does not prevent the normal stopping action from being applied to the press when required, but does prevent initiation of a successive stroke until the failure is corrected. The failure shall be detectable by a simple test, or indicated by the control system.

4.2.2 This requirement does not apply to those elements of the control system which have no effect on the protection against point of operation injuries.

4.3 Point of Operation Guarding (General Requirements):

4.3.1 The company will ensure the following: "Point of operation guards" will be properly applied and adjusted on every operation performed on a mechanical power press. Guarding will be maintained in accordance with the requirements of 29 CFR 1910.217 where the point of operation opening is one-fourth inch or less.

4.3.2 Point of operation guards (general). Every point of operation guard will meet the following design, construction, application, and adjustment requirements:

4.3.2.1 Prevent entry of hands or fingers into the point of operation by reaching through, over, under or around the guard.

4.3.2.2 Conform to the maximum permissible openings found in 29 CFR 1910.217.

4.3.2.3 In itself, create no pinch point between the guard and moving machine parts.

4.3.2.4 Utilize fasteners not readily removable by operator, so as to minimize the possibility of misuse or removal of essential parts.

4.3.2.5 Facilitate its inspection.

4.3.2.6 It shall offer maximum visibility of the point of operation consistent with the other requirements.

4.3.3 Additional requirements. 29 CFR 1910.217 will be reviewed on an annual basis to ensure design, construction, application, and adjustment requirements are reviewed to ensure compliance.

4.3.4 Point of operation enclosures which do not meet the requirements of 29 CFR 1910.217 will be used only in conjunction with point of operation devices.

4.4 Point of Operation Devices:

4.4.1 Prevent and/or stop normal stroking of the press if the operator's hands are inadvertently placed in the point of operation.

4.4.2 Prevent the operator from inadvertently reaching into the point of operation, or withdrawing his hands if they are inadvertently located in the point of operation, as the dies close.

4.4.3 Prevent the operator from inadvertently reaching into the point of operation at all times.

4.4.4 Require application of both of the operator's hands to machine operating controls and locating such controls at such a safety distance from the point of operation that the slide completes the downward travel or stops before the operator can reach into the point of operation with his hands.

4.4.5 Enclose the point of operation before a press stroke can be initiated, and maintaining this closed condition until the motion of the slide had ceased.

4.4.6 Enclose the point of operation before a press stroke can be initiated, so as to prevent an operator from reaching into the point of operation prior to die closure or prior to cessation of slide motion during the downward stroke.

4.5 Gates or Movable Barriers:

4.5.1 A Type A or B gate or movable barrier devices shall protect the operator in the manner specified in 29 CFR 1910.217.

4.6 Presence Sensing Point of Operation Devices:

4.6.1 These devices will be installed on equipment used in this facility will be interlocked into the control circuit to prevent or stop slide motion if the operator's hand or other part of his body is within the sensing field of the device during the down stroke of the press slide. Additionally, the device may not be used on machines using full revolution clutches, used as a tripping means to initiate slide motion, except under strict conditions outlined in 29 CFR 1910.217.

4.6.2 The device will be constructed so that a failure within the system does not prevent the normal stopping action from being applied to the press when required, but does prevent the initiation of a successive stroke until the failure is corrected. The failure will be indicated by the system.

4.6.3 Muting (bypassing of the protective function) of such device, during the upstroke of the press slide, is permitted for the purpose of parts ejection, circuit checking, and feeding.

4.7 Safety Distances:

4.7.1 The safety distance from the sensing field to the point of operation shall be determined by 29 CFR 1910.217 and by a machine safety assessment conducted for each required machine.

4.8 Safety Guards:

4.8.1 Guards shall be used to protect all areas of entry to the point of operation not protected by the presence sensing device.

4.9 Pull-Out Devices:

4.9.1 Pull-out devices will fully protect the operator and shall include attachments for each of the operator's hands. Attachments will be connected to and operated only by the press slide or upper die.

4.9.2 Attachments shall be adjusted to prevent the operator from reaching into the point of operation or to withdraw the operator's hands from the point of operation before the dies close.

4.9.3 A separate pull-out device shall be provided for each operator if more than one operator is used on a press.

4.9.4 Each pull-out device in use shall be visually inspected and checked for proper adjustment at the start of each operator shift, following a new die set-up, and when operators are changed. Necessary maintenance or repair or both shall be performed and completed before the press is operated. Records of inspections and maintenance shall be kept in accordance with 29 CFR 1910.217.

4.9.5 The sweep device may not be used for point of operation safeguarding.

4.10 Holdout or Restraint Devices:

4.10.1 A holdout or a restraint device shall protect the operator as specified in 29 CFR 1910.217 and shall include attachments for each of the operator's hands.

4.10.2 Such attachments shall be securely anchored and adjusted in such a way that the operator is restrained from reaching into the point of operation.

4.10.3 A separate set of restraints shall be provided for each operator if more than one operator is required on a press.

4.11 Two Hand Control Devices (per 29 CFR 1910.217):

4.11.1 When used in press operations requiring more than one operator, separate two hand controls shall be provided for each operator, and shall be designed to require concurrent application of all operators' controls to activate the slide. The removal of a hand from any control button shall cause the slide to stop.

- 4.11.2 Each two hand control shall meet the construction requirements of 29 CFR 1910.217.
- 4.11.3 The safety distance between each two hand control device and the point of operation shall be greater than the distance determined by the following formula:

$$D_s = 63 \text{ inches/second} \times T_s; \text{ where:}$$

D_s =minimum safety distance (inches); 63 inches/secondhand speed constant
and
 T_s =stopping time of the press measured at approximately 90° position
of crankshaft rotation (seconds)

- 4.11.4 Two hand controls shall be fixed in position so that only a supervisor or safety engineer is capable of relocating the controls.

4.12 Two-Hand Trip Devices (per 29 CFR 1910.217):

- 4.12.1 When used in press operations requiring more than one operator, separate two hand trips shall be provided for each operator, and shall be designed to require concurrent application of all operators' to activate the slide.
- 4.12.2 Each two hand trip shall meet the construction requirements of 29 CFR 1910.217.
- 4.12.3 The safety distance (D_m) between the two hand trip and the point of operation shall be greater than the distance determined by the following formula:

$$D_m = 63 \text{ inches/second} \times T_m; \text{ where:}$$

D_m =minimum safety distance (inches); 63 inches/secondhand speed constant;
and
 T_m =the maximum time the press takes for the die closure after it has been tripped (seconds). For full revolution clutch presses with only one engaging point T_m is equal to the time necessary for one and one-half revolutions of the crankshaft.

For full revolution clutch presses with more than one engaging point, T_m shall be calculated as follows:

$$T_m = [1/2 + (1 \text{ Number of engaging points per revolution})] \times \text{time necessary to complete one revolution of the crankshaft (seconds).}$$

- 4.12.4 Two hand trips shall be fixed in position so that only a supervisor or safety engineer is capable of relocating the controls.

4.13 Hand Feeding Tools:

- 4.13.1 Hand feeding tools are intended for placing and removing materials in and from the press. Hand feeding tools are not a point of operation guard or protection device and shall not be used in lieu of the "guards" or devices required in 29 CFR 1910.217.

5. Safety Information.

5.1 Additional Requirements for Safe-Guarding:

5.1.1 Where the operator feeds or removes parts by placing one or both hands in the point of operation, and a two hand control, presence sensing device of Type B gate (see 29 CFR 1910.217) or movable barrier (on a part revolution clutch) is used for safeguarding:

5.2 Inspection, Maintenance, and Modification of Presses:

5.2.1 Inspection and maintenance records. Records will be maintained in the main office. The company will establish and follow a safety program of periodic and regular inspections of power presses to ensure that all parts, auxiliary equipment, and safeguards are in a safe operating condition and adjustment. The company shall document records of inspections which include the date of inspection, the signature of the person who performed the inspection and the serial number, or other identifier, of the power press that was inspected.

5.2.2 Inspection and maintenance intervals. Each press shall be inspected and tested no less than weekly to determine the condition of the clutch/brake mechanism, anti-repeat feature and single stroke mechanism. Necessary maintenance or repair or both shall be performed and completed before the press is operated. The employer shall maintain documented records of inspections, tests and maintenance work which include the date of the inspection, test or maintenance; the signature of the person who performed the inspection, test, or maintenance; and the serial number or other identifier of the press that was inspected, tested or maintained.

5.2.3 Modification. It shall be the responsibility of the area supervisor to ensure that any power press that is modified has specific safety information furnished to establish new or changed guidelines for use and care of the power press.

5.3 Work Area Clearances:

5.3.1 Adequate clearance between machines will be provided to ensure that movement of one operator will not interfere with the work of another.

5.3.2 Ample room for cleaning machines, handling material, work pieces, and scrap shall also be provided.

5.3.3 All surrounding floors shall be kept in good condition and free from obstructions, grease, oil, and water.

5.4 Overloading:

5.4.1 The company shall operate presses within the tonnage and attachment weight ratings specified by the manufacturer and as required by 29 CFR 1910.217.

5.5 Injury Reporting:

5.5.1 The company shall, within 30 days of the occurrence, report to either the Director of the Directorate of Safety Standards Programs, OSHA, U.S. Department of Labor, Washington, D.C. 20210, or the State agency administering a program approved by the Assistant Secretary of Labor for Occupational Safety and Health, all point of operation injuries to operators or other employees. The following information shall be included in the report:

- 5.5.1.1 Employer's name, address and location of the workplace.
- 5.5.1.2 Employee's name, injury sustained, and the task being performed (operation, set-up, maintenance, or other).
- 5.5.1.3 Type of clutch used on the press (full revolution, part revolution, or direct drive).
- 5.5.1.4 Type of safeguard(s) being used (two hand control, two hand trip, pull-outs, sweeps, or other). If the safeguard is not described in this section, give a complete description.
- 5.5.1.5 Cause of the accident (repeat of press, safeguard failure, removing stuck part or scrap, no safeguard provided, no safeguard in use, or other).
- 5.5.1.6 Type of feeding (manual with hands in dies or with hands out of dies, semiautomatic, automatic, or other).
- 5.5.1.7 Means used to actuate press stroke (foot trip, foot control, hand trip, hand control, or other).
- 5.5.1.8 Number of operators required for the operation and the number of operators provided with controls and safeguards.

5.6 Protective Clothing and Personal Protective Equipment (PPE):

- 5.6.1 Where engineering controls are not adequate, employees will wear protective clothing or PPE.
- 5.6.2 These include items such as, caps, hair nets, face shields, safety goggles, glasses, hearing protection, foot guards, gloves etc. Supervisors will ensure that equipment selected will meet the following requirements:
 - 5.6.2.1 It will be appropriate for the particular hazard.
 - 5.6.2.2 It will be maintained in good condition.
 - 5.6.2.3 It will be properly stored when not in use, to prevent damage or loss.
 - 5.6.2.4 It will be kept clean, fully functional and sanitary.

5.6.3 Hazards associated with wear of protective clothing, PPE, personal clothing and jewelry. Protective clothing and PPE can present additional safety hazards. Supervisors will ensure operators wear appropriate clothing and PPE. These items will be worn so as not create additional hazards.

5.7 Press Evaluation:

5.7.1 The company shall evaluate presses to determine which machines or pieces of equipment require control devices or guarding to control work place hazards. A complete listing of presses having these devices or guards will be maintained.

5.7.2 A listing of all presses that have been or will require evaluation will be maintained by the area supervisor or in the main office.

5.8 Periodic Inspections and Verifications:

5.8.1 Inspections. The company shall conduct a periodic inspection of each press at least annually to ensure that the procedures, safeguarding techniques, and the requirements of this safety program are being followed.

5.8.2 The periodic inspection shall be performed by an authorized employee other than the ones(s) utilizing the equipment guards being inspected.

5.8.3 The periodic inspection shall be conducted to correct any deviations or inadequacies identified.

5.8.4 Verification. The company shall verify that the periodic inspections have been performed. The documentation shall be maintained the same location as the master press listing. The documentation shall, as a minimum, identify:

5.8.4.1 The press that was inspected.

5.8.4.2 The date of the inspection.

5.8.4.3 The employees included in the inspection.

5.8.4.4 The person performing the inspection.

5.8.4.5 A narrative of the actions taken during the inspection.

5.9 Validation of Safety Systems for (PSDI):

5.9.1 The company will ensure that validation of safety systems for presence sensing device Initiation devices is accomplished. The purpose of the validation of safety systems for presence sensing device initiation (PSDI) of mechanical power presses is to ensure that the safety systems are designed, installed, and maintained in accordance with all applicable requirements of 29 CFR 1910.217.

5.9.2 The validation process shall utilize an independent third-party validation organization recognized by OSHA in accordance with the requirements specified in appendix C of 29 CFR 1910.217.

- 5.9.3 It is understood that while the company is responsible for assuring that the validation requirements in 29 CFR 1910.217 are fulfilled, the design certification of PSDI safety systems will be initiated and conducted by manufacturers and/or their representatives.

6. Training and Information.

6.1 Press Operators:

- 6.1.1 Operators will not be allowed to operate a press until they are thoroughly familiar with the installation, operation, and use of all control devices.
- 6.1.2 The company shall provide training to ensure that the purpose and function of the press safety program are understood by employees and that the knowledge and skills required for the safe operation of presses is are acquired by employees.
- 6.1.3 The maintenance department (or equivalent group) will be the focal point for the mechanical aspects of press safety and may be called upon to provide operator training on specific topics.
- 6.1.4 Training includes the following and, where necessary, will involves hands-on training:
- 6.1.4.1 A description and identification of the hazards associated with particular machines.
 - 6.1.4.2 The specific safeguard, how it provides protection, and the hazards for which it is intended to block.
 - 6.1.4.3 How to properly use the control devices and guards and why.
 - 6.1.4.4 How to install, operate, and remove control devices and guards.
 - 6.1.4.5 What to do if the control device or guard is damaged, missing, and unable to provide adequate protection.
 - 6.1.4.6 Each authorized employee shall receive training in the recognition of applicable hazard sources.
 - 6.1.4.7 Each affected employee shall be instructed in the purpose and use of the control devices and guards on the machinery they operate.
 - 6.1.4.8 All other employees whose work operations are or may be in an area where presses are used, shall be instructed about the safety procedure, and about the prohibition relating to attempts to defeat machines or equipment which have control devices or guards installed.

- 6.1.4.9 Recognition of applicable hazards associated with the press.
- 6.1.4.10 Procedures for removal of a press from service.
- 6.1.5 PSDI Training
 - 6.1.5.1 Training will be provided to the employee before the employee initially operates the press and as needed to maintain competence, but not less than annually thereafter. It shall include instruction relative to the following items for presses used in the PSDI mode.
 - 6.1.5.2 The manufacturer recommended test procedures for checking operation of the presence sensing device. This shall include the use of the test rod required by 29 CFR 1910.217.
 - 6.1.5.3 The safety distance required.
 - 6.1.5.4 The operation, function and performance of the PSDI mode.
 - 6.1.5.5 The requirements for hand tools that may be used in the PSDI mode.
 - 6.1.5.6 The severe consequences that can result if he or she attempts to circumvent or by-pass any of the safeguards or operating functions of the PSDI system.
- 6.1.6 Training is provided annually and when:
 - 6.1.6.1 There is a change in job assignments
 - 6.1.6.2 There is a change in machines, equipment or processes that present a new hazard
 - 6.1.6.3 There is a change in the type control of device or guard installed on a given press. Training will be provided before reassignment
 - 6.1.6.4 A periodic inspection reveals, or whenever there is reason to believe, that there are deviations from or inadequacies in the employee's knowledge or use of the press control devices or guards
- 6.1.7 Training establishes employee proficiency and introduces new or revised safeguarding methods and procedures, as necessary.
- 6.1.8 Verification. The company shall verify that employee training has been accomplished and is being kept up to date. The documentation shall contain each employee's name and dates of training.

6.2 Press Maintainers. The company will ensure original and continuing competence of personnel caring for, inspecting, and maintaining power presses.

6.2.1 Close contact will be maintained with manufacturers of presses to ensure current proficiency is maintained.

7. Definitions.

- *PSDI – Presence Sensing Device Initiator* - A device that detects the presence of an object (tool or body part) within a field and automatically shuts down or stops the machine.
- *Point of Operation* – The area of hazard on a machine where parts or materials are worked on.

MACHINE GUARDING USING PRESENCE SENSING DEVICES

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Equipment with a configuration which would allow a person to enter, pass through, and become clear of the sensing field into the hazardous portion of the equipment shall not be used in the PSDI mode of operation. The PSDI mode of operation shall be used only for normal production operations. Die-setting and maintenance procedures shall not be done in the PSDI mode.

- **Brake and clutch requirements.**
 - Equipment with flexible steel band brakes or with mechanical linkage actuated brakes or clutches shall not be used in the PSDI mode.
 - Brake systems on equipment used in the PSDI mode shall have sufficient torque so that each average value of stopping times (Ts) for stops initiated at approximately 45 degrees, 60 degrees, and 90 degrees, respectively, of crankshaft angular position, shall not be more than 125 percent of the average value of the stopping time at the top crankshaft position. Compliance with this requirement shall be determined by using the heaviest upper die to be used on the equipment, and operating at the fastest equipment speed if there is speed selection.
 - Where brake engagement and clutch release is affected by spring action, such springs(s) shall operate in compression on a rod or within a hole or tube, and shall be of non-interleaving design.
- **Pneumatic systems when used in PSDI mode**
 - Air valve and air pressure supply/control.
 - The air supply for pneumatic clutch/brake control valves shall incorporate a filter, an air regulator, and, when necessary for proper operation, a lubricator.
 - The air pressure supply for clutch/brake valves on machines used in the PSDI mode shall be regulated to pressures less than or equal to the air pressure used when making the stop time measurements.
 - Air counterbalance systems.
 - Where equipment has slide counterbalance systems that are used in the PSDI mode, the counterbalance system shall also meet the same requirements.
 - Counterbalances shall be adjusted in accordance with the equipment manufacturer's recommendations to assure correct counterbalancing of the slide attachment (upper die) weight for all operations performed on equipment used in the PSDI mode. The adjustments shall be made before performing the stopping time measurements.
 - Flywheels and bearings. Equipment whose designs incorporate flywheels running on journals on the crankshaft or back shaft, or bull gears running on journals mounted on the crankshaft, shall be inspected, lubricated, and maintained to reduce the possibility of unintended and uncontrolled machine strokes caused by bearing seizure.

- **Brake monitoring**

- Equipment operated in the PSDI mode shall be equipped with a brake monitor. The brake monitor shall be adjusted during installation to prevent successive stroking of the machine if increases in stopping time cause an increase in the safety distances above the established requirements.
- Once the PSDI safety system has been installed and validated, adjustment of the brake monitor shall not be done without prior approval of the validation organization for both the brake monitor adjustment and the corresponding adjustment of the safety distance. The validation organization shall in its installation validation, state that in what circumstances, if any, the employer has advance approval for adjustment, when prior oral approval is appropriate and when prior approval must be in writing. The adjustment shall be done under the supervision of an authorized person whose qualifications include knowledge of safety distance requirements and experience with the brake system and its adjustment. When brake wear or other factors extend machine stopping time beyond the limit permitted by the brake monitor, adjustment, repair, or maintenance shall be performed on the brake or other machine system element that extends the stopping time.
- The brake monitor setting shall allow an increase of no more than 10 percent of the longest stopping time for the machine, or 10 milliseconds, whichever is longer, measured at the top of the stroke.

- **Cycle control and control systems**

- The control system shall incorporate a means of dynamically monitoring for decoupling of the rotary position indicating mechanism drive from the crankshaft. This control shall stop slide motion and prevent successive machine strokes if decoupling occurs, or if the monitor itself fails.
- The mode selection means shall have at least one position for selection of the PSDI mode. Where more than one interruption of the light sensing field is used in the initiation of a stroke, either the mode selection means must have one position for each function, or a separate selection means shall be provided which becomes operable when the PSDI mode is selected. Selection of PSDI mode and the number of interruptions/withdrawals of the light sensing field required to initiate an activation cycle shall be by means capable of supervision by the employer.
- A PSDI set-up/reset means shall be provided which requires an overt action by the operator, in addition to PSDI mode selection, before operation of the machine by means of PSDI can be started.
- An indicator visible to the operator and readily seen by the employer shall be provided which shall clearly indicate that the system is set-up for cycling in the PSDI mode.
- The control system shall incorporate a timer to deactivate PSDI when the machine does not stroke within the period of time set by the timer. The timer shall be manually adjustable, to a maximum time of 30 seconds. For any timer setting greater than 15 seconds, the adjustment shall be made by the use of a special tool available only to authorized persons. Following a deactivation of PSDI by the timer, the system shall make it necessary to reset the set-up/reset means in order to reactivate the PSDI mode.
- Reactivation of PSDI operation following deactivation of the PSDI mode from any other cause, such as activation of the red color stop control, interruption of the presence sensing field, opening of an interlock, or reselection of the number of sensing field interruptions/withdrawals required to cycle the machine, shall require resetting of the set-up/reset means.
- The control system shall incorporate an automatic means to prevent initiation or continued operation in the PSDI mode unless the machine drive motor is energized in the forward direction of crankshaft rotation.
- The control design shall preclude any movement of the slide caused by operation of power on, power off, or selector switches, or from checks for proper operations.
- All components and subsystems of the control system shall be designed to operate together to provide total control system compliance with the requirements of this section.
- Where there is more than one operator of a machine used for PSDI, each operator shall be protected by a separate, independently functioning, presence sensing device. The control system shall require that each sensing field be interrupted the selected number of times prior to initiating a stroke. Further, each operator shall be provided with a set-up/reset means that meets the requirements, and which must be actuated to initiate operation of the machine in the PSDI mode.
- The control system shall incorporate interlocks for supplemental guards, if used, which will prevent stroke initiation or will stop a stroke in progress if any supplemental guard fails or is deactivated.
- The control system shall perform checks for proper operation of all cycle control logic element switches and contacts at least once each cycle. Control elements shall be checked for correct status after power "on" and before the initial PSDI stroke.
- The control system shall have provisions for an "inch" operating means. Die-setting shall not be done in the PSDI mode. Production shall not be done in the "inch" mode.

- o The control system shall permit only a single stroke per initiation command.
- o Controls with internally stored programs (e.g., mechanical, electro-mechanical, or electronic) shall default to a predetermined safe condition in the event of any single failure within the system. Programmable controllers which meet the requirements for controls with internally stored programs stated above shall be permitted only if all logic elements affecting the safety system and point of operation safety are internally stored and protected in such a manner that they cannot be altered or manipulated by the user to an unsafe condition.

- **Environmental requirements**

- o Control components shall be selected, constructed, and connected together in such a way as to withstand expected operational and environmental stresses. Such stresses shall not cause unsafe operation.

- **Safety systems**

- o Equipment used in the PSDI mode shall be operated under the control of a safety system which shall function such that a single failure or single operating error shall not cause injury to personnel.
- o The safety system shall be designed, constructed, and arranged as an integral total system, including all elements of the machine, the controls, the safeguarding and any required supplemental safeguarding, and their interfaces with the operator and that part of the environment which has effect on the protection against point of operation hazards.

- **Safeguarding the point of operation**

- o The point of operation of machines operated in the PSDI mode shall be safeguarded, except that the safety distance requirements shall be used for PSDI operation.
- o PSDI shall be implemented only by use of light curtain (photo- electric) presence sensing devices unless the following requirements have been met:
 - Alternatives to photo-electric light curtains may be used for PSDI when the employer can demonstrate, through tests and analysis by the employer or the manufacturer, that the alternative is as safe as the photo-electric light curtain, that the alternative meets the conditions of this section, has the same long term reliability as light curtains and can be integrated into the entire safety system as provided.
 - Prior to use, both the employer and manufacturer must verify that these requirements and all the other applicable requirements of this section are met and an OSHA-recognized third-party validation organization must review the process to ensure the requirements are met.
 - Three months prior to the operation of any alternative system, the employer must notify the OSHA Directorate of Safety Standards programs of the name of the system to be installed, the manufacturer and the OSHA-recognized third-party validation organization immediately. Upon request, the employer must make available to that office all tests and analyses for OSHA review.
- o Individual sensing fields used to initiate strokes in the PSDI mode shall cover only one side of the machine.
- o Light curtains used for PSDI operation shall have minimum object sensitivity not to exceed one and one-fourth inches (31.75 mm). Where light curtain object sensitivity is user-adjustable, either discretely or continuously, design features shall limit the minimum object sensitivity adjustment not to exceed one and one-fourth inches (31.75 mm). Blanking of the sensing field is not permitted.
- o The safety distance (Ds) from the sensing field of the presence sensing device to the point of operation shall be greater than or equal to the distance determined by the formula:

$$D_s = H_s \times (T_s + T_p + T_r + 2T_m) + D_p$$

Where:

Ds = Minimum safety distance.

Hs = Hand speed constant of 63 inches per second (1.6 m/s).

Ts = Longest machine stopping time, in seconds, computed by taking averages of multiple measurements at each of three positions (45 degrees, 60 degrees, and 90 degrees) of crankshaft angular position; the longest of the three averages is the stopping time to use. (Ts is defined as the sum of the kinetic energy dissipation time plus the pneumatic /magnetic /hydraulic reaction time of the clutch/brake operating mechanism(s).)

Tp = Longest presence sensing device response time, in seconds.

Tr = Longest response time, in seconds, of all interposing control elements between the presence sensing device and the clutch/brake operating mechanism(s).

Tm = Increase in the machine stopping time at the top of the stroke, in seconds, allowed by the brake monitor for brake wear. The time increase allowed is limited to no more than 10 percent of the longest machine stopping time measured at the top of the stroke, or 10 milliseconds, whichever is longer.

Dp = Penetration depth factor, required to provide for possible penetration through the presence sensing field by fingers or hand before detection occurs. The penetration depth factor shall be determined from Graph h-1 using the minimum object sensitivity size.

- The presence sensing device location shall either be set at each tool change and set-up to provide at least the minimum safety distance, or fixed in location to provide a safety distance greater than or equal to the minimum safety distance for all tooling set-ups which are to be used on that machine.
- Where presence sensing device location is adjustable, adjustment shall require the use of a special tool available only to authorized persons.
- Supplemental safeguarding shall be used to protect all areas of access to the point of operation which are unprotected by the PSDI presence sensing device. Such supplemental safeguarding shall consist of either additional light curtain (photo-electric) presence sensing devices or other types of guards.
- Presence sensing devices used as supplemental safeguarding shall not initiate a machine stroke, and shall conform to the requirements of this section, except that the safety distance shall comply with those noted above.
- Guards used as supplemental safeguarding shall conform to the design, construction and application requirements, and shall be interlocked with the machine control to prevent machine PSDI operation if the guard fails, is removed, or is out of position.
- Barriers shall be fixed to the machine frame or bolster to prevent personnel from passing completely through the sensing field, where safety distance or machine configuration is such that personnel could pass through the PSDI presence sensing field and assume a position where the point of operation could be accessed without detection by the PSDI presence sensing device. As an alternative, supplemental presence sensing devices used only in the safeguard mode may be provided. If used, these devices shall be located so as to detect all operator locations and positions not detected by the PSDI sensing field, and shall prevent stroking or stop a stroke in process when any supplemental sensing fields are interrupted.
- Hand tools. Where tools are used for feeding, removal of scrap, lubrication of parts, or removal of parts that stick on the die in PSDI operations:
 - The minimum diameter of the tool handle extension shall be greater than the minimum object sensitivity of the presence sensing device(s) used to initiate machine strokes; or
 - The length of the hand tool shall be such as to ensure that the operator's hand will be detected for any safety distance required by the machine set-ups.
- **Inspection and maintenance**
 - Any machine equipped with presence sensing devices for use in PSDI, or for supplemental safeguarding on machinery used in the PSDI mode, shall be equipped with a test rod of diameter specified by the presence sensing device manufacturer to represent the minimum object sensitivity of the sensing field. Instructions for use of the test rod shall be noted on a label affixed to the presence sensing device.
 - The following checks shall be made at the beginning of each shift and whenever a die change is made:
 - A check shall be performed using the test rod according to the presence sensing device manufacturer's instructions to determine that the presence sensing device used for PSDI is operational.
 - The safety distance shall be checked.
 - A check shall be made to determine that all supplemental safeguarding is in place. Where presence sensing devices are used for supplemental safeguarding, a check for proper operation shall be performed using the test rod according to the presence sensing device manufacturer's instructions.
 - A check shall be made to assure that the barriers and/or supplemental presence sensing devices are operating properly.
 - A system or visual check shall be made to verify correct counterbalance adjustment for die weight according to the equipment manufacturer's instructions, when a machine is equipped with a slide counterbalance system.
 - When equipment used in the PSDI mode have flywheel or bull-gear running on crankshaft mounted journals and bearings, or a flywheel mounted on back shaft journals and bearings, periodic inspections following the equipment manufacturer's recommendations shall be made to ascertain that bearings are in good working order, and that automatic lubrication systems for these bearings (if automatic lubrication is provided) are supplying proper lubrication. On machines with provision for manual lubrication of flywheel or bull-gear bearings, lubrication shall be provided according to the equipment manufacturer's recommendations.
 - Periodic inspections of clutch and brake mechanisms shall be performed to assure they are in proper operating condition. The equipment manufacturer's recommendations shall be followed.
 - When any check of the equipment reveals a condition of noncompliance, improper adjustment, or failure, the equipment shall not be operated until the condition has been corrected by adjustment, replacement, or repair.
 - It shall be the responsibility of the employer to ensure the competence of personnel caring for, inspecting, and maintaining equipment equipped for PSDI operation, through initial and periodic training.

- **Safety system validation**

- Prior to the initial use of any equipment in the PSDI mode, two sets of documented validation are required:
 - The design of the safety system required for the use of a machine in the PSDI mode shall be validated prior to installation. The validated will be by an OSHA-recognized third-party validation organization.
 - Alter a machine that has been equipped with a safety system whose design has been validated, the safety system installation shall be documented by the employer, and then shall be validated by an OSHA-recognized third-party validation organization.
- At least annually thereafter, the safety system on a machine used in the PSDI mode shall be revalidated by the employer and by an OSHA-recognized third-party validation organization. Any machine whose safety system has not been revalidated within the preceding 12 months shall be removed from service in the PSDI mode until the safety system is revalidated.
- A label shall be affixed to the machine as part of each installation validation and the most recent revalidation. The label shall indicate the machine serial number, the minimum safety distance (Ds), the fulfillment of design validation, the employer's signed document, the identification of the OSHA-recognized third-party validation organization, its signed validation, and the date the validation and revalidation are issued.
- Records of the installation validation and the most recent revalidation shall be maintained for each safety system equipped machine by the employer as long as the machine is in use. The records shall include the manufacture and model number of each component and subsystem, the calculations of the safety distance, and the stopping time measurements required. The most recent records shall be made available to OSHA.
- The employer shall notify the OSHA-recognized third-party validation organization within five days whenever a component or a subsystem of the safety system fails or modifications are made which may affect the safety of the system. The failure of a critical component shall necessitate the removal of the safety system from service until it is revalidated, except revalidation by the employer is permitted when a non-critical component or subsystem is replaced by one of the same manufacture and design as the original, or determined by the third-party validation organization to be equivalent by similarity analysis.
- The employer shall notify the OSHA-recognized third-party validation organization within five days of the occurrence of any point of operation injury while a machine is used in the PSDI mode. This is in addition to the report of injury required; however, a copy of that report may be used for this purpose.

- **Die setting and work set-up**

- The PSDI mode shall not be used for die setting or set-up. An alternative manual cycle initiation and control means shall be supplied for use in die setting.
- Following a die change, the safety distance, the proper application of supplemental safeguarding, and the slide counterbalance adjustment (if the machine is equipped with a counterbalance) shall be checked and maintained by authorized persons whose qualifications include knowledge of the safety distance, supplemental safe-guarding requirements, and the manufacturer's specifications for counterbalance adjustment. Adjustment of the location of the PSDI presence sensing device shall require use of a special tool available only to the authorized persons.

- **Operator training**

- The operator training shall be provided to the employee before the employee initially operates the machine and as needed to maintain competence at least annually. It shall include instruction relative to the following items for machinery used in the PSDI mode.
 - The manufacturers recommended test procedures for checking operation of the presence sensing device. This shall include the use of the test rod.
 - The safety distance required.
 - The operation, function and performance of the PSDI mode.
 - The requirements for hand tools that may be used in the PSDI mode.
 - The severe consequences that can result if he or she attempts to circumvent or by-pass any of the safe-guard or operating functions of the PSDI system.
- The employer shall verify that employees have been trained by preparing a documented record which includes the identity of the person trained, the signature of the employer or the person who conducted the training, and the date the training was completed.
 - The documented record shall be prepared at the completion of training and shall be maintained on file for the duration of the employee's employment.
 - The record shall be made available upon request to Occupational Safety and Health.

The requirements for validation are outlined in 29CFR1910 Subpart O and the associated Appendix A.

PROGRAM OVERVIEW

OSHA RECORDKEEPING SAFETY PROGRAM REGULATORY STANDARD - OSHA - 29 CFR 1904

INTRODUCTION: The OSHA Recordkeeping Standard requires certain industry segments to evaluate workplace injuries and illnesses, and mandates these employers to collect, compile, retain, analyze and communicate this information to employees. This program establishes criteria for logging occupational injuries or illnesses, posting the annual summary and record retention.

TRAINING:

- Recommended that for supervisors and managers to assist in determining what is recordable.

ACTIVITIES:

- Determine if recordkeeping standards apply
- Maintain appropriate records: OSHA 300, 300A, and 301 (or equivalent) forms
- Supply the records and documentation to OSHA, as needed or required
- Notify OSHA within 8 hours of fatalities or of significant incidents which meet set requirements
- Post appropriate summaries of the OSHA recordkeeping forms
- Encourage employees to report any incidents (injuries, illnesses, and near-miss incidents)
- Report the contents and summaries of these documents upon being notified in writing by the Bureau of Labor Statistics that the employer has been selected to participate in a statistical survey of occupational injuries and illnesses
- Retain log and summary of all recordable occupational injuries and illnesses (OSHA 300 and OSHA 300A or equivalent) for 5 years

FORMS:

- OSHA 300 Form
- OSHA 300A Form
- OSHA 301 Form or
- Accident, Incident, Near Miss Investigation Report
- Training attendance roster

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OSHA Recordkeeping Safety Program

1. Purpose. Records are required to be kept by most employers that indicate the number, types and severity of work related injuries, illnesses and fatalities. The OSHA Recordkeeping Safety Program is designed to assist the company in compliance with the requirements of 29CFR1904 (OSHA's Recordkeeping Standard). The company will review and evaluate this safety program:

- 1.1 On an annual basis, or more frequently if required.
- 1.2 When changes occur to 29 CFR 1904 that prompt revision of this document.
- 1.3 When facility operational changes occur that require a revision of this document.

2. Scope. The OSHA Recordkeeping Safety Program applies to all facilities and job sites where company employees work.

3. Responsibilities.

3.1 Management/Supervisors:

- 3.1.1 Determine if recordkeeping standards apply.
- 3.1.2 Maintain appropriate records.
- 3.1.3 Supply the records and documentation to OSHA, as needed or required.
- 3.1.4 Notify OSHA within 8 hours of fatalities or incidents with multiple hospitalizations (3 or more employees) or any fatality, as needed or required.
 - 3.1.4.1 CALIFORNIA – requires the reporting for one or more persons admitted to the hospital for treatment (not observation) for a period of more than 24 hours or if an employee loses any member of the body (finger, arm, leg, etc.) or suffers any serious permanent disfigurement. This does not include injuries, illnesses or deaths resulting from a criminal act or an accident on a public street or highway.
- 3.1.5 Post appropriate summaries of the OSHA recordkeeping forms.
- 3.1.6 Encourage employees to report any incidents (injuries, illnesses, property damage and near-miss incidents).

3.2 Employees:

- 3.2.1 Report any work related injuries or illnesses immediately to management or your supervisor.

3.3 Safety Officer (as needed or required):

- 3.3.1 Assist in the implementation of the OSHA Recordkeeping Safety Program.

4. Procedure.

4.1 General Recordkeeping Requirements:

4.1.1 Companies with eleven (11) or more employees at any time during the calendar year must comply with the provisions of the recordkeeping standard (29 CFR 1904).

4.1.2 The company will maintain a log of occupational injuries and illnesses on the required OSHA 300, 300A and 301 (or equivalent) forms.

4.1.2.1 The company will report the contents and summaries of these documents upon being notified in writing by the Bureau of Labor Statistics that the employer has been selected to participate in a statistical survey of occupational injuries and illnesses.

4.2 Log and Summary of Occupational Injuries and Illnesses (OSHA 300). The log will be used for classifying occupational injuries and illnesses, and for noting the extent of each case. The log shows when the occupational injury or illness occurred, to whom, the regular job of the injured or ill person at the time of the injury or illness exposure, the department or area in which the person was employed, the type of injury or illness, how much time was lost, whether the case resulted in a fatality, etc. The company will:

4.2.1 Maintain a log and summary of all recordable occupational injuries and illnesses by calendar year, each year. Past logs must be maintained for 5 years, after which they may be discarded.

4.2.1.1 Each year's form will be updated to include newly discovered cases and to reflect changes that occur in recorded cases after the end of the calendar year. If, during the 5-year retention period, there is a change in the extent or outcome of an injury or illness which affects an entry on a previous year's log, then the first entry will be lined out and a corrected entry made on that log. New entries for previously unrecorded cases that are discovered will also be documented. Log totals will also be modified to reflect these changes.

4.2.2 Enter each recordable injury and illness on the log and summary as early as practicable but no later than 6 working days after receiving information that a recordable injury or illness has occurred. For this purpose OSHA Form No. 300 or an equivalent document will be used. The log and summary will be completed in the detail provided in the form and instructions on form OSHA No. 300.

4.2.3 If the company elects to maintain the log of occupational injuries and illnesses at a place other than the main facility or by means of data-processing equipment, or both, it will meet the following criteria:

4.2.3.1 There will be available at the place where the log is maintained sufficient information to complete the log to a date within 6 working days after receiving information that a recordable case has occurred.

- 4.2.3.2 At each facility there will be available a copy of the log which reflects separately the injury and illness experience of that establishment complete and current to a date within 45 calendar days.

4.3 Supplementary Record (OSHA 301):

- 4.3.1 In addition to the log of occupational injuries and illnesses (OSHA 300) the company will have (within 6 working days after receiving information that a recordable case has occurred) a supplementary record for each occupational injury or illness for that establishment. The record will be completed in the detail prescribed in the instructions accompanying Occupational Safety and Health Administration OSHA Form No. 301. Workmen's compensation, insurance, or other alternative records (provided they contain the information required by OSHA Form No. 301) are acceptable substitutes.

4.4 Annual Summary:

- 4.4.1 The company will post an annual summary of occupational injuries and illnesses for each facility under our control. This summary will consist of a copy of the year's totals from the form OSHA No. 300 and the following information from that 300 form:
 - 4.4.1.1 Calendar year covered.
 - 4.4.1.2 Company name and establishment address.
 - 4.4.1.3 Verification signature, title, and date.
 - 4.4.1.4 A form OSHA No. 300-A will be used in presenting the summary. If no injuries or illnesses occurred in the year, zeros will be entered on the total line, and the form posted.
 - 4.4.1.5 The summary will be completed by February 1 of each calendar year. Management, or the officer or employee of the employer who supervises the preparation of the log and summary of occupational injuries and illnesses, will verify that the annual summary of occupational injuries and illnesses is true and complete. The verification will be accomplished by affixing their signature, attesting that the summary is true and complete.
 - 4.4.1.6 The company will post a copy of the establishment's summary (OSHA Form 300A) in each facility in a place accessible to employees and in a location where employees would normally look for such information. The summary covering the previous calendar year will be posted no later than February 1 and will remain in place until April 30. For employees who do not primarily report or work at a fixed site belonging to the company, or who do not report to any fixed site on a regular basis, we will satisfy this posting requirement by presenting or mailing a copy of the summary during the month of February of the following year to each such employee who receives pay during that month.

5. Safety Information.

- 5.1 Records Retention. Records maintained by the company will be retained for the following time periods following the end of the year to which they relate.
 - 5.1.1 Log and summary of all recordable occupational injuries and illnesses (OSHA 300 and OSHA 300A or equivalent). Retained for 5 years.
 - 5.1.2 Supplementary records (OSHA 301 or equivalent) for each occupational injury or illness for this facility. Retained for 5 years.
 - 5.1.3 Employee exposure and medical records for company employees. Retained for the duration of employment plus an additional 30 years.
 - 5.1.4 Noise exposure measurement records. Retained for the duration of employment plus an additional 30 years.
 - 5.1.5 Audiometric test records. Retained for the duration of the affected employee's employment.
- 5.2 Access to Records. The company will provide, upon request, these established records, for inspection and copying by any representative of OSHA or the DOL (or state equivalent agencies) for the purpose of carrying out the provisions of the OSHA act, and for statistical compilation.
 - 5.2.1 The log and summary of all recordable occupational injuries and illnesses (OSHA No. 300) will, upon request, be made available to any employee, former employee, and to their representatives for examination and copying in a reasonable manner and at reasonable times. The employee, former employee, and their representatives will have access to the log for any establishment in which the employee is or has been employed.
- 5.3 Reporting of Fatality or Multiple Hospitalization Accidents. Within 8 hours after the occurrence of a work related accident which is fatal to one or more employees or which results in hospitalization of 3 or more employees, the company will report the accident either orally or in writing. The reporting must be by telephone. The report will relate the circumstances of the accident, the number of fatalities, and the extent of any injuries. It is understood that the Area OSHA Director may require such additional reports, in writing or otherwise, as he deems necessary concerning the accident. This report is to be made to the nearest office of the Occupational Safety and Health Administration. You may also use the OSHA toll free central number 1-800-321-6742. A listing of the current offices can be accessed on the OSHA website (www.OSHA.gov), and a listing current to June, 2005 is included as a form with the OSHA Recordkeeping Safety Program.
 - 5.3.1 CALIFORNIA – requires the reporting for one or more persons admitted to the hospital for treatment (not observation) for a period of more than 24 hours or if an employee loses any member of the body (finger, arm, leg, etc.) or suffers any serious permanent disfigurement. This does not include injuries, illnesses or deaths resulting from a criminal act or an accident on a public street or highway.

- 5.4 Change of Ownership. In the event a change of company ownership should occur, the company will notify the buyers of the requirement to preserve those records of the prior ownership, if any are required to be maintained.
- 5.5 Petitions for Recordkeeping Exceptions. In the event the company chooses to maintain records in a manner different from that required, the company will submit a petition containing the information specified by the Regional Commissioner of the Bureau of Labor Statistics in our region.
- 5.6 Employees Not In Fixed Establishments. Recording requirements for company employees engaged in physically dispersed operations (such as construction, installation, repair or service activities) who do not report to any fixed company establishment on a regular basis but are subject to common supervision will be satisfied by:
 - 5.6.1 Maintaining the required records for each operation or group of operations which is subject to common supervision (field superintendent, field supervisor, etc.) in the main office of the company.
 - 5.6.2 Having the address and telephone number of the main office available at each worksite.
 - 5.6.3 Having personnel available at the main office during normal business hours to provide information from the records maintained there by telephone and by mail.
- 5.7 Statistical Safety Program. The company will comply with all requirements to maintain, provide, and use statistical summaries. Upon receipt of an Occupational Injury and Illnesses Survey Form, the company will promptly complete the form in accordance with the instructions contained therein, and return it in accordance with the instructions.
- 5.8 Recordable Classification:
 - 5.8.1 Case analysis. The following decision logic will be followed:
 - 5.8.1.1 Determine whether a case occurred (death, injury, illness).
 - 5.8.1.2 Establish that the case was work related.
 - 5.8.1.2.1 Case resulting from an event or exposure in the work environment. In addition to the physical location, equipment or materials used in the course of an employee's work are also considered part of the employee's work environment.
 - 5.8.1.2.2 Case resulting from an event or exposure in other locations where employees are engaged in work-related activities or are present as a condition of their employment.

- 5.8.1.3 Establishing that the case was not work related.
 - 5.8.1.3.1 The case will be considered not work related when an employee is off duty on our premises as a member of the general public and not as an employee.
 - 5.8.1.3.2 The case will be considered not work related when an employee has symptoms that merely surface on company premises, but are the result of a non-work related event or exposure off the premises.
- 5.8.1.4 Determining if the case is an illness or injury.
 - 5.8.1.4.1 Illness cases. Illnesses usually result from a long-term exposures or cases where the illness does not develop as the result of an instantaneous event. This concept of illness includes acute illnesses which result from exposures of relatively short duration.
 - 5.8.1.4.2 Injury cases. Injuries are only required to be recorded when they require medical attention (other than first aid). Injuries are usually caused by instantaneous events in the work environment. Cases resulting from anything other than instantaneous events are considered illnesses.
 - 5.8.1.4.3 Recordable case. If the case is an injury, decide if it is recordable. The following criteria will be used as a basis for recordability. The case will be recorded if the employee has:
 - 5.8.1.4.3.1 A work related injury.
 - 5.8.1.4.3.2 Medical treatment other than first aid.
 - 5.8.1.4.3.3 Has a loss of consciousness.
 - 5.8.1.4.3.4 Experiences restriction of work or motion.
 - 5.8.1.4.3.5 Been transferred to another job.

5.8.1.4.4 Illness case. Generally, occupationally induced illness should be recorded as a separate entry on the OSHA 300 (or equivalent) log. However, certain illnesses, such as silicosis, may have prolonged effects which recur over time. The recurrence of these symptoms will not be recorded as new cases on the OSHA forms. The recurrence of symptoms of previous illness may require adjustments of entries on the log for previously recorded illnesses to reflect possible change in the extent or outcome of the particular case. Where it is unclear where an entry should be made, contact the company Safety Officer or the local OSHA office to obtain advice for proper annotation.

5.8.2 Categories for Evaluating the Extent of Recordable cases. Once the company decides that a recordable injury or illness has occurred, the case must be evaluated to determine its extent or outcome. There are three categories that OSHA recognizes as recordable cases. Every recordable case will be placed in only one of the following categories:

5.8.2.1 Fatalities. All work fatalities must be recorded, regardless of the time between the injury and the death, or the length of the illness.

5.8.2.2 Lost Workday cases. Lost workday cases will be determined to have occurred when the injured or ill employee experiences either days away from work, days of restricted work activity, or both, for days after the date of the incident. Record the actual number of days away or of restricted work after the date of injury. Note that if a physician requires a set number of days for the employee to be out of work, that number of days must be recorded on the log, even if the employee returns to work earlier than recommended by the physician. Include any weekends (or normally scheduled days off) in the count, if the employee was scheduled to work the next business day and does not report to work. No more than 180 days should be logged, regardless if the employee loses additional time.

5.8.2.3 Cases not resulting in death or lost workdays. These cases consist of the relatively less serious injuries and illnesses which satisfy the criteria for recordability but which do not result in death or require the affected employee to have days away from work or days of restricted work activity beyond the date of injury or onset of illness.

6. Training and Information.

6.1 None at this time.

7. Definitions.

- *DOL* – U.S. Department of Labor
- *Fatality* – an incident that results in death

- *Hospitalization* – admittance to a hospital or similar facility where employees are provided with medical care and treatment. Emergency room visits are not considered hospitalization
- *Incident* – an unintended event in the workplace
- *Injury* – an incident that results in a detrimental physical effect to an employee

- *Illness* – an incident that results in an acute or chronic health effect to an employee
- *Near-miss Incident* – an incident that could have resulted in an injury, illness or fatality, but did not
- *OSHA* – U.S. Occupational Safety and Health Administration
- *Property Damage* – an incident that results in damage to buildings, structures, equipment, tools or other tangible assets of the company

OSHA's Form 300A (Rev. 01/2004) Summary of Work-Related Injuries and Illnesses

Year _____

U.S. Department of Labor
 Occupational Safety and Health Administration
Form approved OMB no. 1218-0178

All establishments covered by Part 1904 must complete this Summary page, even if no injuries or illnesses occurred during the year. Remember to review the Log to verify that the entries are complete and

Using the Log, count the individual entries you made for each category. Then write the totals below, making sure you've added the entries from every page of the log. If you had no cases write "0."

Employees former employees, and their representatives have the right to review the OSHA Form 300 in its entirety. They also have limited access to the OSHA Form 301 or its equivalent. See 29 CFR 1904.35, in OSHA's Recordkeeping rule, for further details on the access provisions for these forms.

Number of Cases			
Total number of deaths	Total number of cases with days away from work	Total number of cases with job transfer or restriction	Total number of other recordable cases
0	0	0	0
(G)	(H)	(I)	(J)

Number of Days	
Total number of days away from work	Total number of days of job transfer or restriction
0	0
(K)	(L)

Injury and Illness Types			
Total number of... (M)			
(1) Injury	0	(4) Poisoning	0
(2) Skin Disorder	0	(5) Hearing Loss	0
(3) Respiratory Condition	0	(6) All Other Illnesses	0

Post this Summary page from February 1 to April 30 of the year following the year covered by the form

Public reporting burden for this collection of information is estimated to average 58 minutes per response, including time to review the instruction, search and gather the data needed, and complete and review the collection of information. Persons are not required to respond to the collection of information unless it displays a currently valid OMB control number. If you have any comments about these estimates or any aspects of this data collection, contact: US Department of Labor, OSHA Office of Statistics, Room N-3644, 200 Constitution Ave, NW, Washington, DC 20210. Do not send the completed forms to this office.

Establishment information

Your establishment name _____

Street _____

City _____ State _____ Zip _____

Industry description (e.g., Manufacture of motor truck trailers)

Standard Industrial Classification (SIC), if known (e.g., SIC 3715)

OR North American Industrial Classification (NAICS), if known (e.g., 336212)

Employment information

Annual average number of employees _____

Total hours worked by all employees last year _____

Sign here

Knowingly falsifying this document may result in a fine.

I certify that I have examined this document and that to the best of my knowledge the entries are true, accurate, and complete.

Company executive

Title

Phone

Date

OSHA's Form 301 Injuries and Illnesses Incident Report

Attention: This form contains information relating to employee health and must be used in a manner that protects the confidentiality of employees to the extent possible while the information is being used for occupational safety and health purposes.

U.S. Department of Labor
Occupational Safety and Health Administration

Form approved OMB no. 1218-0176

This *Injury and Illness Incident Report* is one of the first forms you must fill out when a recordable work-related injury or illness has occurred. Together with the *Log of Work-Related Injuries and Illnesses* and the accompanying *Summary*, these forms help the employer and OSHA develop a picture of the extent and severity of work-related incidents.

Within 7 calendar days after you receive information that a recordable work-related injury or illness has occurred, you must fill out this form or an equivalent. Some state workers' compensation, insurance, or other reports may be acceptable substitutes. To be considered an equivalent form, any substitute must contain all the information asked for on this form.

According to Public Law 91-596 and 29 CFR 1904, OSHA's recordkeeping rule, you must keep this form on file for 5 years following the year to which it pertains.

If you need additional copies of this form, you may photocopy and use as many as you need.

Completed by _____
Title _____
Phone _____ Date _____

Information about the employee

- 1) Full Name _____
- 2) Street _____
City _____ State _____ Zip _____
- 3) Date of birth _____
- 4) Date hired _____
- 5) Male
 Female

Information about the physician or other health care professional

- 6) Name of physician or other health care professional _____

- 7) If treatment was given away from the worksite, where was it given?
Facility _____
Street _____
City _____ State _____ Zip _____
- 8) Was employee treated in an emergency room?
 Yes
 No
- 9) Was employee hospitalized overnight as an in-patient?
 Yes
 No

Information about the case

- 10) Case number from the Log _____ (Transfer the case number from the Log after you record the case.)
- 11) Date of injury or illness _____
- 12) Time employee began work _____ AM/PM
- 13) Time of event _____ AM/PM Check if time cannot be determined
- 14) **What was the employee doing just before the incident occurred?** Describe the activity, as well as the tools, equipment or material the employee was using. Be specific. Examples: "climbing a ladder while carrying roofing materials"; "spraying chlorine from hand sprayer"; "daily computer key-entry."
- 15) **What happened?** Tell us how the injury occurred. Examples: "When ladder slipped on wet floor, worker fell 20 feet"; "Worker was sprayed with chlorine when gasket broke during replacement"; "Worker developed soreness in wrist over time."
- 16) **What was the injury or illness?** Tell us the part of the body that was affected and how it was affected; be more specific than "hurt", "pain", or "sore." Examples: "strained back"; "chemical burn, hand"; "carpal tunnel syndrome."
- 17) **What object or substance directly harmed the employee?** Examples: "concrete floor"; "chlorine"; "radial arm saw." If this question does not apply to the incident, leave it blank.
- 18) **If the employee died, when did death occur?** Date of death _____

Public reporting burden for this collection of information is estimated to average 22 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Persons are not required to respond to the collection of information unless it displays a current valid OMB control number. If you have any comments about this estimate or any other aspects of this data collection, including suggestions for reducing this burden, contact: US Department of Labor, OSHA Office of Statistics, Room N-3644, 200 Constitution Ave, NW, Washington, DC 20210. Do not send the completed forms to this office.

ACCIDENT, INCIDENT OR NEAR MISS INVESTIGATION REPORT

PART 1 IDENTIFICATION INFORMATION

Employee Name	
Date of Accident	Time: AM PM
Occupation	Shift
Department	SS#:
Employee Home Address:	Date of Birth:
	Date of Hire
	Gender: Male <input type="checkbox"/> Female <input type="checkbox"/>

PART 2 SUPPLEMENTARY INFORMATION

Company			
Mailing Address			
City	State	Zip	
Telephone ()			
Accident Location	<input type="checkbox"/> Same as establishment?	<input type="checkbox"/> On premises?	(Check if applies)
Location Where Accident Occurred (if different from above):			
Remarks:			
Was injured person performing regular job at time of accident? <input type="checkbox"/> Yes <input type="checkbox"/> No			
Describe activity the person was doing just before they were injured:			
Length of Service: With Employer		On this job	
Time shift started	AM PM	Overtime?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Name and address of physician:			
City	State	Zip	
Employee treated in an emergency room? <input type="checkbox"/> Yes <input type="checkbox"/> No.		Employee hospitalized overnight? <input type="checkbox"/> Yes <input type="checkbox"/> No	
If hospitalized, name and address of hospital:			
City	State	Zip	
Fatality? <input type="checkbox"/> Yes <input type="checkbox"/> No		If Yes, date of death	

PART 3 ACCIDENT TREE

NATURE OF INJURY OR ILLNESS:			PART OF BODY AFFECTED:			
Operation Location:	Operation Task:	Employee Task:	Employee Body Position/Activity	Agency	Preceding Situation or Event	Type of Accident

PERSONAL PROTECTIVE EQUIPMENT		
Did employee use any protective equipment for the job or task performed? <input type="checkbox"/> Yes <input type="checkbox"/> No		
Type:		
Did equipment fail? <input type="checkbox"/> Yes <input type="checkbox"/> No		
If so, describe:		
CORRECTIVE ACTIONS:		
Were any corrective or preventive actions put into place due to the incident? <input type="checkbox"/> Yes <input type="checkbox"/> No		
If so, list them:		
Action Taken	Expected Result	Expected Completion Date
Were corrective actions followed through to completion? <input type="checkbox"/> Yes <input type="checkbox"/> No		
If so, list results and dates:		
Action Taken	Expected Result	Expected Completion Date
STATEMENTS CONCERNING ACCIDENT		
EMPLOYEE STATEMENT CONCERNING ACCIDENT		
Name	Title	Date
SUPERVISOR/EMPLOYER'S STATEMENT		
Name	Title	Date
WITNESS STATEMENT		
Name	Title	Date
SAFETY COMMITTEE COMMENTS		
Name	Title	Date
ATTACH ADDITIONAL COMMENTS, REPORTS AND PHOTOS ON NEXT PAGE		

PROGRAM OVERVIEW

PERSONAL PROTECTIVE EQUIPMENT SAFETY PROGRAM

REGULATORY STANDARD: 29 CFR §1910.132-138.

INTRODUCTION: Personal protective equipment, when its use is required, must be provided or used by employees where engineering and work practice controls are not sufficient to prevent exposure to a hazard. The type of personal protective equipment and the reasons for its use must be documented. Where required, employees must be trained in how to use the equipment, reasons for its use, the care and maintenance of the equipment and disposal considerations.

TRAINING:

- General training and information is required for employees who use equipment
- Formal training is required for specific types and uses of equipment (respirators, hearing protection, etc.)

ACTIVITIES:

- Identify risk factors for employee exposures
- Provide protective equipment, as required
- Ensure employees are trained in the use, care and maintenance of the equipment
- Document requirements for Personal Protective Equipment

FORMS:

- Certification of Hazard Assessment
- Assessment
- Respirator - Dust Mask Use Sign-off
- Training Attendance Roster

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- 1. Purpose**
- 2. Scope**
- 3. Responsibilities**
- 4. Procedure**
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Personal Protective Equipment (PPE) Safety Program

1. **Purpose.** Personal Protective Equipment (PPE) shall be used in areas where there is potential exposure to hazards which cannot be adequately controlled by elimination, substitution, engineering methods or administrative controls. PPE is to be considered the last line of defense against exposure to chemical hazards, radiation hazards, biological agents, temperature extremes, noise, electrical energy, mechanical forces, irritants, or projectiles which can produce injury or illness. This defines the required elements for implementing a Personal Protective Equipment (PPE) program.
 - 1.1 Exclusions: PPE requirements for hearing conservation, fall protection, cartridge type respiratory protection and eyebaths and safety shower programs are covered in separate, specific standards; PPE for electrical work is not fully covered within this document, but can be referenced within the Electrical Safety program. Back Belts and Wrist Braces used in mitigation of ergonomic disorders as part of an ergonomics evaluation are not considered PPE.
2. **Scope.** Applies to any area where specific control measures or Personal Protective Equipment is required or used by company employees. Job hazard analysis will be performed in areas where job or task activities may require an evaluation of hazard potential and a determination of protective controls prior to the implementation of Personal Protective Equipment Requirements.
3. **Responsibilities.**
 - 3.1 Management:
 - 3.1.1 Ensure that all jobs and tasks have been evaluated and hazards appropriately addressed. Where possible, hazards will be controlled before the use of PPE is implemented. Controls include:
 - 3.1.1.1 Elimination of a product or process that generates the hazard,
 - 3.1.1.2 Substitution of a non-hazardous or less-hazardous material or chemical,
 - 3.1.1.3 Engineering methods such as ventilation or guarding, and
 - 3.1.1.4 Administrative controls such as procedures or task rotation
 - 3.1.2 Select the appropriate PPE to reduce or eliminate hazards, based on the types of tasks and activities performed at the company.
 - 3.1.3 Write PPE use procedures for tasks or activities that require PPE, or include PPE requirements in existing work and task procedures.
 - 3.1.4 Maintain PPE, or provide employees with the proper training and tools to maintain PPE used at the company.
 - 3.1.5 Post signs, as required, to inform employees where PPE is required (e.g. aisles, machine shop areas, production areas or at entrances to buildings if entire facility requires use).

- 3.1.6 Provide appropriate protective equipment to visitors or other personnel, as needed or required.
 - 3.1.7 At least annually, assess the needs for continued (or additional) PPE use and requirements. These assessments should be documented as proof that PPE is or is not required for certain tasks or activities. Documentation in the procedure is adequate to fulfill this need, however any specific testing or monitoring results will need to be documented and maintained separately.
- 3.2 Employees:
- 3.2.1 Follow established procedures
 - 3.2.2 Maintain PPE, as required by this program
 - 3.2.3 Assist in providing assessment and documentation of PPE requirements
 - 3.2.4 Report concerns, issues or violations of this program to Supervisors or management.
- 3.3 Safety Officer (as needed or required):
- 3.3.1 Assist in hazard evaluation
 - 3.3.2 Assist in the selection of PPE based on the hazards presented
 - 3.3.3 Assist in the writing of PPE procedures, or in the inclusion of PPE requirements into existing procedures
 - 3.3.4 Assist in the assessment and documentation of PPE needs for the company

4. Procedure.

- 4.1 Hazard Evaluation and Determination:
- 4.1.1 Ensure hazard assessments, proper selection of controls and equipment, and certifications of hazard assessments have been completed and documented. This hazard assessment *must* be documented on the *Certification of Hazard Assessment* Form, or an equivalent document.
 - 4.1.1.1 PPE requirements must be documented. Although specific areas may have general PPE requirements (such as safety glasses or hard hats), it is recommended that you evaluate specific job tasks for hazards that may require additional or more stringent PPE use, and maintain the documentation associated with the assessment.
 - 4.1.1.2 Hazard assessments shall be performed in all areas to identify hazards that require the use of PPE and specify the appropriate type and style of PPE for the job.

- 4.1.1.3 A hazard assessment must be completed before any non-routine task (task not evaluated as part of the current hazard assessments) is started and before changes are made to operating procedures and when incidents result from inadequate controls or PPE.

4.2 PPE Selection:

- 4.2.1 Obtain the appropriate PPE. Selected PPE may include: Eye and Face Protection; Hand and Arm Protection; Foot Protection; Head Protection; and Torso and Body Protection.

- 4.2.1.1 The type of PPE must protect against the hazards identified.

- 4.2.1.2 Selection decisions must be communicated to each affected employee.

- 4.2.1.3 Selected PPE must fit each affected employee.

4.3 Written Procedures:

- 4.3.1 PPE or control measures must be incorporated into the written standard operating procedures for the task or process. Where appropriate, include precautions to be taken when working around moving machinery (i.e. items such as long hair, neckties, jewelry, and loose or flowing clothing shall be appropriately restrained, confined, or removed to avoid entanglement)

4.4 Signs:

- 4.4.1 Signs will be posted, as needed or required to warn employees and other personnel when protective equipment is required.

- 4.4.2 Signs may read “Safety Glasses Required”; “DANGER – Eye/Face Hazard area – Do Not Enter Without Protective Equipment”; or “DANGER – Hard Hat Required Area” or similar language may be used.

4.5 Training:

- 4.5.1 Ensure employees have documented training in the requirements including: when needed, use, fit, care, maintenance, useful life, disposal, and limitations of PPE.

- 4.5.1.1 Employees must demonstrate their understanding of the training and ability to properly use PPE before performing work. This can be done at the time of training (quizzes, classroom discussion, etc.) or through demonstration of work practices in the workplace.

- 4.5.1.2 Retraining will be performed when changes to the workplace necessitate different equipment or when changes to the type/design of the PPE are made which require a new skill or knowledge for its successful use. Retraining will also be done when an employee exhibits a lack of understanding or skill to use the equipment properly. Retraining may also be required if an incident occurs involving PPE.

4.6 Documentation practices are maintained for the following items:

4.6.1 Training records must be maintained so that records exist to indicate:

4.6.1.1 What tasks or activities require training

4.6.1.2 Who has had training

4.6.2 Certification of Hazard Assessment:

4.6.2.1 A Certification of Hazard Assessment shall be completed as verification that a hazard assessment was performed for the facility. The "certification document" may be completed by job task or operation, for buildings, or for organizations. Supervisors or area management must verify that the required documentation is completed. If you do not use the provided form for this purpose, your documentation must specifically be identified as a "Certification of Hazard Assessment", and contain all the required elements (person certifying, date, location evaluated)

4.6.2.1.1 This document shall be maintained in a designated location.

4.6.2.1.2 This document shall be updated for changes to operating procedures, when the method of performing the job changes and/or when incident investigations determine those PPE modifications are necessary.

4.6.2.1.3 Other documentation is acceptable as certification (e.g., confined space permits or job health and safety programs written specifically for the task/operation that specifies the necessary PPE) provided they contain the required elements.

4.7 Access to and Maintenance of PPE:

4.7.1 Ensure adequate supplies, storage, and employee access to PPE when required for a specific work area or operation.

4.7.2 PPE must be maintained in a sanitary and reliable condition. Ensure that damaged or defective PPE is taken out of service and not used, and that contaminated clothing and PPE are disposed of or cleaned properly.

4.8 Change Management:

4.8.1 Notify management or safety representatives of changes or modifications to procedures which may require a reassessment of PPE use.

4.9 Annual Assessment:

4.9.1 Review and assess PPE needs and effectiveness, using the provided form or an equivalent assessment tool.

5. Safety Information.

5.1 PPE Selection Process:

- 5.1.1 Review sample, manufacturer information and pricing information. MSDS's and/or chemical permeation data may also be required during committee review.
- 5.1.2 Determine if other appropriate information needs to be reviewed.
- 5.1.3 Determine if a pilot study is needed. This will be done to obtain user feedback on the item to determine potential concerns.
- 5.1.4 Review item after pilot study for final determination to use or not.
- 5.1.5 Submit manufacturer and pricing information to purchasing agent, or management, if use is approved.
- 5.1.6 For chemical protective clothing, manufacturer information is maintained by the company. For suits, gloves, apron, eyewear/goggles -- generic chemical permeation data (what the item is resistant to or not resistant to for general groupings of chemicals) will be maintained).

5.2 Types of PPE and Their Use(s):

5.2.1 Eye Protection:

5.2.1.1 General Application:

- 5.2.1.1.1 Only safety glasses and face protection meeting ANSI Z87 requirements shall be worn.
- 5.2.1.1.2 An optometrist or ophthalmologist may be required to conduct eye examinations and may issue prescription (or specialized fit prescription) safety glasses as appropriate to the needs of the employee. When side shields are required to be worn with prescription glasses, the employee is responsible for notifying the eye-care professional to ensure that the side shields are provided for specific frames.
- 5.2.1.1.3 While waiting for new prescription glasses, employees shall be provided "cover-all" safety eyewear that fits over prescription eyewear or be placed on a job which does not require eye protection.
- 5.2.1.1.4 Visitor-type safety glasses are for "visitors" or temporary use and should NOT be used for every-day eye protection.

5.2.1.2 Specialized Application

- 5.2.1.2.1 Tinted safety-glasses or lenses may be supplied for special circumstances (e.g. tinting for certain precision jobs in glare areas and outdoor work).
- 5.2.1.2.2 In special applications, such as welding or laser operations, helpers shall be protected to the same level as the operator.
- 5.2.1.2.3 Temporary personnel (those who enter an eye-protection area infrequently or for short periods of time) shall be supplied with non-prescription type safety glasses if they do not require prescription lenses or be supplied with cover-all eyewear to be worn over prescription glasses if necessary.
- 5.2.1.2.4 Individuals, who work on or near exposed electrically energized circuit parts, at 50 volts and above, shall wear non-conductive eyewear. Non-conductive eyewear is also necessary for individuals exposed to electrical burn hazards (e.g.: working on systems less than 50 volts, but with high current levels such as electroplating systems, large capacity batteries, etc.). Metal frame glasses are not permitted for these activities.
- 5.2.1.2.5 Where contact lenses are permitted, they shall be worn with required PPE appropriate to the exposure (e.g.: respiratory protection, welding helmets, etc.). As warranted, specific assessments of the work environment may be conducted by safety service providers to resolve concerns or questions. Safety non-prescription glasses shall be available to all wearers of contact lenses.
- 5.2.1.2.6 Employees shall wear appropriate eye or face protection (e.g.: goggles, face shields) when splash or other eye injury hazards exist. Hazards requiring such protection include, but are not limited to:
 - 5.2.1.2.6.1 flying particles
 - 5.2.1.2.6.2 molten metals
 - 5.2.1.2.6.3 liquid chemicals
 - 5.2.1.2.6.4 acids or caustic fumes or liquids
 - 5.2.1.2.6.5 chemical gases or vapors
 - 5.2.1.2.6.6 light radiation sources (e.g.: lasers, welding operations, ultraviolet light)
- 5.2.1.2.7 Eye and Face protection shall be cleaned and maintained in accordance with manufacturer's instructions.

5.2.2 Gloves and Hand Protection:

5.2.2.1 General:

- 5.2.2.1.1 Gloves, gauntlets, and protective sleeves are designed to protect the hands and arms of individuals who may be exposed to skin contact and/or absorption of chemical or biological agents, cuts or lacerations, abrasions, punctures, chemical burns, thermal burns, or harmful temperature extremes. Materials used in the manufacture of clothing must be resistant to the chemicals or materials being handled.
- 5.2.2.1.2 Safety or Industrial Hygiene representatives may arrange for chemical resistance tests when appropriate, provide for consultation on the types of protection available, and assist in determining appropriate protection.
- 5.2.2.1.3 Barrier creams shall not be used as protection against chemical contact, unless specifically approved by a medical professional.
- 5.2.2.1.4 Laundering of gloves used for chemical or biological protection is prohibited.
- 5.2.2.1.5 Jewelry should be removed before wearing gloves and washing hands.
- 5.2.2.1.6 Gloves shall be removed properly so as not to expose an unprotected hand or part of the arm.
- 5.2.2.1.7 After removing gloves, hands should be thoroughly washed with soap and water.
- 5.2.2.1.8 When sharing gloves, such as when using a glove box, disposable gloves should be used as a liner.
- 5.2.2.1.9 Cuff the ends of gloves when feasible.
- 5.2.2.1.10 Disposable style gloves used for splash protection shall be disposed of at the end of each working day, at a minimum. Chemical contact, signs of physical wear, or loss of glove integrity shall require more frequent disposal.
- 5.2.2.1.11 Gloves should be properly stored, away from sunlight, direct artificial light, and electrical equipment.
- 5.2.2.1.12 Lay the gloves flat and avoid temperature and humidity extremes during glove storage.

5.2.2.2 Latex Gloves:

5.2.2.2.1 Due to the increasing concerns with latex gloves and associated skin reactions, latex gloves may be selected based on latex content, protein content (usually <50ug/g) or other requirements based on employee needs. Gloves may be required to be powdered or powder-free, depending upon the needs of the business activities.

5.2.3 Foot Protection:

5.2.3.1 Where safety shoes and additional foot protection is required (over and above that provided by “normal footwear”) only foot protection meeting ANSI Z41 requirements shall be worn.

5.2.3.2 Waterproof, static dissipative (SD), electrostatic dissipative (ESD), electric hazard (EH), metatarsal protection, and rubber footwear where required will be available for purchase through designated company sources.

5.2.3.3 Where dissipation is required, such as in areas where quantities of flammable materials are handled, shoes should be SD rated. Non-conductive insoles may void the static dissipation properties. Safety shoe providers will verify SD properties.

5.2.3.4 Electricians should select EH rated shoes and/or use insulating mats when working on or near energized equipment.

5.2.3.5 Metatarsal Guards: Protectors for the metatarsal (top of foot) area are designed to provide additional protection against injury when handling heavy objects subject to falling or rolling.

5.2.3.6 Rubber footwear may be mandated by the nature of some operations.

5.2.3.6.1 Rubber shoe covers and boots, including boots with built-in steel toes.

5.2.3.6.2 Conductive rubbers must be used with SD rated shoes to maintain the static dissipating property.

5.2.3.6.3 Rubber overshoe footwear may be required.

5.2.3.7 Foot protection shall be cleaned and maintained in accordance with manufacturer's instructions.

5.2.3.8 Safety shoe conductivity meters need to be annually calibrated. Calibration is needed because the meters are powered by batteries which can display false values when the battery strength is low.

5.2.4 Head Protection (shall comply with ANSI Z89):

5.2.4.1 General:

5.2.4.1.1 Hard Hats are designed to provide protection against impact and penetration from falling objects. They also may provide protection against electrical shock and burns caused when coming in contact with energized parts. There are two types and three classes of hard hats. The type and class used or required at the facility or site will be documented based on the hazards.

5.2.4.1.2 Head protection shall be cleaned and maintained in accordance with manufacturer's instructions.

5.2.4.2 Other Types of Head Protection:

5.2.4.2.1 Bump Caps -- Provide protection from impact against stationary objects but do NOT protect against impact or penetration from falling objects or electrical shock hazards.

5.2.4.2.2 Welding Helmets -- Provide protection against ultraviolet, infrared, and visible radiation sources during welding operations.

5.2.4.2.3 Fire Fighting Helmets -- Provide protection from extreme heat encountered during a fire or similar conditions.

5.2.4.2.4 Hair Nets/Hats -- Protect employees from entanglement hazards (e.g. equipment with moving parts, etc.) This can be done with the use of hair restraining devices, such as hair nets, hats, etc.

5.2.5 Protective Clothing:

5.2.5.1 General:

5.2.5.1.1 Clothing such as suits, aprons, coveralls, coats, and pants are available to protect the torso and body of individuals who may be exposed to skin absorption of chemical or biological agents, cuts or lacerations, abrasions, punctures, chemical burns, thermal burns, or harmful temperature extremes. Materials used in the manufacture of such clothing must be matched in resistance to the chemicals or materials being handled.

5.2.5.1.2 Safety/Industrial Hygiene will arrange for chemical resistance tests when appropriate, provide for consultation on the types of protection available, and assist in determining appropriate protection.

5.2.5.1.3 See other documentation within this procedure for company policy on laundering of contaminated clothing.

5.2.5.2 Company provided clothing:

5.2.5.1.1 Laundering of company-issued work clothing shall be provided by the company to avoid the need for employees to launder clothing at home whenever there is a potential for chemical contamination such as asbestos, lead, cadmium, arsenic, sensitizers, etc.

5.2.6 Respiratory (Dust Mask) Protection: This section applies to employees at any company facility or job-site where the use of respiratory protective equipment (a dust mask) is utilized, either by requirement or voluntary use by employees.

5.2.6.1 Selection of respirator protective capabilities will be made according to the specific hazard involved. The company will provide NIOSH certified dust mask respirators.

5.2.6.2 Training of employees in the respiratory hazards to which they are potentially exposed during routine and emergency situations is required. Training must be provided before exposure or use of the equipment and when changes occur in the workplace. Training records must include the date of training, employee's name, and the trainer signature or initials.

5.2.6.3 Training of employees in the proper use (including putting them on and removing them), limitations and maintenance of respirators is required. Respirators will be inspected by the user before each use to ensure the face mask is intact and the head straps are snug fitting.

5.2.6.4 Procedures and schedules for storing, inspecting, repairing, and discarding respirators should be maintained. The company will provide each respirator user with a respirator that is initially clean, sanitary, and in good working order. Dust mask type respirators will be packed or stored to prevent deformation of the face piece and/or exhalation valve. Respirators that fail an inspection or are otherwise found to be defective will be removed from service, and discarded.

5.2.6.5 Face-piece seal protection. Facial hair or other conditions that interfere with the contact of the face to the face-piece of the respirator is prohibited.

5.2.6.6 Surveillance of conditions of use. Appropriate surveillance and evaluations of the working conditions will be performed to assess the degree of employee exposure and stress associated with respirator use, and the effectiveness of the respirators.

5.2.6.7 Employees must leave the respirator use area when they detect vapor or gas breakthrough, changes in breathing resistance or leakage of the face-piece. In these situations, respirators must be replaced prior to the employee returning to the work area.

5.2.6.8 Recordkeeping: The company will establish and retain written information regarding the respirator use. An appropriate Information for Voluntary

Respirator Use form or equivalent Appendix D from the OSHA standard will be maintained for each respirator user.

6. Training and Information.

- 6.1 Employees must be trained in the limitations, proper use, cleaning, storage and disposal practices for any PPE used in the workplace

7. Definitions.

- *Emergency situation* - Any occurrence such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment that may or does result in an uncontrolled significant release of an airborne contaminant.
- *Employee exposure* - Exposure to a concentration of an airborne contaminant that would occur if the employee were not using respiratory protection.
- *Filter or air purifying element* - A component used in respirators to remove solid or liquid aerosols from the inspired air.
- *Filtering facepiece (dust mask)* - A negative pressure particulate respirator with a filter as an integral part of the facepiece or with the entire facepiece composed of the filtering medium.
- *Personal Protective Equipment (PPE)* - Devices worn to protect employees from potential hazards encountered in the workplace.
- *Hazard Assessment* - An evaluation of the workplace to determine if hazards are present (or are likely to be present) which necessitate the use of PPE.
- *Certification of Hazard Assessment* - Certification that the Hazard Assessment has been conducted. This document must contain:
 - Identification of the workplace evaluated
 - Name of person(s) verifying that the evaluation has been performed
 - Date of assessment
- *Documentation of Training* - Documentation that the affected employee has received and understood the required training, and containing:
 - Name of the trained employee
 - Date of training
 - Identification of the type of personal protective equipment


CERTIFICATION OF HAZARD ASSESSMENT

This is to certify that an evaluation has taken place for the tasks and activities performed at this workplace, that hazards have been identified as indicated, and appropriate PPE has been issued and its use enforced.

Area Assessed:		Assessment Date:	
Assessment Completed By:		Signature:	
<u>TASK</u>	<u>IDENTIFIED HAZARD</u>	<u>REQUIRED PERSONAL PROTECTIVE EQUIPMENT</u>	

PERSONAL PROTECTIVE EQUIPMENT ASSESSMENT	
Area Assessed:	Date:
Assessor(s):	
Description of Requirement	Compliant?
PPE PROGRAM FEATURES	
Is there a written program for the area (i.e., procedures, documentation)?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are responsibilities listed and assigned?	<input type="checkbox"/> Yes <input type="checkbox"/> No
PPE SURVEY/ASSESSMENT/ANALYSIS	
Are surveys/assessments structured (example: uses Hazard Recognition Checklist and JHA Form)?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are these surveys integrated with other parts of the company's safety program (example: JHA's and SOPs reflect PPE needs)?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are reassessments routinely scheduled?	<input type="checkbox"/> Yes <input type="checkbox"/> No
PPE EQUIPMENT SELECTION	
Does PPE meet current national standards (ANSI standards – American National Standards Institute – a recognized agency that provides guidance for specific equipment)?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Does PPE selection involve the area Occupational Health and Safety Service provider(s)?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Does the selection process and available equipment protect against identified hazards and allow for correct type, size, and fit?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Is a process in place to ensure proper PPE supply and maintenance per procedure requirements?	<input type="checkbox"/> Yes <input type="checkbox"/> No
PPE TRAINING	
Is the content of the training program specific to the job, including: <ul style="list-style-type: none"> • When PPE is necessary? • What PPE is necessary? • How to properly don, doff, adjust, and wear PPE? • Limitations of PPE? • Maintenance, care, useful life, disposal of PPE? 	<input type="checkbox"/> Yes <input type="checkbox"/> No
Can the employee demonstrate: <ul style="list-style-type: none"> • Understanding of training? • Ability to use PPE? 	<input type="checkbox"/> Yes <input type="checkbox"/> No
Is there a process in place to initiate retraining when: <ul style="list-style-type: none"> • Process/workplace changes result in changed PPE requirements (skill/knowledge updates)? • Observations of employee behavior show inadequate understanding? 	<input type="checkbox"/> Yes <input type="checkbox"/> No

Description of Requirement	Compliant?
EMPLOYEE PERFORMANCE	
Do interviews with or observations of employees indicate that they know: <ul style="list-style-type: none"> •When PPE is necessary? •What PPE is necessary? •How to properly don, doff, adjust, and wear PPE? •How to properly maintain & care for PPE? •When and how to properly dispose of PPE at the end of its useful life? 	<input type="checkbox"/> Yes <input type="checkbox"/> No
RECORDKEEPING	
Do workplace assessment documents show: <ul style="list-style-type: none"> • Identity as <i>Certificate of Hazard Assessment</i>? • Name of workplace(s) evaluated? • Name of person(s) completing the evaluation? • Date(s) of assessment? 	<input type="checkbox"/> Yes <input type="checkbox"/> No
Is attendance for training officially recorded?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Do records indicate that all PPE training is current?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Do records indicate that all new employees receive all necessary PPE training before they begin work?	<input type="checkbox"/> Yes <input type="checkbox"/> No

	❖ Information for Filtering Facepiece (“Dust Mask”) Use ❖ ❖ <i>When Respirators Not Required Under 29 CFR 1910.134</i> ❖		
To the employer:	The statement below must be read by all employees (or read to them in an understandable fashion) who are using filtering facepiece (dust mask type) respirators when cartridge or supplied airline respirators are not required to be provided. A copy of this document should be given to the employee.		
To the employee:	Ensure you keep a copy of this form for your personal records.		
EMPLOYEE INFORMATION			
Employee Name:		ID/Clock Number:	
Facility:		Work Location:	
Job Title:		Dept./Phone:	
VERIFICATION: I acknowledge that I have read and/or understand the information below (OSHA Respiratory Protection Statement) as is required by the Occupational Safety and Health Administration (OSHA).			
EMPLOYEE SIGNATURE:		DATE:	
OSHA RESPIRATORY PROTECTION STATEMENT			
To The User:			
Respirators are an effective method of protection against designated hazards when properly selected and worn. Respirator use is encouraged, even when exposures are below the exposure limit, to provide an additional level of comfort and protection for workers. However, if a respirator is used improperly or not kept clean, the respirator itself can become a hazard to the worker. Sometimes, workers may wear respirators to avoid exposures to hazards, even if the amount of hazardous substance does not exceed the limits set by OSHA standards. If your employer provides respirators for your voluntary use, or if you provide your own respirator, you need to take certain precautions to be sure that the respirator itself does not present a hazard.			
You Should Do The Following:			
<ul style="list-style-type: none"> • Read and heed all instructions provided by the manufacturer on use, maintenance, cleaning and care, and warnings regarding the respirators limitations. • Choose respirators certified for use to protect against the contaminant of concern. NIOSH, the National Institute for Occupational Safety and Health of the U.S. Department of Health and Human Services, certifies respirators. A label or statement of certification should appear on the respirator or respirator packaging. It will tell you what the respirator is designed for and how much it will protect you. • Do not wear your respirator into atmospheres containing contaminants for which your respirator is not designed to protect against. For example, a respirator designed to filter dust particles will not protect you against gases, vapors, or very small solid particles of fumes or smoke. • Keep track of your respirator so that you do not mistakenly use someone else’s respirator. 			
FORM RETENTION INFORMATION			
Retention File:		Location:	
Date Filed:		Filed By:	

PROGRAM OVERVIEW

RESPIRATORY PROTECTION SAFETY PROGRAM

REGULATORY STANDARD: *OSHA - 29 CFR 1910.134*
- 29 CFR 1926.103
ANSI - Z88.2

INTRODUCTION: This safety program addresses the evaluation of potential respiratory hazards, communicating information concerning these hazards, and establishing appropriate engineering, work practice, or respiratory protective measures for employees. This program applies to employees at any company facility or job-site where the use of filter cartridges or supplied air respiratory protective equipment is utilized (either by requirement or voluntary use by employees). It outlines procedures for respirator selection, use and care. The program details the required training, fit testing, and medical evaluation procedures.

TRAINING:

- Training will be conducted before initial assignment, on an annual basis, and as needed
- Retraining is required if exposures change and as needed

ACTIVITIES:

- Evaluate the need for respiratory protection
- Establish and maintain the written program and documentation required
- Appoint a respiratory protection coordinator to oversee the implementation of this program
- Ensure respirator users are medically fit to use the equipment and perform the duties required
- Provide NIOSH-approved respirators, suitable to the hazard
- Offer at least two types of respirators for employees to select from, in appropriate sizes
- Train and fit-test employees who use respirators
- Ensure respiratory equipment is properly stored in a convenient, clean, and sanitary location
- Evaluate the facility and program at least annually to ensure it is effective and appropriate

FORMS:

- Respirator Cleaning and Inspection Record
- Respirator Filter Change Out Schedule
- Respirator Medical Appraisal Response
- Respirator Medical Evaluation Questionnaire
- Respirator Seal Check Procedure
- Respirator Selection and Fit Testing Record
- Respirator Wallet Card for fit Test Certification
- Respiratory Protection Assigned Protection Factors
- Respiratory Protection Fit Test Procedure
- Respiratory Protection Program Assessment
- Respiratory Protection Text of the Regulatory Standard
- Training Attendance Roster

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- 1. Purpose**
- 2. Scope**
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Respiratory Protection Safety Program

1. **Purpose.** The purpose of this program is to provide protective equipment that will control and/or minimize the threat of occupational diseases caused by breathing air contaminated with harmful dusts, fogs, fumes, mists, gases, smokes, sprays, or vapors. The primary objective is to prevent atmospheric contamination through accepted engineering control measures (for example, enclosure or confinement of the operation, general and local ventilation, and substitution of less toxic materials). When effective engineering controls are not feasible, or while they are being instituted, appropriate respirators will be used, as required. The company will review and evaluate this safety program:
 - 1.1 On an annual basis.
 - 1.2 When changes occur to governing regulatory sources that require revision.
 - 1.3 When changes occur to related company procedures that require a revision.
 - 1.4 When facility operational changes occur that requires a revision.
 - 1.5 When there is an accident or close-call that relates to this area of safety.
 - 1.6 Anytime the procedures fail.
2. **Scope.** This program applies to employees at any company facility or job-site where the use of respiratory protective equipment is utilized (either by requirement or voluntary use by employees). The only exception to this requirement is the *voluntary* use of filtering dust masks by employees when the company does not require the use of dust-masks, but the employee chooses to wear one.
3. **Responsibilities.**
 - 3.1 Management/Supervisors:
 - 3.1.1 Evaluate the need for respiratory protection.
 - 3.1.2 Provide NIOSH-approved respirators when they are necessary to protect employee health. Other respiratory equipment may be utilized only when NIOSH approved equipment is inappropriate for the situation.
 - 3.1.3 Ensure the respirator provided is suitable for the intended use and appropriate to the type of hazard.
 - 3.1.4 Offer at least two types of respirators for employees to select from, in appropriate sizes.
 - 3.1.5 Establish and maintain the written program and documentation required.
 - 3.1.6 Appoint a respiratory protection coordinator to oversee the development and implementation of this program.

- 3.1.7 Ensure all employees are appropriately trained in the use, care, maintenance, storage and disposal of respirators.
 - 3.1.8 Ensure respirator fit testing is performed.
 - 3.1.9 Ensure respirator users are medically fit to use the equipment and perform the duties required.
 - 3.1.10 Ensure respiratory equipment is properly stored in a convenient, clean, and sanitary location.
 - 3.1.11 Evaluate the facility and program at least annually to ensure it is effective and appropriate.
- 3.2 Employees:
- 3.2.1 Attend appropriate training.
 - 3.2.2 Use the respiratory protection in accordance with instructions and training received.
 - 3.2.3 Guard against damage to the respirator, and immediately replace suspect respirators.
 - 3.2.4 Clean and disinfect respiratory equipment before and after each use.
 - 3.2.5 Inspect respirators prior to use to ensure they are in good condition, defective parts or equipment will be immediately removed from service until repaired or replaced. SCBA equipment must be inspected at least monthly and before each use, regardless of the frequency used.
 - 3.2.6 Report any trouble with or malfunction of the respirator to your supervisor immediately.
- 3.3 Safety Officer (as needed or required):
- 3.3.1 Assist in the development and implementation of this program.
- 3.4 Respiratory Protection Coordinator:
- 3.4.1 Attend the appropriate training to ensure that the knowledge and capabilities are established to oversee the Respiratory Protection Safety Program.
 - 3.4.2 Maintain records for the respirator program including fit testing, training and medical records.
 - 3.4.3 Assist in hazard evaluations for the facility, site or work area, as needed.
 - 3.4.4 Ensure availability of proper equipment based on the hazards encountered in the workplace and the requirements of this program.

- 3.4.5 Ensure equipment is properly used, stored, maintained, inspected and disposed of, as needed or required.
- 3.4.6 Provide for fit testing and other required training for respirator users.
- 3.4.7 Regularly evaluate the effectiveness of the program.

4. Procedure.

4.1 Program Requirements:

- 4.1.1 Procedures for selecting respirators for use in the workplace.
- 4.1.2 Documentation on the types of cartridges, canisters, filters and other respiratory equipment selected for use in the workplace.
- 4.1.3 Documentation on the types of breathing air or equipment selected for use in the workplace. Procedures to ensure adequate air quality, quantity, and flow of breathing air for atmosphere-supplying respirators
- 4.1.4 Respirator use requirements, including procedures for proper use of respirators in foreseeable emergency situations.
- 4.1.5 Procedures and schedules for cleaning, disinfecting, storing, inspecting, repairing, discarding, and otherwise maintaining respirators.
- 4.1.6 Fit testing procedures for tight-fitting respirators.
- 4.1.7 Medical evaluations of employees required to use respirators.
- 4.1.8 Regular evaluation of the effectiveness of the program.
- 4.1.9 Maintenance of records and documentation.
- 4.1.10 Training of employees in the respiratory hazards to which they are potentially exposed during routine and emergency situations.
- 4.1.11 Training of employees in the proper use (including putting them on and removing them), limitations and maintenance of respirators.

4.2 Respiratory Selection Policy:

- 4.2.1 Selection type. The company will provide a selection of NIOSH certified respirators from at least two (2) different types of respirator models and sizes so that the respirator is acceptable to, and correctly fits, the user.
- 4.2.2 Protective Capabilities. Selection of respirator protective capabilities will be made according to the specific hazard involved. Where a determination can not be made as to the hazard, the worst case will be assumed and appropriate respiratory equipment will be supplied.

- 4.2.3 Specific regulatory standards and hazards. "OSHA has specific definitions and requirements for Assigned Protection Factors (APFs) and Maximum Use Concentrations (MUCs). Proper respirator selection using APFs is an important component of an effective respiratory protection program. Accordingly, OSHA concludes that the use of APFs is necessary to protect employees who must use respirators and to protect the employees from airborne contaminants. These APFs and supersede any previous provisions for respirator selection for all substances (except for those in the 1,3-Butadiene Standard). Please refer to the form on APFs within this manual for more information.
 - 4.2.4 IDLH Atmospheres. The company will supply either NIOSH certified full face-piece pressure demand 30-minute SCBA respirators, or a combination full face-piece pressure demand SAR with auxiliary self-contained air supply respirators. Escape only equipment will be capable of performing in the atmosphere and be appropriate to the hazard.
 - 4.2.5 Oxygen Deficient Atmospheres. All oxygen deficient atmospheres are considered IDLH unless it can be demonstrated that oxygen levels can be maintained within acceptable ranges. In these cases, any atmosphere supplied respirator may be used. In situations where companies are located in higher altitudes, the effectiveness of the respirator may be reduced and additional measures may need to be taken.
 - 4.2.6 Gases and Vapors. Atmosphere supplying respirators may be used. Air purifying respirators may be used if they are either equipped with an NIOSH approved end-of-service-life (ESLI) indicator or there is a written and enforced canister/cartridge change schedule that ensures the cartridges are changed out before their end of service life. The written procedures must describe the information and data relied upon to make this determination.
 - 4.2.7 Particulates. Atmosphere supplying respirators may be used. Air purifying respirators that are equipped with a HEPA filters or equipped with filters certified by NIOSH for the specific particulate size.
- 4.3 Identification of filters, cartridges, and canisters:
- 4.3.1 The company will ensure that all filters, cartridges and canisters used in the workplace are labeled and color coded with the NIOSH approved label and that the label is not removed and remains legible.
- 4.4 Breathing Air Quality and Use:
- 4.4.1 Compressed air, compressed oxygen, liquid air, and liquid oxygen used for respiration will be of high purity.
 - 4.4.1.1 Oxygen will meet the requirements of the United States Pharmacopoeia for medical or breathing oxygen.

- 4.4.1.2 Breathing air will meet at least the requirements for Type 1-Grade D breathing air described in ANSI/Compressed Gas Association Commodity Specification for Air, G-7.1-1989, to include:
 - 4.4.1.2.1 Oxygen content (v/v) of 19.5-23.5%
 - 4.4.1.2.2 Hydrocarbon (condensed) content of 5 milligrams per cubic meter of air or less
 - 4.4.1.2.3 Carbon monoxide (CO) content of 10 ppm or less
 - 4.4.1.2.4 Carbon dioxide content of 1,000 ppm or less
 - 4.4.1.2.5 Lack of noticeable odor
- 4.4.1.3 Oxygen must never be used with air line respirators.
- 4.4.1.4 Breathing air may be supplied to respirators from cylinders or air compressors.
- 4.4.1.5 Compressed oxygen will not be used in atmosphere-supplying respirators, supplied-air respirators or in open circuit self-contained breathing apparatus that have previously used compressed oxygen.
- 4.4.2 Cylinders used to supply breathing air to respirators must meet the following requirements:
 - 4.4.2.1 Tested and maintained (per DOT- 49 CFR Part 173 and 178 requirements).
 - 4.4.2.2 Cylinders of purchased breathing air have a certificate of analysis from the supplier that the breathing air meets the requirements for Type 1--Grade D breathing air.
 - 4.4.2.3 The moisture content in the cylinder does not exceed a dew point of -50 deg.F (-45.6 deg.C) at 1 atmosphere pressure.
- 4.4.3 Compressors for Supplied Air must be constructed and situated to:
 - 4.4.3.1 Prevent entry of contaminated air into the air-supply system.
 - 4.4.3.2 Minimize moisture content to 10° below ambient temperature at 1 atm pressure.
 - 4.4.3.3 Have suitable sorbent beds and filters to ensure air quality. Beds and filter must be maintained and replaced or refurbished per manufacturer's instructions.
 - 4.4.3.4 Have a tag or other documentation indicating the change date and signature of the person who changed it.

- 4.4.3.5 Ensure that Carbon-Monoxide levels do not exceed 10 ppm.
- 4.4.3.6 Ensure that couplings are incompatible with non-respirable gas system valves and outlets.
- 4.4.3.7 Ensure that markings and labels are maintained in legible and readable condition. Breathing gas containers will be marked in accordance with the NIOSH requirements (42 CFR Part 84 and 29 CFR 1910.101)
- 4.4.3.8 Have, for oil-lubricated compressor equipment, high temperature alarms and carbon-monoxide detection equipment to ensure levels do not exceed 10 ppm.

4.5 Use of Respirators:

- 4.5.1 Face-piece seal protection. Facial hair or other conditions that interfere with the contact of the face to the face-piece of the respirator or with the functioning of valves is prohibited. In such cases tight-fitting face-piece respirators may not be used, or the conditions that interfere with the respirator effectiveness must be changed (i.e. the user must keep facial hair shaved).
- 4.5.2 Corrective eyewear. Corrective eyewear must be worn in a manner that does not interfere with the seal or the effectiveness of the respirator.
- 4.5.3 Seal Checks. Seal checks must be performed each time a user puts on the respirator for use.
- 4.5.4 Surveillance of conditions of use. Appropriate surveillance and evaluations of the working conditions will be performed to assess the degree of employee exposure and stress associated with respirator use, and the effectiveness of the respirators.
- 4.5.5 Respirator Use Limitations.
 - 4.5.5.1 Employees must leave the respirator use area when:
 - 4.5.5.1.1 They detect vapor or gas breakthrough, changes in breathing resistance or leakage of the face-piece. In these situations, respirators must be repaired or replaced prior to the employee returning to the work area.
 - 4.5.5.1.2 Replacement of the filter, cartridges, canister, or the respirator itself is required.
 - 4.5.5.1.3 Washing of the face or respirator components is required to prevent eye or skin irritation.
 - 4.5.5.2 IDLH limitations.
 - 4.5.5.2.1 At least one employee (attendant) must be located outside the IDLH atmosphere. This person must be trained to contact or provide emergency rescue, and provided with:

- 4.5.5.2.1.1 Either pressure demand or other positive pressure SCBA respirator or SAR with auxiliary SCBA
- 4.5.5.2.1.2 Either appropriate retrieval equipment to facilitate rescue or equivalent means for providing rescue.
- 4.5.5.2.2 Visual, voice or signal communications must be maintained at all times between the attendant and the respirator user inside the IDLH atmosphere.
- 4.5.5.2.3 Mangers, supervisors or another designate person must be made aware that entry is taking place when entering the IDLH atmosphere.
- 4.5.5.2.4 Provisions for emergency rescue must be made before entry.
- 4.5.5.3 Interior Structural Firefighting.
 - 4.5.5.3.1 All of the elements for IDLH limitations must be met (attendant or incident commander, equipment, communications, emergency rescue and notification).
 - 4.5.5.3.2 At least two employees must work together inside the IDLH and remain in visual or voice contact with one another at all times.
 - 4.5.5.3.3 At least two attendants or designated persons must remain outside the IDLH area. One of these may be the incident commander.
 - 4.5.5.3.4 SCBA respiratory protection is required for all persons engaged in interior structural firefighting.

5. Safety Information.

5.1 Inspection, Maintenance, and Care of Respiratory Equipment:

- 5.1.1 The company will provide for the cleaning and disinfecting, storage, inspection, and repair of respirators used by our employees. Equipment will be properly maintained to retain its original state of effectiveness.
- 5.1.2 Cleaning and disinfecting. The company will provide each respirator user with a respirator that is clean, sanitary, and in good working order. Respirators will be cleaned and disinfected using OSHA approved procedures or equally effective procedures recommended by the respirator manufacturer. The respirators will be cleaned and disinfected at the following intervals:

- 5.1.2.1 Exclusive use respirators - as often as necessary to be maintained in a sanitary condition.
- 5.1.2.2 Respirators issued to more than one employee - before being worn by different individuals.
- 5.1.2.3 Respirators maintained for emergency use only - after each use.
- 5.1.2.4 Respirators used in fit testing- after each use.
- 5.1.3 Storage of respirators.
 - 5.1.3.1 All respirators will be stored to protect them from damage, contamination, dust, sunlight, extreme temperatures, excessive moisture, and damaging chemicals, and they will be packed or stored to prevent deformation of the face piece and exhalation valve.
- 5.1.4 Emergency respirators will be:
 - 5.1.4.1 Kept accessible to the work area.
 - 5.1.4.2 Stored in compartments or in covers that are clearly marked as containing emergency respirators.
 - 5.1.4.3 Stored in accordance with any applicable manufacturer instructions.
- 5.1.5 Inspection. Respirators will be inspected as follows:
 - 5.1.5.1 Routine use respirators - before each use and during cleaning in accordance with manufacturer specifications.
 - 5.1.5.2 Emergency use respirators - at least monthly and after each use. Inspection will be in accordance with the manufacturer recommendations, and equipment will be checked for proper function before and after each use. Monthly inspections will be documented and this documentation will be retained with the equipment. Documentation is retained until superseded or the equipment is permanently removed from service. Documentation includes the date of the inspection, the name or signature of the inspector, the findings, required corrective actions and a serial number or other means of identifying the equipment.
 - 5.1.5.3 Emergency escape-only respirators - before being carried into the workplace for use.
 - 5.1.5.4 Self-contained breathing apparatus - monthly. Air and oxygen cylinders will be maintained in a fully charged state and will be recharged when the pressure falls to 90% of the manufacturer recommended pressure level. Regulator and warning devices will be monitored for proper function.
- 5.1.6 Repairs. Respirators that fail an inspection or are otherwise found to be defective will be removed from service, and discarded, repaired or adjusted only by persons

appropriately trained to perform such operations and will use only the respirator manufacturer NIOSH-approved parts designed for the respirator.

5.2 Respirator Fit Testing:

5.2.1 General. The company will conduct fit testing before an employee is required to use any respirator.

5.2.1.1 The employee must be fit tested with the same make, model, style, and size of respirator that will be used.

5.2.1.2 Fit testing is performed at least annually, and when changes to the type, make, or model of the respirator occur and when facial features of the user change (scarring, dental changes, cosmetic surgery or obvious changes in body weight).

5.2.1.3 In all cases the respirator should be reasonably comfortable for the user, or a different selection of respirators will be offered (and any associated fit testing or other evaluations performed).

5.2.1.4 Fit testing must be administered using OSHA accepted protocols.

5.2.2 Fit Factor, Qualitative (QLFT) and Quantitative (QNFT) fit testing.

5.2.2.1 Negative pressure air-purifying respirators that must achieve a factor of 100 or less must use qualitative testing.

5.2.2.2 Tight-fitting half face-piece respirators must achieve a fit factor of 100 or greater.

5.2.2.3 Tight-fitting full face-piece respirators must achieve a fit factor of 500 or greater.

5.2.2.4 Tight-fitting atmosphere supplied respirators must be tested in negative pressure mode. If the respirator must be converted from positive to negative pressure for the test through the use of filters, the testing must occur in the breathing zone of the user (between the nose and mouth) using a sampling adapter, and any modifications for the conversions must be completely removed and the face-piece restored to its NIOSH-approved configuration before use.

5.3 Respirator Seal and Seal-Check:

5.3.1 Fit instructions. Every respirator wearer will receive fitting instructions including demonstrations and practice in how the respirator should be worn, how to adjust it, and how to determine if it fits properly. The face piece fit will be checked by the wearer each time they put on the respirator.

5.3.2 Hair/apparel. If hair growth or apparel interferes with a satisfactory fit, then the employee will be requested to alter or remove them so as to eliminate interference and allow a satisfactory fit. If a satisfactory fit is still not attained, the employee must use

a positive-pressure respirator such as powered air-purifying respirators, supplied air respirator, or self-contained breathing apparatus.

5.3.3 User seal check procedures. An adequate seal must be attained each time the respirator is worn. Face-piece Positive and/or Negative Pressure Checks.

5.3.3.1 Positive pressure check. Close off the exhalation valve and exhale gently into the face piece. The face fit is considered satisfactory if a slight positive pressure can be built up inside the face piece without any evidence of outward leakage of air at the seal. For most respirators this method of leak testing requires the wearer to first remove the exhalation valve cover before closing off the exhalation valve and then carefully replacing it after the test.

5.3.3.2 Negative pressure check. Close off the inlet opening of the canister or cartridge(s) by covering with the palm of the hand(s) or by replacing the filter seal(s), inhale gently so that the face piece collapses slightly, and hold the breath for ten seconds. The design of the inlet opening of some cartridges cannot be effectively covered with the palm of the hand. The test can be performed by covering the inlet opening of the cartridge with a thin latex or nitrile glove. If the face piece remains in its slightly collapsed condition and no inward leakage of air is detected, the tightness of the respirator is considered satisfactory.

5.4 Medical Evaluation:

5.4.1 General. Using a respirator may place a physical burden on employees that varies with the type of respirator worn, the job and workplace conditions in which the respirator is used, and the medical status of the employee. The company will provide for a medical evaluation to determine the employee's ability to use a respirator before the employee is fit tested or required to use the respirator in the workplace. Medical evaluations for respirator use will discontinue when the employee is no longer required to use a respirator.

5.4.2 Medical evaluation procedures. The company will identify a Physician or other Licensed Health Care Professional (PLHCP) to perform medical evaluations using a medical questionnaire or an initial medical examination that obtains the same information as the medical questionnaire.

5.4.3 Follow-up medical examination. The company will ensure that a follow-up medical examination is provided for an employee who gives a positive response to any question among questions 1 through 8 in the medical evaluation questionnaire and/or demonstrates the need for a follow-up medical examination. The follow-up medical examination will include any medical tests, consultations, or diagnostic procedures that the PLHCP deems necessary to make a final determination.

5.4.4 Administration of the medical questionnaire and examinations. The medical questionnaire and examinations will be administered confidentially during the employee's normal working hours or at a time and place convenient to the employee. The medical questionnaire will be administered in a manner that ensures that the

employee understands its content. An opportunity to discuss the questionnaire and examination results with the PLHCP will be provided to the employee.

5.4.5 Information to be provided to the PLHCP. The following information will be provided to the PLHCP before a recommendation is made concerning an employee's ability to use a respirator:

- 5.4.5.1 The type and weight of the respiratory equipment to be used.
- 5.4.5.2 The duration and frequency of expected use.
- 5.4.5.3 The expected physical work effort.
- 5.4.5.4 Additional protective clothing and equipment to be worn.
- 5.4.5.5 Temperature and humidity extremes that may be encountered.
- 5.4.5.6 The type and weight of the respirator to be used by the employee.
- 5.4.5.7 The duration and frequency of respirator use (including use for rescue and escape).
- 5.4.5.8 Any supplemental information provided previously to the PLHCP regarding an employee need not be provided for a subsequent medical evaluation if the information and the PLHCP remain the same.
- 5.4.5.9 Copy of the written Respiratory Protection Safety Program.
- 5.4.5.10 Copy of the 29 CFR 1910.134 plus Appendices.
- 5.4.5.11 Note: When a new PLHCP is used, the information and documents will be transferred, as appropriate. Re-evaluations are not required solely because a new PLHCP has been selected.

5.4.6 Medical determination.

- 5.4.6.1 Obtain a written recommendation from the PLHCP.
- 5.4.6.2 Determine any limitations on respirator use including whether or not the employee is medically able to use the respirator, or restrictions required by the PLHCP.
- 5.4.6.3 Determine the need, if any, for follow-up medical evaluations.
- 5.4.6.4 Ensure that the employee has received a written copy of the PLHCP recommendation.
- 5.4.6.5 Powered Air Pressure Respirators (PAPR) may be used, if approved by the PLHCP, when the medical condition of the employee prohibits the use of a negative pressure respirator.

5.4.7 Additional medical evaluations. As a minimum, the company will provide additional medical evaluations based on the following conditions:

5.4.7.1 If an employee reports medical signs or symptoms that are related to his or her ability to use a respirator.

5.4.7.2 If a PLHCP, supervisor, or the respirator program administrator determines that re-evaluation is needed.

5.4.7.3 When the program requires, or fit testing determines the necessity for reevaluation.

5.4.7.4 If changes occur in workplace conditions (e.g., increased physical work effort, additional protective clothing, temperature extremes, or types of hazard).

5.4.8 Medical evaluation. Records of medical evaluations will be retained and made available to employees, their legal representatives and OSHA for the duration of employment plus and additional 30 years. If the company ceases to do business or is sold, records will be transferred to the new owner or OSHA will be contacted to determine retention.

5.5 Program Evaluation:

5.5.1 Workplace evaluations will be conducted at least annually, or more often as necessary, to ensure that the program is effectively implemented.

5.5.2 Employees required to use respiratory protection will be consulted during this evaluation to determine or identify problems or concerns with the program or equipment.

5.5.3 Program evaluation and assessment includes the fit, selection, conditions of use and maintenance of respirators and respiratory protective equipment.

5.6 Recordkeeping:

5.6.1 The company will establish and retain written information regarding medical evaluations, fit testing, and the Respiratory Protection Safety Program.

5.6.2 Fit Testing Records. Records of the qualitative (QLFT) and quantitative (QNFT) fit tests administered to an employee will be maintained. These records include:

5.6.2.1 Date of test

5.6.2.2 Type of fit test performed

5.6.2.3 The name or identification of the employee tested

5.6.2.4 Specific make, model, style, and size of respirator tested

- 5.6.2.5 Fit test records will be retained for respirator users until the next fit test is administered
- 5.6.2.6 The pass/fail results for QLFT or the fit factor and strip chart recording or other recording of the test results for QNFT
- 5.6.3 Medical Records. Records of medical evaluations will be retained and made available to employees, their legal representatives and OSHA for the duration of employment plus and additional 30 years. If the company ceases to do business or is sold, records will be transferred to the new owner or OSHA will be contacted to determine retention.
- 5.6.4 Training Records. The company will document that the required respiratory training has been accomplished. Documentation includes the employee's name, the signature or initials of the trainer, and the dates of training.
- 5.7 Voluntary Use of Respirators, where not required in the workplace:
 - 5.7.1 Employees who choose to wear cartridge or supplied air respiratory protection when it is not required in the workplace must be informed and trained in respiratory protection.
 - 5.7.2 The company is required to have a full program if there is mandatory or voluntary use of any respiratory protective equipment other than dust-masks.
 - 5.7.3 For filtering facepiece (dust-mask) programs, required use is covered in the Personal Protective Equipment section of this safety manual. Voluntary use of filtering facepieces does not require any program or documentation.

6. Training and Information.

- 6.1 The company will develop a standardized training format to meet the requirement for a Respiratory Protection Training program. The training will be conducted on an annual basis, or more frequently as needed, in a comprehensive and understandable format.
- 6.2 Training will be provided to each affected employee:
 - 6.2.1 Before the employee is first assigned duties that require respiratory protection.
 - 6.2.2 Before there is a change in assigned duties.
 - 6.2.3 Whenever there is a change in operations that present a hazard for which an employee has not previously been trained.
 - 6.2.4 Whenever there is reason to believe that there are deviations from established respiratory procedures or inadequacies in the employee's knowledge or use of these procedures.
- 6.3 Training includes and knowledge must be demonstrated by the trainee, in the following items, at a minimum:


- 6.3.1 The reasons for respiratory protection and the hazards encountered that require respirators, including any limitations on their use.
 - 6.3.2 The proper fit, use, inspection, maintenance and storage of respirators.
 - 6.3.3 Putting on and removing respirators (donning and doffing), including seal checks.
 - 6.3.4 Emergency situation respirator use, including situations where respirator malfunctions may occur.
 - 6.3.5 Procedures for regularly evaluating the effectiveness of the program and how to recognize the signs or symptoms that may be caused by ineffective respiratory equipment.
 - 6.3.6 Where respirator use is not required.
 - 6.3.7 The general requirements of OSHA's Respirator Standard 29 CFR 1910.134.
- 6.4 Training Records. The company will document that the required respiratory training has been accomplished. Documentation includes the employee's name, the signature or initials of the trainer, and the dates of training.

7. Definitions.

- *Air-purifying respirator* - A respirator with an air-purifying filter, cartridge, or canister that removes specific air contaminants by passing ambient air through the air-purifying element.
- *Assigned Protection Factor* - the level of protection that a properly functioning respirator would be expected to provide to a properly fitted and trained user. For example, an APF of 10 for a respirator means that a user could expect to inhale no more than one tenth of the airborne contaminant present.
- *Atmosphere-supplying respirator* - A respirator that supplies the respirator user with breathing air from a source independent of the ambient atmosphere, and includes supplied-air respirators (SAR) and self-contained breathing apparatus (SCBA) units.
- *Canister or cartridge* - A container with a filter, sorbent, or catalyst, or combination of these items, which removes specific contaminants from the air passed through the container.
- *Demand respirator* means: An atmosphere-supplying respirator that admits breathing air to the facepiece only when a negative pressure is created inside the facepiece by inhalation.
- *Emergency situation* - Any occurrence such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment that may or does result in an uncontrolled significant release of an airborne contaminant.
- *Employee exposure* - Exposure to a concentration of an airborne contaminant that would occur if the employee were not using respiratory protection.

- *End-of-service-life indicator (ESLI)* - A system that warns the respirator user of the approach of the end of adequate respiratory protection, for example, that the sorbent is approaching saturation or is no longer effective.
- *Escape-only respirator* means: A respirator intended to be used only for emergency exit.
- *Filter or air purifying element* - A component used in respirators to remove solid or liquid aerosols from the inspired air.
- *Filtering facepiece (dust mask)* - A negative pressure particulate respirator with a filter as an integral part of the facepiece or with the entire facepiece composed of the filtering medium.
- *Fit factor* - A quantitative estimate of the fit of a particular respirator to a specific individual, and typically estimates the ratio of the concentration of a substance in ambient air to its concentration inside the respirator when worn.
- *Fit test* - The use of a protocol to qualitatively or quantitatively evaluate the fit of a respirator on an individual. (See also Qualitative fit test QLFT and Quantitative fit test QNFT.)
- *Helmet* means: A rigid respiratory inlet covering that also provides head protection against impact and penetration.
- *High efficiency particulate air (HEPA) filter* means: A filter that is at least 99.97% efficient in removing monodisperse particles of 0.3 micrometers in diameter. The equivalent NIOSH 42 CFR 84 particulate filters are the N100, R100, and P100 filters.
- *Hood* - A respiratory inlet covering that completely covers the head and neck and may also cover portions of the shoulders and torso.
- *Immediately dangerous to life or health (IDLH)* - An atmosphere that poses an immediate threat to life, would cause irreversible adverse health effects, or would impair an individual's ability to escape from a dangerous atmosphere.
- *Interior structural firefighting* - The physical activity of fire suppression, rescue or both, inside of buildings or enclosed structures which are involved in a fire situation beyond the incipient stage. (See 29 CFR 1910.155)
- *Loose-fitting facepiece* - A respiratory inlet covering that is designed to form a partial seal with the face.
- *Negative pressure respirator (tight fitting)* - A respirator in which the air pressure inside the facepiece is negative during inhalation with respect to the ambient air pressure outside the respirator.
- *Oxygen deficient atmosphere* - An atmosphere with oxygen content below 19.5% by volume.
- *Physician or other licensed health care professional (PLHCP)* - An individual whose legally permitted scope of practice (i.e., license, registration, or certification) allows him or her to independently provide, or be delegated the responsibility to provide, some or all of the health care services required by the respiratory protection standard.

- *Positive pressure respirator* - A respirator in which the pressure inside the respiratory inlet covering exceeds the ambient air pressure outside the respirator.
- *Powered air-purifying respirator (PAPR)* - An air-purifying respirator that uses a blower to force the ambient air through air-purifying elements to the inlet covering.
- *Pressure demand respirator* - A positive pressure atmosphere-supplying respirator that admits breathing air to the facepiece when the positive pressure is reduced inside the facepiece by inhalation.
- *Qualitative fit test (QLFT)* - A pass/fail fit test to assess the adequacy of respirator fit that relies on the individual's response to the test agent.
- *Quantitative fit test (QNFT)* - An assessment of the adequacy of respirator fit by numerically measuring the amount of leakage into the respirator.
- *Respiratory inlet covering* - That portion of a respirator that forms the protective barrier between the user's respiratory tract and an air-purifying device or breathing air source, or both. It may be a facepiece, helmet, hood, suit, or a mouthpiece respirator with nose clamp.
- *Self-contained breathing apparatus (SCBA)* - An atmosphere-supplying respirator for which the breathing air source is designed to be carried by the user.
- *Service life* - The period of time that a respirator, filter or sorbent, or other respiratory equipment provides adequate protection to the wearer.
- *Supplied-air respirator (SAR) or airline respirator* - An atmosphere-supplying respirator for which the source of breathing air is not designed to be carried by the user.
- *Tight-fitting facepiece* - A respiratory inlet covering that forms a complete seal with the face.
- *User seal check* - An action conducted by the respirator user to determine if the respirator is properly seated to the face.

		❖ RESPIRATOR CLEANING AND INSPECTION RECORD ❖				
OWNER INFORMATION						
OWNER <i>(if individually issued):</i>	LAST NAME	FIRST	MIDDLE INITIAL			
COMPANY NAME			DEPT:			
EMPLOYEE ID # (if applicable)			WORK PHONE:			
RESPIRATOR INFORMATION						
RESPIRATOR TYPE						
MANUFACTURER		MODEL #				
SIZE #	RESPIRATOR ID NUMBER:					
DATE OF INSPECTION		TIME:				
CLEANING REQUIREMENTS TIGHT FITTING RESPIRATORS						
Estimated Frequency: (Check all that apply)						
<input type="checkbox"/> Hourly	<input type="checkbox"/> Twice each Shift	<input type="checkbox"/> Daily	<input type="checkbox"/> Weekly	<input type="checkbox"/> Monthly	<input type="checkbox"/> Before Use	<input type="checkbox"/> After Use
COMPONENT:		CLEANING REQUIREMENTS (edit in accordance with manufacturers instructions)				
Cartridge Holder:						
Cartridge Threads/Fittings:						
Connections:						
Elastomeric Parts Deteriorating?						
Elastomeric Parts Pliable?						
Exhalation Valve Assembly:						
Facepiece:						
Gaskets:						
Harness Assembly:						
Headbands:						
Hose Assembly:						
Inhalation Valve:						
Nosecup Valves:						
Speaking Diaphragm:						
COMMENTS:						

CLEANING REQUIREMENTS TIGHT FITTING RESPIRATORS – [Continued]

Respirator Cleaning Procedures (Mandatory)

These procedures are provided for employee use when cleaning respirators. They are general in nature, and the employee as an alternative may use the cleaning recommendations provided by the manufacturer of the respirators used by their employees, provided such procedures are as effective as those listed in 29 CFR 1910.134 Appendix B-2 (see below). Equivalent effectiveness simply means that the procedures used must accomplish the objectives set forth below.

Procedures for Cleaning Respirators:

- Remove filters, cartridges, or canisters. Disassemble facepieces by removing speaking diaphragms, demand and pressure - demand valve assemblies, hoses, or any components recommended by the manufacturer. Discard or repair any defective parts.
- Wash components in warm (43 deg. C [110 deg. F] maximum) water with a mild detergent or with a cleaner recommended by the manufacturer. A stiff bristle (not wire) brush may be used to facilitate the removal of dirt.
- Rinse components thoroughly in clean, warm (43 deg. C [110 deg. F] maximum), preferably running water. Drain.
- When the cleaner used does not contain a disinfecting agent, respirator components should be immersed for two minutes in one of the following:
 - Hypochlorite solution (50 ppm of chlorine) made by adding approximately one milliliter of laundry bleach to one liter of water at 43 deg. C (110 deg. F); or,
 - Aqueous solution of iodine (50 ppm iodine) made by adding approximately 0.8 milliliters of tincture of iodine (6-8 grams ammonium and/or potassium iodide/100 cc of 45% alcohol) to one liter of water at 43 deg. C (110 deg. F); or,
 - Other commercially available cleansers of equivalent disinfectant quality when used as directed, if their use is recommended or approved by the respirator manufacturer.
- Rinse components thoroughly in clean, warm (43 deg. C [110 deg. F] maximum), preferably running water. Drain. The importance of thorough rinsing cannot be overemphasized. Detergents or disinfectants that dry on facepieces may result in dermatitis. In addition, some disinfectants may cause deterioration of rubber or corrosion of metal parts if not completely removed.
- Components should be hand-dried with a clean lint-free cloth or air-dried.
- Reassemble facepiece, replacing filters, cartridges, and canisters where necessary.
- Test the respirator to ensure that all components work properly.

INSPECTOR'S NAME/TITLE:			
SIGNATURE:		DATE:	
FORM RETENTION INFORMATION		ATTACHMENTS	
Retention File:	Location:	*Yes <input type="checkbox"/>	No <input type="checkbox"/>
Date Filed:	Filed By:	*See Following Pages <input type="checkbox"/>	

RESPIRATOR MEDICAL APPRAISAL RESPONSE

_____ was examined on _____
(Patient's Name) (Date)

OR

The medical evaluation form for _____
(Patient's Name)

was reviewed on _____
(Date)


This individual is:

- Approved to wear positive or negative pressure respirators
- NOT approve to wear positive or negative pressure respirators
- Approved WITH THE FOLLOWING LIMITATIONS to wear positive or negative pressure respirators

Limitations of use (time limits, type of equipment restrictions, etc):

(Signature of Licensed Physician/Health Care Professional)

(Print Physician/Health Care Professional's Name)


 ❖Respirator Medical Evaluation Questionnaire❖ ❖Appendix C to 29 CFR 1910.134❖	
To the employer:	Answers to questions in Section 1 and to question 9 in Section 2 of Part A, do not require a medical examination. Your employer must allow you to answer this questionnaire during normal working hours, or at a time and place that is convenient to you. To maintain your confidentiality, your employer or supervisor must not look at or review your answers, and your employer must tell you how to deliver or send this questionnaire to the health care professional who will review it.
To the employee:	
Part A. Section 1. (Mandatory) The following information must be provided by every employee who has been selected to use any type of respirator (please print).	
Today's date:	
Your name:	
Your age:	
Sex:	Male <input type="checkbox"/> Female <input type="checkbox"/>
Your height:	ft. in.
Your weight:	lbs
Your job title:	
A phone number where you can be reached by the health care professional who reviews this questionnaire (include the Area Code):	()
The best time to phone you at this number:	
Has your employer told you how to contact the health care professional who will review this questionnaire?	Yes <input type="checkbox"/> No <input type="checkbox"/>
Check the type of respirator you will use (you can check more than one category):	
<input type="checkbox"/>	N, R, or P disposable respirator (filter-mask, non- cartridge type only).
<input type="checkbox"/>	Other type (for example, half- or full-facepiece type, powered-air purifying, supplied-air, self-contained breathing apparatus).
Have you worn a respirator?	Yes <input type="checkbox"/> No <input type="checkbox"/>
If "yes" what type(s)?	
Part A. Section 2. (Mandatory) Questions 1 through 9 below must be answered by every employee who has been selected to use any type of respirator.	
	Yes <input type="checkbox"/> No <input type="checkbox"/>
Do you currently smoke tobacco, or have you smoked tobacco in the last month?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Have you ever had any of the following conditions:	
Seizures (fits)?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Diabetes (sugar disease)?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Allergic reactions that interfere with your breathing?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Claustrophobia (fear of closed-in places)?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Trouble smelling odors?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Have you ever had any of the following pulmonary or lung problems?	
Asbestosis?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Asthma?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Chronic bronchitis?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Emphysema?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Pneumonia?	<input type="checkbox"/> Yes <input type="checkbox"/> No

❖ OSHA Respirator Medical Evaluation Questionnaire ❖		
	Yes	No
Tuberculosis?	<input type="checkbox"/>	<input type="checkbox"/>
Silicosis?	<input type="checkbox"/>	<input type="checkbox"/>
Pneumothorax?	<input type="checkbox"/>	<input type="checkbox"/>
Lung cancer?	<input type="checkbox"/>	<input type="checkbox"/>
Broken ribs?	<input type="checkbox"/>	<input type="checkbox"/>
Any chest injuries or surgeries?	<input type="checkbox"/>	<input type="checkbox"/>
Any other lung problem that you've been told about?	<input type="checkbox"/>	<input type="checkbox"/>
Do you currently have any of the following symptoms of pulmonary or lung illness?		
Shortness of breath?	<input type="checkbox"/>	<input type="checkbox"/>
Shortness of breath when walking fast on level ground or walking up a slight hill or incline?	<input type="checkbox"/>	<input type="checkbox"/>
Shortness of breath when walking with other people at an ordinary pace on level ground?	<input type="checkbox"/>	<input type="checkbox"/>
Have to stop for breath when walking at your own pace on level ground?	<input type="checkbox"/>	<input type="checkbox"/>
Shortness of breath when washing or dressing yourself?	<input type="checkbox"/>	<input type="checkbox"/>
Shortness of breath that interferes with your job?	<input type="checkbox"/>	<input type="checkbox"/>
Coughing that produces phlegm (thick sputum)?	<input type="checkbox"/>	<input type="checkbox"/>
Coughing that wakes you early in the morning?	<input type="checkbox"/>	<input type="checkbox"/>
Coughing that occurs mostly when you are lying down?	<input type="checkbox"/>	<input type="checkbox"/>
Coughing up blood in the last month?	<input type="checkbox"/>	<input type="checkbox"/>
Wheezing?	<input type="checkbox"/>	<input type="checkbox"/>
Wheezing that interferes with your job?	<input type="checkbox"/>	<input type="checkbox"/>
Chest pain when you breathe deeply?	<input type="checkbox"/>	<input type="checkbox"/>
Any other symptoms that you think may be related to lung problems?	<input type="checkbox"/>	<input type="checkbox"/>
Have you ever had any of the following cardiovascular or heart problems:		
Heart attack?	<input type="checkbox"/>	<input type="checkbox"/>
Stroke?	<input type="checkbox"/>	<input type="checkbox"/>
Angina?	<input type="checkbox"/>	<input type="checkbox"/>
Heart failure?	<input type="checkbox"/>	<input type="checkbox"/>
Swelling in your legs or feet (not caused by walking)?	<input type="checkbox"/>	<input type="checkbox"/>
Heart arrhythmia (heart beating irregularly)?	<input type="checkbox"/>	<input type="checkbox"/>
High blood pressure?	<input type="checkbox"/>	<input type="checkbox"/>
Any other heart problem that you've been told about?	<input type="checkbox"/>	<input type="checkbox"/>
Have you ever had any of the following cardiovascular or heart symptoms:		
Frequent pain or tightness in your chest?	<input type="checkbox"/>	<input type="checkbox"/>
Pain or tightness in your chest during physical activity?	<input type="checkbox"/>	<input type="checkbox"/>
Pain or tightness in your chest that interferes with your job?	<input type="checkbox"/>	<input type="checkbox"/>
In the past two years, have you noticed your heart skipping or missing a beat?	<input type="checkbox"/>	<input type="checkbox"/>
Heartburn or indigestion that is not related to eating?	<input type="checkbox"/>	<input type="checkbox"/>
Any other symptoms that you think may be related to heart or circulation problems?	<input type="checkbox"/>	<input type="checkbox"/>
Do you currently take medication for any of the following problems:		
Breathing or lung problems?	<input type="checkbox"/>	<input type="checkbox"/>
Heart trouble?	<input type="checkbox"/>	<input type="checkbox"/>
Blood pressure?	<input type="checkbox"/>	<input type="checkbox"/>
Seizures (fits)?	<input type="checkbox"/>	<input type="checkbox"/>

❖ OSHA Respirator Medical Evaluation Questionnaire ❖		
	Yes	No
If you've used a respirator, have you ever had any of the following problems? (If you've never used a respirator, check the following space and go to question 9:)		
Eye irritation?	<input type="checkbox"/>	<input type="checkbox"/>
Skin allergies or rashes?	<input type="checkbox"/>	<input type="checkbox"/>
Anxiety?	<input type="checkbox"/>	<input type="checkbox"/>
General weakness or fatigue?	<input type="checkbox"/>	<input type="checkbox"/>
Any other problem that interferes with your use of a respirator?	<input type="checkbox"/>	<input type="checkbox"/>
Would you like to talk to the health care professional who will review this questionnaire about your answers to this questionnaire?	<input type="checkbox"/>	<input type="checkbox"/>
Questions below must be answered by every employee who has been selected to use either a full-facepiece respirator or a self-contained breathing apparatus (SCBA). For employees who have been selected to use other types of respirators, answering these questions is voluntary.		
	Yes	No
Have you ever lost vision in either eye (temporarily or permanently)?	<input type="checkbox"/>	<input type="checkbox"/>
Do you currently have any of the following vision problems:		
Wear contact lenses?	<input type="checkbox"/>	<input type="checkbox"/>
Wear glasses?	<input type="checkbox"/>	<input type="checkbox"/>
Color blind?	<input type="checkbox"/>	<input type="checkbox"/>
Any other eye or vision problem?	<input type="checkbox"/>	<input type="checkbox"/>
Have you ever had an injury to your ears, including a broken ear drum?	<input type="checkbox"/>	<input type="checkbox"/>
Do you currently have any of the following hearing problems:		
Difficulty hearing?	<input type="checkbox"/>	<input type="checkbox"/>
Wear a hearing aid?	<input type="checkbox"/>	<input type="checkbox"/>
Any other hearing or ear problem?	<input type="checkbox"/>	<input type="checkbox"/>
Have you ever had a back injury?	<input type="checkbox"/>	<input type="checkbox"/>
Do you currently have any of the following musculoskeletal problems:		
Weakness in any of your arms, hands, legs, or feet?	<input type="checkbox"/>	<input type="checkbox"/>
Back pain?	<input type="checkbox"/>	<input type="checkbox"/>
Difficulty fully moving your arms and legs?	<input type="checkbox"/>	<input type="checkbox"/>
Pain or stiffness when you lean forward or backward at the waist?	<input type="checkbox"/>	<input type="checkbox"/>
Difficulty fully moving your head up or down?	<input type="checkbox"/>	<input type="checkbox"/>
Difficulty fully moving your head side to side?	<input type="checkbox"/>	<input type="checkbox"/>
Difficulty bending at your knees?	<input type="checkbox"/>	<input type="checkbox"/>
Difficulty squatting to the ground?	<input type="checkbox"/>	<input type="checkbox"/>
Climbing a flight of stairs or a ladder carrying more than 25 lbs?	<input type="checkbox"/>	<input type="checkbox"/>
Any other muscle or skeletal problem that interferes with using a respirator?	<input type="checkbox"/>	<input type="checkbox"/>
Any of the following questions, and other questions not listed, may be added to the questionnaire at the discretion of the health care professional who will review the questionnaire.		
	Yes	No
In your present job, are you working at high altitudes (over 5,000 feet) or in a place that has lower than normal amounts of oxygen?	<input type="checkbox"/>	<input type="checkbox"/>
If "yes," do you have feelings of dizziness, shortness of breath, pounding in your chest, or other symptoms when you're working under these conditions?	<input type="checkbox"/>	<input type="checkbox"/>
At work or at home, have you ever been exposed to hazardous solvents, hazardous airborne chemicals (e.g., gases, fumes, or dust), or have you come into skin contact with hazardous chemicals?	<input type="checkbox"/>	<input type="checkbox"/>
If "yes," name the chemicals if you know them:		

❖ OSHA Respirator Medical Evaluation Questionnaire ❖		
	Yes	No
Have you ever worked with any of the materials, or under any of the conditions, listed below:		
Asbestos?	<input type="checkbox"/>	<input type="checkbox"/>
Silica (e.g., in sandblasting)?	<input type="checkbox"/>	<input type="checkbox"/>
Tungsten/cobalt (e.g., grinding or welding this material)?	<input type="checkbox"/>	<input type="checkbox"/>
Beryllium?	<input type="checkbox"/>	<input type="checkbox"/>
Aluminum?	<input type="checkbox"/>	<input type="checkbox"/>
Coal (for example, mining)?	<input type="checkbox"/>	<input type="checkbox"/>
Iron?	<input type="checkbox"/>	<input type="checkbox"/>
Tin?	<input type="checkbox"/>	<input type="checkbox"/>
Dusty environments?	<input type="checkbox"/>	<input type="checkbox"/>
Any other hazardous exposures?	<input type="checkbox"/>	<input type="checkbox"/>
If "yes," describe these exposures:		
List any second jobs or side businesses you have:		
List your previous occupations:		
List your current and previous hobbies:		
Have you been in the military services?	<input type="checkbox"/>	<input type="checkbox"/>
If "yes," were you exposed to biological or chemical agents (either in training or combat)?	<input type="checkbox"/>	<input type="checkbox"/>
Have you ever worked on a HAZMAT team?	<input type="checkbox"/>	<input type="checkbox"/>
Other than medications for breathing and lung problems, heart trouble, blood pressure, and seizures mentioned earlier in this questionnaire, are you taking any other medications for any reason (including over-the-counter medications)?	<input type="checkbox"/>	<input type="checkbox"/>
If "yes," name the medications if you know them:		
Will you be using any of the following items with your respirator(s)?		
HEPA Filters	<input type="checkbox"/>	<input type="checkbox"/>
Canisters (for example, gas masks)	<input type="checkbox"/>	<input type="checkbox"/>
Cartridges	<input type="checkbox"/>	<input type="checkbox"/>
How often are you expected to use the respirator(s)?		
Escape only (no rescue)	<input type="checkbox"/>	<input type="checkbox"/>
Emergency rescue only	<input type="checkbox"/>	<input type="checkbox"/>
Less than 5 hours per week	<input type="checkbox"/>	<input type="checkbox"/>
Less than 2 hours per day	<input type="checkbox"/>	<input type="checkbox"/>
2 to 4 hours per day	<input type="checkbox"/>	<input type="checkbox"/>
Over 4 hours per day	<input type="checkbox"/>	<input type="checkbox"/>
During the period you are using the respirator(s), is your work effort		
Light (less than 200 kcal per hour)	<input type="checkbox"/>	<input type="checkbox"/>
If "yes" how long does this period last during the average shift	hrs.	mins
Examples of a light work effort are sitting while writing, typing, drafting, or performing light assembly work; or standing while operating a drill press (1-3 lbs.) or controlling machines.		

❖ OSHA Respirator Medical Evaluation Questionnaire ❖		
	Yes	No
Moderate (200 to 350 kcal per hour)	<input type="checkbox"/>	<input type="checkbox"/>
If "yes" how long does this period last during the average shift	hrs.	mins.
Examples of moderate work effort are sitting while nailing or filing; driving a truck or bus in urban traffic; standing while drilling, nailing, performing assembly work, or transferring a moderate load (about 35 lbs.) at trunk level; walking on a level surface about 2 mph or down a 5-degree grade about 3 mph; or pushing a wheelbarrow with a heavy load (about 100 lbs.) on a level surface.		
Heavy (above 350 kcal per hour)	<input type="checkbox"/>	<input type="checkbox"/>
If "yes" how long does this period last during the average shift	hrs.	mins.
Examples of heavy work are lifting a heavy load (about 50 lbs.) from the floor to your waist or shoulder; working on a loading dock; shoveling; standing while bricklaying or chipping castings; walking up an 8-degree grade about 2 mph; climbing stairs with a heavy load (about 50 lbs.).		
Will you be wearing protective clothing and/or equipment (other than the respirator) when you're using your respirator?	<input type="checkbox"/>	<input type="checkbox"/>
If "yes," describe this protective clothing and/or equipment:		
Will you be working under hot conditions (exceeding 77 deg. F)?	<input type="checkbox"/>	<input type="checkbox"/>
Will you be working under humid conditions?	<input type="checkbox"/>	<input type="checkbox"/>
Describe the work you'll be doing while you're using your respirator(s)		
Describe any special or hazardous conditions you might encounter when you're using your respirator(s) (for example, confined spaces, life-threatening gases):		
Provide the following information, if you know it, for each toxic substance that you'll be exposed to when you're using your respirator(s):		
Name of the first toxic substance:		
Estimated maximum exposure level per shift:		
Duration of exposure per shift:		
Name of the second toxic substance:		
Estimated maximum exposure level per shift:		
Duration of exposure per shift:		
Name of the third toxic substance:		
Estimated maximum exposure level per shift:		
Duration of exposure per shift:		
Duration of exposure per shift:		
The name of any other toxic substances that you'll be exposed to while using your respirator:		
Describe any special responsibilities you'll have while using your respirator(s) that may affect the safety and well-being of others (for example, rescue, security):		

 ❖Respirator Seal Check Procedure❖ ❖As Required Under 29 CFR 1910.134 (Mandatory)❖	
To the employer:	The seal check procedures listed below must be accomplished by all employees using respirators.
To the employee:	Your employer is required to have you perform check seal procedures if you are using a respirator. The procedures must be accomplished each time you put on a respirator before entering a hazardous respiratory environment. Ensure you keep a copy of this form for your personal records.
EMPLOYEE INFORMATION	
Employee Name:	ID/Clock Number:
Facility:	Work Location:
Job Title:	Dept./Phone:
VERIFICATION: I acknowledge that I have read and understand the below procedures as required by the Occupational Safety and Health Administration (OSHA).	
EMPLOYEE SIGNATURE:	DATE:
OSHA RESPIRATORY PROTECTION SEAL CHECK PROCEDURES	
<p><u>To The Respirator User:</u> The individual who uses a tight-fitting respirator is to perform a user seal check to ensure that an adequate seal is achieved each time the respirator is put on. Either the OSHA required positive and negative pressure checks, or the respirator manufacturers recommended user seal check method must be used. User seal checks are not substitutes for qualitative or quantitative fit tests.</p> <p><u>Facepiece Positive and/or Negative Pressure Checks:</u></p> <ul style="list-style-type: none"> • Positive pressure check. Close off the exhalation valve and exhale gently into the facepiece. The face fit is considered satisfactory if a slight positive pressure can be built up inside the facepiece without any evidence of outward leakage of air at the seal. For most respirators this method of leak testing requires the wearer to first remove the exhalation valve cover before closing off the exhalation valve and then carefully replacing it after the test. • Negative pressure check. Close off the inlet opening of the canister or cartridge(s) by covering with the palm of the hand(s) or by replacing the filter seal(s), inhale gently so that the facepiece collapses slightly, and hold the breath for ten seconds. The design of the inlet opening of some cartridges cannot be effectively covered with the palm of the hand. The test can be performed by covering the inlet opening of the cartridge with a thin latex or nitrile glove. If the facepiece remains in its slightly collapsed condition and no inward leakage of air is detected, the tightness of the respirator is considered satisfactory. <p><u>Manufacturer's Recommended User Seal Check Procedures:</u> The respirator manufacturer's recommended procedures for performing a user seal check may be used instead of the positive and/or negative pressure check procedures provided that the employer demonstrates that the manufacturer's procedures are equally effective.</p>	
FORM RETENTION INFORMATION	
Retention File:	Location:
Date Filed:	Filed By:
*Yes <input type="checkbox"/> No <input type="checkbox"/>	



❖ RESPIRATOR SELECTION and FIT TEST RECORD ❖

COMPANY and/or EMPLOYEE INFORMATION

EMPLOYEE JOB TITLE/WORK AREA:	LAST NAME	FIRST	MIDDLE INITIAL
SIGNATURE			COMPANY NAME:
EMPLOYEE ID # (if applicable)			WORK PHONE:

JOB/HAZARD ASSESSMENT INFORMATION

Source of Data for Hazard Assessment <small>(objective data, monitoring type, etc.)</small>		Title and location of documentation for Hazard Assessment (if not attached):	
Date of Hazard Assessment:		Name of Hazard Assessor:	
Job Title of Hazard Assessor:		Signature of Hazard Assessor:	

FIT TEST INFORMATION

Date of Fit Test:		Name of Fit Testor:	
Job Title of Fit Tester:		Signature of Fit Testor:	

REMARKS	
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RESPIRATOR SELECTION DATA

Exposure Means:			Size of Respirator	Make/Model of Respirator	Type of Cartridge to be used:
Activity/Chemical <small>(Painting, MEK Solvent)</small>	Vapor, Dust, Mist, etc.	Expected Exposure Levels			

RESPIRATOR WALLET CARD FOR FIT TEST CERTIFICATION

RESPIRATOR FIT CERTIFICATION

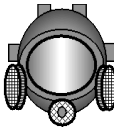
THIS IS TO CERTIFY THAT _____
ASSOCIATE

HAS BEEN SUCCESSFULLY FIT TESTED AND TRAINED IN
RESPIRATOR USE AND CARE AND IS QUALIFIED TO USE THE
RESPIRATORS LISTED ON THE BACK OF THIS CERTIFICATION.

ASSOCIATE SIGNATURE DATE

CERTIFIER SIGNATURE DATE

LICENSE CONTROL NUMBER _____



RESPIRATOR FIT CERTIFICATION

THIS IS TO CERTIFY THAT _____
ASSOCIATE

HAS BEEN SUCCESSFULLY FIT TESTED AND TRAINED IN
RESPIRATOR USE AND CARE AND IS QUALIFIED TO USE THE
RESPIRATORS LISTED ON THE BACK OF THIS CERTIFICATION.

ASSOCIATE SIGNATURE DATE

CERTIFIER SIGNATURE DATE

LICENSE CONTROL NUMBER _____



RESPIRATOR FIT CERTIFICATION

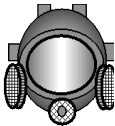
THIS IS TO CERTIFY THAT _____
ASSOCIATE

HAS BEEN SUCCESSFULLY FIT TESTED AND TRAINED IN
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RESPIRATORS LISTED ON THE BACK OF THIS CERTIFICATION.

ASSOCIATE SIGNATURE DATE

CERTIFIER SIGNATURE DATE

LICENSE CONTROL NUMBER _____



RESPIRATOR FIT CERTIFICATION

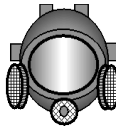
THIS IS TO CERTIFY THAT _____
ASSOCIATE

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RESPIRATORS LISTED ON THE BACK OF THIS CERTIFICATION.

ASSOCIATE SIGNATURE DATE

CERTIFIER SIGNATURE DATE

LICENSE CONTROL NUMBER _____



RESPIRATOR FIT CERTIFICATION

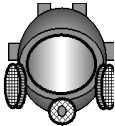
THIS IS TO CERTIFY THAT _____
ASSOCIATE

HAS BEEN SUCCESSFULLY FIT TESTED AND TRAINED IN
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CERTIFIER SIGNATURE DATE

LICENSE CONTROL NUMBER _____



RESPIRATOR FIT CERTIFICATION

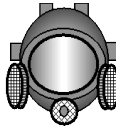
THIS IS TO CERTIFY THAT _____
ASSOCIATE

HAS BEEN SUCCESSFULLY FIT TESTED AND TRAINED IN
RESPIRATOR USE AND CARE AND IS QUALIFIED TO USE THE
RESPIRATORS LISTED ON THE BACK OF THIS CERTIFICATION.

ASSOCIATE SIGNATURE DATE

CERTIFIER SIGNATURE DATE

LICENSE CONTROL NUMBER _____



**INSTRUCTIONS
FOR USE.**

1. DEVELOP A NUMBERING SYSTEM FOR USE WITH THE CONTROL NUMBERS.
2. PRINT THE LICENSES ON ORDINARY CARD STOCK IN THE COLOR OF YOUR CHOICE.
3. DESIGNATE A RESPIRATOR TRAINER AND CERTIFIER TO CONDUCT THE TRAINING AND FIT TEST ASSOCIATES.
4. AFTER ALL INFORMATION IS FILLED IN, CONSIDER LAMINATING.
5. COPY THIS FORM FOR FUTURE USES.

FRONT OF FORM
Page 29

RESPIRATOR FIT CERTIFICATION

THIS IS TO CERTIFY THAT

HAS BEEN FIT TESTED AND IS CERTIFIED
TO WEAR THE FOLLOWING RESPIRATORS:

_____ Respirator Brand	_____ Size
_____ Respirator Brand	_____ Size

LICENSE CONTROL NUMBER _ _ _ _

RESPIRATOR FIT CERTIFICATION

THIS IS TO CERTIFY THAT

HAS BEEN FIT TESTED AND IS CERTIFIED
TO WEAR THE FOLLOWING RESPIRATORS:

_____ Respirator Brand	_____ Size
_____ Respirator Brand	_____ Size

LICENSE CONTROL NUMBER _ _ _ _

RESPIRATOR FIT CERTIFICATION

THIS IS TO CERTIFY THAT

HAS BEEN FIT TESTED AND IS CERTIFIED
TO WEAR THE FOLLOWING RESPIRATORS:

_____ Respirator Brand	_____ Size
_____ Respirator Brand	_____ Size

LICENSE CONTROL NUMBER _ _ _ _

RESPIRATOR FIT CERTIFICATION

THIS IS TO CERTIFY THAT

HAS BEEN FIT TESTED AND IS CERTIFIED
TO WEAR THE FOLLOWING RESPIRATORS:

_____ Respirator Brand	_____ Size
_____ Respirator Brand	_____ Size

LICENSE CONTROL NUMBER _ _ _ _

RESPIRATOR FIT CERTIFICATION

THIS IS TO CERTIFY THAT

HAS BEEN FIT TESTED AND IS CERTIFIED
TO WEAR THE FOLLOWING RESPIRATORS:

_____ Respirator Brand	_____ Size
_____ Respirator Brand	_____ Size

LICENSE CONTROL NUMBER _ _ _ _

RESPIRATOR FIT CERTIFICATION

THIS IS TO CERTIFY THAT

HAS BEEN FIT TESTED AND IS CERTIFIED
TO WEAR THE FOLLOWING RESPIRATORS:

_____ Respirator Brand	_____ Size
_____ Respirator Brand	_____ Size

LICENSE CONTROL NUMBER _ _ _ _

RESPIRATORY PROTECTION - ASSIGNED PROTECTION FACTORS

The Assigned Protection Factor (APF) of a Respirator reflects the level of protection that a properly functioning Respirator would be expected to provide to a properly fitted and trained user. For example, an APF of 10 for a Respirator means that a user could expect to inhale no more than one-tenth of the airborne contaminant present.

Respirator Class and Type	OSHA	NIOSH
<i>Air Purifying:</i>		
Filtering Face piece	10	10
Half-Mask	10	10
Full-Face piece	50	50
<i>Powered Air Purifying:</i>		
Half-Mask	50	50
Full-Face piece	250	50
Loose Fitting Face piece	25	25
Hood or Helmet	25	25
<i>Supplied Air:</i>		
Half-Mask-Demand	10	10
Half-Mask-Continuous	50	50
Half-Mask-Pressure Demand	1000	1000
Full-Face piece Demand	50	50
Full-Face piece Continuous Flow	250	50
Full-Face piece Pressure Demand	1000	2000
Loose Fitting Face piece	25	25
Hood or Helmet	25	25
<i>Self Contained Breathing Apparatus (SCBA):</i>		
Demand	50	50
Pressure Demand	> 1000	10,000



❖Respiratory Protection - Fit Testing Procedures❖

Appendix A to 29 CFR 1910.134: Fit Testing Procedures (Mandatory)

PART I. OSHA – ACCEPTED FIT TEST PROTOCOLS

Fit Testing Procedures--General Requirements. The employer shall conduct fit testing using the following procedures. The requirements in this appendix apply to all OSHA- accepted fit test methods, both QLFT and QNFT.

- The test subject shall be allowed to pick the most acceptable respirator from a sufficient number of respirator models and sizes so that the respirator is acceptable to, and correctly fits, the user.
- Prior to the selection process, the test subject shall be shown how to put on a respirator, how it should be positioned on the face, how to set strap tension and how to determine an acceptable fit. A mirror shall be available to assist the subject in evaluating the fit and positioning of the respirator. This instruction may not constitute the subject's formal training on respirator use, because it is only a review.
- The test subject shall be informed that he/she is being asked to select the respirator that provides the most acceptable fit. Each respirator represents a different size and shape, and if fitted and used properly, will provide adequate protection.
- The test subject shall be instructed to hold each chosen facepiece up to the face and eliminate those that obviously do not give an acceptable fit.
- The more acceptable facepieces are noted in case the one selected proves unacceptable; the most comfortable mask is donned and worn at least five minutes to assess comfort. Assistance in assessing comfort can be given by discussing the points in the following item A.6. If the test subject is not familiar with using a particular respirator, the test subject shall be directed to don the mask several times and to adjust the straps each time to become adept at setting proper tension on the straps.
- Assessment of comfort shall include a review of the following points with the test subject and allowing the test subject adequate time to determine the comfort of the respirator:
 - Position of the mask on the nose
 - Room for eye protection
 - Room to talk
 - Position of mask on face and cheeks
- The following criteria shall be used to help determine the adequacy of the respirator fit:
 - Chin properly placed;
 - Adequate strap tension, not overly tightened;
 - Fit across nose bridge;
 - Respirator of proper size to span distance from nose to chin;
 - Tendency of respirator to slip;
 - Self-observation in mirror to evaluate fit and respirator position.
- The test subject shall conduct a user seal check, either the negative and positive pressure seal checks described in Appendix B-1 of this section or those recommended by the respirator manufacturer which provide equivalent protection to the procedures in Appendix B- 1. Before conducting the negative and positive pressure checks, the subject shall be told to seat the mask on the face by moving the head from side-to-side and up and down slowly while taking in a few slow deep breaths. Another facepiece shall be selected and retested if the test subject fails the user seal check tests.
- The test shall not be conducted if there is any hair growth between the skin and the facepiece sealing surface, such as stubble beard growth, beard, mustache or sideburns which cross the respirator sealing surface. Any type of apparel which interferes with a satisfactory fit shall be altered or removed.
- If a test subject exhibits difficulty in breathing during the tests, she or he shall be referred to a physician or other licensed health care professional, as appropriate, to determine whether the test subject can wear a respirator while performing her or his duties.
- If the employee finds the fit of the respirator unacceptable, the test subject shall be given the opportunity to select a different respirator and to be retested.
- Exercise regimen. Prior to the commencement of the fit test, the test subject shall be given a description of the fit test and the test subject's responsibilities during the test procedure. The description of the process shall include a description of the test exercises that the subject will be performing. The respirator to be tested shall be worn for at least 5 minutes before the start of the fit test.
- The fit test shall be performed while the test subject is wearing any applicable safety equipment that may be worn during actual respirator use which could interfere with respirator fit.

- Test Exercises.
 - The following test exercises are to be performed for all fit testing methods prescribed in this appendix, except for the CNP method. A separate fit testing exercise regimen is contained in the CNP protocol. The test subject shall perform exercises, in the test environment, in the following manner:
 - Normal breathing. In a normal standing position, without talking, the subject shall breathe normally.
 - Deep breathing. In a normal standing position, the subject shall breathe slowly and deeply, taking caution so as not to hyperventilate.
 - Turning head side to side. Standing in place, the subject shall slowly turn his/her head from side to side between the extreme positions on each side. The head shall be held at each extreme momentarily so the subject can inhale at each side.
 - Moving head up and down. Standing in place, the subject shall slowly move his/her head up and down. The subject shall be instructed to inhale in the up position (i.e., when looking toward the ceiling).
 - Talking. The subject shall talk out loud slowly and loud enough so as to be heard clearly by the test conductor. The subject can read from a prepared text such as the following, count backward from 100, or recite a memorized poem or song.

Rainbow Passage:
When the sunlight strikes raindrops in the air, they act like a prism and form a rainbow. The rainbow is a division of white light into many beautiful colors. These take the shape of a long round arch, with its path high above, and its two ends apparently beyond the horizon. There is, according to legend, a boiling pot of gold at one end. People look, but no one ever finds it. When a man looks for something beyond reach, his friends say he is looking for the pot of gold at the end of the rainbow.
 - Grimace. The test subject shall grimace by smiling or frowning. (This applies only to QNFT testing; it is not performed for QLFT)
 - Bending over. The test subject shall bend at the waist as if he/she were to touch his/her toes. Jogging in place shall be substituted for this exercise in those test environments such as shroud type QNFT or QLFT units that do not permit bending over at the waist.
 - Normal breathing. Same as exercise (1).
 - Each test exercise shall be performed for one minute except for the grimace exercise which shall be performed for 15 seconds. The test subject shall be questioned by the test conductor regarding the comfort of the respirator upon completion of the protocol. If it has become unacceptable, another model of respirator shall be tried. The respirator shall not be adjusted once the fit test exercises begin. Any adjustment voids the test, and the fit test must be repeated.

Qualitative Fit Test (QLFT) Protocols

- General
 - The employer shall ensure that persons administering QLFT are able to prepare test solutions, calibrate equipment and perform tests properly, recognize invalid tests, and ensure that test equipment is in proper working order.
 - The employer shall ensure that QLFT equipment is kept clean and well maintained so as to operate within the parameters for which it was designed.
- Isoamyl Acetate Protocol. *Note: This protocol is not appropriate to use for the fit testing of particulate respirators. If used to fit test particulate respirators, the respirator must be equipped with an organic vapor filter.
 - Odor Threshold Screening. Odor threshold screening, performed without wearing a respirator, is intended to determine if the individual tested can detect the odor of isoamyl acetate at low levels.
 - Three 1 liter glass jars with metal lids are required.
 - Odor-free water (e.g., distilled or spring water) at approximately 25 deg. C (77 deg. F) shall be used for the solutions.
 - The isoamyl acetate (IAA) (also known as isopentyl acetate) stock solution is prepared by adding 1 ml of pure IAA to 800 ml of odor-free water in a 1 liter jar, closing the lid and shaking for 30 seconds. A new solution shall be prepared at least weekly.
 - The screening test shall be conducted in a room separate from the room used for actual fit testing. The two rooms shall be well-ventilated to prevent the odor of IAA from becoming evident in the general room air where testing takes place.
 - The odor test solution is prepared in a second jar by placing 0.4 ml of the stock solution into 500 ml of odor-free water using a clean dropper or pipette. The solution shall be shaken for 30 seconds and allowed to stand for two to three minutes so that the IAA concentration above the liquid may reach equilibrium. This solution shall be used for only one day.
 - A test blank shall be prepared in a third jar by adding 500 cc of odor-free water.

- The odor test and test blank jar lids shall be labeled (e.g., 1 and 2) for jar identification. Labels shall be placed on the lids so that they can be peeled off periodically and switched to maintain the integrity of the test.
- The following instruction shall be typed on a card and placed on the table in front of the two test jars (i.e., 1 and 2): "The purpose of this test is to determine if you can smell banana oil at a low concentration. The two bottles in front of you contain water. One of these bottles also contains a small amount of banana oil. Be sure the covers are on tight, and then shake each bottle for two seconds. Unscrew the lid of each bottle, one at a time, and sniff at the mouth of the bottle. Indicate to the test conductor which bottle contains banana oil."
- The mixtures used in the IAA odor detection test shall be prepared in an area separate from where the test is performed, in order to prevent olfactory fatigue in the subject.
- If the test subject is unable to correctly identify the jar containing the odor test solution, the IAA qualitative fit test shall not be performed.
- If the test subject correctly identifies the jar containing the odor test solution, the test subject may proceed to respirator selection and fit testing.
- Isoamyl Acetate Fit Test
 - The fit test chamber shall be a clear 55-gallon drum liner suspended inverted over a 2-foot diameter frame so that the top of the chamber is about 6 inches above the test subject's head. If no drum liner is available, a similar chamber shall be constructed using plastic sheeting. The inside top center of the chamber shall have a small hook attached.
 - Each respirator used for the fitting and fit testing shall be equipped with organic vapor cartridges or offer protection against organic vapors.
 - After selecting, donning, and properly adjusting a respirator, the test subject shall wear it to the fit testing room. This room shall be separate from the room used for odor threshold screening and respirator selection, and shall be well-ventilated, as by an exhaust fan or lab hood, to prevent general room contamination.
 - A copy of the test exercises and any prepared text from which the subject is to read shall be taped to the inside of the test chamber.
 - Upon entering the test chamber, the test subject shall be given a 6-inch by 5-inch piece of paper towel, or other porous, absorbent, single-ply material, folded in half and wetted with 0.75 ml of pure IAA. The test subject shall hang the wet towel on the hook at the top of the chamber. An IAA test swab or ampule may be substituted for the IAA wetted paper towel provided it has been demonstrated that the alternative IAA source will generate an IAA test atmosphere with a concentration equivalent to that generated by the paper towel method.
 - Allow two minutes for the IAA test concentration to stabilize before starting the fit test exercises. This would be an appropriate time to talk with the test subject; to explain the fit test, the importance of his/her cooperation, and the purpose for the test exercises; or to demonstrate some of the exercises.
 - If at any time during the test, the subject detects the banana-like odor of IAA, the test is failed. The subject shall quickly exit from the test chamber and leave the test area to avoid olfactory fatigue.
 - If the test is failed, the subject shall return to the selection room and remove the respirator. The test subject shall repeat the odor sensitivity test, select and put on another respirator, return to the test area and again begin the fit test procedure described in (b) (1) through (7) above. The process continues until a respirator that fits well has been found. Should the odor sensitivity test be failed, the subject shall wait at least 5 minutes before retesting. Odor sensitivity will usually have returned by this time.
 - If the subject passes the test, the efficiency of the test procedure shall be demonstrated by having the subject break the respirator face seal and take a breath before exiting the chamber.
 - When the test subject leaves the chamber, the subject shall remove the saturated towel and return it to the person conducting the test, so that there is no significant IAA concentration buildup in the chamber during subsequent tests. The used towels shall be kept in a self-sealing plastic bag to keep the test area from being contaminated.
- Saccharin Solution Aerosol Protocol. The entire screening and testing procedure shall be explained to the test subject prior to the conduct of the screening test.
 - Taste threshold screening. The saccharin taste threshold screening, performed without wearing a respirator, is intended to determine whether the individual being tested can detect the taste of saccharin.
 - *Note: If the test subject eats or drinks something sweet before the screening test, he/she may be unable to taste the weak saccharin solution.

- During threshold screening as well as during fit testing, subjects shall wear an enclosure about the head and shoulders that is approximately 12 inches in diameter by 14 inches tall with at least the front portion clear and that allows free movements of the head when a respirator is worn. An enclosure substantially similar to the 3M hood assembly, parts # FT 14 and # FT 15 combined, is adequate.
- The test enclosure shall have a 3/4-inch (1.9 cm) hole in front of the test subject's nose and mouth area to accommodate the nebulizer nozzle.
- The test subject shall don the test enclosure. Throughout the threshold screening test, the test subject shall breathe through his/her slightly open mouth with tongue extended. The subject is instructed to report when he/she detects a sweet taste.
- Using a DeVilbiss Model 40 Inhalation Medication Nebulizer or equivalent, the test conductor shall spray the threshold check solution into the enclosure. The nozzle is directed away from the nose and mouth of the person. This nebulizer shall be clearly marked to distinguish it from the fit test solution nebulizer.
- The threshold check solution is prepared by dissolving 0.83 gram of sodium saccharin USP in 100 ml of warm water. It can be prepared by putting 1 ml of the fit test solution (see (b) (5) below) in 100 ml of distilled water.
- To produce the aerosol, the nebulizer bulb is firmly squeezed so that it collapses completely, then released and allowed to fully expand.
- Ten squeezes are repeated rapidly and then the test subject is asked whether the saccharin can be tasted. If the test subject reports tasting the sweet taste during the ten squeezes, the screening test is completed. The taste threshold is noted as ten regardless of the number of squeezes actually completed.
- If the first response is negative, ten more squeezes are repeated rapidly and the test subject is again asked whether the saccharin is tasted. If the test subject reports tasting the sweet taste during the second ten squeezes, the screening test is completed. The taste threshold is noted as twenty regardless of the number of squeezes actually completed.
- If the second response is negative, ten more squeezes are repeated rapidly and the test subject is again asked whether the saccharin is tasted. If the test subject reports tasting the sweet taste during the third set of ten squeezes, the screening test is completed. The taste threshold is noted as thirty regardless of the number of squeezes actually completed.
- The test conductor will take note of the number of squeezes required to solicit a taste response.
- If the saccharin is not tasted after 30 squeezes (step 10), the test subject is unable to taste saccharin and may not perform the saccharin fit test.
- If a taste response is elicited, the test subject shall be asked to take note of the taste for reference in the fit test.
- Correct use of the nebulizer means that approximately 1 ml of liquid is used at a time in the nebulizer body.
- The nebulizer shall be thoroughly rinsed in water, shaken dry and refilled at least each morning and afternoon or at least every four hours.
- Saccharin solution aerosol fit test procedure.
 - The test subject may not eat, drink (except plain water), smoke, or chew gum for 15 minutes before the test.
 - The fit test uses the same enclosure described in 3. (a) above.
 - The test subject shall don the enclosure while wearing the respirator selected in section A.1 of this appendix. The respirator shall be properly adjusted and equipped with a particulate filter(s).
 - A second DeVilbiss Model 40 Inhalation Medication Nebulizer or equivalent is used to spray the fit test solution into the enclosure. This nebulizer shall be clearly marked to distinguish it from the screening test solution nebulizer.
 - The fit test solution is prepared by adding 83 grams of sodium saccharin to 100 ml of warm water.
 - As before, the test subject shall breathe through the slightly open mouth with tongue extended, and report if he/she tastes the sweet taste of saccharin.
 - The nebulizer is inserted into the hole in the front of the enclosure and an initial concentration of saccharin fit test solution is sprayed into the enclosure using the same number of squeezes (either 10, 20 or 30 squeezes) based on the number of squeezes required to elicit a taste response as noted during the screening test. A minimum of 10 squeezes is required.
 - After generating the aerosol, the test subject shall be instructed to perform the exercises in section I. A. 14. of this appendix.
 - Every 30 seconds the aerosol concentration shall be replenished using one half the original number of squeezes used initially (e.g., 5, 10 or 15).

- The test subject shall indicate to the test conductor if at any time during the fit test the taste of saccharin is detected. If the test subject does not report tasting the saccharin, the test is passed.
 - If the taste of saccharin is detected, the fit is deemed unsatisfactory and the test is failed. A different respirator shall be tried and the entire test procedure is repeated (taste threshold screening and fit testing).
 - Since the nebulizer has a tendency to clog during use, the test operator must make periodic checks of the nebulizer to ensure that it is not clogged. If clogging is found at the end of the test session, the test is invalid.
- Bitrex™ (Denatonium Benzoate) Solution Aerosol Qualitative Fit Test Protocol. The Bitrex™ (Denatonium benzoate) solution aerosol QLFT protocol uses the published saccharin test protocol because that protocol is widely accepted. Bitrex is routinely used as a taste aversion agent in household liquids which children should not be drinking and is endorsed by the American Medical Association, the National Safety Council, and the American Association of Poison Control Centers. The entire screening and testing procedure shall be explained to the test subject prior to the conduct of the screening test.
 - Taste Threshold Screening. The Bitrex taste threshold screening, performed without wearing a respirator, is intended to determine whether the individual being tested can detect the taste of Bitrex.
 - During threshold screening as well as during fit testing, subjects shall wear an enclosure about the head and shoulders that is approximately 12 inches (30.5 cm) in diameter by 14 inches (35.6 cm) tall. The front portion of the enclosure shall be clear from the respirator and allow free movement of the head when a respirator is worn. An enclosure substantially similar to the 3M hood assembly, parts #14 and #15 combined, is adequate.
 - The test enclosure shall have a 3/4 inch (1.9 cm) hole in front of the test subject's nose and mouth area to accommodate the nebulizer nozzle.
 - The test subject shall don the test enclosure. Throughout the threshold screening test, the test subject shall breathe through his or her slightly open mouth with tongue extended. The subject is instructed to report when he/she detects a bitter taste
 - Using a DeVilbiss Model 40 Inhalation Medication Nebulizer or equivalent, the test conductor shall spray the Threshold Check Solution into the enclosure. This Nebulizer shall be clearly marked to distinguish it from the fit test solution nebulizer.
 - The Threshold Check Solution is prepared by adding 13.5 milligrams of Bitrex to 100 ml of 5% salt (NaCl) solution in distilled water.
 - To produce the aerosol, the nebulizer bulb is firmly squeezed so that the bulb collapses completely, and is then released and allowed to fully expand.
 - An initial ten squeezes are repeated rapidly and then the test subject is asked whether the Bitrex can be tasted. If the test subject reports tasting the bitter taste during the ten squeezes, the screening test is completed. The taste threshold is noted as ten regardless of the number of squeezes actually completed.
 - If the first response is negative, ten more squeezes are repeated rapidly and the test subject is again asked whether the Bitrex is tasted. If the test subject reports tasting the bitter taste during the second ten squeezes, the screening test is completed. The taste threshold is noted as twenty regardless of the number of squeezes actually completed.
 - If the second response is negative, ten more squeezes are repeated rapidly and the test subject is again asked whether the Bitrex is tasted. If the test subject reports tasting the bitter taste during the third set of ten squeezes, the screening test is completed. The taste threshold is noted as thirty regardless of the number of squeezes actually completed.
 - The test conductor will take note of the number of squeezes required to solicit a taste response.
 - If the Bitrex is not tasted after 30 squeezes (step 10), the test subject is unable to taste Bitrex and may not perform the Bitrex fit test.
 - If a taste response is elicited, the test subject shall be asked to take note of the taste for reference in the fit test.
 - Correct use of the nebulizer means that approximately 1 ml of liquid is used at a time in the nebulizer body.
 - The nebulizer shall be thoroughly rinsed in water, shaken to dry and refilled at least each morning and afternoon or at least every four hours.
 - Bitrex Solution Aerosol Fit Test Procedure.
 - The test subject may not eat, drink (except plain water), smoke, or chew gum for 15 minutes before the test.
 - The fit test uses the same enclosure as that described in 4. (a) above.

- The test subject shall don the enclosure while wearing the respirator selected according to section I. A. of this appendix. The respirator shall be properly adjusted and equipped with any type particulate filter(s).
 - A second DeVilbiss Model 40 Inhalation Medication Nebulizer or equivalent is used to spray the fit test solution into the enclosure. This nebulizer shall be clearly marked to distinguish it from the screening test solution nebulizer.
 - The fit test solution is prepared by adding 337.5 mg of Bitrex to 200 ml of a 5% salt (NaCl) solution in warm water.
 - As before, the test subject shall breathe through his or her slightly open mouth with tongue extended, and be instructed to report if he/she tastes the bitter taste of Bitrex.
 - The nebulizer is inserted into the hole in the front of the enclosure and an initial concentration of the fit test solution is sprayed into the enclosure using the same number of squeezes (either 10, 20 or 30 squeezes) based on the number of squeezes required to elicit a taste response as noted during the screening test.
 - After generating the aerosol, the test subject shall be instructed to perform the exercises in section I. A. 14. of this appendix.
 - Every 30 seconds the aerosol concentration shall be replenished using one half the number of squeezes used initially (e.g., 5, 10 or 15).
 - The test subject shall indicate to the test conductor if at any time during the fit test the taste of Bitrex is detected. If the test subject does not report tasting the Bitrex, the test is passed.
 - If the taste of Bitrex is detected, the fit is deemed unsatisfactory and the test is failed. A different respirator shall be tried and the entire test procedure is repeated (taste threshold screening and fit testing).
- Irritant Smoke (Stannic Chloride) Protocol. This qualitative fit test uses a person's response to the irritating chemicals released in the "smoke" produced by a stannic chloride ventilation smoke tube to detect leakage into the respirator.
 - General Requirements and Precautions
 - The respirator to be tested shall be equipped with high efficiency particulate air (HEPA) or P100 series filter(s).
 - Only stannic chloride smoke tubes shall be used for this protocol.
 - No form of test enclosure or hood for the test subject shall be used.
 - The smoke can be irritating to the eyes, lungs, and nasal passages. The test conductor shall take precautions to minimize the test subject's exposure to irritant smoke. Sensitivity varies, and certain individuals may respond to a greater degree to irritant smoke. Care shall be taken when performing the sensitivity screening checks that determine whether the test subject can detect irritant smoke to use only the minimum amount of smoke necessary to elicit a response from the test subject.
 - The fit test shall be performed in an area with adequate ventilation to prevent exposure of the person conducting the fit test or the build-up of irritant smoke in the general atmosphere.
 - Sensitivity Screening Check. *The person to be tested must demonstrate his or her ability to detect a weak concentration of the irritant smoke.
 - The test operator shall break both ends of a ventilation smoke tube containing stannic chloride, and attach one end of the smoke tube to a low flow air pump set to deliver 200 milliliters per minute, or an aspirator squeeze bulb. The test operator shall cover the other end of the smoke tube with a short piece of tubing to prevent potential injury from the jagged end of the smoke tube.
 - The test operator shall advise the test subject that the smoke can be irritating to the eyes, lungs, and nasal passages and instruct the subject to keep his/her eyes closed while the test is performed.
 - The test subject shall be allowed to smell a weak concentration of the irritant smoke before the respirator is donned to become familiar with its irritating properties and to determine if he/she can detect the irritating properties of the smoke. The test operator shall carefully direct a small amount of the irritant smoke in the test subject's direction to determine that he/she can detect it.
 - Irritant Smoke Fit Test Procedure
 - The person being fit tested shall don the respirator without assistance, and perform the required user seal check(s).
 - The test subject shall be instructed to keep his/her eyes closed.
 - The test operator shall direct the stream of irritant smoke from the smoke tube toward the face seal area of the test subject, using the low flow pump or the squeeze bulb. The test operator shall begin at least 12 inches from the facepiece and move the smoke stream around the whole perimeter of the mask. The operator shall gradually make two more passes around the perimeter of the mask, moving to within six inches of the respirator.

- If the person being tested has not had an involuntary response and/or detected the irritant smoke, proceed with the test exercises.
- The exercises identified in section I.A. 14. of this appendix shall be performed by the test subject while the respirator seal is being continually challenged by the smoke, directed around the perimeter of the respirator at a distance of six inches.
- If the person being fit tested reports detecting the irritant smoke at any time, the test is failed. The person being retested must repeat the entire sensitivity check and fit test procedure.
- Each test subject passing the irritant smoke test without evidence of a response (involuntary cough, irritation) shall be given a second sensitivity screening check, with the smoke from the same smoke tube used during the fit test, once the respirator has been removed, to determine whether he/she still reacts to the smoke. Failure to evoke a response shall void the fit test.
- If a response is produced during this second sensitivity check, then the fit test is passed.

Quantitative Fit Test (QNFT) Protocols. The following quantitative fit testing procedures have been demonstrated to be acceptable: Quantitative fit testing using a non- hazardous test aerosol (such as corn oil, polyethylene glycol 400 [PEG 400], di-2-ethyl hexyl sebacate [DEHS], or sodium chloride) generated in a test chamber, and employing instrumentation to quantify the fit of the respirator; Quantitative fit testing using ambient aerosol as the test agent and appropriate instrumentation (condensation nuclei counter) to quantify the respirator fit; Quantitative fit testing using controlled negative pressure and appropriate instrumentation to measure the volumetric leak rate of a facepiece to quantify the respirator fit.

- General
 - The employer shall ensure that persons administering QNFT are able to calibrate equipment and perform tests properly, recognize invalid tests, calculate fit factors properly and ensure that test equipment is in proper working order.
 - The employer shall ensure that QNFT equipment is kept clean, and is maintained and calibrated according to the manufacturer's instructions so as to operate at the parameters for which it was designed.
 - Generated Aerosol Quantitative Fit Testing Protocol
 - Apparatus.
 - Instrumentation. Aerosol generation, dilution, and measurement systems using particulates (corn oil, polyethylene glycol 400 [PEG 400], di-2-ethyl hexyl sebacate [DEHS] or sodium chloride) as test aerosols shall be used for quantitative fit testing.
 - Test chamber. The test chamber shall be large enough to permit all test subjects to perform freely all required exercises without disturbing the test agent concentration or the measurement apparatus. The test chamber shall be equipped and constructed so that the test agent is effectively isolated from the ambient air, yet uniform in concentration throughout the chamber.
 - When testing air-purifying respirators, the normal filter or cartridge element shall be replaced with a high efficiency particulate air (HEPA) or P100 series filter supplied by the same manufacturer.
 - The sampling instrument shall be selected so that a computer record or strip chart record may be made of the test showing the rise and fall of the test agent concentration with each inspiration and expiration at fit factors of at least 2,000. Integrators or computers that integrate the amount of test agent penetration leakage into the respirator for each exercise may be used provided a record of the readings is made.
 - The combination of substitute air-purifying elements, test agent and test agent concentration shall be such that the test subject is not exposed in excess of an established exposure limit for the test agent at any time during the testing process, based upon the length of the exposure and the exposure limit duration.
 - The sampling port on the test specimen respirator shall be placed and constructed so that no leakage occurs around the port (e.g., where the respirator is probed), a free air flow is allowed into the sampling line at all times, and there is no interference with the fit or performance of the respirator. The in-mask sampling device (probe) shall be designed and used so that the air sample is drawn from the breathing zone of the test subject, midway between the nose and mouth and with the probe extending into the facepiece cavity at least 1/4 inch.
 - The test setup shall permit the person administering the test to observe the test subject inside the chamber during the test.
 - The equipment generating the test atmosphere shall maintain the concentration of test agent constant to within a 10 percent variation for the duration of the test.

- The time lag (interval between an event and the recording of the event on the strip chart or computer or integrator) shall be kept to a minimum. There shall be a clear association between the occurrence of an event and its being recorded.
- The sampling line tubing for the test chamber atmosphere and for the respirator sampling port shall be of equal diameter and of the same material. The length of the two lines shall be equal.
- The exhaust flow from the test chamber shall pass through an appropriate filter (i.e., high efficiency particulate or P100 series filter) before release.
- When sodium chloride aerosol is used, the relative humidity inside the test chamber shall not exceed 50 percent.
- The limitations of instrument detection shall be taken into account when determining the fit factor.
- Test respirators shall be maintained in proper working order and be inspected regularly for deficiencies such as cracks or missing valves and gaskets.
- Procedural Requirements.
 - When performing the initial user seal check using a positive or negative pressure check, the sampling line shall be crimped closed in order to avoid air pressure leakage during either of these pressure checks.
 - The use of an abbreviated screening QLFT test is optional. Such a test may be utilized in order to quickly identify poor fitting respirators that passed the positive and/or negative pressure test and reduce the amount of QNFT time. The use of the CNC QNFT instrument in the count mode is another optional method to obtain a quick estimate of fit and eliminate poor fitting respirators before going on to perform a full QNFT.
 - A reasonably stable test agent concentration shall be measured in the test chamber prior to testing. For canopy or shower curtain types of test units, the determination of the test agent's stability may be established after the test subject has entered the test environment.
 - Immediately after the subject enters the test chamber, the test agent concentration inside the respirator shall be measured to ensure that the peak penetration does not exceed 5 percent for a half mask or 1 percent for a full facepiece respirator.
 - A stable test agent concentration shall be obtained prior to the actual start of testing.
 - Respirator restraining straps shall not be over-tightened for testing. The straps shall be adjusted by the wearer without assistance from other persons to give a reasonably comfortable fit typical of normal use. The respirator shall not be adjusted once the fit test exercises begin.
 - The test shall be terminated whenever any single peak penetration exceeds 5 percent for half masks and 1 percent for full facepiece respirators. The test subject shall be refitted and retested.
 - Calculation of fit factors.
 - The fit factor shall be determined for the quantitative fit test by taking the ratio of the average chamber concentration to the concentration measured inside the respirator for each test exercise except the grimace exercise.
 - The average test chamber concentration shall be calculated as the arithmetic average of the concentration measured before and after each test (i.e., 7 exercises) or the arithmetic average of the concentration measured before and after each exercise or the true average measured continuously during the respirator sample.
 - The concentration of the challenge agent inside the respirator shall be determined by one of the following methods:
 - Average peak penetration method means the method of determining test agent penetration into the respirator utilizing a strip chart recorder, integrator, or computer. The agent penetration is determined by an average of the peak heights on the graph or by computer integration, for each exercise except the grimace exercise. Integrators or computers that calculate the actual test agent penetration into the respirator for each exercise will also be considered to meet the requirements of the average peak penetration method.
 - Maximum peak penetration method means the method of determining test agent penetration in the respirator as determined by strip chart recordings of the test. The highest peak penetration for a given exercise is taken to be representative of average penetration into the respirator for that exercise.
 - Integration by calculation of the area under the individual peak for each exercise except the grimace exercise. This includes computerized integration.

▪ Controlled negative pressure (CNP) quantitative fit testing protocol. The CNP protocol provides an alternative to aerosol fit test methods. The CNP fit test method technology is based on exhausting air from a temporarily sealed respirator facepiece to generate and then maintain a constant negative pressure inside the facepiece. The rate of air exhaust is controlled so that a constant negative pressure is maintained in the respirator during the fit test. The level of pressure is selected to replicate the mean inspiratory pressure that causes leakage into the respirator under normal use conditions. With pressure held constant, air flow out of the respirator is equal to air flow into the respirator. Therefore, measurement of the exhaust stream that is required to hold the pressure in the temporarily sealed respirator constant yields a direct measure of leakage air flow into the respirator. The CNP fit test method measures leak rates through the facepiece as a method for determining the facepiece fit for negative pressure respirators. The CNP instrument manufacturer Dynatech Nevada also provides attachments (sampling manifolds) that replace the filter cartridges to permit fit testing in an employee's own respirator. To perform the test, the test subject closes his or her mouth and holds his/her breath, after which an air pump removes air from the respirator facepiece at a pre-selected constant pressure. The facepiece fit is expressed as the leak rate through the facepiece, expressed as milliliters per minute. The quality and validity of the CNP fit tests are determined by the degree to which the in-mask pressure tracks the test pressure during the system measurement time of approximately five seconds. Instantaneous feedback in the form of a real-time pressure trace of the in-mask pressure is provided and used to determine test validity and quality. A minimum fit factor pass level of 100 is necessary for a half-mask respirator and a minimum fit factor of at least 500 is required for a full facepiece respirator. The entire screening and testing procedure shall be explained to the test subject prior to the conduct of the screening test.

- CNP Fit Test Requirements.

- The instrument shall have a non-adjustable test pressure of 15.0 mm water pressure.
- The CNP system defaults selected for test pressure shall be set at -1.5 mm of water (-0.58 inches of water) and the modeled inspiratory flow rate shall be 53.8 liters per minute for performing fit tests.

Note: CNP systems have built-in capability to conduct fit testing that is specific to unique work rate, mask, and gender situations that might apply in a specific workplace. Use of system default values, which were selected to represent respirator wear with medium cartridge resistance at a low-moderate work rate, will allow inter- test comparison of the respirator fit.)

- The individual who conducts the CNP fit testing shall be thoroughly trained to perform the test.
- The respirator filter or cartridge needs to be replaced with the CNP test manifold. The inhalation valve downstream from the manifold either needs to be temporarily removed or propped open.
- The test subject shall be trained to hold his or her breath for at least 20 seconds.
- The test subject shall don the test respirator without any assistance from the individual who conducts the CNP fit test.
- The QNFT protocol shall be followed according to section I. C. 1. of this appendix with an exception for the CNP test exercises.

- CNP Test Exercises.

- Normal breathing. In a normal standing position, without talking, the subject shall breathe normally for 1 minute. After the normal breathing exercise, the subject needs to hold head straight ahead and hold his or her breath for 10 seconds during the test measurement.
- Deep breathing. In a normal standing position, the subject shall breathe slowly and deeply for 1 minute, being careful not to hyperventilate. After the deep breathing exercise, the subject shall hold his or her head straight ahead and hold his or her breath for 10 seconds during test measurement.
- Turning head side to side. Standing in place, the subject shall slowly turn his or her head from side to side between the extreme positions on each side for 1 minute. The head shall be held at each extreme momentarily so the subject can inhale at each side. After the turning head side to side exercise, the subject needs to hold head full left and hold his or her breath for 10 seconds during test measurement. Next, the subject needs to hold head full right and hold his or her breath for 10 seconds during test measurement.

- Moving head up and down. Standing in place, the subject shall slowly move his or her head up and down for 1 minute. The subject shall be instructed to inhale in the up position (i.e., when looking toward the ceiling). After the moving head up and down exercise, the subject shall hold his or her head full up and hold his or her breath for 10 seconds during test measurement. Next, the subject shall hold his or her head full down and hold his or her breath for 10 seconds during test measurement. Talking. The subject shall talk out loud slowly and loud enough so as to be heard clearly by the test conductor. The subject can read from a prepared text such as the Rainbow Passage, count backward from 100, or recite a memorized poem or song for 1 minute. After the talking exercise, the subject shall hold his or her head straight ahead and hold his or her breath for 10 seconds during the test measurement.
- Grimace. The test subject shall grimace by smiling or frowning for 15 seconds.
- Bending Over. The test subject shall bend at the waist as if he or she were to touch his or her toes for 1 minute. Jogging in place shall be substituted for this exercise in those test environments such as shroud-type QNFT units that prohibit bending at the waist. After the bending over exercise, the subject shall hold his or her head straight ahead and hold his or her breath for 10 seconds during the test measurement.
- Normal Breathing. The test subject shall remove and re-don the respirator within a one-minute period. Then, in a normal standing position, without talking, the subject shall breathe normally for 1 minute. After the normal breathing exercise, the subject shall hold his or her head straight ahead and hold his or her breath for 10 seconds during the test measurement. After the test exercises, the test subject shall be questioned by the test conductor regarding the comfort of the respirator upon completion of the protocol. If it has become unacceptable, another model of a respirator shall be tried.
- CNP Test Instrument.
 - The test instrument shall have an effective audio warning device when the test subject fails to hold his or her breath during the test. The test shall be terminated whenever the test subject failed to hold his or her breath. The test subject may be refitted and retested.
 - A record of the test shall be kept on file, assuming the fit test was successful. The record must contain the test subject's name; overall fit factor; make, model, style and size of respirator used; and date tested.

PART II. NEW FIT TEST PROTOCOLS.

- Any person may submit to OSHA an application for approval of a new fit test protocol. If the application meets the following criteria, OSHA will initiate a rulemaking proceeding under section 6(b)(7) of the OSH Act to determine whether to list the new protocol as an approved protocol in this Appendix A.
- The application must include a detailed description of the proposed new fit test protocol. This application must be supported by either:
 - A test report prepared by an independent government research laboratory (e.g., Lawrence Livermore National Laboratory, Los Alamos National Laboratory, the National Institute for Standards and Technology) stating that the laboratory has tested the protocol and had found it to be accurate and reliable; or
 - An article that has been published in a peer-reviewed industrial hygiene journal describing the protocol and explaining how test data support the protocol's accuracy and reliability.
 - If OSHA determines that additional information is required before the Agency commences a rulemaking proceeding under this section, OSHA will so notify the applicant and afford the applicant the opportunity to submit the supplemental information. Initiation of a rulemaking proceeding will be deferred until OSHA has received and evaluated the supplemental information.

RESPIRATORY PROTECTION PROGRAM ASSESSMENT		
Area or Department Assessed:	Assessor:	Date:
Description of Requirement		Compliant?
General Process		
Are respirators or other respiratory protection methods required by the company? Note that the only exemption from the requirements is for voluntary use of dust-masks only. If employers require dust-masks (or any other form of respiratory protection), or if employees voluntarily wear respiratory protection other than dust-masks, this regulation applies.		<input type="checkbox"/> Yes <input type="checkbox"/> No
Is the work area where respiratory protection is required periodically (and frequently) evaluated to determine: <ul style="list-style-type: none"> • If respiratory protection is still required • The degree of employee exposure • The degree of stress to employees using respiratory protection 		<input type="checkbox"/> Yes <input type="checkbox"/> No
Has a trained respiratory protection coordinator been assigned for the company?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Is the workplace regularly evaluated for methods to reduce or eliminate the need for respiratory protection?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Are respirator users frequently consulted on the effectiveness of the respiratory protection program and to identify any problems?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Written Documentation		
Does a written respiratory protection program exist?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Does the program contain the following elements? <ul style="list-style-type: none"> • Procedures for selection • Medical evaluation documentation • Fit testing procedures • Proper use procedures • Procedures and schedules for cleaning, disinfecting, storing, inspecting, repairing, discarding and maintaining respirators • Procedures to ensure adequate air supply and flow • Employee training • Periodic evaluation to assure the program is needed? 		<input type="checkbox"/> Yes <input type="checkbox"/> No
Does documentation exist that shows hazards were evaluated and reduction efforts made prior to implementation of respiratory protection?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Are respirators selected based on the hazard, and is this information documented?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Do written procedures exist that specify the selection, use and care of respirators for each task or operation requiring their use?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Are fit-testing procedures in place, and is fit testing performed at least annually?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Do procedures that outline the proper use of respirators include both routine and non-routine uses?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Do schedules (and written procedures) exist for respirator routine cleaning, maintenance and disposal?		<input type="checkbox"/> Yes <input type="checkbox"/> No

Description of Requirement	Compliant?
<p>Is a written recommendation provided to the company by the medical professional who evaluates each respirator user? Such recommendations will provide ONLY:</p> <ul style="list-style-type: none"> • the limitations, if any, for respirator usage, • the need, if any, for follow up evaluations, and • a written statement that the employee has received a copy of the evaluation results 	<input type="checkbox"/> YES <input type="checkbox"/> NO
<p>Is a PAPR form on file for any negative pressure respirator users where the medical professional determines there may be an increased health risk?</p>	<input type="checkbox"/> YES <input type="checkbox"/> NO
<p>Are medical evaluation records available to users in accordance with the OSHA medical exposure recordkeeping standard (29CFR1910.1020)?</p>	<input type="checkbox"/> YES <input type="checkbox"/> NO
<p>Is fit testing documented for all respirator types and does the documentation include:</p> <ul style="list-style-type: none"> • Name or identification of employee • Type of test performed • Specific make, model, style and size tested • Test Date • Pass/fail results for qualitative tests or the fit factor/strip chart (or other recordings) of quantitative tests. 	<input type="checkbox"/> YES <input type="checkbox"/> NO
Medical Evaluation	
<p>Have employees who use respirators been medically evaluated by a licensed professional to assure they are physically able to wear respirators? (Note: wearing some types of respiratory protection can put additional stressors on the heart and lungs.)</p>	<input type="checkbox"/> YES <input type="checkbox"/> NO
<p>Does the medical evaluation include the use of the medical questionnaire (29CFR1910.134 Appendix C Part A Sections 1 and2), or a physical exam that provides equivalent information?</p>	<input type="checkbox"/> YES <input type="checkbox"/> NO
<p>Is the medical evaluation process kept confidential?</p>	<input type="checkbox"/> YES <input type="checkbox"/> NO
<p>Are employees provided the opportunity to discuss the evaluation results with the medical professional?</p>	<input type="checkbox"/> YES <input type="checkbox"/> NO
<p>Is information on respirator type and weight, usage and duration, environmental conditions and physical work effort for the task(s) provided to the medical professional by the company prior to the evaluation?</p>	<input type="checkbox"/> YES <input type="checkbox"/> NO
<p>Is a written copy of the respiratory protection plan provided to the medical professional prior to evaluation?</p>	<input type="checkbox"/> YES <input type="checkbox"/> NO
<p>Is a written recommendation provided to the company by the medical professional for each respirator user? Such recommendations will provide ONLY:</p> <ul style="list-style-type: none"> • the limitations, if any, for respirator usage, • the need, if any, for follow up evaluations, and • a written statement that the employee has received a copy of the evaluation results 	<input type="checkbox"/> YES <input type="checkbox"/> NO
<p>Is a PAPR form on file for any negative pressure respirator users where the medical professional determines there may be an increased health risk?</p> <ul style="list-style-type: none"> • Are follow up or subsequent medical evaluations performed when: • employees report signs or symptoms that affect their ability to use a respirator • there is a need for reevaluation based on fit-testing or program implementation findings • there are significant changes to the tasks that may affect the type or usage of the respirator? 	<input type="checkbox"/> YES <input type="checkbox"/> NO

Description of Requirement	Compliant?
Employee Training	
Have employees been trained in the use of respirators prior to their being required to use one? Training includes: <ul style="list-style-type: none"> • Fit testing • Workplace Hazards (why use is required) • Effective use and limitations • Donning/Doffing • Care and maintenance (including storage) • Inspection • Disposal • Emergency uses (including failure-mode) • Recognition of signs or symptoms that may indicate respirator malfunction or failure 	<input type="checkbox"/> YES <input type="checkbox"/> NO
Is training (or re-training) performed at least annually (within 12 months of initial training), or more often as needed for either task changes or when employees demonstrate a need for retraining?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Is training documented, and does the documentation include the trainer name and identification, the content of the training, the trainee name and identification and the trainee signature?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Can employees demonstrate the items included in the training to assure they are knowledgeable and competent in the procedures?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are employees informed of the hazards they may encounter with or without respiratory protection, and the level of protection that respirators provide?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Has a trained respiratory protection coordinator been assigned for the company?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are fit-testing procedures in place, and is fit testing performed at least annually?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are employees trained to perform a seal-check each time they don a tight-fitting face-piece respirator?	<input type="checkbox"/> YES <input type="checkbox"/> NO
When respirators are used voluntarily by employees (and not required by employers), is the "Basic Advisory Information" in 29CFR1910.134 Appendix B provided to these employees during training?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Respiratory Selection	
Are respirators selected based on the encountered hazard(s), and is this information documented?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Is all respiratory equipment NIOSH certified?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Is a variety of respiratory protection equipment available (models and sizes) for employees to select from?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Where IDLH (immanently dangerous to life and health) atmospheres exist, are only SCBA (self contained breathing apparatus) or SARs (supplied air respirators) used?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Where protection against gases or vapors requires respirators, are atmosphere supplying respirators used? <ul style="list-style-type: none"> • Note: Air purifying respirators can be used if they have an end of service life indicator or cartridge change-out is performed prior to end of service life. 	<input type="checkbox"/> YES <input type="checkbox"/> NO
Where particulate protection is required, are either atmosphere supplying respirators or air purifying respirators provided with appropriately rated HEPA filters?	<input type="checkbox"/> YES <input type="checkbox"/> NO

Description of Requirement	Compliant?
Are employees with facial hair or any condition that may affect the fit and effectiveness of the respirator prohibited from using tight-fitting face-piece respirators?	<input type="checkbox"/> YES <input type="checkbox"/> NO
If applicable, is it assured that employees who wear corrective lenses or other eyewear (including PPE) can wear a tight-fitting face-piece respirator effectively and are still able to utilize the required eyewear?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are all cartridges, canisters or filters used appropriately color coded and labeled with the NIOSH approved labeling system? Note: these labels must be attached and maintained in legible condition at all times	<input type="checkbox"/> YES <input type="checkbox"/> NO
Fit Testing (for tight-fitting face-piece (positive or negative pressure) respirators)	
Is fit testing performed prior to initial use and at least annually thereafter?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Is fit testing provided for each type (size, make, and model) of respirator the user will wear?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Is fit testing performed whenever physical changes to the user occurs which could affect the performance level of the respirator (i.e. facial scarring, major dental work, cosmetic surgery, significant weight changes)?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Is fit testing for negative pressure respirators performed using qualitative methods (using a testing agent and the employee senses) in accordance with the OSHA protocol found in Appendix A of CFR1910.134? Note: must achieve a fit factor of 100 or less.	<input type="checkbox"/> YES <input type="checkbox"/> NO
Is fit testing for all other types of respiratory protection performed using quantitative methods (numerical measurement by test equipment that detects leakage) in accordance with OSHA protocol (see Appendix A of CFR1910.134)? Note: full face-piece types must achieve 500 or more and half piece types must achieve 100 or more.	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are employees who find that their selected respirator(s) does not fit properly provided with an opportunity to select a different type (make, model or size)?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are all supplied-air respirators (SARs) tested either qualitatively or quantitatively in negative pressure mode, regardless of pressure mode during use?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Is fit testing documented for all respirator types and does the documentation include: <ul style="list-style-type: none"> • Name or identification of employee • Type of test performed • Specific make, model, style and size tested • Test Date • Pass/fail results for qualitative tests or the fit factor/strip chart (or other recordings) of quantitative tests. 	<input type="checkbox"/> YES <input type="checkbox"/> NO
Effective Respirator Use	
A procedure implemented that outline the proper use of respirators for the workplace?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are actions taken, as needed, to ensure the effective use of respirators during each work shift?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Is appropriate surveillance maintained to assure that employees are not overly-stressed by respirator usage?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are employees afforded adequate opportunities to wash their faces and clean the respirators so as not to cause skin irritation by any prolonged use?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Where employees detect leakage or breakthrough, or at required intervals, are employees provided adequate opportunity and supplies to change respirator filters, cartridges or canisters?	<input type="checkbox"/> YES <input type="checkbox"/> NO

Description of Requirement	Compliant?
Where leakage or breakthrough is detected, are employees immediately provided with a different respirator? Note: Leaking respirators must be repaired prior to re-use, or discarded.	<input type="checkbox"/> YES <input type="checkbox"/> NO
IDLH Atmospheres	
Is at least one employee stationed outside the IDLH area at all times while an entrant is inside (i.e. a watcher)?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Is a visual, voice or signal line of communications maintained between entrant and watcher?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Is the watcher trained to summon emergency rescue services (or provide such rescue or emergency services after notifying the employer of their entry)?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are watchers equipped with pressure demand or other positive pressure SCBA (or SAR with secondary SCBA) protection?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are watchers equipped with the appropriate retrieval equipment to provide rescue, or to provide to the rescuer?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Where applicable, are only SCBA provided teams of at least two persons who are in constant communication, and who have at least two watchers assigned, allowed to fight fires in an IDLH atmosphere? (Note: this does not preclude emergency rescue efforts in cases of fire)	<input type="checkbox"/> YES <input type="checkbox"/> NO
Maintenance and Care of Respirators	
Do employers provide for the cleaning, disinfecting, storage, inspection and repair of all respirators?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are supplies provided to users for appropriate cleaning and disinfecting?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are respirators provided to employees in a clean and sanitary condition?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Is the procedure outlined in 29CFR1910.134 Appendix B (or an equivalent process) used to clean respirators?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are respirators cleaned and disinfected: <ul style="list-style-type: none"> • Prior to each employee use • After each employee use • As often as necessary to maintain them in a clean and sanitary condition? 	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are respirators stored in such a manner as to prevent damage, contamination, dust, sunlight exposure, extreme temperatures, excessive moisture and chemical damage?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are emergency respirators accessible at all times and stored in compartments or covers that are clearly marked as emergency respirators?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are all respirators inspected: <ul style="list-style-type: none"> • Before each use • During cleaning • At least monthly (emergency respirators and SCBA)? 	<input type="checkbox"/> YES <input type="checkbox"/> NO
Do inspections include a check of the function, connection tightness, and condition of parts (including facepiece, straps, valves, tubes, pliability of elastomeric parts, signs of deterioration, and the cartridges, canisters or filters)?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are any air or oxygen cylinders maintained fully charged, and recharged after pressure falls to <90%.	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are any regulators and warning devices calibrated and kept functional?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Do emergency respirators have inspections that include the date, name of inspector, findings, any remedial actions required, and the identifying serial number (or equivalent) of the equipment?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are defective respirators immediately removed from service until repaired or replaced?	<input type="checkbox"/> YES <input type="checkbox"/> NO

Description of Requirement	Compliant?
Are repairs made only by trained persons who utilize the NIOSH approved parts and procedures?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are repairs or adjustments made to reducing and admission valves, regulators and alarms performed only by a manufacturer's certified person?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Breathing Air Quality (SCBA and SARs only)	
Does any liquid or compressed oxygen meet the requirements for medical or breathing oxygen?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Does any compressed breathing air meet the CGA 7.1 requirements which include: <ul style="list-style-type: none"> • O2 content at 19.5-23.5% (O2 distribution systems can be >23.5%) • Hydrocarbon content of 5 mg/m3 or less • CO content of 10ppm or less • CO2 content of 1000ppm or less and • No noticeable odor? 	<input type="checkbox"/> YES <input type="checkbox"/> NO
Is a process in place to assure that compressed oxygen is NOT used in any equipment that previously use compressed air?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are cylinders tested and maintained in accordance with DOT regulations (49CFRPart 173 and 178)?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are any purchased breathing air cylinders accompanied by a signed certification from the supplier that the cylinder contents meet the CGA 7.1 requirements?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Is a process in place to assure that the cylinder contents do not exceed moisture/dew-point requirements of -50°F (-45.6°C) at 1 atmosphere pressure?	<input type="checkbox"/> YES <input type="checkbox"/> NO
For compressor supplied systems: Is contaminated air prevented from entering the air supply system?	<input type="checkbox"/> YES <input type="checkbox"/> NO
For compressor supplied systems: Is moisture content minimized (should be 10°F or 5.56°C below the ambient temperature at 1 atmosphere)?	<input type="checkbox"/> YES <input type="checkbox"/> NO
For compressor supplied systems: Are sorbent beds and filters maintained, replaced or refurbished in accordance with manufacturer's instructions to ensure breathing air quality?	<input type="checkbox"/> YES <input type="checkbox"/> NO
For compressor supplied systems: Are tags attached to compressors that indicate any change dates (for sorbent or filters) and the signature of the person who performed the change?	<input type="checkbox"/> YES <input type="checkbox"/> NO
For compressor supplied systems that are not oil-lubricated: Is a process in place to assure CO levels do not exceed 10ppm?	<input type="checkbox"/> YES <input type="checkbox"/> NO
For compressor supplied systems that are oil-lubricated: Is a high-temp or CO alarm used to assure CO levels in breathing air do not exceed 10ppm?	<input type="checkbox"/> YES <input type="checkbox"/> NO
For compressor or building supplied air systems: Are connection couplings incompatible with other gas supply lines to assure that employees are not subjected to non-respirable gases or other gas systems?	<input type="checkbox"/> YES <input type="checkbox"/> NO
For breathing gas container systems: Are containers marked in accordance with the NIOSH respirator certification standard (42CFR Part 84)?	<input type="checkbox"/> YES <input type="checkbox"/> NO

**RESPIRATORY PROTECTION TEXT OF THE REGULATORY STANDARD AND
APPENDICES
(29 CFR 1910.134)**

RESPIRATORY PROTECTION – 1910.134

Regulations (Standards - 29 CFR) - Table of Contents

• Part Number:	1910
• Part Title	Occupational Safety and Health Standards
• Subpart	I
• Subpart Title	Personal Protective Equipment
• Standard Number	<u>1910.134</u>
• Title	Respiratory Protection
• Appendix	A, B-1, B-2, C, D

This section applies to General Industry (part 1910), Shipyards (part 1915), Marine Terminals (part 1917), Long Shoring (part 1918), and Construction (part 1926).

1910.134(a) Permissible practice.

1910.134(a)(1) In the control of those occupational diseases caused by breathing air contaminated with harmful dusts, fogs, fumes, mists, gases, smokes, sprays, or vapors, the primary objective shall be to prevent atmospheric contamination. This shall be accomplished as far as feasible by accepted engineering control measures (for example, enclosure or confinement of the operation, general and local ventilation, and substitution of less toxic materials). When effective engineering controls are not feasible, or while they are being instituted, appropriate respirators shall be used pursuant to this section.

1910.134(a)(2) Respirators shall be provided by the employer when such equipment is necessary to protect the health of the employee. The employer shall provide the respirators which are applicable and suitable for the purpose intended. The employer shall be responsible for the establishment and maintenance of a respiratory protection program which shall include the requirements outlined in paragraph (c) of this section.

1910.134(b) Definitions. The following definitions are important terms used in the respiratory protection standard in this section.

- ***Air-purifying respirator*** means a respirator with an air-purifying filter, cartridge, or canister that removes specific air contaminants by passing ambient air through the air-purifying element.
- ***Assigned protection factor (APF)*** [Reserved]
- ***Atmosphere-supplying respirator*** means a respirator that supplies the respirator user with breathing air from a source independent of the ambient atmosphere, and includes supplied-air respirators (SARs) and self-contained breathing apparatus (SCBA) units.
- ***Canister or cartridge*** means a container with a filter, sorbent, or catalyst, or combination of these items, which removes specific contaminants from the air passed through the container.
- ***Demand respirator*** means an atmosphere-supplying respirator that admits breathing air to the facepiece only when a negative pressure is created inside the facepiece by inhalation.
- ***Emergency situation*** means any occurrence such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment that may or does result in an uncontrolled significant release of an airborne contaminant.
- ***Employee exposure*** means exposure to a concentration of an airborne contaminant that would occur if the employee were not using respiratory protection.
- ***End-of-service-life indicator (ESLI)*** means a system that warns the respirator user of the approach of the end of adequate respiratory protection, for example, that the sorbent is approaching saturation or is no longer effective.
- ***Escape-only respirator*** means a respirator intended to be used only for emergency exit.
- ***Filter or air purifying element*** means a component used in respirators to remove solid or liquid aerosols from the inspired air.
- ***Filtering facepiece (dust mask)*** means a negative pressure particulate respirator with a filter as an integral part of the facepiece or with the entire facepiece composed of the filtering medium.
- ***Fit factor*** means a quantitative estimate of the fit of a particular respirator to a specific individual, and typically estimates the ratio of the concentration of a substance in ambient air to its concentration inside the respirator when worn.
- ***Fit test*** means the use of a protocol to qualitatively or quantitatively evaluate the fit of a respirator on an individual. (See also Qualitative fit test QLFT and Quantitative fit test QNFT.)
- ***Helmet*** means a rigid respiratory inlet covering that also provides head protection against impact and penetration.
- ***High efficiency particulate air (HEPA) filter*** means a filter that is at least 99.97% efficient in removing monodisperse particles of 0.3 micrometers in diameter. The equivalent NIOSH 42 CFR 84 particulate filters are the N100, R100, and P100 filters.
- ***Hood*** means a respiratory inlet covering that completely covers the head and neck and may also cover portions of the shoulders and torso.
- ***Immediately dangerous to life or health (IDLH)*** means an atmosphere that poses an immediate threat to life, would

cause irreversible adverse health effects, or would impair an individual's ability to escape from a dangerous atmosphere.

- **Interior structural firefighting** means the physical activity of fire suppression, rescue or both, inside of buildings or enclosed structures which are involved in a fire situation beyond the incipient stage. (See 29 CFR 1910.155)
 - **Loose-fitting facepiece** means a respiratory inlet covering that is designed to form a partial seal with the face.
 - **Maximum use concentration (MUC)** [Reserved].
 - **Negative pressure respirator (tight fitting)** means a respirator in which the air pressure inside the facepiece is negative during inhalation with respect to the ambient air pressure outside the respirator.
 - **Oxygen deficient atmosphere** means an atmosphere with oxygen content below 19.5% by volume.
 - **Physician or other licensed health care professional (PLHCP)** means an individual whose legally permitted scope of practice (i.e., license, registration, or certification) allows him or her to independently provide, or be delegated the responsibility to provide, some or all of the health care services required by paragraph (e) of this section.
 - **Positive pressure respirator** means a respirator in which the pressure inside the respiratory inlet covering exceeds the ambient air pressure outside the respirator.
 - **Powered air-purifying respirator (PAPR)** means an air-purifying respirator that uses a blower to force the ambient air through air-purifying elements to the inlet covering.
 - **Pressure demand respirator** means a positive pressure atmosphere-supplying respirator that admits breathing air to the facepiece when the positive pressure is reduced inside the facepiece by inhalation.
 - **Qualitative fit test (QLFT)** means a pass/fail fit test to assess the adequacy of respirator fit that relies on the individual's response to the test agent.
 - **Quantitative fit test (QNFT)** means an assessment of the adequacy of respirator fit by numerically measuring the amount of leakage into the respirator.
 - **Respiratory inlet covering** means that portion of a respirator that forms the protective barrier between the user's respiratory tract and an air-purifying device or breathing air source, or both. It may be a facepiece, helmet, hood, suit, or a mouthpiece respirator with nose clamp.
 - **Self-contained breathing apparatus (SCBA)** means an atmosphere-supplying respirator for which the breathing air source is designed to be carried by the user.
 - **Service life** means the period of time that a respirator, filter or sorbent or other respiratory equipment provides adequate protection to the wearer.
 - **Supplied-air respirator (SAR) or airline respirator** means an atmosphere-supplying respirator for which the source of breathing air is not designed to be carried by the user.
 - **This section** means this respiratory protection standard.
 - **Tight-fitting facepiece** means a respiratory inlet covering that forms a complete seal with the face.
 - **User seal check** means an action conducted by the respirator user to determine if the respirator is properly seated to the face.
- 1910.134(c) Respiratory protection program.** This paragraph requires the employer to develop and implement a written respiratory protection program with required worksite-specific procedures and elements for required respirator use. The program must be administered by a suitably trained program administrator. In addition, certain program elements may be required for voluntary use to prevent potential hazards associated with the use of the respirator. The Small Entity Compliance Guide contains criteria for the selection of a program administrator and a sample program that meets the requirements of this paragraph. Copies of the Small Entity Compliance Guide will be available on or about April 8, 1998 from the Occupational Safety and Health Administration's Office of Publications, Room N 3101, 200 Constitution Avenue, NW, Washington, DC, 20210 (202-219-4667).
- 1910.134(c)(1)** In any workplace where respirators are necessary to protect the health of the employee or whenever respirators are required by the employer, the employer shall establish and implement a written respiratory protection program with worksite-specific procedures. The program shall be updated as necessary to reflect those changes in workplace conditions that affect respirator use. The employer shall include in the program the following provisions of this section, as applicable:
- 1910.134(c)(1)(i)** Procedures for selecting respirators for use in the workplace;
 - 1910.134(c)(1)(ii)** Medical evaluations of employees required to use respirators;
 - 1910.134(c)(1)(iii)** Fit testing procedures for tight-fitting respirators;
 - 1910.134(c)(1)(iv)** Procedures for proper use of respirators in routine and reasonably foreseeable emergency situations;
 - 1910.134(c)(1)(v)** Procedures and schedules for cleaning, disinfecting, storing, inspecting, repairing, discarding, and otherwise maintaining respirators;
 - 1910.134(c)(1)(vi)** Procedures to ensure adequate air quality, quantity, and flow of breathing air for atmosphere-supplying respirators;
 - 1910.134(c)(1)(vii)** Training of employees in the respiratory hazards to which they are potentially exposed during routine and emergency situations;
 - 1910.134(c)(1)(viii)** Training of employees in the proper use of respirators, including putting on and removing them, any limitations on their use, and their maintenance; and
 - 1910.134(c)(1)(ix)** Procedures for regularly evaluating the effectiveness of the program.
- 1910.134(c)(2)** Where respirator use is not required:
- 1910.134(c)(2)(i)** An employer may provide respirators at the request of employees or permit employees to use their own respirators, if the employer determines that such respirator use will not in itself create a hazard. If the employer determines that any voluntary respirator use is permissible, the employer shall provide the respirator users with the information contained in Appendix D to this section ("Information for Employees Using Respirators When Not Required Under the Standard"); and

1910.134(c)(2)(ii) In addition, the employer must establish and implement those elements of a written respiratory protection program necessary to ensure that any employee using a respirator voluntarily is medically able to use that respirator, and that the respirator is cleaned, stored, and maintained so that its use does not present a health hazard to the user. Exception: Employers are not required to include in a written respiratory protection program those employees whose only use of respirators involves the voluntary use of filtering facepieces (dust masks).

1910.134(c)(3) The employer shall designate a program administrator who is qualified by appropriate training or experience that is commensurate with the complexity of the program to administer or oversee the respiratory protection program and conduct the required evaluations of program effectiveness.

1910.134(c)(4) The employer shall provide respirators, training, and medical evaluations at no cost to the employee.

1910.134(d) Selection of respirators. This paragraph requires the employer to evaluate respiratory hazard(s) in the workplace, identify relevant workplace and user factors, and base respirator selection on these factors. The paragraph also specifies appropriately protective respirators for use in IDLH atmospheres, and limits the selection and use of air-purifying respirators.

1910.134(d)(1) General requirements.

1910.134(d)(1)(i) The employer shall select and provide an appropriate respirator based on the respiratory hazard(s) to which the worker is exposed and workplace and user factors that affect respirator performance and reliability.

1910.134(d)(1)(ii) The employer shall select a NIOSH-certified respirator. The respirator shall be used in compliance with the conditions of its certification.

1910.134(d)(1)(iii) The employer shall identify and evaluate the respiratory hazard(s) in the workplace; this evaluation shall include a reasonable estimate of employee exposures to respiratory hazard(s) and an identification of the contaminant's chemical state and physical form. Where the employer cannot identify or reasonably estimate the employee exposure, the employer shall consider the atmosphere to be IDLH.

1910.134(d)(1)(iv) The employer shall select respirators from a sufficient number of respirator models and sizes so that the respirator is acceptable to, and correctly fits, the user.

1910.134(d)(2) Respirators for IDLH atmospheres.

1910.134(d)(2)(i) The employer shall provide the following respirators for employee use in IDLH atmospheres:

1910.134(d)(2)(i)(A) A full facepiece pressure demand SCBA certified by NIOSH for a minimum service life of thirty minutes, or
1910.134(d)(2)(i)(B) A combination full facepiece pressure demand supplied-air respirator (SAR) with auxiliary self-contained air supply.

1910.134(d)(2)(ii) Respirators provided only for escape from IDLH atmospheres shall be NIOSH-certified for escape from the atmosphere in which they will be used.

1910.134(d)(2)(iii) All oxygen-deficient atmospheres shall be considered IDLH. Exception: If the employer demonstrates that, under all foreseeable conditions, the oxygen concentration can be maintained within the ranges specified in Table II of this section (i.e., for the altitudes set out in the table), then any atmosphere-supplying respirator may be used.

1910.134(d)(3) Respirators for atmospheres that are not IDLH.

1910.134(d)(3)(i) The employer shall provide a respirator that is adequate to protect the health of the employee and ensure compliance with all other OSHA statutory and regulatory requirements, under routine and reasonably foreseeable emergency situations.

1910.134(d)(3)(i)(A) Assigned Protection Factors (APFs) [Reserved]

1910.134(d)(3)(i)(B) Maximum Use Concentration (MUC) [Reserved]

1910.134(d)(3)(ii) The respirator selected shall be appropriate for the chemical state and physical form of the contaminant.

1910.134(d)(3)(iii) For protection against gases and vapors, the employer shall provide:

1910.134(d)(3)(iii)(A) An atmosphere-supplying respirator, or

1910.134(d)(3)(iii)(B) An air-purifying respirator, provided that:

1910.134(d)(3)(iii)(B)(1) The respirator is equipped with an end-of-service-life indicator (ESLI) certified by NIOSH for the contaminant; or

1910.134(d)(3)(iii)(B)(2) If there is no ESLI appropriate for conditions in the employer's workplace, the employer implements a change schedule for canisters and cartridges that is based on objective information or data that will ensure that canisters and cartridges are changed before the end of their service life. The employer shall describe in the respirator program the information and data relied upon and the basis for the canister and cartridge change schedule and the basis for reliance on the data.

1910.134(d)(3)(iv) For protection against particulates, the employer shall provide:

1910.134(d)(3)(iv)(A) An atmosphere-supplying respirator; or

1910.134(d)(3)(iv)(B) An air-purifying respirator equipped with a filter certified by NIOSH under 30 CFR part 11 as a high efficiency particulate air (HEPA) filter, or an air-purifying respirator equipped with a filter certified for particulates by NIOSH under 42 CFR part 84; or

1910.134(d)(3)(iv)(C) For contaminants consisting primarily of particles with mass median aerodynamic diameters (MMAD) of at least 2 micrometers, an air-purifying respirator equipped with any filter certified for particulates by NIOSH.

TABLE I.
ASSIGNED PROTECTION FACTORS
[RESERVED]

TABLE II	
Altitude (ft.)	Oxygen deficient Atmospheres (% O ₂) for which the employer atmosphere-may rely on supplying respirators:
Less than 3,001	16.0-19.5
3,001-4,000	16.4-19.5
4,001-5,000	17.1-19.5
5,001-6,000	17.8-19.5
6,001-7,000	18.5-19.5
7,001-8,000 ¹	19.3-19.5.

¹Above 8,000 feet the exception does not apply. Oxygen-enriched breathing air must be supplied above 14,000 feet.

1910.134(e) Medical evaluation. Using a respirator may place a physiological burden on employees that varies with the type of respirator worn, the job and workplace conditions in which the respirator is used, and the medical status of the employee. Accordingly, this paragraph specifies the minimum requirements for medical evaluation that employers must implement to determine the employee's ability to use a respirator.

1910.134(e)(1) General. The employer shall provide a medical evaluation to determine the employee's ability to use a respirator, before the employee is fit tested or required to use the respirator in the workplace. The employer may discontinue an employee's medical evaluations when the employee is no longer required to use a respirator.

1910.134(e)(2) Medical evaluation procedures.

1910.134(e)(2)(i) The employer shall identify a physician or other licensed health care professional (PLHCP) to perform medical evaluations using a medical questionnaire or an initial medical examination that obtains the same information as the medical questionnaire.

1910.134(e)(2)(ii) The medical evaluation shall obtain the information requested by the questionnaire in Sections 1 and 2, Part A of Appendix C of this section.

1910.134(e)(3) Follow-up medical examination.

1910.134(e)(3)(i) The employer shall ensure that a follow-up medical examination is provided for an employee who gives a positive response to any question among questions 1 through 8 in Section 2, Part A of Appendix C or whose initial medical examination demonstrates the need for a follow-up medical examination.

1910.134(e)(3)(ii) The follow-up medical examination shall include any medical tests, consultations, or diagnostic procedures that the PLHCP deems necessary to make a final determination.

1910.134(e)(4) Administration of the medical questionnaire and examinations.

1910.134(e)(4)(i) The medical questionnaire and examinations shall be administered confidentially during the employee's normal working hours or at a time and place convenient to the employee. The medical questionnaire shall be administered in a manner that ensures that the employee understands its content.

1910.134(e)(4)(ii) The employer shall provide the employee with an opportunity to discuss the questionnaire and examination results with the PLHCP.

1910.134(e)(5) Supplemental information for the PLHCP.

1910.134(e)(5)(i) The following information must be provided to the PLHCP before the PLHCP makes a recommendation concerning an employee's ability to use a respirator:

1910.134(e)(5)(i)(A) (A) The type and weight of the respirator to be used by the employee;

1910.134(e)(5)(i)(B) The duration and frequency of respirator use (including use for rescue and escape);

1910.134(e)(5)(i)(C) The expected physical work effort;

1910.134(e)(5)(i)(D) Additional protective clothing and equipment to be worn; and

1910.134(e)(5)(i)(E) Temperature and humidity extremes that may be encountered.

1910.134(e)(5)(ii) Any supplemental information provided previously to the PLHCP regarding an employee need not be provided for a subsequent medical evaluation if the information and the PLHCP remain the same.

1910.134(e)(5)(iii) The employer shall provide the PLHCP with a copy of the written respiratory protection program and a copy of this section.

- **Note to Paragraph (e)(5)(iii):** When the employer replaces a PLHCP, the employer must ensure that the new PLHCP obtains this information, either by providing the documents directly to the PLHCP or having the documents transferred from the former PLHCP to the new PLHCP. However, OSHA does not expect employers to have employees medically reevaluated solely because a new PLHCP has been selected.

1910.134(e)(6) Medical determination. In determining the employee's ability to use a respirator, the employer shall:

1910.134(e)(6)(i) Obtain a written recommendation regarding the employee's ability to use the respirator from the PLHCP. The recommendation shall provide only the following information:

1910.134(e)(6)(i)(A) Any limitations on respirator use related to the medical condition of the employee, or relating to the workplace conditions in which the respirator will be used, including whether or not the employee is medically able to use the respirator;

1910.134(e)(6)(i)(B) The need, if any, for follow-up medical evaluations; and

1910.134(e)(6)(i)(C) A statement that the PLHCP has provided the employee with a copy of the PLHCP's written recommendation.

1910.134(e)(6)(ii) If the respirator is a negative pressure respirator and the PLHCP finds a medical condition that may place the

employee's health at increased risk if the respirator is used, the employer shall provide a PAPR if the PLHCP's medical evaluation finds that the employee can use such a respirator; if a subsequent medical evaluation finds that the employee is medically able to use a negative pressure respirator, then the employer is no longer required to provide a PAPR.

1910.134(e)(7) Additional medical evaluations. At a minimum, the employer shall provide additional medical evaluations that comply with the requirements of this section if:

1910.134(e)(7)(i) An employee reports medical signs or symptoms that are related to ability to use a respirator;

1910.134(e)(7)(ii) A PLHCP, supervisor, or the respirator program administrator informs the employer that an employee needs to be reevaluated;

1910.134(e)(7)(iii) Information from the respiratory protection program, including observations made during fit testing and program evaluation, indicates a need for employee reevaluation; or

1910.134(e)(7)(iv) A change occurs in workplace conditions (e.g., physical work effort, protective clothing, temperature) that may result in a substantial increase in the physiological burden placed on an employee.

1910.134(f) Fit testing. This paragraph requires that, before an employee may be required to use any respirator with a negative or positive pressure tight-fitting facepiece, the employee must be fit tested with the same make, model, style, and size of respirator that will be used. This paragraph specifies the kinds of fit tests allowed, the procedures for conducting them, and how the results of the fit tests must be used.

1910.134(f)(1) The employer shall ensure that employees using a tight-fitting facepiece respirator pass an appropriate qualitative fit test (QLFT) or quantitative fit test (QNFT) as stated in this paragraph.

1910.134(f)(2) The employer shall ensure that an employee using a tight-fitting facepiece respirator is fit tested prior to initial use of the respirator, whenever a different respirator facepiece (size, style, model or make) is used, and at least annually thereafter.

1910.134(f)(3) The employer shall conduct an additional fit test whenever the employee reports, or the employer, PLHCP, supervisor, or program administrator makes visual observations of, changes in the employee's physical condition that could affect respirator fit. Such conditions include, but are not limited to, facial scarring, dental changes, cosmetic surgery, or an obvious change in body weight.

1910.134(f)(4) If after passing a QLFT or QNFT, the employee subsequently notifies the employer, program administrator, supervisor, or PLHCP that the fit of the respirator is unacceptable, the employee shall be given a reasonable opportunity to select a different respirator facepiece and to be retested.

1910.134(f)(5) The fit test shall be administered using an OSHA-accepted QLFT or QNFT protocol. The OSHA-accepted QLFT and QNFT protocols and procedures are contained in Appendix A of this section.

1910.134(f)(6) QLFT may only be used to fit test negative pressure air-purifying respirators that must achieve a fit factor of 100 or less.

1910.134(f)(7) If the fit factor, as determined through an OSHA-accepted QNFT protocol, is equal to or greater than 100 for tight-fitting half facepieces, or equal to or greater than 500 for tight-fitting full facepieces, the QNFT has been passed with that respirator.

1910.134(f)(8) Fit testing of tight-fitting atmosphere-supplying respirators and tight-fitting powered air-purifying respirators shall be accomplished by performing quantitative or qualitative fit testing in the negative pressure mode, regardless of the mode of operation (negative or positive pressure) that is used for respiratory protection.

1910.134(f)(8)(i) Qualitative fit testing of these respirators shall be accomplished by temporarily converting the respirator user's actual facepiece into a negative pressure respirator with appropriate filters, or by using an identical negative pressure air-purifying respirator facepiece with the same sealing surfaces as a surrogate for the atmosphere-supplying or powered air-purifying respirator facepiece.

1910.134(f)(8)(ii) Quantitative fit testing of these respirators shall be accomplished by modifying the facepiece to allow sampling inside the facepiece in the breathing zone of the user, midway between the nose and mouth. This requirement shall be accomplished by installing a permanent sampling probe onto a surrogate facepiece, or by using a sampling adapter designed to temporarily provide a means of sampling air from inside the facepiece.

1910.134(f)(8)(iii) Any modifications to the respirator facepiece for fit testing shall be completely removed, and the facepiece restored to NIOSH-approved configuration, before that facepiece can be used in the workplace.

1910.134(g) Use of respirators. This paragraph requires employers to establish and implement procedures for the proper use of respirators. These requirements include prohibiting conditions that may result in facepiece seal leakage, preventing employees from removing respirators in hazardous environments, taking actions to ensure continued effective respirator operation throughout the work shift, and establishing procedures for the use of respirators in IDLH atmospheres or in interior structural firefighting situations.

1910.134(g)(1) Facepiece seal protection.

1910.134(g)(1)(i) The employer shall not permit respirators with tight-fitting facepieces to be worn by employees who have:

1910.134(g)(1)(i)(A) Facial hair that comes between the sealing surface of the facepiece and the face or that interferes with valve function; or

1910.134(g)(1)(i)(B) Any condition that interferes with the face-to-facepiece seal or valve function.

1910.134(g)(1)(ii) If an employee wears corrective glasses or goggles or other personal protective equipment, the employer shall ensure that such equipment is worn in a manner that does not interfere with the seal of the facepiece to the face of the user.

1910.134(g)(1)(iii) For all tight-fitting respirators, the employer shall ensure that employees perform a user seal check each time they put on the respirator using the procedures in Appendix B-1 or procedures recommended by the respirator manufacturer that the employer demonstrates are as effective as those in Appendix B-1 of this section.

1910.134(g)(2) Continuing respirator effectiveness.

1910.134(g)(2)(i) Appropriate surveillance shall be maintained of work area conditions and degree of employee exposure or stress. When there is a change in work area conditions or degree of employee exposure or stress that may affect respirator effectiveness, the employer shall reevaluate the continued effectiveness of the respirator.

1910.134(g)(2)(ii) The employer shall ensure that employees leave the respirator use area:

1910.134(g)(2)(ii)(A) To wash their faces and respirator facepieces as necessary to prevent eye or skin irritation associated with respirator use; or

1910.134(g)(2)(ii)(B) If they detect vapor or gas breakthrough, changes in breathing resistance, or leakage of the facepiece; or

1910.134(g)(2)(ii)(C) To replace the respirator or the filter, cartridge, or canister elements.

1910.134(g)(2)(iii) If the employee detects vapor or gas breakthrough, changes in breathing resistance, or leakage of the facepiece, the employer must replace or repair the respirator before allowing the employee to return to the work area.

1910.134(g)(3) Procedures for IDLH atmospheres. For all IDLH atmospheres, the employer shall ensure that:

1910.134(g)(3)(i) One employee or, when needed, more than one employee is located outside the IDLH atmosphere;

1910.134(g)(3)(ii) Visual, voice, or signal line communication is maintained between the employee(s) in the IDLH atmosphere and the employee(s) located outside the IDLH atmosphere;

1910.134(g)(3)(iii) The employee(s) located outside the IDLH atmosphere are trained and equipped to provide effective emergency rescue;

1910.134(g)(3)(iv) The employer or designee is notified before the employee(s) located outside the IDLH atmosphere enter the IDLH atmosphere to provide emergency rescue;

1910.134(g)(3)(v) The employer or designee authorized to do so by the employer, once notified, provides necessary assistance appropriate to the situation;

1910.134(g)(3)(vi) Employee(s) located outside the IDLH atmospheres are equipped with:

1910.134(g)(3)(vi)(A) Pressure demand or other positive pressure SCBAs, or a pressure demand or other positive pressure supplied-air respirator with auxiliary SCBA; and either

1910.134(g)(3)(vi)(B) Appropriate retrieval equipment for removing the employee(s) who enter(s) these hazardous atmospheres where retrieval equipment would contribute to the rescue of the employee(s) and would not increase the overall risk resulting from entry; or

1910.134(g)(3)(vi)(C) Equivalent means for rescue where retrieval equipment is not required under paragraph (g)(3)(vi)(B).

1910.134(g)(4) Procedures for interior structural firefighting. In addition to the requirements set forth under paragraph (g)(3), in interior structural fires, the employer shall ensure that:

1910.134(g)(4)(i) At least two employees enter the IDLH atmosphere and remain in visual or voice contact with one another at all times;

1910.134(g)(4)(ii) At least two employees are located outside the IDLH atmosphere; and

- **1910.134(g)(4)(iii)** All employees engaged in interior structural firefighting use SCBAs.

Note 1 to paragraph (g): One of the two individuals located outside the IDLH atmosphere may be assigned to an additional role, such as incident commander in charge of the emergency or safety officer, so long as this individual is able to perform assistance or rescue activities without jeopardizing the safety or health of any firefighter working at the incident.

- **Note 2 to paragraph (g):** Nothing in this section is meant to preclude firefighters from performing emergency rescue activities before an entire team has assembled.

1910.134(h) Maintenance and care of respirators. This paragraph requires the employer to provide for the cleaning and disinfecting, storage, inspection, and repair of respirators used by employees.

1910.134(h)(1) Cleaning and disinfecting. The employer shall provide each respirator user with a respirator that is clean, sanitary, and in good working order. The employer shall ensure that respirators are cleaned and disinfected using the procedures in Appendix B-2 of this section, or procedures recommended by the respirator manufacturer, provided that such procedures are of equivalent effectiveness. The respirators shall be cleaned and disinfected at the following intervals:

1910.134(h)(1)(i) Respirators issued for the exclusive use of an employee shall be cleaned and disinfected as often as necessary to be maintained in a sanitary condition;

1910.134(h)(1)(ii) Respirators issued to more than one employee shall be cleaned and disinfected before being worn by different individuals;

1910.134(h)(1)(iii) Respirators maintained for emergency use shall be cleaned and disinfected after each use; and

1910.134(h)(1)(iv) Respirators used in fit testing and training shall be cleaned and disinfected after each use.

1910.134(h)(2) Storage. The employer shall ensure that respirators are stored as follows:

1910.134(h)(2)(i) All respirators shall be stored to protect them from damage, contamination, dust, sunlight, extreme temperatures, excessive moisture, and damaging chemicals, and they shall be packed or stored to prevent deformation of the facepiece and exhalation valve.

1910.134(h)(2)(ii) In addition to the requirements of paragraph (h)(2)(i) of this section, emergency respirators shall be:

1910.134(h)(2)(ii)(A) Kept accessible to the work area;

1910.134(h)(2)(ii)(B) Stored in compartments or in covers that are clearly marked as containing emergency respirators; and

1910.134(h)(2)(ii)(C) Stored in accordance with any applicable manufacturer instructions.

1910.134(h)(3) Inspection.

1910.134(h)(3)(i) The employer shall ensure that respirators are inspected as follows:

1910.134(h)(3)(i)(A) All respirators used in routine situations shall be inspected before each use and during cleaning;

1910.134(h)(3)(i)(B) All respirators maintained for use in emergency situations shall be inspected at least monthly and in accordance with the manufacturer's recommendations, and shall be checked for proper function before and after each use; and

1910.134(h)(3)(i)(C) Emergency escape-only respirators shall be inspected before being carried into the workplace for use.

1910.134(h)(3)(ii) The employer shall ensure that respirator inspections include the following:

1910.134(h)(3)(ii)(A) A check of respirator function, tightness of connections, and the condition of the various parts including, but not limited to, the facepiece, head straps, valves, connecting tube, and cartridges, canisters or filters; and

1910.134(h)(3)(ii)(B) A check of elastomeric parts for pliability and signs of deterioration.

1910.134(h)(3)(iii) In addition to the requirements of paragraphs (h)(3)(i) and (ii) of this section, self-contained breathing apparatus shall be inspected monthly. Air and oxygen cylinders shall be maintained in a fully charged state and shall be recharged when the pressure falls to 90% of the manufacturer's recommended pressure level. The employer shall determine that the regulator and warning devices function properly.

1910.134(h)(3)(iv) For respirators maintained for emergency use, the employer shall:

1910.134(h)(3)(iv)(A) Certify the respirator by documenting the date the inspection was performed, the name (or signature) of the person who made the inspection, the findings, required remedial action, and a serial number or other means of identifying the inspected respirator; and

1910.134(h)(3)(iv)(B) Provide this information on a tag or label that is attached to the storage compartment for the respirator, is kept with the respirator, or is included in inspection reports stored as paper or electronic files. This information shall be maintained until replaced following a subsequent certification.

1910.134(h)(4) Repairs. The employer shall ensure that respirators that fail an inspection or are otherwise found to be defective are removed from service, and are discarded or repaired or adjusted in accordance with the following procedures:

1910.134(h)(4)(i) Repairs or adjustments to respirators are to be made only by persons appropriately trained to perform such operations and shall use only the respirator manufacturer's NIOSH-approved parts designed for the respirator;

1910.134(h)(4)(ii) Repairs shall be made according to the manufacturer's recommendations and specifications for the type and extent of repairs to be performed; and

1910.134(h)(4)(iii) Reducing and admission valves, regulators, and alarms shall be adjusted or repaired only by the manufacturer or a technician trained by the manufacturer.

1910.134(i) Breathing air quality and use. This paragraph requires the employer to provide employees using atmosphere-supplying respirators (supplied-air and SCBA) with breathing gases of high purity.

1910.134(i)(1) The employer shall ensure that compressed air, compressed oxygen, liquid air, and liquid oxygen used for respiration accords with the following specifications:

1910.134(i)(1)(i) Compressed and liquid oxygen shall meet the United States Pharmacopoeia requirements for medical or breathing oxygen; and

1910.134(i)(1)(ii) Compressed breathing air shall meet at least the requirements for Grade D breathing air described in ANSI/Compressed Gas Association Commodity Specification for Air, G-7.1-1989, to include:

1910.134(i)(1)(ii)(A) Oxygen content (v/v) of 19.5-23.5%;

1910.134(i)(1)(ii)(B) Hydrocarbon (condensed) content of 5 milligrams per cubic meter of air or less;

1910.134(i)(1)(ii)(C) Carbon monoxide (CO) content of 10 ppm or less;

1910.134(i)(1)(ii)(D) Carbon dioxide content of 1,000 ppm or less; and

1910.134(i)(1)(ii)(E) Lack of noticeable odor.

1910.134(i)(2) The employer shall ensure that compressed oxygen is not used in atmosphere-supplying respirators that have previously used compressed air.

1910.134(i)(3) The employer shall ensure that oxygen concentrations greater than 23.5% are used only in equipment designed for oxygen service or distribution.

1910.134(i)(4) The employer shall ensure that cylinders used to supply breathing air to respirators meet the following requirements:

1910.134(i)(4)(i) Cylinders are tested and maintained as prescribed in the Shipping Container Specification Regulations of the Department of Transportation (49 CFR part 173 and part 178);

1910.134(i)(4)(ii) Cylinders of purchased breathing air have a certificate of analysis from the supplier that the breathing air meets the requirements for Grade D breathing air; and

1910.134(i)(4)(iii) The moisture content in the cylinder does not exceed a dew point of -50 deg.F (-45.6 deg.C) at 1 atmosphere pressure.

1910.134(i)(5) The employer shall ensure that compressors used to supply breathing air to respirators are constructed and situated so as to:

1910.134(i)(5)(i) Prevent entry of contaminated air into the air-supply system;

1910.134(i)(5)(ii) Minimize moisture content so that the dew point at 1 atmosphere pressure is 10 degrees F (5.56 deg.C) below the ambient temperature;

1910.134(i)(5)(iii) Have suitable in-line air-purifying sorbent beds and filters to further ensure breathing air quality. Sorbent beds and filters shall be maintained and replaced or refurbished periodically following the manufacturer's instructions.

1910.134(i)(5)(iv) Have a tag containing the most recent change date and the signature of the person authorized by the employer to perform the change. The tag shall be maintained at the compressor.

1910.134(i)(6) For compressors that are not oil-lubricated, the employer shall ensure that carbon monoxide levels in the breathing air do not exceed 10 ppm.

1910.134(i)(7) For oil-lubricated compressors, the employer shall use a high-temperature or carbon monoxide alarm, or both, to monitor carbon monoxide levels. If only high-temperature alarms are used, the air supply shall be monitored at intervals sufficient to prevent carbon monoxide in the breathing air from exceeding 10 ppm.

1910.134(i)(8) The employer shall ensure that breathing air couplings are incompatible with outlets for nonrespirable worksite air or other gas systems. No asphyxiating substance shall be introduced into breathing air lines.

1910.134(i)(9) The employer shall use breathing gas containers marked in accordance with the NIOSH respirator certification standard, 42 CFR part 84.

1910.134(i) Identification of filters, cartridges, and canisters. The employer shall ensure that all filters, cartridges and

canisters used in the workplace are labeled and color coded with the NIOSH approval label and that the label is not removed and remains legible.

1910.134(k) Training and Information. This paragraph requires the employer to provide effective training to employees who are required to use respirators. The training must be comprehensive, understandable, and recur annually, and more often if necessary. This paragraph also requires the employer to provide the basic information on respirators in Appendix D of this section to employees who wear respirators when not required by this section or by the employer to do so.

1910.134(k)(1) The employer shall ensure that each employee can demonstrate knowledge of at least the following:

1910.134(k)(1)(i) Why the respirator is necessary and how improper fit, usage, or maintenance can compromise the protective effect of the respirator;

1910.134(k)(1)(ii) What the limitations and capabilities of the respirator are;

1910.134(k)(1)(iii) How to use the respirator effectively in emergency situations, including situations in which the respirator malfunctions;

1910.134(k)(1)(iv) How to inspect, put on and remove, use, and check the seals of the respirator;

1910.134(k)(1)(v) What the procedures are for maintenance and storage of the respirator;

1910.134(k)(1)(vi) How to recognize medical signs and symptoms that may limit or prevent the effective use of respirators; and

1910.134(k)(1)(vii) The general requirements of this section.

1910.134(k)(2) The training shall be conducted in a manner that is understandable to the employee.

1910.134(k)(3) The employer shall provide the training prior to requiring the employee to use a respirator in the workplace.

1910.134(k)(4) An employer who is able to demonstrate that a new employee has received training within the last 12 months that addresses the elements specified in paragraph (k)(1)(i) through (vii) is not required to repeat such training provided that, as required by paragraph (k)(1), the employee can demonstrate knowledge of those element(s). Previous training not repeated initially by the employer must be provided no later than 12 months from the date of the previous training.

1910.134(k)(5) Retraining shall be administered annually, and when the following situations occur:

1910.134(k)(5)(i) Changes in the workplace or the type of respirator render previous training obsolete;

1910.134(k)(5)(ii) Inadequacies in the employee's knowledge or use of the respirator indicate that the employee has not retained the requisite understanding or skill; or

1910.134(k)(5)(iii) Any other situation arises in which retraining appears necessary to ensure safe respirator use.

1910.134(k)(6) The basic advisory information on respirators, as presented in Appendix D of this section, shall be provided by the employer in any written or oral format, to employees who wear respirators when such use is not required by this section or by the employer.

1910.134(l) Program evaluation. This section requires the employer to conduct evaluations of the workplace to ensure that the written respiratory protection program is being properly implemented, and to consult employees to ensure that they are using the respirators properly.

1910.134(l)(1) The employer shall conduct evaluations of the workplace as necessary to ensure that the provisions of the current written program are being effectively implemented and that it continues to be effective.

1910.134(l)(2) The employer shall regularly consult employees required to use respirators to assess the employees' views on program effectiveness and to identify any problems. Any problems that are identified during this assessment shall be corrected. Factors to be assessed include, but are not limited to:

1910.134(l)(2)(i) Respirator fit (including the ability to use the respirator without interfering with effective workplace performance);

1910.134(l)(2)(ii) Appropriate respirator selection for the hazards to which the employee is exposed;

1910.134(l)(2)(iii) Proper respirator use under the workplace conditions the employee encounters; and

1910.134(l)(2)(iv) Proper respirator maintenance.

1910.134(m) Recordkeeping. This section requires the employer to establish and retain written information regarding medical evaluations, fit testing, and the respirator program. This information will facilitate employee involvement in the respirator program, assist the employer in auditing the adequacy of the program, and provide a record for compliance determinations by OSHA.

1910.134(m)(1) Medical evaluation. Records of medical evaluations required by this section must be retained and made available in accordance with 29 CFR 1910.1020.

1910.134(m)(2) Fit testing.

1910.134(m)(2)(i) The employer shall establish a record of the qualitative and quantitative fit tests administered to an employee including:

1910.134(m)(2)(i)(A) The name or identification of the employee tested;

1910.134(m)(2)(i)(B) Type of fit test performed;

1910.134(m)(2)(i)(C) Specific make, model, style, and size of respirator tested;

1910.134(m)(2)(i)(D) Date of test; and

1910.134(m)(2)(i)(E) The pass/fail results for QLFTs or the fit factor and strip chart recording or other recording of the test results for QNFTs.

1910.134(m)(2)(ii) Fit test records shall be retained for respirator users until the next fit test is administered.

1910.134(m)(3) A written copy of the current respirator program shall be retained by the employer.

1910.134(m)(4) Written materials required to be retained under this paragraph shall be made available upon request to affected employees and to the Assistant Secretary or designee for examination and copying.

1910.134(n) Dates.

1910.134(n)(1) Effective date. This section is effective April 8, 1998. The obligations imposed by this section commence on the effective date unless otherwise noted in this paragraph. Compliance with obligations that do not commence on the effective date shall occur no later than the applicable start-up date.

1910.134(n)(2) Compliance dates. All obligations of this section commence on the effective date except as follows:

1910.134(n)(2)(i) The determination that respirator use is required (paragraph (a)) shall be completed no later than September 8, 1998.

1910.134(n)(2)(ii) Compliance with provisions of this section for all other provisions shall be completed no later than October 5, 1998.

1910.134(n)(3) The provisions of 29 CFR 1910.134 and 29 CFR 1926.103, contained in the 29 CFR parts 1900 to 1910.99 and the 29 CFR part 1926 editions, revised as of July 1, 1997, are in effect and enforceable until October 5, 1998, or during any administrative or judicial stay of the provisions of this section.

1910.134(n)(4) Existing Respiratory Protection Programs. If, in the 12 month period preceding April 8, 1998, the employer has conducted annual respirator training, fit testing, respirator program evaluation, or medical evaluations, the employer may use the results of those activities to comply with the corresponding provisions of this section, providing that these activities were conducted in a manner that meets the requirements of this section.

1910.134(o) Appendices.

1910.134(o)(1) Compliance with Appendix A, Appendix B-1, Appendix B-2, and Appendix C of this section is mandatory.

1910.134(o)(2) Appendix D of this section is non-mandatory and is not intended to create any additional obligations not otherwise imposed or to detract from any existing obligations.

[63 FR 1152, Jan. 8, 1998; 63 FR 20098, April 23, 1998]

RESPIRATORY PROTECTION REGULATORY STANDARD AND APPENDICES (29 CFR 1910.134)

Fit Testing Procedures (Mandatory). - 1910.134 App A

Regulations (Standards - 29 CFR) - Table of Contents

- Part Number: 1910
- Part Title: Occupational Safety and Health Standards
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- Subpart Title: Personal Protective Equipment
- Standard Number: 1910.134 App
- Title: Fit Testing Procedures (Mandatory)

Appendix A to § 1910.134: Fit Testing Procedures (Mandatory)

Part 1. OSHA-Accepted Fit Test Protocols

A. Fit Testing Procedures -- General Requirements. The employer shall conduct fit testing using the following procedures. The requirements in this appendix apply to all OSHA-accepted fit test methods, both QLFT and QNFT.

1. The test subject shall be allowed to pick the most acceptable respirator from a sufficient number of respirator models and sizes so that the respirator is acceptable to, and correctly fits, the user.
2. Prior to the selection process, the test subject shall be shown how to put on a respirator, how it should be positioned on the face, how to set strap tension and how to determine an acceptable fit. A mirror shall be available to assist the subject in evaluating the fit and positioning of the respirator. This instruction may not constitute the subject's formal training on respirator use, because it is only a review.
3. The test subject shall be informed that he/she is being asked to select the respirator that provides the most acceptable fit. Each respirator represents a different size and shape, and if fitted and used properly, will provide adequate protection.
4. The test subject shall be instructed to hold each chosen facepiece up to the face and eliminate those that obviously do not give an acceptable fit.
5. The more acceptable facepieces are noted in case the one selected proves unacceptable; the most comfortable mask is donned and worn at least five minutes to assess comfort. Assistance in assessing comfort can be given by discussing the points in the following item A.6. If the test subject is not familiar with using a particular respirator, the test subject shall be directed to don the mask several times and to adjust the straps each time to become adept at setting proper tension on the straps.
6. Assessment of comfort shall include a review of the following points with the test subject and allowing the test subject adequate time to determine the comfort of the respirator:
 - (a) Position of the mask on the nose
 - (b) Room for eye protection
 - (c) Room to talk
 - (d) Position of mask on face and cheeks
7. The following criteria shall be used to help determine the adequacy of the respirator fit:
 - (a) Chin properly placed;
 - (b) Adequate strap tension, not overly tightened;
 - (c) Fit across nose bridge;
 - (d) Respirator of proper size to span distance from nose to chin;
 - (e) Tendency of respirator to slip;
 - (f) Self-observation in mirror to evaluate fit and respirator position.
8. The test subject shall conduct a user seal check, either the negative and positive pressure seal checks described in Appendix B-1 of this section or those recommended by the respirator manufacturer which provide equivalent protection to the procedures in Appendix B-1. Before conducting the negative and positive pressure checks, the subject shall be told to seat the mask on the face

by moving the head from side-to-side and up and down slowly while taking in a few slow deep breaths. Another facepiece shall be selected and retested if the test subject fails the user seal check tests.

9. The test shall not be conducted if there is any hair growth between the skin and the facepiece sealing surface, such as stubble beard growth, beard, mustache or sideburns which cross the respirator sealing surface. Any type of apparel which interferes with a satisfactory fit shall be altered or removed.

10. If a test subject exhibits difficulty in breathing during the tests, she or he shall be referred to a physician or other licensed health care professional, as appropriate, to determine whether the test subject can wear a respirator while performing her or his duties.

11. If the employee finds the fit of the respirator unacceptable, the test subject shall be given the opportunity to select a different respirator and to be retested.

12. Exercise regimen. Prior to the commencement of the fit test, the test subject shall be given a description of the fit test and the test subject's responsibilities during the test procedure. The description of the process shall include a description of the test exercises that the subject will be performing. The respirator to be tested shall be worn for at least 5 minutes before the start of the fit test.

13. The fit test shall be performed while the test subject is wearing any applicable safety equipment that may be worn during actual respirator use which could interfere with respirator fit.

14. Test Exercises.

(a) Employers must perform the following test exercises for all fit testing methods prescribed in this appendix, except for the CNP quantitative fit testing protocol and the CNP REDON quantitative fit testing protocol. For these two protocols, employers must ensure that the test subjects (*i.e.*, employees) perform the exercise procedure specified in Part I.C.4(b) of this appendix for the CNP quantitative fit testing protocol, or the exercise procedure described in Part I.C.5(b) of this appendix for the CNP REDON quantitative fit-testing protocol. For the remaining fit testing methods, employers must ensure that employees perform the test exercises in the appropriate test environment in the following manner:

(1) Normal breathing. In a normal standing position, without talking, the subject shall breathe normally.

(2) Deep breathing. In a normal standing position, the subject shall breathe slowly and deeply, taking caution so as not to hyperventilate.

(3) Turning head side to side. Standing in place, the subject shall slowly turn his/her head from side to side between the extreme positions on each side. The head shall be held at each extreme momentarily so the subject can inhale at each side.

(4) Moving head up and down. Standing in place, the subject shall slowly move his/her head up and down. The subject shall be instructed to inhale in the up position (*i.e.*, when looking toward the ceiling).

(5) Talking. The subject shall talk out loud slowly and loud enough so as to be heard clearly by the test conductor. The subject can read from a prepared text such as the Rainbow Passage, count backward from 100, or recite a memorized poem or song.

Rainbow Passage *When the sunlight strikes raindrops in the air, they act like a prism and form a rainbow. The rainbow is a division of white light into many beautiful colors. These take the shape of a long round arch, with its path high above, and its two ends apparently beyond the horizon. There is, according to legend, a boiling pot of gold at one end. People look, but no one ever finds it. When a man looks for something beyond reach, his friends say he is looking for the pot of gold at the end of the rainbow.*

(6) Grimace. The test subject shall grimace by smiling or frowning. (This applies only to QNFT testing; it is not performed for QLFT)

(7) Bending over. The test subject shall bend at the waist as if he/she were to touch his/her toes. Jogging in place shall be substituted for this exercise in those test environments such as shroud type QNFT or QLFT units that do not permit bending over at the waist.

(8) Normal breathing. Same as exercise (1).

(b) Each test exercise shall be performed for one minute except for the grimace exercise which shall be performed for 15 seconds. The test subject shall be questioned by the test conductor regarding the comfort of the respirator upon completion of the protocol. If it has become unacceptable, another model of respirator shall be tried. The respirator shall not be adjusted once the fit test exercises begin. Any adjustment voids the test, and the fit test must be repeated.

B. Qualitative Fit Test (QLFT) Protocols

1. General

(a) The employer shall ensure that persons administering QLFT are able to prepare test solutions, calibrate equipment and perform tests properly, recognize invalid tests, and ensure that test equipment is in proper working order.

(b) The employer shall ensure that QLFT equipment is kept clean and well maintained so as to operate within the parameters for which it was designed.

2. Isoamyl Acetate Protocol

Note: This protocol is not appropriate to use for the fit testing of particulate respirators. If used to fit test particulate respirators, the respirator must be equipped with an organic vapor filter.

(a) Odor Threshold Screening

Odor threshold screening, performed without wearing a respirator, is intended to determine if the individual tested can detect the odor of isoamyl acetate at low levels.

(1) Three 1 liter glass jars with metal lids are required.

(2) Odor-free water (*e.g.*, distilled or spring water) at approximately 25 deg. C (77 deg. F) shall be used for the solutions.

(3) The isoamyl acetate (IAA) (also known as isopentyl acetate) stock solution is prepared by adding 1 ml of pure IAA to 800 ml of odor-free water in a 1 liter jar, closing the lid and shaking for 30 seconds. A new solution shall be prepared at least weekly.

(4) The screening test shall be conducted in a room separate from the room used for actual fit testing. The two rooms shall be

well-ventilated to prevent the odor of IAA from becoming evident in the general room air where testing takes place.

(5) The odor test solution is prepared in a second jar by placing 0.4 ml of the stock solution into 500 ml of odor-free water using a clean dropper or pipette. The solution shall be shaken for 30 seconds and allowed to stand for two to three minutes so that the IAA concentration above the liquid may reach equilibrium. This solution shall be used for only one day.

(6) A test blank shall be prepared in a third jar by adding 500 cc of odor-free water.

(7) The odor test and test blank jar lids shall be labeled (e.g., 1 and 2) for jar identification. Labels shall be placed on the lids so that they can be peeled off periodically and switched to maintain the integrity of the test.

(8) The following instruction shall be typed on a card and placed on the table in front of the two test jars (i.e., 1 and 2): "The purpose of this test is to determine if you can smell banana oil at a low concentration. The two bottles in front of you contain water. One of these bottles also contains a small amount of banana oil. Be sure the covers are on tight, then shake each bottle for two seconds. Unscrew the lid of each bottle, one at a time, and sniff at the mouth of the bottle. Indicate to the test conductor which bottle contains banana oil."

(9) The mixtures used in the IAA odor detection test shall be prepared in an area separate from where the test is performed, in order to prevent olfactory fatigue in the subject.

(10) If the test subject is unable to correctly identify the jar containing the odor test solution, the IAA qualitative fit test shall not be performed.

(11) If the test subject correctly identifies the jar containing the odor test solution, the test subject may proceed to respirator selection and fit testing.

(b) Isoamyl Acetate Fit Test

(1) The fit test chamber shall be a clear 55-gallon drum liner suspended inverted over a 2-foot diameter frame so that the top of the chamber is about 6 inches above the test subject's head. If no drum liner is available, a similar chamber shall be constructed using plastic sheeting. The inside top center of the chamber shall have a small hook attached.

(2) Each respirator used for the fitting and fit testing shall be equipped with organic vapor cartridges or offer protection against organic vapors.

(3) After selecting, donning, and properly adjusting a respirator, the test subject shall wear it to the fit testing room. This room shall be separate from the room used for odor threshold screening and respirator selection, and shall be well-ventilated, as by an exhaust fan or lab hood, to prevent general room contamination.

(4) A copy of the test exercises and any prepared text from which the subject is to read shall be taped to the inside of the test chamber.

(5) Upon entering the test chamber, the test subject shall be given a 6-inch by 5-inch piece of paper towel, or other porous, absorbent, single-ply material, folded in half and wetted with 0.75 ml of pure IAA. The test subject shall hang the wet towel on the hook at the top of the chamber. An IAA test swab or ampule may be substituted for the IAA wetted paper towel provided it has been demonstrated that the alternative IAA source will generate an IAA test atmosphere with a concentration equivalent to that generated by the paper towel method.

(6) Allow two minutes for the IAA test concentration to stabilize before starting the fit test exercises. This would be an appropriate time to talk with the test subject; to explain the fit test, the importance of his/her cooperation, and the purpose for the test exercises; or to demonstrate some of the exercises.

(7) If at any time during the test, the subject detects the banana-like odor of IAA, the test is failed. The subject shall quickly exit from the test chamber and leave the test area to avoid olfactory fatigue.

(8) If the test is failed, the subject shall return to the selection room and remove the respirator. The test subject shall repeat the odor sensitivity test, select and put on another respirator, return to the test area and again begin the fit test procedure described in (b) (1) through (7) above. The process continues until a respirator that fits well has been found. Should the odor sensitivity test be failed, the subject shall wait at least 5 minutes before retesting. Odor sensitivity will usually have returned by this time.

(9) If the subject passes the test, the efficiency of the test procedure shall be demonstrated by having the subject break the respirator face seal and take a breath before exiting the chamber.

(10) When the test subject leaves the chamber, the subject shall remove the saturated towel and return it to the person conducting the test, so that there is no significant IAA concentration buildup in the chamber during subsequent tests. The used towels shall be kept in a self-sealing plastic bag to keep the test area from being contaminated.

3. Saccharin Solution Aerosol Protocol

The entire screening and testing procedure shall be explained to the test subject prior to the conduct of the screening test.

(a) Taste threshold screening. The saccharin taste threshold screening, performed without wearing a respirator, is intended to determine whether the individual being tested can detect the taste of saccharin.

(1) During threshold screening as well as during fit testing, subjects shall wear an enclosure about the head and shoulders that is approximately 12 inches in diameter by 14 inches tall with at least the front portion clear and that allows free movements of the head when a respirator is worn. An enclosure substantially similar to the 3M hood assembly, parts # FT 14 and # FT 15 combined, is adequate.

(2) The test enclosure shall have a 3/4-inch (1.9 cm) hole in front of the test subject's nose and mouth area to accommodate the nebulizer nozzle.

(3) The test subject shall don the test enclosure. Throughout the threshold screening test, the test subject shall breathe through his/her slightly open mouth with tongue extended. The subject is instructed to report when he/she detects a sweet taste.

(4) Using a DeVilbiss Model 40 Inhalation Medication Nebulizer or equivalent, the test conductor shall spray the threshold check solution into the enclosure. The nozzle is directed away from the nose and mouth of the person. This nebulizer shall be clearly marked to distinguish it from the fit test solution nebulizer.

(5) The threshold check solution is prepared by dissolving 0.83 gram of sodium saccharin USP in 100 ml of warm water. It can be prepared by putting 1 ml of the fit test solution (see (b)(5) below) in 100 ml of distilled water.

(6) To produce the aerosol, the nebulizer bulb is firmly squeezed so that it collapses completely, then released and allowed to fully

expand.

(7) Ten squeezes are repeated rapidly and then the test subject is asked whether the saccharin can be tasted. If the test subject reports tasting the sweet taste during the ten squeezes, the screening test is completed. The taste threshold is noted as ten regardless of the number of squeezes actually completed.

(8) If the first response is negative, ten more squeezes are repeated rapidly and the test subject is again asked whether the saccharin is tasted. If the test subject reports tasting the sweet taste during the second ten squeezes, the screening test is completed. The taste threshold is noted as twenty regardless of the number of squeezes actually completed.

(9) If the second response is negative, ten more squeezes are repeated rapidly and the test subject is again asked whether the saccharin is tasted. If the test subject reports tasting the sweet taste during the third set of ten squeezes, the screening test is completed. The taste threshold is noted as thirty regardless of the number of squeezes actually completed.

(10) The test conductor will take note of the number of squeezes required to solicit a taste response.

(11) If the saccharin is not tasted after 30 squeezes (step 10), the test subject is unable to taste saccharin and may not perform the saccharin fit test.

Note to paragraph 3. (a): If the test subject eats or drinks something sweet before the screening test, he/she may be unable to taste the weak saccharin solution.

(12) If a taste response is elicited, the test subject shall be asked to take note of the taste for reference in the fit test.

(13) Correct use of the nebulizer means that approximately 1 ml of liquid is used at a time in the nebulizer body.

(14) The nebulizer shall be thoroughly rinsed in water, shaken dry, and refilled at least each morning and afternoon or at least every four hours.

(b) Saccharin solution aerosol fit test procedure.

(1) The test subject may not eat, drink (except plain water), smoke, or chew gum for 15 minutes before the test.

(2) The fit test uses the same enclosure described in 3. (a) above.

(3) The test subject shall don the enclosure while wearing the respirator selected in section I. A. of this appendix. The respirator shall be properly adjusted and equipped with a particulate filter(s).

(4) A second DeVilbiss Model 40 Inhalation Medication Nebulizer or equivalent is used to spray the fit test solution into the enclosure. This nebulizer shall be clearly marked to distinguish it from the screening test solution nebulizer.

(5) The fit test solution is prepared by adding 83 grams of sodium saccharin to 100 ml of warm water.

(6) As before, the test subject shall breathe through the slightly open mouth with tongue extended, and report if he/she tastes the sweet taste of saccharin.

(7) The nebulizer is inserted into the hole in the front of the enclosure and an initial concentration of saccharin fit test solution is sprayed into the enclosure using the same number of squeezes (either 10, 20 or 30 squeezes) based on the number of squeezes required to elicit a taste response as noted during the screening test. A minimum of 10 squeezes is required.

(8) After generating the aerosol, the test subject shall be instructed to perform the exercises in section I. A. 14. of this appendix.

(9) Every 30 seconds the aerosol concentration shall be replenished using one half the original number of squeezes used initially (e.g., 5, 10 or 15).

(10) The test subject shall indicate to the test conductor if at any time during the fit test the taste of saccharin is detected. If the test subject does not report tasting the saccharin, the test is passed.

(11) If the taste of saccharin is detected, the fit is deemed unsatisfactory and the test is failed. A different respirator shall be tried and the entire test procedure is repeated (taste threshold screening and fit testing).

(12) Since the nebulizer has a tendency to clog during use, the test operator must make periodic checks of the nebulizer to ensure that it is not clogged. If clogging is found at the end of the test session, the test is invalid.

4. Bitrex™ (Denatonium Benzoate) Solution Aerosol Qualitative Fit Test Protocol

The Bitrex™ (Denatonium benzoate) solution aerosol QLFT protocol uses the published saccharin test protocol because that protocol is widely accepted. Bitrex is routinely used as a taste aversion agent in household liquids which children should not be drinking and is endorsed by the American Medical Association, the National Safety Council, and the American Association of Poison Control Centers. The entire screening and testing procedure shall be explained to the test subject prior to the conduct of the screening test.

(a) Taste Threshold Screening.

The Bitrex taste threshold screening, performed without wearing a respirator, is intended to determine whether the individual being tested can detect the taste of Bitrex.

(1) During threshold screening as well as during fit testing, subjects shall wear an enclosure about the head and shoulders that is approximately 12 inches (30.5 cm) in diameter by 14 inches (35.6 cm) tall. The front portion of the enclosure shall be clear from the respirator and allow free movement of the head when a respirator is worn. An enclosure substantially similar to the 3M hood assembly, parts # FT 14 and # FT 15 combined, is adequate.

(2) The test enclosure shall have a 3/4 inch (1.9 cm) hole in front of the test subject's nose and mouth area to accommodate the nebulizer nozzle.

(3) The test subject shall don the test enclosure. Throughout the threshold screening test, the test subject shall breathe through his or her slightly open mouth with tongue extended. The subject is instructed to report when he/she detects a bitter taste

(4) Using a DeVilbiss Model 40 Inhalation Medication Nebulizer or equivalent, the test conductor shall spray the Threshold Check Solution into the enclosure. This Nebulizer shall be clearly marked to distinguish it from the fit test solution nebulizer.

(5) The Threshold Check Solution is prepared by adding 13.5 milligrams of Bitrex to 100 ml of 5% salt (NaCl) solution in distilled water.

(6) To produce the aerosol, the nebulizer bulb is firmly squeezed so that the bulb collapses completely, and is then released and allowed to fully expand.

(7) An initial ten squeezes are repeated rapidly and then the test subject is asked whether the Bitrex can be tasted. If the test subject reports tasting the bitter taste during the ten squeezes, the screening test is completed. The taste threshold is noted as

ten regardless of the number of squeezes actually completed.

(8) If the first response is negative, ten more squeezes are repeated rapidly and the test subject is again asked whether the Bitrex is tasted. If the test subject reports tasting the bitter taste during the second ten squeezes, the screening test is completed. The taste threshold is noted as twenty regardless of the number of squeezes actually completed.

(9) If the second response is negative, ten more squeezes are repeated rapidly and the test subject is again asked whether the Bitrex is tasted. If the test subject reports tasting the bitter taste during the third set of ten squeezes, the screening test is completed. The taste threshold is noted as thirty regardless of the number of squeezes actually completed.

(10) The test conductor will take note of the number of squeezes required to solicit a taste response.

(11) If the Bitrex is not tasted after 30 squeezes (step 10), the test subject is unable to taste Bitrex and may not perform the Bitrex fit test.

(12) If a taste response is elicited, the test subject shall be asked to take note of the taste for reference in the fit test.

(13) Correct use of the nebulizer means that approximately 1 ml of liquid is used at a time in the nebulizer body.

(14) The nebulizer shall be thoroughly rinsed in water, shaken to dry, and refilled at least each morning and afternoon or at least every four hours.

(b) Bitrex Solution Aerosol Fit Test Procedure.

(1) The test subject may not eat, drink (except plain water), smoke, or chew gum for 15 minutes before the test.

(2) The fit test uses the same enclosure as that described in 4. (a) above.

(3) The test subject shall don the enclosure while wearing the respirator selected according to section I. A. of this appendix. The respirator shall be properly adjusted and equipped with any type particulate filter(s).

(4) A second DeVilbiss Model 40 Inhalation Medication Nebulizer or equivalent is used to spray the fit test solution into the enclosure. This nebulizer shall be clearly marked to distinguish it from the screening test solution nebulizer.

(5) The fit test solution is prepared by adding 337.5 mg of Bitrex to 200 ml of a 5% salt (NaCl) solution in warm water.

(6) As before, the test subject shall breathe through his or her slightly open mouth with tongue extended, and be instructed to report if he/she tastes the bitter taste of Bitrex.

(7) The nebulizer is inserted into the hole in the front of the enclosure and an initial concentration of the fit test solution is sprayed into the enclosure using the same number of squeezes (either 10, 20 or 30 squeezes) based on the number of squeezes required to elicit a taste response as noted during the screening test.

(8) After generating the aerosol, the test subject shall be instructed to perform the exercises in section I. A. 14. of this appendix.

(9) Every 30 seconds the aerosol concentration shall be replenished using one half the number of squeezes used initially (e.g., 5, 10 or 15).

(10) The test subject shall indicate to the test conductor if at any time during the fit test the taste of Bitrex is detected. If the test subject does not report tasting the Bitrex, the test is passed.

(11) If the taste of Bitrex is detected, the fit is deemed unsatisfactory and the test is failed. A different respirator shall be tried and the entire test procedure is repeated (taste threshold screening and fit testing).

5. Irritant Smoke (Stannic Chloride) Protocol

This qualitative fit test uses a person's response to the irritating chemicals released in the "smoke" produced by a stannic chloride ventilation smoke tube to detect leakage into the respirator.

(a) General Requirements and Precautions

(1) The respirator to be tested shall be equipped with high efficiency particulate air (HEPA) or P100 series filter(s).

(2) Only stannic chloride smoke tubes shall be used for this protocol.

(3) No form of test enclosure or hood for the test subject shall be used.

(4) The smoke can be irritating to the eyes, lungs, and nasal passages. The test conductor shall take precautions to minimize the test subject's exposure to irritant smoke. Sensitivity varies, and certain individuals may respond to a greater degree to irritant smoke. Care shall be taken when performing the sensitivity screening checks that determine whether the test subject can detect irritant smoke to use only the minimum amount of smoke necessary to elicit a response from the test subject.

(5) The fit test shall be performed in an area with adequate ventilation to prevent exposure of the person conducting the fit test or the build-up of irritant smoke in the general atmosphere.

(b) Sensitivity Screening Check

The person to be tested must demonstrate his or her ability to detect a weak concentration of the irritant smoke.

(1) The test operator shall break both ends of a ventilation smoke tube containing stannic chloride, and attach one end of the smoke tube to a low flow air pump set to deliver 200 milliliters per minute, or an aspirator squeeze bulb. The test operator shall cover the other end of the smoke tube with a short piece of tubing to prevent potential injury from the jagged end of the smoke tube.

(2) The test operator shall advise the test subject that the smoke can be irritating to the eyes, lungs, and nasal passages and instruct the subject to keep his/her eyes closed while the test is performed.

(3) The test subject shall be allowed to smell a weak concentration of the irritant smoke before the respirator is donned to become familiar with its irritating properties and to determine if he/she can detect the irritating properties of the smoke. The test operator shall carefully direct a small amount of the irritant smoke in the test subject's direction to determine that he/she can detect it.

(c) Irritant Smoke Fit Test Procedure

(1) The person being fit tested shall don the respirator without assistance, and perform the required user seal check(s).

(2) The test subject shall be instructed to keep his/her eyes closed.

(3) The test operator shall direct the stream of irritant smoke from the smoke tube toward the face seal area of the test subject, using the low flow pump or the squeeze bulb. The test operator shall begin at least 12 inches from the facepiece and move the smoke stream around the whole perimeter of the mask. The operator shall gradually make two more passes around the perimeter of the mask, moving to within six inches of the respirator.

(4) If the person being tested has not had an involuntary response and/or detected the irritant smoke, proceed with the test

exercises.

(5) The exercises identified in section I.A. 14. of this appendix shall be performed by the test subject while the respirator seal is being continually challenged by the smoke, directed around the perimeter of the respirator at a distance of six inches.

(6) If the person being fit tested reports detecting the irritant smoke at any time, the test is failed. The person being retested must repeat the entire sensitivity check and fit test procedure.

(7) Each test subject passing the irritant smoke test without evidence of a response (involuntary cough, irritation) shall be given a second sensitivity screening check, with the smoke from the same smoke tube used during the fit test, once the respirator has been removed, to determine whether he/she still reacts to the smoke. Failure to evoke a response shall void the fit test.

(8) If a response is produced during this second sensitivity check, then the fit test is passed.

C. Quantitative Fit Test (QNFT) Protocols

The following quantitative fit testing procedures have been demonstrated to be acceptable: Quantitative fit testing using a non-hazardous test aerosol (such as corn oil, polyethylene glycol 400 [PEG 400], di-2-ethyl hexyl sebacate [DEHS], or sodium chloride) generated in a test chamber, and employing instrumentation to quantify the fit of the respirator; Quantitative fit testing using ambient aerosol as the test agent and appropriate instrumentation (condensation nuclei counter) to quantify the respirator fit; Quantitative fit testing using controlled negative pressure and appropriate instrumentation to measure the volumetric leak rate of a facepiece to quantify the respirator fit.

1. General

(a) The employer shall ensure that persons administering QNFT are able to calibrate equipment and perform tests properly, recognize invalid tests, calculate fit factors properly and ensure that test equipment is in proper working order.

(b) The employer shall ensure that QNFT equipment is kept clean, and is maintained and calibrated according to the manufacturer's instructions so as to operate at the parameters for which it was designed.

2. Generated Aerosol Quantitative Fit Testing Protocol

(a) Apparatus.

(1) Instrumentation. Aerosol generation, dilution, and measurement systems using particulates (corn oil, polyethylene glycol 400 [PEG 400], di-2-ethyl hexyl sebacate [DEHS] or sodium chloride) as test aerosols shall be used for quantitative fit testing.

(2) Test chamber. The test chamber shall be large enough to permit all test subjects to perform freely all required exercises without disturbing the test agent concentration or the measurement apparatus. The test chamber shall be equipped and constructed so that the test agent is effectively isolated from the ambient air, yet uniform in concentration throughout the chamber.

(3) When testing air-purifying respirators, the normal filter or cartridge element shall be replaced with a high efficiency particulate air (HEPA) or P100 series filter supplied by the same manufacturer.

(4) The sampling instrument shall be selected so that a computer record or strip chart record may be made of the test showing the rise and fall of the test agent concentration with each inspiration and expiration at fit factors of at least 2,000. Integrators or computers that integrate the amount of test agent penetration leakage into the respirator for each exercise may be used provided a record of the readings is made.

(5) The combination of substitute air-purifying elements, test agent and test agent concentration shall be such that the test subject is not exposed in excess of an established exposure limit for the test agent at any time during the testing process, based upon the length of the exposure and the exposure limit duration.

(6) The sampling port on the test specimen respirator shall be placed and constructed so that no leakage occurs around the port (e.g., where the respirator is probed), a free air flow is allowed into the sampling line at all times, and there is no interference with the fit or performance of the respirator. The in-mask sampling device (probe) shall be designed and used so that the air sample is drawn from the breathing zone of the test subject, midway between the nose and mouth and with the probe extending into the facepiece cavity at least 1/4 inch.

(7) The test setup shall permit the person administering the test to observe the test subject inside the chamber during the test.

(8) The equipment generating the test atmosphere shall maintain the concentration of test agent constant to within a 10 percent variation for the duration of the test.

(9) The time lag (interval between an event and the recording of the event on the strip chart or computer or integrator) shall be kept to a minimum. There shall be a clear association between the occurrence of an event and its being recorded.

(10) The sampling line tubing for the test chamber atmosphere and for the respirator sampling port shall be of equal diameter and of the same material. The length of the two lines shall be equal.

(11) The exhaust flow from the test chamber shall pass through an appropriate filter (i.e., high efficiency particulate filter) before release.

(12) When sodium chloride aerosol is used, the relative humidity inside the test chamber shall not exceed 50 percent.

(13) The limitations of instrument detection shall be taken into account when determining the fit factor.

(14) Test respirators shall be maintained in proper working order and be inspected regularly for deficiencies such as cracks or missing valves and gaskets.

(b) Procedural Requirements.

(1) When performing the initial user seal check using a positive or negative pressure check, the sampling line shall be crimped closed in order to avoid air pressure leakage during either of these pressure checks.

(2) The use of an abbreviated screening QLFT test is optional. Such a test may be utilized in order to quickly identify poor fitting respirators that passed the positive and/or negative pressure test and reduce the amount of QNFT time. The use of the CNC QNFT instrument in the count mode is another optional method to obtain a quick estimate of fit and eliminate poor fitting respirators before going on to perform a full QNFT.

(3) A reasonably stable test agent concentration shall be measured in the test chamber prior to testing. For canopy or shower curtain types of test units, the determination of the test agent's stability may be established after the test subject has entered the test environment.

- (4) Immediately after the subject enters the test chamber, the test agent concentration inside the respirator shall be measured to ensure that the peak penetration does not exceed 5 percent for a half mask or 1 percent for a full facepiece respirator.
- (5) A stable test agent concentration shall be obtained prior to the actual start of testing.
- (6) Respirator restraining straps shall not be over-tightened for testing. The straps shall be adjusted by the wearer without assistance from other persons to give a reasonably comfortable fit typical of normal use. The respirator shall not be adjusted once the fit test exercises begin.
- (7) The test shall be terminated whenever any single peak penetration exceeds 5 percent for half masks and 1 percent for full facepiece respirators. The test subject shall be refitted and retested.
- (8) Calculation of fit factors.
 - (i) The fit factor shall be determined for the quantitative fit test by taking the ratio of the average chamber concentration to the concentration measured inside the respirator for each test exercise except the grimace exercise.
 - (ii) The average test chamber concentration shall be calculated as the arithmetic average of the concentration measured before and after each test (i.e., 7 exercises) or the arithmetic average of the concentration measured before and after each exercise or the true average measured continuously during the respirator sample.
 - (iii) The concentration of the challenge agent inside the respirator shall be determined by one of the following methods:

(A) Average peak penetration method means the method of determining test agent penetration into the respirator utilizing a strip chart recorder, integrator, or computer. The agent penetration is determined by an average of the peak heights on the graph or by computer integration, for each exercise except the grimace exercise. Integrators or computers that calculate the actual test agent penetration into the respirator for each exercise will also be considered to meet the requirements of the average peak penetration method.

(B) Maximum peak penetration method means the method of determining test agent penetration in the respirator as determined by strip chart recordings of the test. The highest peak penetration for a given exercise is taken to be representative of average penetration into the respirator for that exercise.

(C) Integration by calculation of the area under the individual peak for each exercise except the grimace exercise. This includes computerized integration.

(D) The calculation of the overall fit factor using individual exercise fit factors involves first converting the exercise fit factors to penetration values, determining the average, and then converting that result back to a fit factor. This procedure is described in the following equation:

$$\text{Overall Fit Factor} = \frac{\text{Number of exercises}}{1/ff_1 + 1/ff_2 + 1/ff_3 + 1/ff_4 + 1/ff_5 + 1/ff_6 + 1/ff_7 + 1/ff_8}$$

Where ff_1 , ff_2 , ff_3 , etc. are the fit factors for exercises 1, 2, 3, etc.

- (9) The test subject shall not be permitted to wear a half mask or quarter facepiece respirator unless a minimum fit factor of 100 is obtained, or a full facepiece respirator unless a minimum fit factor of 500 is obtained.
- (10) Filters used for quantitative fit testing shall be replaced whenever increased breathing resistance is encountered, or when the test agent has altered the integrity of the filter media.

3. Ambient aerosol condensation nuclei counter (CNC) quantitative fit testing protocol.

The ambient aerosol condensation nuclei counter (CNC) quantitative fit testing (Portacount™) protocol quantitatively fit tests respirators with the use of a probe. The probed respirator is only used for quantitative fit tests. A probed respirator has a special sampling device, installed on the respirator that allows the probe to sample the air from inside the mask. A probed respirator is required for each make, style, model, and size that the employer uses and can be obtained from the respirator manufacturer or distributor. The CNC instrument manufacturer, TSI Inc., also provides probe attachments (TSI sampling adapters) that permit fit testing in an employee's own respirator. A minimum fit factor pass level of at least 100 is necessary for a half-mask respirator and a minimum fit factor pass level of at least 500 is required for a full facepiece negative pressure respirator. The entire screening and testing procedure shall be explained to the test subject prior to the conduct of the screening test.

(a) Portacount Fit Test Requirements.

- (1) Check the respirator to make sure the sampling probe and line are properly attached to the facepiece and that the respirator is fitted with a particulate filter capable of preventing significant penetration by the ambient particles used for the fit test (e.g., NIOSH 42 CFR 84 series 100, series 99, or series 95 particulate filter) per manufacturer's instruction.
- (2) Instruct the person to be tested to don the respirator for five minutes before the fit test starts. This purges the ambient particles trapped inside the respirator and permits the wearer to make certain the respirator is comfortable. This individual shall already have been trained on how to wear the respirator properly.
- (3) Check the following conditions for the adequacy of the respirator fit: Chin properly placed; Adequate strap tension, not overly tightened; Fit across nose bridge; Respirator of proper size to span distance from nose to chin; Tendency of the respirator to slip; Self-observation in a mirror to evaluate fit and respirator position.
- (4) Have the person wearing the respirator do a user seal check. If leakage is detected, determine the cause. If leakage is from a poorly fitting facepiece, try another size of the same model respirator, or another model of respirator.
- (5) Follow the manufacturer's instructions for operating the Portacount and proceed with the test.
- (6) The test subject shall be instructed to perform the exercises in section I. A. 14. of this appendix.
- (7) After the test exercises, the test subject shall be questioned by the test conductor regarding the comfort of the respirator upon completion of the protocol. If it has become unacceptable, another model of respirator shall be tried.

(b) Portacount Test Instrument.

- (1) The Portacount will automatically stop and calculate the overall fit factor for the entire set of exercises. The overall fit factor is what counts. The Pass or Fail message will indicate whether or not the test was successful. If the test was a Pass, the fit test is over.

(2) Since the pass or fail criterion of the Portacount is user programmable, the test operator shall ensure that the pass or fail criterion meet the requirements for minimum respirator performance in this Appendix.

(3) A record of the test needs to be kept on file, assuming the fit test was successful. The record must contain the test subject's name; overall fit factor; make, model, style, and size of respirator used; and date tested.

4. Controlled negative pressure (CNP) quantitative fit testing protocol.

The CNP protocol provides an alternative to aerosol fit test methods. The CNP fit test method technology is based on exhausting air from a temporarily sealed respirator facepiece to generate and then maintain a constant negative pressure inside the facepiece. The rate of air exhaust is controlled so that a constant negative pressure is maintained in the respirator during the fit test. The level of pressure is selected to replicate the mean inspiratory pressure that causes leakage into the respirator under normal use conditions. With pressure held constant, air flow out of the respirator is equal to air flow into the respirator. Therefore, measurement of the exhaust stream that is required to hold the pressure in the temporarily sealed respirator constant yields a direct measure of leakage air flow into the respirator. The CNP fit test method measures leak rates through the facepiece as a method for determining the facepiece fit for negative pressure respirators. The CNP instrument manufacturer Occupational Health Dynamics of Birmingham, Alabama also provides attachments (sampling manifolds) that replace the filter cartridges to permit fit testing in an employee's own respirator. To perform the test, the test subject closes his or her mouth and holds his/her breath, after which an air pump removes air from the respirator facepiece at a pre-selected constant pressure. The facepiece fit is expressed as the leak rate through the facepiece, expressed as milliliters per minute. The quality and validity of the CNP fit tests are determined by the degree to which the in-mask pressure tracks the test pressure during the system measurement time of approximately five seconds. Instantaneous feedback in the form of a real-time pressure trace of the in-mask pressure is provided and used to determine test validity and quality. A minimum fit factor pass level of 100 is necessary for a half-mask respirator and a minimum fit factor of at least 500 is required for a full facepiece respirator. The entire screening and testing procedure shall be explained to the test subject prior to the conduct of the screening test.

(a) CNP Fit Test Requirements.

(1) The instrument shall have a non-adjustable test pressure of 15.0 mm water pressure.

(2) The CNP system defaults selected for test pressure shall be set at -- 15 mm of water (-0.58 inches of water) and the modeled inspiratory flow rate shall be 53.8 liters per minute for performing fit tests.

(Note: CNP systems have built-in capability to conduct fit testing that is specific to unique work rate, mask, and gender situations that might apply in a specific workplace. Use of system default values, which were selected to represent respirator wear with medium cartridge resistance at a low-moderate work rate, will allow inter-test comparison of the respirator fit.)

(3) The individual who conducts the CNP fit testing shall be thoroughly trained to perform the test.

(4) The respirator filter or cartridge needs to be replaced with the CNP test manifold. The inhalation valve downstream from the manifold either needs to be temporarily removed or propped open.

(5) The employer must train the test subject to hold his or her breath for at least 10 seconds.

(6) The test subject must don the test respirator without any assistance from the test administrator who is conducting the CNP fit test. The respirator must not be adjusted once the fit-test exercises begin. Any adjustment voids the test, and the test subject must repeat the fit test.

(7) The QNFT protocol shall be followed according to section I. C. 1. of this appendix with an exception for the CNP test exercises.

(b) CNP Test Exercises.

(1) Normal breathing. In a normal standing position, without talking, the subject shall breathe normally for 1 minute. After the normal breathing exercise, the subject needs to hold head straight ahead and hold his or her breath for 10 seconds during the test measurement.

(2) Deep breathing. In a normal standing position, the subject shall breathe slowly and deeply for 1 minute, being careful not to hyperventilate. After the deep breathing exercise, the subject shall hold his or her head straight ahead and hold his or her breath for 10 seconds during test measurement.

(3) Turning head side to side. Standing in place, the subject shall slowly turn his or her head from side to side between the extreme positions on each side for 1 minute. The head shall be held at each extreme momentarily so the subject can inhale at each side. After the turning head side to side exercise, the subject needs to hold head full left and hold his or her breath for 10 seconds during test measurement. Next, the subject needs to hold head full right and hold his or her breath for 10 seconds during test measurement.

(4) Moving head up and down. Standing in place, the subject shall slowly move his or her head up and down for 1 minute. The subject shall be instructed to inhale in the up position (i.e., when looking toward the ceiling). After the moving head up and down exercise, the subject shall hold his or her head full up and hold his or her breath for 10 seconds during test measurement. Next, the subject shall hold his or her head full down and hold his or her breath for 10 seconds during test measurement.

(5) Talking. The subject shall talk out loud slowly and loud enough so as to be heard clearly by the test conductor. The subject can read from a prepared text such as the Rainbow Passage, count backward from 100, or recite a memorized poem or song for 1 minute. After the talking exercise, the subject shall hold his or her head straight ahead and hold his or her breath for 10 seconds during the test measurement.

(6) Grimace. The test subject shall grimace by smiling or frowning for 15 seconds.

(7) Bending Over. The test subject shall bend at the waist as if he or she were to touch his or her toes for 1 minute. Jogging in place shall be substituted for this exercise in those test environments such as shroud-type QNFT units that prohibit bending at the waist. After the bending over exercise, the subject shall hold his or her head straight ahead and hold his or her breath for 10 seconds during the test measurement.

(8) Normal Breathing. The test subject shall remove and re-don the respirator within a one-minute period. Then, in a normal standing position, without talking, the subject shall breathe normally for 1 minute. After the normal breathing exercise, the subject shall hold his or her head straight ahead and hold his or her breath for 10 seconds during the test measurement. After the test exercises, the test subject shall be questioned by the test conductor regarding the comfort of the respirator upon completion of

the protocol. If it has become unacceptable, another model of a respirator shall be tried.

(c) CNP Test Instrument.

(1) The test instrument must have an effective audio-warning device, or a visual-warning device in the form of a screen tracing, that indicates when the test subject fails to hold his or her breath during the test. The test must be terminated and restarted from the beginning when the test subject fails to hold his or her breath during the test. The test subject then may be refitted and retested.

(2) A record of the test shall be kept on file, assuming the fit test was successful. The record must contain the test subject's name; overall fit factor; make, model, style and size of respirator used; and date tested.

5. Controlled negative pressure (CNP) REDON quantitative fit testing protocol.

(a) When administering this protocol to test subjects, employers must comply with the requirements specified in paragraphs (a) and (c) of Part I.C.4 of this appendix ("Controlled negative pressure (CNP) quantitative fit testing protocol"), as well as use the test exercises described below in paragraph (b) of this protocol instead of the test exercises specified in paragraph (b) of Part I.C.4 of this appendix.

(b) Employers must ensure that each test subject being fit tested using this protocol follows the exercise and measurement procedures, including the order of administration, described below in Table A-1 of this appendix.

Table A-1. -- CNP REDON Quantitative Fit Testing Protocol

Exercises ⁽¹⁾	Exercise procedure	Measurement procedure
Facing Forward	Stand and breathe normally, without talking, for 30 seconds.	Face forward, while holding breath for 10 seconds.
Bending Over	Bend at the waist, as if going to touch his or her toes, for 30 seconds.	Face parallel to the floor, while holding breath for 10 seconds
Head Shaking	For about three seconds, shake head back and forth vigorously several times while shouting.	Face forward, while holding breath for 10 seconds.
REDON 1	Remove the respirator mask, loosen all facepiece straps, and then redon the respirator mask.	Face forward, while holding breath for 10 seconds.
REDON 2	Remove the respirator mask, loosen all facepiece straps, and then redon the respirator mask again.	Face forward, while holding breath for 10 seconds.

¹ Exercises are listed in the order in which they are to be administered.

(c) After completing the test exercises, the test administrator must question each test subject regarding the comfort of the respirator. When a test subject states that the respirator is unacceptable, the employer must ensure that the test administrator repeats the protocol using another respirator model.

(d) Employers must determine the overall fit factor for each test subject by calculating the harmonic mean of the fit testing exercises as follows:

$$\text{Overall Fit Factor} = \frac{N}{\left[\frac{1}{FF_1} + \frac{1}{FF_2} + \dots + \frac{1}{FF_N} \right]}$$

Where:

N = The number of exercises;

FF1 = The fit factor for the first exercise;

FF2 = The fit factor for the second exercise; and

FFN = The fit factor for the nth exercise.

Part II. New Fit Test Protocols

A. Any person may submit to OSHA an application for approval of a new fit test protocol. If the application meets the following criteria, OSHA will initiate a rulemaking proceeding under section 6(b)(7) of the OSH Act to determine whether to list the new protocol as an approved protocol in this Appendix A.

B. The application must include a detailed description of the proposed new fit test protocol. This application must be supported by either:

1. A test report prepared by an independent government research laboratory (e.g., Lawrence Livermore National Laboratory, Los Alamos National Laboratory, the National Institute for Standards and Technology) stating that the laboratory has tested the protocol and had found it to be accurate and reliable; or
2. An article that has been published in a peer-reviewed industrial hygiene journal describing the protocol and explaining how test data support the protocol's accuracy and reliability.

C. If OSHA determines that additional information is required before the Agency commences a rulemaking proceeding under this section, OSHA will so notify the applicant and afford the applicant the opportunity to submit the supplemental information. Initiation of a rulemaking proceeding will be deferred until OSHA has received and evaluated the supplemental information.

[63 FR 20098, April 23, 1998; 69 FR 46993, August 4, 2004]

**RESPIRATORY PROTECTION REGULATORY STANDARD AND APPENDICES
(29 CFR 1910.134)**

USER SEAL CHECK PROCEDURES (MANDATORY) – 1910.134 App B-1

Regulations (Standards - 29 CFR) - Table of Contents

- Part Number: 1910
- Part Title Occupational Safety and Health Standards
- Subpart I
- Subpart Title Personal Protective Equipment
- Standard Number 1910.134 App B-1
- Title User Seal Check Procedures (Mandatory)

Appendix B-1 to § 1910.134: User Seal Check Procedures (Mandatory) The individual who uses a tight-fitting respirator is to perform a user seal check to ensure that an adequate seal is achieved each time the respirator is put on. Either the positive and negative pressure checks listed in this appendix, or the respirator manufacturer's recommended user seal check method shall be used. User seal checks are not substitutes for qualitative or quantitative fit tests.

I. Facepiece Positive and/or Negative Pressure Checks

A. Positive pressure check. Close off the exhalation valve and exhale gently into the facepiece. The face fit is considered satisfactory if a slight positive pressure can be built up inside the facepiece without any evidence of outward leakage of air at the seal. For most respirators this method of leak testing requires the wearer to first remove the exhalation valve cover before closing off the exhalation valve and then carefully replacing it after the test.

B. Negative pressure check. Close off the inlet opening of the canister or cartridge(s) by covering with the palm of the hand(s) or by replacing the filter seal(s), inhale gently so that the facepiece collapses slightly, and hold the breath for ten seconds. The design of the inlet opening of some cartridges cannot be effectively covered with the palm of the hand. The test can be performed by covering the inlet opening of the cartridge with a thin latex or nitrile glove. If the facepiece remains in its slightly collapsed condition and no inward leakage of air is detected, the tightness of the respirator is considered satisfactory.

II. Manufacturer's Recommended User Seal Check Procedures

The respirator manufacturer's recommended procedures for performing a user seal check may be used instead of the positive and/or negative pressure check procedures provided that the employer demonstrates that the manufacturer's procedures are equally effective.

[63 FR 1152, Jan. 8, 1998]

**RESPIRATORY PROTECTION REGULATORY STANDARD AND APPENDICES
(29 CFR 1910.134)**

RESPIRATOR CLEANING PROCEDURES (MANDATORY) – 1910.134 App B-2

Regulations (Standards - 29 CFR) - Table of Contents

- Part Number: 1910
- Part Title Occupational Safety and Health Standards
- Subpart I
- Subpart Title Personal Protective Equipment
- Standard Number 1910.134 App B-2
- Title Respirator Cleaning Procedures (Mandatory)

Appendix B-2 to § 1910.134: Respirator Cleaning Procedures (Mandatory)

These procedures are provided for employer use when cleaning respirators. They are general in nature, and the employer as an alternative may use the cleaning recommendations provided by the manufacturer of the respirators used by their employees, provided such procedures are as effective as those listed here in Appendix B- 2. Equivalent effectiveness simply means that the

procedures used must accomplish the objectives set forth in Appendix B-2, i.e., must ensure that the respirator is properly cleaned and disinfected in a manner that prevents damage to the respirator and does not cause harm to the user.

I. Procedures for Cleaning Respirators

A. Remove filters, cartridges, or canisters. Disassemble facepieces by removing speaking diaphragms, demand and pressure-demand valve assemblies, hoses, or any components recommended by the manufacturer. Discard or repair any defective parts.

B. Wash components in warm (43 deg. C [110 deg. F] maximum) water with a mild detergent or with a cleaner recommended by the manufacturer. A stiff bristle (not wire) brush may be used to facilitate the removal of dirt.

C. Rinse components thoroughly in clean, warm (43 deg. C [110 deg. F] maximum), preferably running water. Drain.

D. When the cleaner used does not contain a disinfecting agent, respirator components should be immersed for two minutes in one of the following:

1. Hypochlorite solution (50 ppm of chlorine) made by adding approximately one milliliter of laundry bleach to one liter of water at 43 deg. C (110 deg. F); or,

2. Aqueous solution of iodine (50 ppm iodine) made by adding approximately 0.8 milliliters of tincture of iodine (6-8 grams ammonium and/or potassium iodide/100 cc of 45% alcohol) to one liter of water at 43 deg. C (110 deg. F); or,

3. Other commercially available cleansers of equivalent disinfectant quality when used as directed, if their use is recommended or approved by the respirator manufacturer.

E. Rinse components thoroughly in clean, warm (43 deg. C [110 deg. F] maximum), preferably running water. Drain. The importance of thorough rinsing cannot be overemphasized. Detergents or disinfectants that dry on facepieces may result in dermatitis. In addition, some disinfectants may cause deterioration of rubber or corrosion of metal parts if not completely removed.

F. Components should be hand-dried with a clean lint-free cloth or air-dried.

G. Reassemble facepiece, replacing filters, cartridges, and canisters where necessary.

H. Test the respirator to ensure that all components work properly.

[63 FR 1152, Jan. 8, 1998]

**RESPIRATORY PROTECTION REGULATORY STANDARD AND APPENDICES
(29 CFR 1910.134)**

OSHA RESPIRATOR MEDICAL EVALUATION QUESTIONNAIRE (MANDATORY) – 1910.134 App C

Regulations (Standards - 29 CFR) - Table of Contents

- Part Number: 1910
- Part Title: Occupational Safety and Health Standards
- Subpart: I
- Subpart Title: Personal Protective Equipment
- Standard Number: 1910.134 App C
- Title: OSHA Respirator Medical Evaluation Questionnaire (Mandatory)

Appendix C to Sec. 1910.134: OSHA Respirator Medical Evaluation Questionnaire (Mandatory)

To the employer: Answers to questions in Section 1, and to question 9 in Section 2 of Part A, do not require a medical examination.

To the employee:

Can you read (circle one): Yes/No

Your employer must allow you to answer this questionnaire during normal working hours, or at a time and place that is convenient to you. To maintain your confidentiality, your employer or supervisor must not look at or review your answers, and your employer must tell you how to deliver or send this questionnaire to the health care professional who will review it.

Part A. Section 1. (Mandatory) The following information must be provided by every employee who has been selected to use any type of respirator (please print).

1. Today's date: _____

2. Your name: _____

3. Your age (to nearest year): _____

4. Sex (circle one): Male/Female

5. Your height: _____ ft. _____ in.

6. Your weight: _____ lbs.

7. Your job title: _____

8. A phone number where you can be reached by the health care professional who reviews this questionnaire (include the Area Code): _____

9. The best time to phone you at this number: _____

10. Has your employer told you how to contact the health care professional who will review this questionnaire (circle one): Yes/No

11. Check the type of respirator you will use (you can check more than one category):

a. _____ N, R, or P disposable respirator (filter-mask, non- cartridge type only).

b. _____ Other type (for example, half- or full-facepiece type, powered-air purifying, supplied-air, self-contained breathing apparatus).

12. Have you worn a respirator (circle one): Yes/No

If "yes," what type(s): _____

Part A. Section 2. (Mandatory) Questions 1 through 9 below must be answered by every employee who has been selected to use any type of respirator (please circle "yes" or "no").

1. Do you **currently** smoke tobacco, or have you smoked tobacco in the last month: Yes/No

2. Have you **ever had** any of the following conditions?

- a. Seizures (fits): Yes/No
- b. Diabetes (sugar disease): Yes/No
- c. Allergic reactions that interfere with your breathing: Yes/No
- d. Claustrophobia (fear of closed-in places): Yes/No
- e. Trouble smelling odors: Yes/No

3. Have you **ever had** any of the following pulmonary or lung problems?

- a. Asbestosis: Yes/No
- b. Asthma: Yes/No
- c. Chronic bronchitis: Yes/No
- d. Emphysema: Yes/No

- e. Pneumonia: Yes/No
- f. Tuberculosis: Yes/No
- g. Silicosis: Yes/No
- h. Pneumothorax (collapsed lung): Yes/No
- i. Lung cancer: Yes/No
- j. Broken ribs: Yes/No
- k. Any chest injuries or surgeries: Yes/No
- l. Any other lung problem that you've been told about: Yes/No

4. Do you **currently** have any of the following symptoms of pulmonary or lung illness?

- a. Shortness of breath: Yes/No
- b. Shortness of breath when walking fast on level ground or walking up a slight hill or incline: Yes/No
- c. Shortness of breath when walking with other people at an ordinary pace on level ground: Yes/No
- d. Have to stop for breath when walking at your own pace on level ground: Yes/No
- e. Shortness of breath when washing or dressing yourself: Yes/No
- f. Shortness of breath that interferes with your job: Yes/No
- g. Coughing that produces phlegm (thick sputum): Yes/No
- h. Coughing that wakes you early in the morning: Yes/No
- i. Coughing that occurs mostly when you are lying down: Yes/No
- j. Coughing up blood in the last month: Yes/No
- k. Wheezing: Yes/No
- l. Wheezing that interferes with your job: Yes/No
- m. Chest pain when you breathe deeply: Yes/No
- n. Any other symptoms that you think may be related to lung problems: Yes/No

5. Have you **ever had** any of the following cardiovascular or heart problems?

- a. Heart attack: Yes/No
- b. Stroke: Yes/No
- c. Angina: Yes/No
- d. Heart failure: Yes/No
- e. Swelling in your legs or feet (not caused by walking): Yes/No
- f. Heart arrhythmia (heart beating irregularly): Yes/No
- g. High blood pressure: Yes/No
- h. Any other heart problem that you've been told about: Yes/No

6. Have you **ever had** any of the following cardiovascular or heart symptoms?

- a. Frequent pain or tightness in your chest: Yes/No
- b. Pain or tightness in your chest during physical activity: Yes/No
- c. Pain or tightness in your chest that interferes with your job: Yes/No
- d. In the past two years, have you noticed your heart skipping or missing a beat: Yes/No
- e. Heartburn or indigestion that is not related to eating: Yes/No
- f. Any other symptoms that you think may be related to heart or circulation problems: Yes/No

7. Do you **currently** take medication for any of the following problems?

- a. Breathing or lung problems: Yes/No
- b. Heart trouble: Yes/No
- c. Blood pressure: Yes/No
- d. Seizures (fits): Yes/No

8. If you've used a respirator, have you **ever had** any of the following problems? (If you've never used a respirator, check the following space and go to question 9:)

- a. Eye irritation: Yes/No
- b. Skin allergies or rashes: Yes/No
- c. Anxiety: Yes/No
- d. General weakness or fatigue: Yes/No
- e. Any other problem that interferes with your use of a respirator: Yes/No

9. Would you like to talk to the health care professional who will review this questionnaire about your answers to this

questionnaire: Yes/No

Questions 10 to 15 below must be answered by every employee who has been selected to use either a full-facepiece respirator or a self-contained breathing apparatus (SCBA). For employees who have been selected to use other types of respirators, answering these questions is voluntary.

10. Have you **ever lost** vision in either eye (temporarily or permanently): Yes/No

11. Do you **currently** have any of the following vision problems?

- a. Wear contact lenses: Yes/No
- b. Wear glasses: Yes/No
- c. Color blind: Yes/No
- d. Any other eye or vision problem: Yes/No

12. Have you **ever had** an injury to your ears, including a broken ear drum: Yes/No

13. Do you **currently** have any of the following hearing problems?

- a. Difficulty hearing: Yes/No
- b. Wear a hearing aid: Yes/No
- c. Any other hearing or ear problem: Yes/No

14. Have you **ever had** a back injury: Yes/No

15. Do you **currently** have any of the following musculoskeletal problems?

- a. Weakness in any of your arms, hands, legs, or feet: Yes/No
- b. Back pain: Yes/No
- c. Difficulty fully moving your arms and legs: Yes/No
- d. Pain or stiffness when you lean forward or backward at the waist: Yes/No
- e. Difficulty fully moving your head up or down: Yes/No
- f. Difficulty fully moving your head side to side: Yes/No
- g. Difficulty bending at your knees: Yes/No
- h. Difficulty squatting to the ground: Yes/No
- i. Climbing a flight of stairs or a ladder carrying more than 25 lbs: Yes/No
- j. Any other muscle or skeletal problem that interferes with using a respirator: Yes/No

Part B Any of the following questions, and other questions not listed, may be added to the questionnaire at the discretion of the health care professional who will review the questionnaire.

1. In your present job, are you working at high altitudes (over 5,000 feet) or in a place that has lower than normal amounts of oxygen: Yes/No

If "yes," do you have feelings of dizziness, shortness of breath, pounding in your chest, or other symptoms when you're working under these conditions: Yes/No

2. At work or at home, have you ever been exposed to hazardous solvents, hazardous airborne chemicals (e.g., gases, fumes, or dust), or have you come into skin contact with hazardous chemicals: Yes/No

If "yes," name the chemicals if you know them:

3. Have you ever worked with any of the materials, or under any of the conditions, listed below:

- a. Asbestos: Yes/No
- b. Silica (e.g., in sandblasting): Yes/No
- c. Tungsten/cobalt (e.g., grinding or welding this material): Yes/No
- d. Beryllium: Yes/No

- e. Aluminum: Yes/No
- f. Coal (for example, mining): Yes/No
- g. Iron: Yes/No
- h. Tin: Yes/No
- i. Dusty environments: Yes/No
- j. Any other hazardous exposures: Yes/No

If "yes," describe these exposures: _____

4. List any second jobs or side businesses you have: _____

5. List your previous occupations: _____

6. List your current and previous hobbies: _____

7. Have you been in the military services? Yes/No

If "yes," were you exposed to biological or chemical agents (either in training or combat): Yes/No

8. Have you ever worked on a HAZMAT team? Yes/No

9. Other than medications for breathing and lung problems, heart trouble, blood pressure, and seizures mentioned earlier in this questionnaire, are you taking any other medications for any reason (including over-the-counter medications): Yes/No

If "yes," name the medications if you know them: _____

10. Will you be using any of the following items with your respirator(s)?

- a. HEPA Filters: Yes/No
- b. Canisters (for example, gas masks): Yes/No
- c. Cartridges: Yes/No

11. How often are you expected to use the respirator(s) (circle "yes" or "no" for all answers that apply to you)?:

- a. Escape only (no rescue): Yes/No
- b. Emergency rescue only: Yes/No
- c. Less than 5 hours **per week**: Yes/No
- d. Less than 2 hours **per day**: Yes/No
- e. 2 to 4 hours per day: Yes/No
- f. Over 4 hours per day: Yes/No

12. During the period you are using the respirator(s), is your work effort:

- a. **Light** (less than 200 kcal per hour): Yes/No

If "yes," how long does this period last during the average shift: _____hours . _____minutes.

Examples of a light work effort are **sitting** while writing, typing, drafting, or performing light assembly work; or **standing** while operating a drill press (1-3 lbs.) or controlling machines.

- b. **Moderate** (200 to 350 kcal per hour): Yes/No

If "yes," how long does this period last during the average shift: _____hours ._____minutes.

Examples of moderate work effort are **sitting** while nailing or filing; **driving** a truck or bus in urban traffic; **standing** while drilling, nailing, performing assembly work, or transferring a moderate load (about 35 lbs.) at trunk level; **walking** on a level surface about 2 mph or down a 5-degree grade about 3 mph; or **pushing** a wheelbarrow with a heavy load (about 100 lbs.) on a level surface.

c. **Heavy** (above 350 kcal per hour): Yes/No

If "yes," how long does this period last during the average shift: _____hours ._____minutes.

Examples of heavy work are **lifting** a heavy load (about 50 lbs.) from the floor to your waist or shoulder; working on a loading dock; **shoveling; standing** while bricklaying or chipping castings; **walking** up an 8-degree grade about 2 mph; climbing stairs with a heavy load (about 50 lbs.).

13. Will you be wearing protective clothing and/or equipment (other than the respirator) when you're using your respirator:
Yes/No

If "yes," describe this protective clothing and/or equipment: _____

14. Will you be working under hot conditions (temperature exceeding 77 deg. F): Yes/No

15. Will you be working under humid conditions: Yes/No

16. Describe the work you'll be doing while you're using your respirator(s):

17. Describe any special or hazardous conditions you might encounter when you're using your respirator(s) (for example, confined spaces, life-threatening gases):

18. Provide the following information, if you know it, for each toxic substance that you'll be exposed to when you're using your respirator(s):

Name of the first toxic substance: _____
Estimated maximum exposure level per shift: _____
Duration of exposure per shift: _____
Name of the second toxic substance: _____
Estimated maximum exposure level per shift: _____
Duration of exposure per shift: _____
Name of the third toxic substance: _____
Estimated maximum exposure level per shift: _____
Duration of exposure per shift: _____

The name of any other toxic substances that you'll be exposed to while using your respirator:

19. Describe any special responsibilities you'll have while using your respirator(s) that may affect the safety and well-being of others (for example, rescue, security):

[63 FR 1152, Jan. 8, 1998; 63 FR 20098, April 23, 1998]

RESPIRATORY PROTECTION REGULATORY STANDARD AND APPENDICES (29 CFR 1910.134)

INFORMATION FOR EMPLOYEES USING RESPIRATORS WHEN NOT REQUIRED UNDER STANDARD (MANDATORY) – 1910.134 App D

Regulations (Standards - 29 CFR) - Table of Contents

• Part Number:	1910
• Part Title	Occupational Safety and Health Standards
• Subpart	I
• Subpart Title	Personal Protective Equipment
• Standard Number	<u>1910.134 App D</u>
• Title	Information for Employees Using Respirators When Not Required Under Standard (Mandatory)

Appendix D to Sec. 1910.134 Information for Employees Using Respirators When Not Required Under the Standard (Mandatory)

Respirators are an effective method of protection against designated hazards when properly selected and worn. Respirator use is encouraged, even when exposures are below the exposure limit, to provide an additional level of comfort and protection for workers. However, if a respirator is used improperly or not kept clean, the respirator itself can become a hazard to the worker. Sometimes, workers may wear respirators to avoid exposures to hazards, even if the amount of hazardous substance does not exceed the limits set by OSHA standards. If your employer provides respirators for your voluntary use, or if you provide your own respirator, you need to take certain precautions to be sure that the respirator itself does not present a hazard.

You should do the following:

1. Read and heed all instructions provided by the manufacturer on use, maintenance, cleaning and care, and warnings regarding the respirators limitations.
2. Choose respirators certified for use to protect against the contaminant of concern. NIOSH, the National Institute for Occupational Safety and Health of the U.S. Department of Health and Human Services, certifies respirators. A label or statement of certification should appear on the respirator or respirator packaging. It will tell you what the respirator is designed for and how much it will protect you.
3. Do not wear your respirator into atmospheres containing contaminants for which your respirator is not designed to protect against. For example, a respirator designed to filter dust particles will not protect you against gases, vapors, or very small solid particles of fumes or smoke.
4. Keep track of your respirator so that you do not mistakenly use someone else's respirator.

[63 FR 1152, Jan. 8, 1998; 63 FR 20098, April 23, 1998]

PROGRAM OVERVIEW

RETURN TO WORK PROGRAM

REGULATORY STANDARD: *Best Practices Guidelines*

INTRODUCTION: Return to Work programs are used to control injury related expenses and to assist injured workers in returning to work as quickly as possible. Return to Work can also assist in speeding recovery of the injured worker by increasing their self-esteem, as well as reducing the negative financial impacts on the worker due to lost time. In providing modified work to an injured employee, employers can exercise control over the cost of a claim by reducing indemnity payments while receiving productive work from the employee.

TRAINING:

- On the-job-training, dependent upon job responsibilities as needed
- All employees will be informed of the company policy and procedures to follow when returning an employee to work with work-related injuries.

ACTIVITIES:

- Evaluate employee's restrictions to determine modified work activities.
- Monitor employee progress until released to full duty.

FORMS:

- Letter to Physician at Time of Injury
- Physical Demands Analysis.
- Job Offer Letter
- Training Attendance Roster

Table of Contents

- 1. Purpose**
- 2. Scope**
- 3. Responsibilities**
- 4. Procedure**
- 5. Safety Information**
- 6. Training Information & Requirements**
- 7. Definitions**

Return to Work (RTW) Program

- 1. Purpose.** This program addresses the importance of and procedures for an employee with a work-related injury to return to work as quickly as possible.
- 2. Scope.** This program applies to all employees of the company.
- 3. Responsibilities.**
 - 3.1 Management/Supervisors will:
 - 3.1.1 Initiate and enforce the RTW Program.
 - 3.1.2 Arrange for first aid and prompt medical attention by directing the employee to the appropriate initial medical provider upon injury or incident.
 - 3.1.3 Upon receipt from the medical provider of documentation establishing life, physical and work related restrictions, offer appropriate modified duty work assignment by way of a job offer.
 - 3.1.4 Monitor the progress of the injured employee and enforce the injured worker's restrictions during recovery period.
 - 3.2 Employees will:
 - 3.2.1 IMMEDIATELY report all injuries to their supervisors.
 - 3.2.2 Return any documentation from the treating physician addressing any changes in restrictions to your supervisor after each visit to a medical provider.
 - 3.2.3 Be available for any modified job activities as defined by the treating physician and approved by your supervisor.
 - 3.2.4 Maintain open communication with your supervisor regarding your progress towards full recovery.
 - 3.2.5 Comply with work restrictions during recovery process.
 - 3.2.6 Be responsible to appear for all medical appointments.
 - 3.3 Internal Claim Coordinator:
 - 3.3.1 Work with immediate supervisors to identify modified duty activities within the restrictions identified by the physician.

- 3.3.2 Communicate with the treating medical provider regarding the availability of modified duty.
- 3.3.3 Maintain communications with the injured employee, company management, the medical provider and the insurance company's Claim Case Manager.

4. Procedure.

- 4.1 Procedure before an injury occurs.
 - 4.1.1 Management designates and trains an internal claim coordinator.
 - 4.1.2 Evaluate and document opportunities for modified duty activities that may be used when an injured employee is recovering from a work-related injury. This can be done by identifying job tasks that are available within your current work environment.
- 4.2 Procedure when an injury occurs.
 - 4.2.1 Arrange for prompt medical attention to treat the employee for emergency and ongoing medical care.
 - 4.2.2 Follow your established claim reporting procedures to report the injury.
 - 4.2.3 Immediately, or as soon as possible, provide the injured employee information to present to the treating provider regarding modified duty availability through "Physical Demand Analysis form"
 - 4.2.4 A Physical Demand Analysis form should also be attached with the letter for the treating physician to use to report a full return to work or any modified duty restrictions. Request that the provider complete the form.
 - 4.2.5 These two forms can be delivered to the medical provider by the injured employee upon initial treatment or faxed by you to the provider.
 - 4.2.6 After each physician visit, request that the employee return the Physical Demand Analysis form addressing any changes in restrictions.
 - 4.2.7 Upon the employee's return, review with the employee and immediate supervisor the modified assignments that accommodate the restrictions identified by the treating physician.
 - 4.2.8 It is the employee's responsibility to keep the insurance company and employer notified of any changes in address while unable to work due to temporary total disability or lack of modified work available.

4.2.9 Maintain open communication with the insurance company, the claim manager to ensure a successful RTW program. Inform the claim manager immediately:

- Any changes in restrictions from the medical provider.
- If the employee refuses or does not report to work while in the RTW program.

5. Safety Information.

5.1 Records and Documentation: The client will maintain a confidential file to include all documents relating to each workers' compensation claim involving RTW activities. The client will share this file only with appropriate and approved sources as directed any legal restrictions and the Workers' Compensation Protocol. Files include, but are not limited to:

- 5.1.1 Letter to Physician at Time of Injury
- 5.1.2 Physical restriction documents from physician
- 5.1.3 Return to work communications
- 5.1.4 Insurance company communications
- 5.1.5 Attorney letters
- 5.1.6 First Report of Injury
- 5.1.7 Employer notes and records
- 5.1.8 Work history

6. Training and Information.

- 6.1 On the-job-training, dependent upon job responsibilities as needed
- 6.2 All employees will be informed of the company policy and procedures to follow when returning an employee to work with work-related injuries.
- 6.3 All employees will participate in the training and education, as needed or required. This training will be reinforced during implementation of the RTW program.

7. Definitions.

- *Lost Time:* Any amount of time away from scheduled work activities due to the work-related injury. The recording of loss time begins the first full day after the injury that the employee is unable to return to work.
- *Modified Duty:* Any restrictions affecting the normal work activities necessary to promote healing while the employee to continue limited work activities. These modifications may include physical limitations, reassignment of work duties or limited amount of time available to work.
- *Physical Demand Analysis:* A comprehensive report from the treating physician identifying all life, physical and work restrictions or modification necessary to ensure the continuing healing of the individual while allowing for the individual to engage in appropriate work activities.

Letter To Physician at Time of Injury

Date: _____

Employee: _____

To the treating physician:

Our employee is presenting himself/herself to you for medical treatment under the Workers' Compensation protocol for a work-related injury.

Our company offers modified duty for all employees injured on the job. This employee has been instructed to return to work immediately after receiving treatment if medically able. Please complete the attached form identifying any life, physical or work restrictions that we can accommodate to promote the healing process and allow the employee to continue being productive in their work responsibilities:

The reporting and billing information for our workers' compensation insurance company is listed below for your convenience.

Thank you,

Company Name

Return to Work Capabilities Form
ATTN: TREATING PHYSICIAN/CARE PROVIDER

Please indicate the patient's ability and capacity to safely return to work at present time.

EMPLOYEE		JOB TITLE/DEPT	
EMPLOYER		DATE OF INJURY	

How often in the workday can the employee lift/carry, push/pull:

WEIGHTS (lbs)	NEVER	OCCASIONALLY (0-33%, 1-3 hrs)	FREQUENTLY (34-66%, 4-6 hrs)	CONSTANTLY (67-100%, 6-8 hrs)	COMMENTS
1-20	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
11-20	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
21-50	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
51-100	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
> 100	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

How often in the workday can the employee perform the following tasks:

Tasks	NEVER	OCCASIONALLY (0-33%, 1-3 hrs)	FREQUENTLY (34-66%, 4-6 hrs)	CONSTANTLY (67-100%, 6-8 hrs)
Standing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sitting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Walking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Climbing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Balancing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kneeling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Crawling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reaching	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Crouching	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bending	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Overhead lifting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Work on ladders	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Grasping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fine manipulation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Driving	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Environmental Conditions:	COMMENTS		
Temperature Extremes	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Noise	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Inhalants	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Chemicals	<input type="checkbox"/> Yes	<input type="checkbox"/> No	

Name of Treatment Provider

Title

Date

Signature

**Return To Work
Job Offer Letter**

Date: _____

To: _____

As of this date, we have received medical information from your treating physician and our workers' compensation provider that you are released to return to work under modified work restrictions. As you know, we have modified duty available.

You are instructed to report to work on _____.

Your return to work restrictions may include a reduction in hours, change of job activities or other restrictions. These restrictions have been established by your medical provider, approved by our workers' compensation company and accepted by your employer. We will address these changes upon your return. Your compliance with any restrictions will be required.

We look forward to having you back to work.

Sincerely,

Cc: Supervisor
SRS Claims
Dr. _____ (employee's physician)
Atty. _____ (employee's attorney, if applicable)

PROGRAM OVERVIEW

SAFE DRIVING AND VEHICLE/FLEET SAFETY PROGRAM

REGULATORY STANDARD: OSHA General Duty Clause

INTRODUCTION: Company owned or leased vehicles must be maintained in proper condition, and drivers appropriately licensed to operate the type of vehicle. This program outlines the basic inspection techniques for using a company owned or leased vehicle. This program also outlines the basic safety requirements for operating both company owned and leased vehicles and for personal vehicles used for company business purposes.

TRAINING:

- Appropriate driver's licenses for the type of vehicle are required.
- Basic driver safety is recommended for employees who use vehicles for company business.

ACTIVITIES:

- Inspect vehicles prior to operation

FORMS:

- Motor Vehicle Accident Report
- Safe Driving Vehicle Inspection
- Training Attendance Roster

Table of Contents

- 1. Purpose**
- 2. Scope**
- 3. Responsibilities**
- 4. Procedure**
- 5. Safety Information**
- 6. Training and Information**
- 7. Definitions**

Safe Driving and Fleet and Vehicle Management Safety Program

1. **Purpose.** This program outlines the recommendations for managing and inspecting automobiles and trucks used by company employees for business reasons.
2. **Scope.** This program applies to vehicles owned or leased by the company and to employee owned vehicles used for company business.
3. **Responsibilities.**
 - 3.1 Management:
 - 3.1.1 Ensure drivers are licensed and certified for the type of vehicle driven, without restrictions on their licenses.
 - 3.1.1.1 Where MVR reports are required annually or for pre-employment, ensure an adequate process to obtain and confidentially maintain this information is in place.
 - 3.1.2 Ensure any vehicles are properly inspected, registered and maintained.
 - 3.1.3 Ensure seat belts, safety chains for snow and other equipment is available and functional, as needed or required.
 - 3.1.4 Ensure vehicle insurance is in place for any owned or leased vehicles.
 - 3.1.5 Revoke the driving privileges for employees driving company owned or leased vehicles where the driving record or ability of the employee may be in question.
 - 3.2 Employees or Drivers:
 - 3.2.1 Ensure your driver's license is current
 - 3.2.2 Ensure your driver's license is the appropriate type for the vehicle being used.
 - 3.2.3 Inspect vehicles before driving.
 - 3.2.4 Ensure you are capable of driving safely (physical, emotional and mental health)
 - 3.3 Safety Officer:
 - 3.3.1 Assist in the development and implementation of the written program, as needed.
4. **Procedure.**
 - 4.1 General Requirements:
 - 4.1.1 Only authorized personnel may drive company vehicles.

- 4.1.2 Driving while under the influence of alcohol, inhalants or illegal drugs, or after taking any medications that may impair your driving ability is prohibited.
 - 4.1.3 Drivers must obey all traffic signals and devices, and obey traffic laws at all times.
 - 4.1.4 Seatbelts must be worn at all times while the vehicle is in motion.
 - 4.1.5 Only company authorized persons may ride as a passenger in a company owned or leased vehicle, based on company policy.
 - 4.1.6 Drivers may only use “hands-free” style phone systems when the vehicle is in motion, based on state requirements.
- 4.2 Break Downs Involving Company Vehicles:
- 4.2.1 Drivers must notify the company as soon as possible after any accident or incident with a company vehicle, regardless of how minor the incident may have been.
 - 4.2.2 Contact your supervisor or manager immediately for assistance obtaining towing or repair.
 - 4.2.3 If the company subscribes to a vehicle service agency (like AAA or other road-service provider), follow the established procedure for contacting that agency.
- 4.3 Vehicular Accidents. In the event of an accident, remain calm. Our first priority is the health and safety of our employees. Employees involved in a work-related vehicular accident must:
- 4.3.1.1 Contact the appropriate local law enforcement agency. Even if the incident is minor, a police report is required for all vehicular accidents involving a company owned vehicle or for those occurring while the employee is performing company business.
 - 4.3.1.2 Notify company management or Supervisors as soon as possible.
 - 4.3.1.3 If possible, leave vehicles in their positions until the police arrive.
 - 4.3.1.4 Do not discuss the accident with others involved. Share your observations only with the police.
 - 4.3.1.5 Exchange, if possible, the following information with all other drivers involved:
 - 4.3.1.5.1 The driver’s name
 - 4.3.1.5.2 The names of all other passengers (per involved vehicle)
 - 4.3.1.5.3 The driver’s/auto insurance information

- 4.3.1.5.4 The other vehicle information: make, model, year, color, and license plate number
- 4.3.1.5.5 The name of the driver's employer if the driver was traveling for business
- 4.3.1.6 If property damage occurred to a vehicle of an unknown owner (e.g. a parked car) or other property (e.g. a fence), do NOT leave the scene until a full police report is completed.

5. Safety Information.

- 5.1 Notification of Driver Suspension, Accidents or similar issues
 - 5.1.1 Employees must notify their supervisor or manager within 24 hours of any citation of traffic or driving violation, if the violation occurred while using a company vehicle.
 - 5.1.2 Employees who may be expected to drive for company business must notify their supervisor or manager if their license is suspended, revoked or restricted for any reason.
- 5.2 Companies will maintain owned or leased vehicles in a safe manner.
 - 5.2.1 Employees who find defects or repair needs with any company vehicle must notify their supervisor or manager immediately.
 - 5.2.2 Employees may not drive company vehicles that are in an unsafe condition.
- 5.3 Pre-Driving Inspection:
 - 5.3.1 Tire condition and, if necessary, pressure
 - 5.3.2 Spare tire available
 - 5.3.3 Lights and turn signals operational
 - 5.3.4 Windshield wipers functional
 - 5.3.5 Windshield intact (no cracks or breaks)
 - 5.3.6 Defroster operational
 - 5.3.7 Oil and fluids (windshield cleaner, transmission, brake fluid) present at required levels.
 - 5.3.8 Brakes functional
 - 5.3.9 Mirrors are present, properly adjusted and clean.
 - 5.3.10 Vehicle loads are secure

5.3.11 Emergency materials and equipment (fire extinguishers, accident reporting kit, vehicle registration, etc.) are present, as needed.

5.3.12 General vehicle condition is appropriate. Scrapes, scratches, dents or other damage should be reported before taking the vehicle on the road.

6. Training and Information.

6.1 It is recommended that employees undergo defensive driving or general safe driving training when they are required to operate company owned or leased vehicles.

7. Definitions.

- *Driving Responsibilities* – An employee who drives a vehicle (company owned or leased, or a personal vehicle) for company business purposes.
- *Vehicle* – a company owned or leased automobile, truck or motorcycle which requires a valid driver's license to operate on public roadways.

MOTOR VEHICLE ACCIDENT REPORT							
Employee or driver	Driver Name			Company Name			
	Business Address		Business Phone		Was vehicle being used for company business? <input type="checkbox"/> Yes <input type="checkbox"/> No		
	Operator Driver's License #	License Restrictions? <input type="checkbox"/> Yes <input type="checkbox"/> No		If Yes, specify:		Previous accidents with company vehicles? <input type="checkbox"/> Yes <input type="checkbox"/> No	
	License Plate #	Year	Make	Model	# of Passengers		
	Vehicle: <input type="checkbox"/> Owned <input type="checkbox"/> Leased?	Describe damages to company vehicle					
Other Vehicles	Owner Car 2		Phone Number		Owner Car 3		Phone Number
	Address (street, city, zip)			Address (street, city, zip)			
	Driver Name		License Plate Number		Driver Name		License Plate Number
	Driver Address (street, city, zip)			Driver Address (street, city, zip)			
	Vehicle Make	Model	Year	Vehicle Make	Model	Year	
	Name of Passengers (if any)			Name of Passengers (if any)			
	Describe Damage			Describe Damage			
	Insurance Company	Policy #	State DL Number	Insurance Company	Policy #	State DL Number	
Other Property	Fully Describe Damage						
	Name and Address of Owner						
Injured Parties	Name	Extent of Injury		Age	Veh 1	Other Veh 2	Other Veh 3
Witnesses	Name		Address			Phone Number	
Other Reports	Police Involvement? <input type="checkbox"/> Yes <input type="checkbox"/> No		Which Police Agency? <input type="checkbox"/> State <input type="checkbox"/> City <input type="checkbox"/> Town <input type="checkbox"/> County Sheriff <input type="checkbox"/> Other:				
	Citation Issued? <input type="checkbox"/> Yes <input type="checkbox"/> No		To Whom? <input type="checkbox"/> Vehicle 1 <input type="checkbox"/> Vehicle 2 <input type="checkbox"/> Vehicle 3				

MOTOR VEHICLE ACCIDENT REPORT

Check all that apply:

- | | | |
|---|---|---|
| <input type="checkbox"/> Straight Road
<input type="checkbox"/> Curve Right
<input type="checkbox"/> Curve Left
<input type="checkbox"/> With Turning Lane | <input type="checkbox"/> One Lane
<input type="checkbox"/> Two Lane
<input type="checkbox"/> Three Lane
<input type="checkbox"/> Four Lane | <input type="checkbox"/> Level
<input type="checkbox"/> Hill Crest
<input type="checkbox"/> Hill Uphill
<input type="checkbox"/> Hill Downhill |
|---|---|---|

Attach a drawing or show on the diagram below, the position of each car, vehicle or injured person, indicating (with an arrow) the direction of travel of each. If the street or view was obstructed in any way, indicate where and how; also indicate any traffic signals or devices, or signs, including lines on the road.

DRIVER:		SUPERVISOR:	
Print Name:		Print Name:	
Signature:		Signature:	
Report completed by (if different)		Date:	

SAFE DRIVING VEHICLE INSPECTION CHECKLIST		
ITEM	YES	NO
Tires are in good condition (tread, pressure)		
Spare tire is accessible		
Head-lights operational (regular and high beams)		
Turn signals operational		
Windshield wipers operational		
Washer fluid available		
Windshield intact (no cracks or breaks)		
Defroster operational, as needed		
Oil and fluid levels (brake, transmission, oil) present at required levels		
Brake lights function		
Mirrors (side and rearview) present and in good condition		
Mirrors adjusted for driver		
Vehicle loads and any storage of materials are secure		
Fire extinguishers are present, as needed		
Vehicle registration is available		
Accident reporting information is available		
Vehicle is in generally good condition.		
Note any dents, scratches or other damage issues present:		
Checklist completed by:		
Date:	Time of Day:	

PROGRAM OVERVIEW

SAFETY CHECKLISTS

Company Specific Corrective Actions

Training Attendance Roster

Safety Checklist [Construction Safety]

Safety Checklist [OSHA Self-Inspection]

COMPANY SPECIFIC CORRECTIVE ACTIONS				
DATE:	ASSESSOR:	DEPT OR AREA:	SUBMITTED TO:	
<u>CONDITION</u>	<u>COMPLIANT</u>	<u>CORRECTED BY</u>	<u>COMPLETION DATE</u>	<u>COMMENTS AND CORRECTIVE ACTION</u>
	<input type="checkbox"/> Yes <input type="checkbox"/> No			
	<input type="checkbox"/> Yes <input type="checkbox"/> No			
	<input type="checkbox"/> Yes <input type="checkbox"/> No			
	<input type="checkbox"/> Yes <input type="checkbox"/> No			
	<input type="checkbox"/> Yes <input type="checkbox"/> No			
	<input type="checkbox"/> Yes <input type="checkbox"/> No			
	<input type="checkbox"/> Yes <input type="checkbox"/> No			
	<input type="checkbox"/> Yes <input type="checkbox"/> No			
	<input type="checkbox"/> Yes <input type="checkbox"/> No			
	<input type="checkbox"/> Yes <input type="checkbox"/> No			
	<input type="checkbox"/> Yes <input type="checkbox"/> No			
	<input type="checkbox"/> Yes <input type="checkbox"/> No			
	<input type="checkbox"/> Yes <input type="checkbox"/> No			

CONSTRUCTION SAFETY CHECKLIST	
Completed by:	Date:
ITEM	COMPLIANT?
Is an injury prevention program established for construction worksites? [29 CFR 1926.20(b)(1)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Does the program include regular inspections by a designated competent person of the worksite, materials, and equipment? [29 CFR 1926.20(b)(2)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
When machines, tools, materials, or equipment are identified as unsafe, is one of these procedures followed? [29 CFR 1926.20(b)(3)] a. they are tagged b. the controls are locked to render them inoperable; or c. they are immediately removed from the work area?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are only qualified employees (by training or experience) permitted to operate machinery? [29 CFR 1926.20(b)(4)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are all employees trained to recognize and avoid unsafe conditions? Do they know the regulations applicable to the work environment? [29 CFR 1926.21(b)(2)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Have employees been instructed regarding the safe handling and use of poisons, caustics, and other harmful substances? Are they aware of the hazards, personal hygiene, and personal protective measures required? [29 CFR 1926.21(b)(3)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
In areas where harmful plants or animals may be present, have employees been instructed regarding the hazards, how to avoid injury, and first aid procedures to be used in the event of injury? [29 CFR 1926.21(b)(4)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Have employees who are required to handle or use flammable liquids, gases, or toxic materials been instructed in the safe handling and use of these materials? [29 CFR 1926.21(b)(5)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Have all employees who are required to enter confined or enclosed spaces been instructed in the nature of the hazards involved, the necessary precautions to take, and the use of protective and emergency equipment required? [29 CFR 1926.21(b)(6)(i)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are medical personnel available for advice and consultation? [29 CFR 1926.23 and 1926.50(a)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are provisions made in advance of any project for prompt medical attention in case of serious injury? [29 CFR 1926.50(b)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
If emergency medical care is not readily available, is a trained person available to render first aid? [29 CFR 1926.50(c)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are first-aid supplies readily available at the worksite? [29 CFR 1926.50(d)(1)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are first-aid supplies at the worksite in a weatherproof container with individual sealed packages for each type of item? [29 CFR 1926.50(d)(2)]	<input type="checkbox"/> YES <input type="checkbox"/> NO

ITEM	COMPLIANT?
Are first-aid supplies checked to replace expended items each time they are sent to the worksite and at least weekly if left at the worksite? [29 CFR 1926.50(d)(2)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Is transportation available for taking an injured person to medical care, or is a communication system available for contacting an ambulance service? [29 CFR 1926.50(e)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are telephone numbers of physicians, hospitals, or ambulances conspicuously posted at the worksite? [29 CFR 1926.50(f)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Is an adequate supply of drinking water at or near the worksite? [29 CFR 1926.51(a)(1)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
If portable drinking water containers are used at the worksite, can they be tightly closed and are they equipped with a tap? [29 CFR 1926.51(a)(2)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Is dipping water from a drinking water container and use of a common drinking cup prohibited? [29 CFR 1926.51(a)(2) and (4)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are washing facilities at or near the worksite for employees who handle paints, coatings, pesticides, or other harmful contaminants? [29 CFR 1926.51(f)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Has an effective fire protection and prevention program been established at the worksite through all phases of construction, repair, or alteration? [29 CFR 1926.24]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Has all form and scrap lumber with protruding nails, re-bar and all other debris been cleared from work areas, passageways, and stairs in and around buildings or other structures? [29 CFR 1926.25(a)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Is combustible scrap and debris removed from the work area at regular intervals during the course of construction? [29 CFR 1926.25 (b) and 1926.252(c)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are containers provided for the collection and separation of waste, trash, oily and used rags, and other refuse? [29 CFR 1926.25(c)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are all solvent wastes, oily rags, and flammable liquids kept in fire-resistant, covered containers until removed from the work area? [29 CFR 1926.252(e)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are all construction areas, aisles, stairs, ramps, runways, corridors, offices, labs, shops, and storage areas where work is in progress well lighted? [29 CFR 1926.26 and 1926.56]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Is appropriate personal protective equipment used in all operations where hazardous conditions exist? [29 CFR 1926.28]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are all materials that are stored in tiers stacked, racked, blocked, interlocked, or otherwise secured to prevent sliding, falling, or collapse? [29 CFR 1926.250(a)(1)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Is the minimum safe load limit of floors within buildings and structures, in pounds per square foot, conspicuously posted in all storage areas? [29 CFR 1926.250(a)(2)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are maximum safe loads always maintained? [29 CFR 1926.250(a)(2)]	<input type="checkbox"/> YES <input type="checkbox"/> NO

ITEM	COMPLIANT?
Are aisles and passageways kept clear to provide for the free and safe movement of material-handling equipment and people? [29 CFR 1926.250(a)(3)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are such areas kept in good repair? [29 CFR 1926.250(a)(3)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Where a difference in road or working level exists, are means such as ramps, blocking, or grading provided to ensure the safe movement of vehicles between two levels? [29 CFR 1926.250(a)(4)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Is material stored inside buildings placed more than 6 feet away from any hoist-way or inside floor openings, or more than 10 feet away from an exterior wall? [29 CFR 1926.250(b)(1)] Note: The exterior wall must not extend beyond the top of the material stored.	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are non-compatible materials segregated in storage? [29 CFR 1926.250(b)(3)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are bagged materials stacked by stepping-back the layers and cross-keying the stack at least every 10 bags? [29 CFR 1926.250(b)(4)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Is it prohibited to store more material on scaffolds or runways than needed for the immediate operation? [29 CFR 1926.250(b)(5)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are brick stacks limited to 7 feet in height? [29 CFR 1926.250(b)(6)] Note: When a loose brick stack reaches a height of 4 feet, it must be tapered back 2 inches on every foot of height above the 4 foot level.	<input type="checkbox"/> YES <input type="checkbox"/> NO
When masonry blocks are stacked higher than 6 feet, is the stack tapered back one-half block per tier above the 6-foot level? [29 CFR 1926.250(b)(7)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are all nails withdrawn from lumber before lumber is stacked? [29 CFR 1926.250(b)(8)(i)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Is lumber stacked on level and solidly supported sills? [29 CFR 1926.250(b)(8)(ii)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Is lumber stacked in a stable, self-supporting manner? [29 CFR 1926.250(b)(8)(iii)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are all lumber piles 20 feet or less in height? [29 CFR 1926.250(b)(8)(iv)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are lumber piles to be handled manually stacked a height of 16 feet or less? [29 CFR 1926.250(b)(8)(iv)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are all structural steel, poles, pipe, bar stock other cylindrical material (unless racked) stacked and blocked to prevent spreading or tilting? [29 CFR 1926.250(b)(9)]	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are all masonry walls over 8 feet in height braced to prevent overturning? [29 CFR 1926.706(b)]	<input type="checkbox"/> YES <input type="checkbox"/> NO

OSHA Compliance Self-Inspection Checklist

Checklist Completed by:

Date:

ABRASIVE WHEEL EQUIPMENT - GRINDERS

- Is the work rest used and kept adjusted to within 1/8 inch of the wheel?
- Is the adjustable tongue on the top side of the grinder used and kept adjusted to within 1/4 inch of the wheel?
- Do side guards cover the spindle, nut and flange and 75 percent of the wheel diameter?
- Are bench and pedestal grinders permanently mounted?
- Are goggles or face shields always worn when grinding?
- Is the maximum RPM rating of each abrasive wheel compatible with the RPM rating of the grinder motor?
- Are fixed or permanently mounted grinders connected to their electrical supply system with metallic conduit or other permanent wiring method?
- Does each grinder have an individual on and off control switch?
- Is each electrically operated grinder effectively grounded?
- Before new abrasive wheels are mounted, are they visually inspected and ring tested?
- Are dust collectors and powered exhausts provided on grinders used in operations that produce large amounts of dust?
- Are splash guards mounted on grinders that use coolant to prevent the coolant reaching employees?
- Is cleanliness maintained around grinders?

OSHA Compliance Self-Inspection Check List

COMPRESSORS AND COMPRESSED AIR

- Are compressors equipped with pressure relief valves and pressure gauges?
- Are compressor air intakes installed and equipped so as to ensure that only clean uncontaminated air enters the compressor?
- Are air filters installed on the compressor intake?
- Are compressors operated and lubricated in accordance with the manufacturer's recommendations?
- Are safety devices on compressed air systems checked frequently?
- Before any repair work is done on the pressure system of a compressor, is the pressure bled off and the system locked-out?
- Are signs posted to warn of the automatic starting feature of the compressors?
- Is the belt drive system totally enclosed to provide protection for the front, back, top and sides?
- Is it strictly prohibited to direct compressed air towards a person?
- Are employees prohibited from using highly compressed air for cleaning purposes?
- If compressed air is used for cleaning off clothing, is the pressure reduced to less than 10 psi?
- When using compressed air for cleaning, do employees wear protective chip guarding and personal protective equipment?
- Are safety chains or other suitable locking devices used at couplings of high pressure hose lines where a connection failure would create a hazard?
- Before compressed air is used to empty containers of liquid, is the safe working pressure of the container checked?
- When compressed air is used with abrasive blast cleaning equipment, is the operating valve a type that must be held open manually?
- When compressed air is used to inflate auto tires, is a clip-on chuck and an inline regulator preset to 40 psi required?
- Is it prohibited to use compressed air to clean up or move combustible dust if such action could cause the dust to be suspended in the air and cause a fire or explosion hazard?

OSHA Compliance Self-Inspection Check List

COMPRESSOR AIR RECEIVERS

- Is every receiver equipped with a pressure gauge and with one or more automatic, spring-loaded safety valves?
- Is the total relieving capacity of the safety valve capable of preventing pressure in the receiver from exceeding the maximum allowable working pressure of the receiver by more than 10 percent?
- Is every air receiver provided with a drain pipe and valve at the lowest point for the removal of accumulated oil and water?
- Are compressed air receivers periodically drained of moisture and oil?
- Are all safety valves tested frequently and at regular intervals to determine whether they are in good operating condition?
- Is there a current operating permit used by the Division of Occupational Safety and Health?
- Is the inlet of air receivers and piping systems kept free of accumulated oil and carbonaceous materials?

OSHA Compliance Self-Inspection Check List

COMPRESSED GAS CYLINDERS

- Are cylinders with a water weight capacity over 30 pounds, equipped with means for connecting a valve protector device, or with a collar or recess to protect the valve?
- Are cylinders legibly marked to clearly identify the gas contained?
- Are compressed gas cylinders stored in areas which are protected from external heat sources such as flame impingement, intense radiant heat, electric arcs or high temperature lines?
- Are cylinders located or stored in areas where they will not be damaged by passing or falling objects or subjects to tampering by unauthorized persons?
- Are cylinders stored or transported in a manner to prevent them from creating a hazard by tipping, falling or rolling?
- Are cylinders containing liquefied fuel gas, stored or transported in a position so that the safety relief device is always in direct contact with the vapor space in the cylinder?
- Are valve protectors always placed on cylinders when the cylinders are not in use or connected for use?
- Are all valves closed off before a cylinder is moved, when the cylinder is empty and at the completion of each job?
- Are low pressure fuel-gas cylinders checked periodically for corrosion, general distortion, cracks or any other defect that might indicate a weakness or render it unfit for service?
- Does the periodic check of low pressure fuel-gas cylinders include a close inspection of the cylinders' bottom?

OSHA Compliance Self-Inspection Check List

ELECTRICAL

- Do you specify compliance with OSHA for all contract electrical work?
- Are all employees required to report as soon as practicable any obvious hazard to life or property observed in connection with electrical equipment or lines?
- Are employees instructed to make preliminary inspections and/or appropriate tests to determine what conditions exist before starting work on electrical equipment or lines?
- When electrical equipment or lines are to be serviced, maintained or adjusted, are necessary switches opened, locked-out and tagged whenever possible?
- Are portable electrical tools and equipment grounded or of the double insulated type?
- Are electrical appliances such as vacuum cleaners, polishers, vending machines, etc. grounded?
- Do extension cords being used have a grounding conductor?
- Are multiple plug adapters prohibited?
- Are ground-fault circuit interrupters installed on each temporary 15 or 20 ampere, 120 volt AC circuit at locations where construction, demolition, modifications, alterations or excavations are being performed?
- Are all temporary circuits protected by suitable disconnecting switches or plug connectors at the junction with permanent wiring?
- Do you have electrical installations in hazardous dust or vapor areas? If so, do they meet the National Electrical Code (NEC) for hazardous locations?
- Is exposed wiring and cords with frayed or deteriorated insulation repaired or replaced promptly?
- Are flexible cords and cables free of splices or taps?
- Are clamps or other securing means provided on flexible cords or cables at plugs, receptacles, tools, equipment, etc., and is the cord jacket securely held in place?
- Are all cord, cable and raceway connections intact and secure?
- In wet or damp locations, are electrical tools and equipment appropriate for the use or location or otherwise protected?
- Is the location of electrical power lines and cables (over-head, underground, under-floor, other side of walls, etc.) determined before digging, drilling or similar work is begun?
- Are metal measuring tapes, ropes, hand-lines or similar devices with metallic thread woven into the fabric prohibited where they could come in contact with energized parts of equipment or circuit conductors?

OSHA Compliance Self-Inspection Check List

ELECTRICAL (Page 2)

- Is the use of metal ladders prohibited in areas where the ladder or the person using the ladder could come in contact with energized parts of equipment, fixtures or circuit conductors?
- Are all disconnecting switches and circuit breakers labeled to indicate their use or equipment served?
- Are disconnecting means always opened before fuses are replaced?
- Do all interior wiring systems include provisions for grounding metal parts of electrical raceways, equipment and enclosures?
- Are all electrical raceways and enclosures securely fastened in place?
- Are all energized parts of electrical circuits and equipment guarded against accidental contact by approved cabinets or enclosures?
- Is sufficient access and working space provided and maintained about all electrical equipment to permit ready and safe operations and maintenance?
- Are all unused openings (including conduit knockouts) in electrical enclosures and fittings closed with appropriate covers, plugs or plates?
- Are electrical enclosures such as switches, receptacles, junction boxes, etc., provided with tight-fitting covers or plates?
- Are disconnecting switches for electrical motors in excess of two horsepower, capable of opening the circuit when the motor is in a stalled condition, without exploding? (Switches must be horsepower rated equal to or in excess of the motor hp rating.)
- Is low voltage protection provided in the control device of motors driving machines or equipment which could cause probable injury from inadvertent starting?
- Is each motor disconnecting switch or circuit breaker located within sight of the motor control device?
- Is each motor located within sight of its controller or the controller disconnecting means capable of being locked in the open position or is a separate disconnecting means installed in the circuit within sight of the motor?
- Is the controller for each motor in excess of two horsepower, rated in horsepower equal to or in excess of the rating of the motor in serves?
- Are employees who regularly work on or around energized electrical equipment or lines instructed in the cardio-pulmonary resuscitation (CPR) methods?
- Are employees prohibited from working alone on energized lines or equipment over 600 volts?

OSHA Compliance Self-Inspection Check List

ELEVATED SURFACES

- Are signs posted, when appropriate, showing the elevated surface load capacity?
- Are surfaces elevated more than 30 inches above the floor or ground provided with standard guardrails?
- Are all elevated surfaces (beneath which people or machinery could be exposed to falling objects) provided with standard 4-inch toe-boards?
- Is a permanent means of access and egress provided to elevated storage and work surfaces?
- Is required headroom provided where necessary?
- Is material on elevated surfaces piled, stacked or racked in a manner to prevent it from tipping, falling, collapsing, rolling or spreading?
- Are dock boards or bridge plates used when transferring materials between docks and trucks or rail cars?

OSHA Compliance Self-Inspection Check List

EMPLOYER POSTING

- Is the required OSHA workplace poster displayed in a prominent location where all employees are likely to see it?
- Are emergency telephone numbers posted where they can be readily found in case of emergency?
- Where employees may be exposed to any toxic substances or harmful physical agents, has appropriate information concerning employee access to medical and exposure records and "Material Safety Data Sheets" been posted or otherwise made readily available to affected employees?
- Are signs concerning "Exiting from buildings," room capacities, floor loading, biohazards, exposures to x-ray, microwave, or other harmful radiation or substances posted where appropriate?
- Is the Summary of Occupational Illnesses and injuries posted in the month of February?

OSHA Compliance Self-Inspection Check List

ENTERING CONFINED SPACES

- Are confined spaces thoroughly emptied of any corrosive or hazardous substances, such as acids or caustics, before entry?
- Are all lines to a confined space, containing inert, toxic, flammable or corrosive materials valved off and blanked or disconnected and separated before entry?
- Is it required that all impellers, agitators or other moving equipment inside confined spaces be locked-out if they present a hazard?
- Is either natural or mechanical ventilation provided prior to confined space entry?
- Are appropriate atmospheric tests performed to check for oxygen deficiency, toxic substances and explosive concentrations in the confined space before entry?
- Is adequate illumination provided for the work to be performed in the confined space?
- Is the atmosphere inside the confined space frequently tested or continuously monitored during conduct of work?
- Is there an assigned safety standby employee outside of the confined space, when required, whose sole responsibility is to watch the work in progress, sound an alarm if necessary and render assistance?
- Is the standby employee appropriately trained and equipped to handle an emergency?
- Is the standby employee or other employees prohibited from entering the confined space without lifelines and respiratory equipment if there is any question as to the cause of an emergency?
- Is approved respiratory equipment required if the atmosphere inside the confined space cannot be made acceptable?
- Is all portable electrical equipment required if the atmosphere inside the confined space cannot be made acceptable?
- Is all portable electrical equipment used inside confined spaces either grounded and insulated or equipped with ground fault protection?
- Before gas welding or burning is started in a confined space, are hoses checked for leaks, compressed gas bottles forbidden inside of the confined space, torches kept only outside of the confined area and the confined area tested for an explosive atmosphere each time before a lighted torch is to be taken into the confined space?
- If employees will be using oxygen-consuming equipment such as salamanders, torches, furnaces, etc., in a confined space, is sufficient air provided to assure combustion without reducing the oxygen concentration of the atmosphere below 19.5 percent by volume?
- Whenever combustion-type equipment is used in a confined space, are provisions made to ensure the exhaust gases are vented outside of the enclosure?

OSHA Compliance Self-Inspection Check List

ENTERING CONFINED SPACES *(Page 2)*

- Is each confined space checked for decaying vegetation or animal matter which may produce methane?
- Is the confined space checked for possible industrial waste which could contain toxic properties?
- If the confined space is below the ground and near areas where motor vehicles will be operating, is it possible for vehicle exhaust or carbon monoxide to enter the space?

OSHA Compliance Self-Inspection Check List

ENVIRONMENTAL CONTROLS

- Are all work areas properly illuminated?
- Are employees instructed in proper first-aid and other emergency procedures?
- Are hazardous substances, blood and other potentially infectious materials identified, which may cause harm by inhalation, ingestion or skin absorption or contact?
- Are employees aware of the hazards involved with the various chemicals they may be exposed to in their work environment, such as ammonia, chlorine, epoxies, caustics, etc.?
- Is employee exposure to chemicals in the workplace kept within acceptable levels?
- Can a less harmful method or produce be used?
- Is the work area's ventilation system appropriate for the work being performed?
Are spray painting operations done in spray rooms or booths equipped with an appropriate exhaust system?
- Is employee exposure to welding fumes controlled by ventilation, use of respirators, exposure time or other means?
- Are welders and other workers nearby provided with flash shields during welding operations?
- If forklifts and other vehicles are used in buildings or other enclosed areas, are the carbon monoxide levels kept below maximum acceptable concentration?
- Has there been a determination that noise levels in the facilities are within acceptable levels?
- Are steps being taken to use engineering controls to reduce excessive noise levels?
- Are proper precautions being taken when handling asbestos and other fibrous materials?
- Are caution labels and signs used to warn of hazardous substances (e.g., asbestos) and biohazards (e.g., bloodborne pathogens)?
- Are wet methods used, when practicable, to prevent the emission of airborne asbestos fibers, silica dust and similar hazardous materials?
- Are engineering controls examined and maintained or replaced on a scheduled basis?
- Is vacuuming with appropriate equipment used whenever possible rather than blowing or sweeping dust?
- Are grinders, saws and other machines that produce respirable dusts vented to an industrial collector or central exhaust system?
- Are all local exhaust ventilation systems designed and operating properly such as air flow and volume necessary for the application, ducts not plugged or belts slipping?
- Is personal protective equipment provided, used and maintained wherever required?

OSHA Compliance Self-Inspection Check List

ENVIRONMENTAL CONTROLS *(Page 2)*

- Are there written standard operating procedures for the selection and use of respirators where needed?
- Are restrooms and washrooms kept clean and sanitary?
- Is all water provided for drinking, washing and cooking potable?
- Are all outlets for water not suitable for drinking clearly identified?
- Are employees' physical capacities assessed before being assigned to jobs requiring heavy work?
- Are employees instructed in the proper manner of lifting heavy objects?
- Where heat is a problem, have all fixed work areas been provided with spot cooling or air conditioning?
- Are employees screened before assignment to areas of high heat to determine if their health condition might make them more susceptible to having an adverse reaction?
- Are employees working on streets and roadways where they are exposed to the hazards of traffic, required to wear bright colored (traffic orange) warning vests?
- Are exhaust stacks and air intakes so located that contaminated air will not be re-circulated within a building or other enclosed area?
- Is equipment producing ultra-violet radiation properly shielded?
- Are universal precautions observed where occupational exposure to blood or other potentially infectious materials can occur and in all instances where differentiation of types of body fluids or potentially infectious materials is difficult or impossible?

OSHA Compliance Self-Inspection Check List

EXIT DOORS

- Are doors which are required to serve as exits designed and constructed so that the way of exit travel is obvious and direct?
- Are windows which could be mistaken for exit doors, made inaccessible by means of barriers or railings?
- Are exit doors operable from the direction of exit travel without the use of a key or any special knowledge or effort when the building is occupied?
- Is a revolving, sliding or overhead door prohibited from serving as a required exit door?
- Where panic hardware is installed on a required exit door, will it allow the door to open by applying a force of 15 pounds or less in the direction of the exit traffic?
- Are doors on cold storage rooms provided with an inside release mechanism which will release the latch and open the door even if it is padlocked or otherwise locked on the outside?
- Where exit doors open directly onto any street, alley or other area where vehicles may be operated, are adequate barriers and warnings provided to prevent employees stepping into the path of traffic?
- Are doors that swing in both directions and are located between rooms where there is frequent traffic, provide with viewing panels in each door?

OSHA Compliance Self-Inspection Check List

EXITING OR EGRESS

- Are all exits marked with an exit sign and illuminated by a reliable light source?
- Are the directions to exits, when not immediately apparent, marked with visible signs?
- Are doors, passageways or stairways, that are neither exits nor access to exits and which could be mistaken for exits, appropriately marked "NOT AN EXIT," "TO BASEMENT," "STOREROOM," etc.?
- Are exit signs provided with the word "EXIT" in lettering at least ½-inch wide?
- Are exit doors side-hinged?
- Are all exits kept free of obstructions?
- Are at least two means of egress provided from elevated platforms, pits or rooms where the absence of second exit would increase the risk of injury from hot, poisonous, corrosive, suffocating, flammable or explosive substances?
- Are there sufficient exits to permit prompt escape in case of emergency?
- Are special precautions taken to protect employees during construction and repair operations?
- Is the number of exits from each floor of a building and the number of exits from the building itself, appropriate for the building occupancy load?
- Are exit stairways which are required to be separated from other parts of a building, enclosed by at least 2-hour fire-resistive construction in buildings more than four stories in height, and not less than 1-hour fire-resistive constructive elsewhere?
- Where ramps are used as part of required exiting from a building, is the ramp slope limited to 1 ft. vertical and 12 ft horizontal?
- Where exiting will be through frameless glass doors, glass exit doors, storm doors, etc., are the doors fully tempered and meet the safety requirements for human impact?

OSHA Compliance Self-Inspection Check List

FIRE PROTECTION

- Is your local fire department well acquainted with your facilities, its location and specific hazards?
- If you have a fire alarm system, is it certified as required?
- If you have a fire alarm system, is it tested at least annually?
- If you have interior stand pipes and valves, are they inspected regularly?
- If you have outside private fire hydrants, are they flushed at least once a year and on a routine preventative maintenance schedule?
- Are fire doors and shutters in good operating condition?
- Are fire doors and shutters unobstructed and protected against obstructions, including their counterweights?
- Are fire door and shutter fusible links in place?
- Are automatic sprinkler system water control valves, air and water pressure checked weekly/periodically as required?
- Is the maintenance of automatic sprinkler systems assigned to responsible persons or to a sprinkler contractor?
- Are sprinkler heads protected by metal guards, when exposed to physical damage?
- Is proper clearance maintained below sprinkler heads?
- Are portable fire extinguishers provided in adequate number and type?
- Are fire extinguishers mounted in readily accessible locations?
- Are fire extinguishers recharged regularly and noted on the inspection tag?
- Are employees periodically instructed in the use of extinguishers and fire protection procedures?

OSHA Compliance Self-Inspection Check List

FLAMMABLE & COMBUSTIBLE MATERIALS

- Are combustible scrap, debris and waste materials (oily rags, etc.) stored in covered metal receptacles and removed from the work site promptly?
- Is proper storage practiced to minimize the risk of the fire including spontaneous combustion?
- Are approved containers and tanks used for the storage and handling of flammable and combustible liquids?
- Are all connections on drums and combustible liquid piping, vapor and liquid tight?
- Are all flammable liquids kept in closed containers when not in use (e.g. parts cleaning tanks, pans, etc.?)
- Are bulk drums of flammable liquids grounded and bonded to containers during dispensing?
- Do storage rooms for flammable and combustible liquids have explosion-proof lights?
- Do storage rooms for flammable and combustible liquids have mechanical or gravity ventilation?
- Is liquefied petroleum gas stored, handled and used in accordance with safe practices and standards?
- Are "NO SMOKING" signs posted in liquefied petroleum gas tanks?
- Are liquefied petroleum storage tanks guarded to prevent damage from vehicles?
- Are all solvent wastes and flammable liquids kept in fire-resistant, covered containers until they are removed from the work site?
- Is vacuuming used whenever possible rather than blowing or sweeping combustible dust?
- Are firm separators placed between containers of combustibles or flammables, when stacked one upon another, to assure their support stability?
- Are fuel gas cylinders and oxygen cylinders separated by distance, fire-resistant barriers, etc. while in storage?
- Are fire extinguishers selected and provided for the types of materials in areas where they are to be used?
 - Class A Ordinary combustible material fires.
 - Class B Flammable liquid, gas or grease fires.
 - Class C Energized-electrical equipment fires.
- Are appropriate fire extinguishers mounted within 75 feet of outside areas containing flammable liquids, and within 10 feet of any inside storage area for such materials?
- Are extinguishers free from obstructions or blockage?

OSHA Compliance Self-Inspection Check List

FLAMMABLE & COMBUSTIBLE MATERIALS *(Page 2)*

- Are all extinguishers serviced, maintained and tagged at intervals not to exceed one year?
- Are all extinguishers fully charged and in their designated places?
- Where sprinkler systems are permanently installed, are the nozzle heads so directed or arranged that water will not be sprayed into operating electrical switch boards and equipment?
- Are "NO SMOKING" signs posted where appropriate in areas where flammable or combustible materials are used or stored?
- Are safety cans used for dispensing flammable or combustible liquids at a point of use?
- Are all spills of flammable or combustible liquids cleaned up promptly?
- Are storage tanks adequately vented to prevent the development of excessive vacuum or pressure as a result of filling, emptying or atmosphere temperature changes?
- Are storage tanks equipped with emergency venting that will relieve excessive internal pressure caused by fire exposure?
- Are "NO SMOKING" rules enforced in areas involving storage and use of hazardous materials?

OSHA Compliance Self-Inspection Check List

FLOOR AND WALL OPENINGS

- Are floor openings guarded by a cover, a guardrail or equivalent on all sides (except at entrance to stairways or ladders?)
- Are toe-boards installed around the edges of permanent floor opening (where persons may pass below the opening?)
- Are skylight screens of such construction and mounting that they will withstand a load of at least 200 pounds?
- Is the glass in the windows, doors, glass walls, etc., which are subject to human impact, of sufficient thickness and type for the condition of use?
- Are grates or similar type covers over floor openings such as floor drains of such design that foot traffic or rolling equipment will not be affected by the grate spacing?
- Are unused portions of service pits and pits not actually in use either covered or protected by guardrails or equivalent?
- Are manhole covers, trench covers and similar covers, plus their supports designed to carry a truck rear axle load of at 20,000 pounds when located in roadways and subject to vehicle traffic?
- Are floor or wall openings in fire resistive construction provided with doors or covers compatible with the fire rating of the structure and provided with self-closing feature when appropriate?

OSHA Compliance Self-Inspection Check List

FUELING

- Is it prohibited to fuel an internal combustion engine with a flammable liquid while the engine is running?
- Are fueling operations done in such a manner that likelihood of spillage will be minimal?
- When spillage occurs during fueling operations, is the spilled fuel washed away completely, evaporated or other measures taken to control vapors before restarting the engine?
- Are fuel tank caps replaced and secured before starting the engine?
- In fueling operations, is there always metal contact between the container and the fuel tank?
- Are fueling hoses of a type designed to handle the specific type of fuel?
- Is it prohibited to handle or transfer gasoline in open containers?
- Are open lights, open flames or sparking or arcing equipment prohibited near fueling or transfer of fuel operations?
- Is smoking prohibited in the vicinity of fueling operations?
- Are fueling operators prohibited in building or other enclosed areas that are not specifically ventilated for this purpose?
- Where fueling or transfer of fuel is done through a gravity flow system, are the nozzles of the self-closing type?

OSHA Compliance Self-Inspection Check List

GENERAL WORK ENVIRONMENT

- Are all work sites clean, sanitary and orderly?
- Are work surfaces kept dry or appropriate means taken to assure the surfaces are slip-resistant?
- Are all spilled hazardous materials or liquids, including blood and other potentially infectious materials, cleaned up immediately and according to proper procedures?
- Is combustible scrap, debris and waste stored safely and removed from the work-site promptly?
- Is all regulated waste, as defined in the OSHA bloodborne pathogens standard (29 CFR 1910.1030), discarded according to federal, state and local regulations?
- Are accumulations of combustible dust routinely removed from elevated surfaces including the overhead structure of buildings, etc.?
- Is combustible dust cleaned up with a vacuum system to prevent the dust going into suspension?
- Is metallic or conductive dust prevented from entering or accumulating on or around electrical enclosures or equipment?
- Are covered metal waste cans used for oily and paint-soaked waste?
- Are all oil and gas fired devices equipped with flame failure controls that will prevent flow of fuel if pilots or main burners are not working?
- Are paint spray booths, dip tanks, etc., cleaned regularly?
- Are the minimum number of toilets and washing facilities provided?
- Are the toilets and washing facilities clean and sanitary?
- Are all the work areas adequately illuminated?
- Are pits and floor openings covered or otherwise guarded?

OSHA Compliance Self-Inspection Check List

HARMFUL SUBSTANCES CONTROL BY VENTILATION

- Is the volume and velocity of air in each exhaust system sufficient to gather the dusts, fumes, mists, vapors or gases to be controlled and to convey them to a suitable point of disposal?
- Are exhaust inlets, ducts and plenums designed, constructed and supported to prevent collapse or failure of any part of the system?
- Are clean-out ports or doors provided at intervals not to exceed 12 feet in all horizontal runs of exhaust ducts?
- Where two or more different type of operations are being controlled through the same exhaust system, will the combination of substances being controlled, constitute a fire, explosion or chemical reaction hazard in the duct?
- Is adequate makeup air provided to areas where exhaust systems are operating?
- Is the source point for makeup air located so that only clean, fresh air, which is free of contaminants, will enter the work environment?
- Where two or more ventilation systems are serving a work area, is their operation such that one will not offset the functions of the other?

OSHA Compliance Self-Inspection Check List

HAZARDOUS CHEMICAL EXPOSURE

- Are employees trained in the safe handling practices of hazardous chemicals such as acids, caustics, etc.?
- Are employees aware of the potential hazards involving various chemicals stored or used in the workplace such as acids, bases, caustics, epoxies, phenols, etc.?
- Is employee exposure to chemicals kept within acceptable levels?
- Are eye wash fountains and safety showers provided in areas where corrosive chemicals are handled?
- Are all containers, such as vats, storage tanks, etc., labeled as to their contents (e.g., "CAUSTICS")?
- Are all employees required to use personal protective clothing and equipment when handling chemicals (gloves, eye protection, respirators, etc.?)
- Are flammable or toxic chemicals kept in closed containers when not in use?
- Are chemical piping systems clearly marked as to their content?
- Where corrosive liquids are frequently handled in open containers or drawn from storage vessels or pipe lines, is adequate means readily available for neutralizing or disposing of spills or overflows properly and safely?
- Have standard operating procedures been established and are they being followed when cleaning up chemical spills?
- Where needed for emergency use, are respirators stored in a convenient, clean and sanitary location?
- Are respirators intended for emergency use adequate for the various uses for which they may be needed?
- Are employees prohibited from eating in areas where hazardous chemicals are present?
- Is personal protective equipment provided, used and maintained whenever necessary?
- Are there written standard operating procedures for the selection and use of respirators where needed?
- If you have a respirator protection program, are your employees instructed on the correct usage and limitations of the respirators? Are the respirators NIOSH approved for this particular application? Are they regularly inspected and cleaned, sanitized and maintained?
- If hazardous substances are used in your processes, do you have a medical or biological monitoring system in operation?

OSHA Compliance Self-Inspection Check List

HAZARDOUS CHEMICAL EXPOSURE *(Page 2)*

- Are you familiar with the Threshold Limit Values or Permissible Exposure Limits of airborne contaminants and physical agents used in your workplace?
- Have control procedures been instituted for hazardous materials, where appropriate, such as respirators, ventilation systems, handling practices, etc.?
- Whenever possible are hazardous substances handled in properly designed and exhausted booths or similar locations?
- Do you use general dilution or local exhaust ventilation systems to control dusts, vapors, gases, fumes, smoke, solvents or mists which may be generated in your workplace?
- Is ventilation equipment provided for removal of contaminants from such operations as: Production grinding, buffing, spray painting and/or vapor degreasing and is it operating properly?
- Do employees complain about dizziness, headaches, nausea, irritation or other factors of discomfort when they use solvents or other chemicals?
- Is there a dermatitis problem? Do employees complain about dryness, irritation or sensitization of the skin?
- Have you considered the use of an industrial hygienist or environmental health specialist to evaluate your operation?
- If internal combustion engines are used, is carbon monoxide kept within acceptable levels?
- Is vacuuming used, rather than blowing or sweeping dusts whenever possible for clean-up?
- Are materials which give off toxic asphyxiate, suffocating or anesthetic fumes, stored in remote or isolated locations when not in use?

OSHA Compliance Self-Inspection Check List

HAZARDOUS SUBSTANCES COMMUNICATION

- Is there a list of hazardous substances used in your workplace?
- Is there a current written exposure control plan for occupational exposure to bloodborne pathogens and other potentially infectious materials, where applicable?
- Is there a written hazard communication program dealing with Material Safety Data Sheets (MSDS), labeling and employee training?
- Is each container for a hazardous substance (i.e., vats, bottles, storage tanks, etc.) labeled with product identity and a hazard warning (communication of the specific health hazards and physical hazards)?
- Is there a Material Safety Data Sheet readily available for each hazardous substance used?
- Is there an employee training program for hazardous substances?
- Does this program include: (1) An explanation of what an MSDS is and how to use and obtain one; (2) MSDS contents for each hazardous substance or class of substances; (3) Explanation of "Right to Know"; (4) Identification of where an employee can see the employers written hazard communication program and where hazardous substances are present in their work areas; (5) The physical and health hazards of substances in the work area and specific protective measures to be used;(6) Details of the hazard communication program, including how to use the labeling system and MSDS
- Does the employee training program on the bloodborne pathogens standard contain the following elements: (1) An accessible copy of the standard and an explanation of its contents; (2) a general explanation of the epidemiology and symptoms of bloodborne diseases; (3) an explanation of the modes of transmission of bloodborne pathogens; (4) an explanation of the employer's exposure control plan and the means by which employees can obtain a copy of the written plan; (5) an explanation of the appropriate methods for recognizing tasks and the other activities that may involve exposure to blood and other potentially infectious materials; (6) an explanation of the use and limitations of methods that will prevent or reduce exposure including appropriate engineering controls, work practices and personal protective equipment; (7) information on the types, proper use, location, removal, handling, decontamination and disposal of personal protective equipment; (8) an explanation of the basis for selection of personal protective equipment; (9) information on the hepatitis B vaccine;(10) information on the appropriate actions to take and persons to contact in an emergency involving blood or other potentially infectious materials; (11) an explanation of the procedure to follow if an exposure incident occurs, including the methods of reporting the incident and the medical follow-up that will be made available; and (12) information on post-exposure evaluations and follow-up; (13) an explanation of signs, labels and color coding?

OSHA Compliance Self-Inspection Check List

HAZARDOUS SUBSTANCES COMMUNICATION *(Page 2)*

- Are employees trained in the following? (1) How to recognize tasks that might result in occupational exposure? (2) How to use work practice and engineering controls and personal protective equipment and to know their limitations? (3) How to obtain information on the types, selection, proper use, location, removal, handling, decontamination and disposal of personal protective equipment? (3) Who to contact and what to do in an emergency?

OSHA Compliance Self-Inspection Check List

HOIST AND AUXILIARY EQUIPMENT

- Is each overhead electric hoist equipped with a limit device to stop the hook travel at its highest and lowest point of safe travel?
- Will each hoist automatically stop and hold any load up to 125 percent of its rated load if its actuating force is removed?
- Is the rated load of each hoist legibly marked and visible to the operator?
- Are stops provided at the safe limits of travel for trolley hoist?
- Are the controls of hoist plainly marked to indicate the direction of travel or motion?
- Is each cage-controlled hoist equipped with an effective warning device?
- Are close-fitting guards or other suitable devices installed on hoist to assure hoist ropes will be maintained in the sheave grooves?
- Are all hoist chains or ropes of sufficient length to handle the full range of movement of the application while still maintain two full wraps on the drum at all times?
- Are nip points or contact points between hoist ropes and sheaves which are permanently located within seven feet of the floor, ground or working platform, guarded?
- Is it prohibited to use chains or rope slings that are kinked or twisted?
- Is it prohibited to use the hoist rope or chain wrapped around the load as a substitute, for a sling?
- Is the operator instructed to avoid carrying loads over people?

OSHA Compliance Self-Inspection Check List

INDUSTRIAL TRUCKS - FORKLIFTS

- Are only employees who have been trained in the proper use of hoists allowed to operate them?
- Are only trained personnel allowed to operate industrial trucks?
- Is substantial overhead protective equipment provided on high lift rider equipment?
- Are the required lift truck operating rules posted and enforced?
- Is directional lighting provided on each industrial truck that operates in an area with less than 2 foot candles per square foot of general lighting?
- Does each industrial truck have a warning horn, whistle, gong or other device which can be clearly heard above the normal noise in the areas where operated?
- Are the brakes on each industrial truck capable of bringing the vehicle to a complete and safe stop when fully loaded?
- Will the industrial trucks' parking brake effectively prevent the vehicle from moving when unattended?
- Are industrial trucks operating in areas where flammable gases or vapors, or combustible dust or ignitable fibers may be present in the atmosphere, approved for such locations?
- Are motorized hand and hand/rider trucks so designed that the brakes are applied, and power to the drive motor shuts off when the operator releases his or her grip on the device that controls the travel?
- Are industrial trucks with internal combustion engine, operated in buildings or enclosed areas, carefully checked to ensure such operations do not cause harmful concentration of dangerous gases or fumes?

OSHA Compliance Self-Inspection Check List

LOCKOUT / TAGOUT PROCEDURES

- Is all machinery or equipment capable of movement, required to be de-energized or disengaged and blocked or locked-out during cleaning, servicing, adjusting or setting up operations, whenever required?
- Where the power disconnecting means for equipment does not also disconnect the electrical control circuit:
 - Are the appropriate electrical enclosures identified?
 - Are means provided to assure the control circuit can also be disconnected and locked-out?
 - Is the locking-out of control circuits in lieu of locking-out main power disconnects prohibited?
 - Are all equipment control valve handles provided with a means for locking-out?
 - Does the lock-out procedure require that stored energy (mechanical, hydraulic, air, etc.) be released or blocked before equipment is locked-out for repairs?
 - Are appropriate employees provided with individually keyed personal safety locks?
 - Are employees required to keep personal control of their key(s) while they have safety locks in use?
 - Is it required that only the employee exposed to the hazard, place or remove the safety lock?
 - Is it required that employees check the safety of the lock-out by attempting a start up after making sure no one is exposed?
 - Are employees instructed to always push the control circuit stop button prior to re-energizing the main power switch?
 - Is there a means provided to identify any or all employees who are working on locked-out equipment by their locks or accompanying tags?
 - Are a sufficient number of accident preventive signs or tags and safety padlocks provided for any reasonably foreseeable repair emergency?
 - When machine operations, configuration or size requires the operator to leave his or her control station to install tools or perform other operations, and that part of the machine could move if accidentally activated, is such element required to be separately locked or blocked-out?
 - In the event that equipment or lines cannot be shut down, locked-out and tagged, is a safe job procedure established and rigidly followed?

OSHA Compliance Self-Inspection Check List

MACHINE GUARDING

- Is there a training program to instruct employees on safe methods of machine operation?
- Is there adequate supervision to ensure that employees are following safe machine operating procedures?
- Is there a regular program of safety inspection of machinery and equipment?
- Is all machinery and equipment kept clean and properly maintained?
- Is sufficient clearance provided around and between machines to allow for safe operations, set up and servicing, material handling and waste removal?
- Is equipment and machinery securely placed and anchored, when necessary to prevent tipping or other movement that could result in personal injury?
- Is there a power shut-off switch within reach of the operator's position at each machine?
- Can electric power to each machine be locked out for maintenance, repair or security?
- Are the non-current carrying metal parts of electrically operated machines bonded and grounded?
- Are foot-operated switches guarded or arranged to prevent accidental actuation by personnel or falling objects?
- Are manually operated valves and switches controlling the operation of equipment and machines clearly identified and readily accessible?
- Are all emergency stop buttons colored red?
- Are all pulleys and belts that are within 7 feet of the floor or working level properly guarded?
- Are all moving chains and gears properly guarded?
- Are splash guards mounted on machines that use coolant to prevent the coolant from reaching employees?
- Are methods provided to protect the operator and other employees in the machine area from hazards created at the point of operation, in-going nip points, rotating parts, flying chips and sparks?
- Are machinery guards secure and so arranged that they do not offer a hazard in their use?
- If special hand tools are used for placing and removing material, do they protect the operator's hands?
- Are revolving drums, barrels and containers required to be guarded by an enclosure that is interlocked with the drive mechanism, so that revolution cannot occur unless the guard enclosure is in place, so guarded?

OSHA Compliance Self-Inspection Check List

MACHINE GUARDING *(Page 2)*

- Do arbors and mandrels have firm and secure bearings and are they free from play?
- Are provisions made to prevent machines from automatically starting when power is restored after a power failure or shut down?
- Are machines constructed so as to be free from excessive vibration when the largest size tool is mounted and run at full speed?
- If machinery is cleaned with compressed air, is air pressure controlled and personal protective equipment or other safeguards utilized to protect operators and other workers from eye and body injury?
- Are fan blades protected with a guard having openings no larger than ½ inch, when operating within 7 feet of the floor?
- Are saws used for ripping, equipped with anti-kick back devices and spreaders?
- Are radial arm saws so arranged that the cutting head will gently return to the back of the table when released?

OSHA Compliance Self-Inspection Check List

MATERIALS HANDLING

- Is there safe clearance for equipment through aisles and doorways?
- Are aisleways designated, permanently marked and kept clear to allow unhindered passage?
- Are motorized vehicles and mechanized equipment inspected daily or prior to use?
- Are vehicles shut off and brakes set prior to loading or unloading?
- Are containers of combustibles or flammables, when stacked while being moved, always separated by dunnage sufficient to provide stability?
- Are dock boards (bridge plates) used when loading or unloading operations are taking place between vehicles and docks?
- Are trucks and trailers secured from movement during loading and unloading operations?
- Are dock plates and loading ramps constructed and maintained with sufficient strength to support imposed loading?
- Are hand trucks maintained in safe operating condition?
- Are chutes equipped with sideboards of sufficient height to prevent the materials being handled from falling off?
- Are chutes and gravity roller sections firmly placed or secured to prevent displacement?
- At the delivery end of the rollers or chutes, are provisions made to brake the movement of the handled materials?
- Are pallets usually inspected before being loaded or moved?
- Are hooks with safety latches or other arrangements used when hoisting materials so that slings or load attachments won't accidentally slip off the hoist hooks?
- Are securing chains, ropes, chockers or slings adequate for the job to be performed?
- When hoisting materials or equipment, are provisions made to assure no one will be passing under the suspended loads?
- Are materials safety data sheets available to employees handling hazardous substances?

OSHA Compliance Self-Inspection Check List

MEDICAL SERVICES AND FIRST AID

- Is there a hospital, clinic or infirmary for medical care in proximity of your workplace?
- If medical and first-aid facilities are not in proximity of your workplace, is at least one employee on each shift currently qualified to render first aid?
- Have all employees who are expected to respond to medical emergencies as part of their work*

- (1) received first-aid training
- (2) had hepatitis B vaccination made available to them
- (3) had appropriate training on procedures to protect them from bloodborne pathogens, including universal precautions
- (4) have available and understand how to use appropriate personal protective equipment to protect against exposure to bloodborne diseases?

- Where employees have had an exposure incident involving bloodborne pathogens, did you provide an immediate post-exposure medical evaluation and follow-up?
- Are medical personnel readily available for advice and consultation on matters of employees' health?
- Are emergency phone numbers posted?
- Are first-aid kits easily accessible to each work area, with necessary supplies available, periodically inspected and replenished as needed?
- Have first-aid kit supplies been approved by a physician, indicating that they are adequate for a particular area or operation?
- Are means provided for quick drenching or flushing of the eyes and body in areas where corrosive liquids or materials are handled?

* Pursuant to an OSHA memorandum of July 1, 1992, employees who render first-aid only as a collateral duty do not have to be offered pre-exposure hepatitis B vaccine only if the employer puts the following requirements into his/her exposure control plan and implements them:

- (1) the employer must record all first-aid incidents involving the presence of blood or other potentially infectious materials before the end of the work shift during which the first-aid incident occurred
- (2) the employer must comply with post-exposure evaluation, prophylaxis and follow-up requirements of the standard with respect to "exposure incidents," as defined by the standard
- (3) the employer must train designated first-aid providers about the reporting procedure
- (4) the employer must offer to initiate the hepatitis B vaccination series within 24 hours to all unvaccinated first-aid providers who have rendered assistance in any situation involving the presence of blood or other potentially infectious materials



OSHA Compliance Self-Inspection Check List

NOISE

- Are there areas in the workplace where continuous noise levels exceed 85dBA?
- Is there an ongoing preventive health program to educate employees in: safe levels of noise, exposures; effects of noise on their health; and the use of personal protection?
- Have work areas where noise levels make voice communication between employees difficult been identified and posted?
- Are noise levels being measured using a sound level meter or an octave band analyzer and records being kept?
- Have engineering controls been used to reduce excessive noise levels? Where engineering controls are determined to not be feasible, are administrative controls (i.e. worker rotation) being used to minimize individual employee exposure to noise?
- Is approved hearing protective equipment (noise attenuating devices) available to every employee working in noisy areas?
- Have you tried isolating noisy machinery from the rest of your operation?
- If you use ear protectors, are employees properly fitted and instructed in their use?
- Are employees in high noise areas given periodic audiometric testing to ensure that you have an effective hearing protection system?

OSHA Compliance Self-Inspection Check List

PERSONAL PROTECTIVE EQUIPMENT & CLOTHING

- Are protective goggles or face shields provided and worn where there is any danger of flying particles or corrosive materials?
- Are approved safety glasses required to be worn at all times in areas where there is a risk of eye injuries such as punctures, abrasions, contusions or burns?
- Are employees who need corrective lenses (glasses or contacts) in working environments having harmful exposures, required to wear only approved safety glasses, protective goggles, or use other medically approved precautionary procedures?
- Are protective gloves, aprons, shields or other means provided and required where employees could be cut or where there is reasonably anticipated exposure to corrosive liquids, chemicals, blood or other potentially infectious materials. See 29 CFR 1910.1030(b) for the definition of "other potentially infectious materials."
- Are hard hats provided and worn where danger of falling objects exists?
- Are hard hats inspected periodically for damage to the shell and suspension system?
- Is appropriate foot protection required where there is the risk of foot injuries from hot, corrosive, poisonous substances, falling objects, crushing or penetrating actions?
- Are approved respirators provided for regular or emergency use where needed?
- Is all protective equipment maintained in a sanitary condition and ready for use?
- Do you have eye wash facilities and a quick Drench Shower within the work area where employees are exposed to injurious corrosive materials?
- Where special equipment is needed for electrical workers, is it available?
- Where food or beverages are consumed on the premises, are they consumed in areas where there is no exposure to toxic material, blood or other potentially infectious materials?
- Is protection against the effects of occupational noise exposure provided when sound levels exceed those of the OSHA noise standard?
- Are adequate work procedures, protective clothing and equipment provided and used when cleaning up spilled toxic or otherwise hazardous materials or liquids?
- Are there appropriate procedures in place for disposing of or decontaminating personal protective equipment contaminated with, or reasonably anticipated to be contaminated with, blood or other potentially infectious materials?

OSHA Compliance Self-Inspection Check List

PIPING SYSTEMS IDENTIFICATION

- When non-potable water is piped through a facility, are outlets or taps posted to alert employees that it is unsafe and not to be used for drinking, washing or other personal use?
- When hazardous substances are transported through above-ground piping, is each pipeline identified at points where confusion could introduce hazards to employees?
- When pipelines are identified by color painting, are all visible parts of the line so identified?
- When pipelines are identified by color painted bands or tapes, are the bands or tapes located at reasonable intervals and at each outlet, valve or connection?
- When pipelines are identified by color, is the color code posted at all locations where confusion could introduce hazards to employees?
- When the contents of pipelines are identified by name or name abbreviation, is the information readily visible on the pipe near each valve or outlet?
- When pipelines carrying hazardous substances are identified by tags, are the tags constructed of durable materials, the message carried clearly and permanently distinguishable and are tags installed at each valve or outlet?
- When pipelines are heated by electricity, steam or other external source, are suitable warning signs or tags placed at unions, valves or other serviceable parts of the system?

OSHA Compliance Self-Inspection Check List

PORTABLE LADDERS

- Are all ladders maintained in good condition, joints between steps and side rails tight, all hardware and fittings securely attached and moveable parts operating freely without binding or undue play?
- Are non-slip safety feet provided on each ladder?
- Are non-slip safety feet provided on each metal or rung ladder?
- Are ladder rungs and steps free of grease and oil?
- Is it prohibited to place a ladder in front of doors opening toward the ladder except when the door is blocked open, locked or guarded?
- Is it prohibited to place ladders on boxes, barrels or other unstable bases to obtain additional height?
- Are employees instructed to face the ladder when ascending or descending?
- Are employees prohibited from using ladders that are broken, missing steps, rungs or cleats, broken side rails or other faulty equipment?
- Are employees instructed not to use the top step of ordinary stepladders as a step?
- When portable rung ladders are used to gain access to elevated platforms, roofs, etc., does the ladder always extend at least 3 feet above the elevated surface?
- Is it required that when portable rung or cleat type ladders are used, the base is so placed that slipping will not occur, or it is lashed or otherwise held in place?
- Are portable metal ladders legibly marked with signs reading "CAUTION - DO NOT USE AROUND ELECTRICAL EQUIPMENT" or equivalent wording?
- Are employees prohibited from using ladders as guys, braces, skids, gin poles or for other than their intended purposes?
- Are employees instructed to only adjust extension ladders while standing at a base (not while standing on the ladder or from a position above the ladder?)
- Are metal ladders inspected for damage?
- Are the rungs of ladders uniformly spaced at 12 inches, center to center?

OSHA Compliance Self-Inspection Check List

PORTABLE (POWER OPERATED) TOOLS & EQUIPMENT

- Are grinders, saws and similar equipment provided with appropriate safety guards?
- Are power tools used with the correct shield, guard or attachment, recommended by the manufacturer?
- Are portable circular saws equipped with guards above and below the base shoe?
- Are circular saw guards checked to assure they are not wedged up, thus leaving the lower portion of the blade unguarded?
- Are rotating or moving parts of equipment guarded to prevent physical contact?
- Are all cord-connected, electrically-operated tools and equipment effectively grounded or of the approved double insulated type?
- Are effective guards in place over belts, pulleys, chains, sprockets, on equipment such as concrete mixers, air compressors, etc.?
- Are portable fans provided with full guards or screens having openings ½ inch or less?
- Is hoisting equipment available and used for lifting heavy objects and are hoist ratings and characteristics appropriate for the task?
- Are ground-fault circuit interrupters provided on all temporary electrical 15 and 20 ampere circuits, used during periods of construction?
- Are pneumatic and hydraulic hoses on power-operated tools checked regularly for deterioration or damage?

OSHA Compliance Self-Inspection Check List

POWDER-ACTUATED TOOLS

- Are employees who operate powder-actuated tools trained in their use and carry a valid operators card?
- Is each powder-actuated tool stored in its own locked container when not being used?
- Is a sign at least 7 inches by 10 with bold face type reading "POWDER-ACTUATED TOOL IN USE" conspicuously posted when the tool is being used?
- Are powder-actuated tools left unloaded until they are actually ready to be used?
- Are powder-actuated tools inspected for obstructions or defects each day before use?
- Do power-actuated tool operators have and use appropriate personal protective equipment such as hard hats, safety goggles, safety shoes and ear protectors?

OSHA Compliance Self-Inspection Check List

RECORDKEEPING

- Are all occupational injury or illnesses, except minor injuries requiring only first aid, being recorded as required on the OSHA 300 log?
- Are employee medical records and records of employee exposure to hazardous substances or harmful physical agents up-to-date and in compliance with current OSHA standards?
- Are employee training records kept and accessible for review by employees, when required by OSHA standards?
- Have arrangements been made to maintain required records for the legal period of time for each specific type record? (Some records must be maintained for at least 40 years.)
- Are operating permits and records up-to-date for such items as elevators, air pressure tanks, liquefied petroleum gas tanks, etc.?

OSHA Compliance Self-Inspection Check List

SAFETY AND HEALTH PROGRAM

- Do you have an active safety and health program in operation that deals with general safety and health program elements as well as the management of hazards specific to your work site?
- Is one person clearly responsible for the overall activities of the safety and health program?
- Do you have a safety committee or group made up of management and labor representatives that meets regularly and report in writing on its activities?
- Do you have a working procedure for handling in-house employee complaints regarding safety and health?
- Are you keeping your employees advised of the successful effort and accomplishments you and/or your safety committee have made in assuring they will have a workplace that is safe and healthful?

OSHA Compliance Self-Inspection Check List

SANITIZING EQUIPMENT & CLOTHING

- Is personal protective clothing or equipment that employees are required to wear or use, of a type capable of being cleaned easily and disinfected?
- Are employees prohibited from interchanging personal protective clothing or equipment, unless it has been properly cleaned?
- Are machines and equipment, which process, handle or apply materials that could be injurious to employees, cleaned and/or decontaminated before being overhauled or placed in storage?
- Are employees prohibited from smoking or eating in any area where contaminants that could be injurious if ingested are present?
- When employees are required to change from street clothing into protective clothing, is a clean change room with separate storage facility for street and protective clothing provided?
- Are employees required to shower and wash their hair as soon as possible after a known contact has occurred with a carcinogen?
- When equipment, materials or other items are taken into or removed from a carcinogen regulated area, is it done in a manner that will contaminate non-regulated areas or the external environment?

OSHA Compliance Self-Inspection Check List

SPRAYING OPERATIONS

- Is adequate ventilation assured before spray operations are started?
- Is mechanical ventilation provided when spraying operations are done in enclosed areas?
- When mechanical ventilation is provided during spraying operations, is it so arranged that it will not circulate the contaminated air?
- Is the spray area free of hot surfaces?
- Is the spray area at least 20 feet from flames, sparks, operating electrical motors and other ignition sources?
- Are portable lamps, used to illuminate spray areas, suitable for use in hazardous location?
- Is approved respiratory equipment provided and used when appropriate during spraying operations?
- Do solvents used for cleaning have a flash point to 100° or more?
- Are fire control sprinkler heads kept clean?
- Are "NO SMOKING" signs posted in spray areas, paint rooms, paint booths and paint storage areas?
- Is the spray area kept clean of combustible residue?
- Are spray booths constructed of metal, masonry or other substantial noncombustible materials?
- Are spray booth floors and baffles noncombustible and easily cleaned?
- Is infrared drying apparatus kept out of the spray area during spraying operations?
- Is the spray booth completely ventilated before using the drying apparatus?
- Is the electric drying apparatus properly grounded?
- Are lighting fixtures for spray booths located outside of the booth and the interior lighted through sealed clear panels?
- Are the electric motors for exhaust fans placed outside booths or ducts?
- Are belts and pulleys inside the booth fully enclosed?
- Do ducts have access doors to allow cleaning?
- Do all drying spaces have adequate ventilation?

OSHA Compliance Self-Inspection Check List

STAIRS & STAIRWAYS

- Are standard stair rails or handrails on all stairways having four or more risers?
- Are all stairways at least 22 inches wide?
- Do stairs have landing platforms not less than 30 inches in the direction of travel and extend 22 inches in width at every 12 feet or less of vertical rise?
- Do stairs angle no more than 50 and no less than 30 degrees?
- Are stairs of hollow-pan type treads and landings filled to the top edge of the pan with solid material?
- Are step risers on stairs uniform from top to bottom?
- Are steps on stairs and stairways designed or provided with a surface that renders them slip resistant?
- Are stairway handrails located between 30 and 34 inches above the leading edge of stair treads?
- Do stairway handrails have at least 3 inches of clearance between the handrails and the wall or surface they are mounted on?
- Where doors or gates open directly on a stairway, is there a platform provided so the swing of the door does not reduce the width of the platform to less than 21 inches?
- Are stairway handrails capable of withstanding a load of 200 pounds, applied within 2 inches of the top edge, in any downward or outward direction?
- Where stairs or stairways exit directly into any area where vehicles may be operated, are adequate barriers and warnings provided to prevent employees stepping into the path of traffic?
- Do stairway landings have a dimension measured in the direction of travel, at least equal to the width of the stairway?
- Is the vertical distance between stairway landings to 12 feet or less?

OSHA Compliance Self-Inspection Check List

TIRE INFLATION

- Where tires are mounted and/or inflated on drop center wheels, is a safe practice procedure posted and enforced?
- Where tires are mounted and/or inflated on drop center wheels, is a safe practice procedure posted and enforced?
- Where tires are mounted and/or inflated on wheels with split rims and/or retainer rings, is a safe practice procedure posted and enforced?
- Does each tire inflation hose have a clip-on chuck with at least 24 inches of hose between the chuck and an in-line hand valve and gauge?
- Does the tire inflation control valve automatically shutoff the air flow when the valve is released?
- Is a tire restraining device such as a cage, rack or other effective means used while inflating tires mounted on split rims, or rims using retainer rings?
- Are employees strictly forbidden from taking a position directly over or in front of a tire while it's being inflated?

OSHA Compliance Self-Inspection Check List

TRANSPORTING EMPLOYEES & MATERIALS

- Do employees who operate vehicles on public thoroughfares have valid operator's licenses?
- When seven or more employees are regularly transported in a van, bus or truck, is the operator's license appropriate for the class of vehicle being driven?
- Is each van, bus or truck used regularly to transport employees, equipped with an adequate number of seats?
- When employees are transported by truck, are provisions provided to prevent their falling from the vehicle?
- Are vehicles used to transport employees equipped with lamps, brakes, horns, mirrors, windshields and turn signals in good repair?
- Are transport vehicles provided with handrails, steps, stirrups or similar devices, so placed and arranged that employees can safely mount or dismount?
- Are employee transport vehicles equipped at all times with at least two reflective type flares?
- Is a full charged fire extinguisher, in good condition, with at least 4 B:C rating maintained in each employee transport vehicle?
- When cutting tools or tools with sharp edges are carried in passenger compartments of employee transport vehicles, are they placed in closed boxes or containers which are secured in place?
- Are employees prohibited from riding on top of any load which can shift, topple or otherwise become unstable?

OSHA Compliance Self-Inspection Check List

WALKWAYS

- Are aisles and passageways kept clear?
- Are aisles and walkways marked as appropriate?
- Are wet surfaces covered with non-slip materials?
- Are holes in the floor, sidewalk or other walking surface repaired properly, covered or otherwise made safe?
- Is there safe clearance for walking in aisles where motorized or mechanical handling equipment is operating?
- Are materials or equipment stored in such a way that sharp projectiles will not interfere with the walkway?
- Are spilled materials cleaned up immediately?
- Are changes of direction or elevations readily identifiable?
- Are aisles or walkways that pass near moving or operating machinery, welding operations or similar operations arranged so employees will not be subjected to potential hazards?
- Is adequate headroom provided for the entire length of any aisle or walkway?
- Are standard guardrails provided wherever aisle or walkway surfaces are elevated more than 30 inches above any adjacent floor or the ground?
- Are bridges provided over conveyors and similar hazards?

OSHA Compliance Self-Inspection Check List

WELDING, CUTTING & BRAZING

- Are only authorized and trained personnel permitted to use welding, cutting or brazing equipment?
- Does each operator have a copy of the appropriate operating instructions and are they directed to follow them?
- Are compressed gas cylinders regularly examined for obvious signs of defects, deep rusting or leakage?
- Is care used in handling and storage of cylinders, safety valves, relief valves, etc., to prevent damage?
- Are precautions taken to prevent the mixture of air or oxygen with flammable gasses, except at a burner or in a standard torch?
- Are only approved apparatus (torches, regulators, pressure-reducing valves, acetylene generators, manifolds) used?
- Are cylinders kept away from sources of heat?
- Are the cylinders kept away from elevators, stairs or gangways?
- Is it prohibited to use cylinders as rollers or supports?
- Are empty cylinders appropriately marked and their valves closed?
- Are signs reading: "DANGER—NO SMOKING, MATCHES OR OPENLIGHTS", or the equivalent, posted?
- Are cylinders, cylinder valves, couplings, regulators, hoses and apparatus kept free of oily or greasy substances?
- Is care taken not to drop or strike cylinders?
- Unless secured on special trucks, are regulators removed and valve-protection caps put in place before moving cylinders?
- Do cylinders without fixed wheels have keys, handles or non-adjustable wrenches on stem valves when in service?
- Are liquefied gases stored and shipped valve-end up with valve covers in place?
- Are provisions made to never crack a fuel-gas cylinder valve near sources of ignition?
- Before a regulator is removed, is the valve closed and gas released from the regulator?
- Is red used to identify the acetylene (and other fuel-gas) hose, green for oxygen hose and black for inert gas and air hose?
- Are pressure-reducing regulators used only for the gas and pressures for which they are intended?

OSHA Compliance Self-Inspection Check List

WELDING, CUTTING & BRAZING (Page 2)

- Is open circuit (no load) voltage of arc welding and cutting machines as low as possible and not in excess of the recommended limits?
- Under wet conditions, are automatic controls for reducing no load voltage used?
- Is grounding of the machine frame and safety ground connections of portable machines checked periodically?
- Are electrodes removed from the holders when not in use?
- Is it required that electric power to the welder be shut off when no one is in attendance?
- Is suitable fire extinguishing equipment available for immediate use?
- Is the welder forbidden to coil or loop welding electrode cable around his body?
- Are wet machines thoroughly dried and tested before being used?
- Are work and electrode lead cables frequently inspected for wear and damage and replaced when needed?
- Do means for connecting cable lengths have adequate insulation?
- When the object to be welded cannot be moved and fire hazards cannot be removed, are shields used to confine heat, sparks and slag?
- Are fire watchers assigned when welding or cutting is performed in locations where a serious fire might develop?
- Are combustible floors kept wet, covered by damp sand or protected by fire-resistant shields?
- When floors are wet down, are personnel protected from possible electrical shock?
- When welding is done on metal walls, are precautions taken to protect combustibles on the other side?
- Before hot work is begun, are used drums, barrels, tanks and other containers so thoroughly cleaned that no substances remain that could explode, ignite or produce toxic vapors?
- Is it required that eye protection, helmets, hand shields and goggles meet appropriate standards?
- Are employees exposed to the hazards created by welding, cutting or brazing operations protected with personal protective equipment and clothing?
- Is a check made for adequate ventilation in and where welding or cutting is performed?
- When working in confined places, are environmental monitoring tests taken and means provided for quick removal of welders in case of an emergency?

PROGRAM OVERVIEW

WELDING, CUTTING, AND BRAZING SAFETY PROGRAM

REGULATORY STANDARD - OSHA - 29 CFR 1910.251 - 252

NFPA - Standard 51B, 1962

INTRODUCTION: The welding, cutting, and brazing processes expose workers to a variety of hazards including burns, fire, eye damage, possible lung irritation and damage, electric shock, slips and falls. This safety program is intended to evaluate and identify the specific hazards where hot work is performed, communicating information concerning these hazards, and establishing appropriate procedures and protective measures for our employees.

TRAINING:

- Fire Watchers must attend fire extinguisher use training, or equivalent fire protection methods
- LOTO, compressed gas handling are required, as needed
- Provide training on the hot work permit program, if applicable

ACTIVITIES:

- Recognize the responsibility for the safe usage of cutting and welding equipment on company property
- Based on fire potentials of plant facilities, establish areas for cutting and welding, and establish procedures for cutting and welding
- Develop, implement, and communicate Hot Work Permit program, as applicable
- Train cutters or welders and their supervisors in the safe operation of their equipment and the safe use of the process
- Advise all contractors about flammable materials or hazardous conditions, as applicable
- Provide resources (fire watchers, equipment, barriers, etc.) as needed or required
- Determine the combustible materials and hazardous areas present or likely to be present in the work location, and protective methods to be used
- Ensure adequate ventilation

FORMS:

- Hot Work Permit, as applicable
- Supplemental Arc Welding and Cutting Information
- Supplemental Oxygen-Fuel Gas Welding and Cutting Information
- Supplemental Resistance Welding Information
- Program Assessment
- Training Attendance Roster

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- 3. Responsibilities**
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- 5. Safety Information**
- 6. Training Information & Requirements**
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Welding, Cutting, and Brazing Safety Program

1. Purpose.

- 2. Scope.** The following operations are **NOT** covered within this standard: Lead pots; Thermogrip tongs; Thermite welding; Burning bars; Electric or furnace-heated soldering irons; Soft soldering and brazing of Copper Water Tube (CWT); Abrasive wheel metal cutting; Tar kettles; Electric cables; and Flameless heat guns. These operations should be covered by specific local procedures where these operations take place.

3. Responsibilities.

3.1 Management/Supervisors:

- 3.1.1 Recognize the responsibility for the safe usage of cutting and welding equipment on company property.
- 3.1.2 Based on fire potentials of plant facilities, establish areas for cutting and welding, and establish procedures for cutting and welding, in other areas.
- 3.1.3 Designate an individual responsible for authorizing cutting and welding operations in areas not specifically designed for such processes.
- 3.1.4 Train cutters or welders and their supervisors in the safe operation of their equipment and the safe use of the process.
- 3.1.5 Advise all contractors about flammable materials or hazardous conditions of which they may not be aware.
- 3.1.6 Provide resources (fire watchers, equipment, barriers, etc.) as needed or required.

3.2 Employees:

- 3.2.1 Be aware of welding hazards, as needed or required.
- 3.2.2 Follow appropriate safety precautions when welding is performed.

3.3 Safety Officer (as needed or required):

- 3.3.1 Act as the designated person responsible for authorizing cutting and welding operations in areas not specifically designed for such purposes.
- 3.3.2 Assist in the development and implementation of this program.

3.4 Welders:

- 3.4.1 Be responsible for the safe handling of the cutting or welding equipment and the safe use of the cutting or welding process.
- 3.4.2 Determine the combustible materials and hazardous areas present or likely to be present in the work location.
- 3.4.3 Protect combustibles from ignition by the following:
 - 3.4.3.1 Have the work moved to a location free from dangerous combustibles.
 - 3.4.3.2 Have the combustibles moved to a safe distance from the work or have the combustibles properly shielded against ignition if it cannot be moved to a location free from dangerous combustibles.
 - 3.4.3.3 Ensure that cutting and welding operations are so scheduled that plant operations that might expose combustibles to ignition are not started during cutting or welding.
 - 3.4.3.4 Secure authorization for the cutting or welding operations from the designated management representative.
 - 3.4.3.5 Determine that the cutter or welder secures his approval that conditions are safe before going ahead.
 - 3.4.3.6 Determine that fire protection and extinguishing equipment are properly located at the site.
 - 3.4.3.7 Ensure the availability of Fire Watches when required.

3.5 Fire Watcher (as needed or required):

- 3.5.1 Be familiar with facilities for sounding an alarm in the event of a fire.
- 3.5.2 Watch for fires in all exposed areas, try to extinguish them only when obviously within the capacity of the equipment available, or otherwise sound the alarm.
- 3.5.3 A fire watch shall be maintained for at least a half hour after completion of welding or cutting.
- 3.5.4 Attend fire extinguisher use training, or training in equivalent fire protection methods.

4. Procedure.

4.1 Fire Prevention and Protection:

- 4.1.1 For elaboration of these basic precautions, the special precautions and the delineation of the fire protection and prevention responsibilities of welders and cutters, their supervisors (including outside contractors) and those in management on whose property cutting and welding is to be performed, see, Standard for Fire Prevention in Use of Cutting and Welding Processes, NFPA Standard 51B. The basic precautions for fire prevention in welding or cutting work are:
 - 4.1.1.1 If the object to be welded or cut cannot readily be moved, all movable fire hazards in the vicinity shall be taken to a safe place.
 - 4.1.1.2 If the object to be welded or cut cannot be moved and if all the fire hazards cannot be removed, then guards shall be used to confine the heat, sparks, and slag, and to protect the immovable fire hazards, or equivalent precautions taken.
 - 4.1.1.2.1 Wherever there are floor openings or cracks in the flooring that cannot be closed, precautions shall be taken so that no readily combustible materials on the floor below will be exposed to sparks that may drop through the floor.
 - 4.1.1.2.2 The same precautions shall be observed with regard to cracks or holes in walls, open doorways and open or broken windows.
 - 4.1.1.2.3 If the above requirements cannot be followed then welding and cutting will not be performed.
 - 4.1.1.3 Suitable fire extinguishing equipment shall be maintained in a state of readiness for instant use. Such equipment may consist of pails of water, buckets of sand, hoses or portable extinguishers depending upon the nature and quantity of the combustible material exposed.
- 4.1.2 Fire watch shall be required whenever welding or cutting is performed in locations where other than a minor fire might develop, or any of the following conditions exist:
 - 4.1.2.1 Appreciable combustible material, in building construction or contents, closer than 35 feet (10.7 m) to the point of operation.
 - 4.1.2.2 Appreciable combustibles are more than 35 feet (10.7 m) away but are easily ignited by sparks.
 - 4.1.2.3 Wall or floor openings within a 35-foot (10.7 m) radius expose combustible material in adjacent areas including concealed spaces in walls or floors.

- 4.1.2.4 Combustible materials are adjacent to the opposite side of metal partitions, walls, ceilings, or roofs and are likely to be ignited by conduction or radiation.
- 4.1.3 Fire watchers shall have fire extinguishing equipment readily available and be trained in its use.
- 4.1.4 Before cutting or welding is permitted, the area shall be inspected by the individual responsible for authorizing cutting and welding operations. This individual shall designate precautions to be followed in granting authorization to proceed preferably in the form of a written permit.
- 4.1.5 Where combustible materials such as paper clippings, wood shavings, or textile fibers are on the floor, the floor shall be swept clean for a radius of 35 feet (10.7 m).
 - 4.1.5.1 Combustible floors shall be kept wet, covered with damp sand, or protected by fire-resistant shields. Where floors have been wet down, personnel operating arc welding or cutting equipment shall be protected from possible shock.
- 4.1.6 Cutting or welding shall not be permitted in the following situations:
 - 4.1.6.1 In areas not authorized by management.
 - 4.1.6.2 In sprinkler-protected buildings while such protection is impaired.
 - 4.1.6.3 In the presence of explosive atmospheres (mixtures of flammable gases, vapors, liquids, or dusts with air), or explosive atmospheres that may develop inside unclean or improperly prepared tanks or equipment which have previously contained such materials, or that may develop in areas with an accumulation of combustible dusts.
 - 4.1.6.4 In areas near the storage of large quantities of exposed, readily ignitable materials such as bulk sulfur, baled paper, or cotton.
- 4.1.7 Where practicable, all combustibles shall be relocated at least 35 feet (10.7 m) from the work site. Where relocation is impracticable, combustibles shall be protected with flameproof covers or otherwise shielded with metal or asbestos guards or curtains.
- 4.1.8 Ducts and conveyor systems that might carry sparks to distant combustibles shall be suitably protected or shut down.
- 4.1.9 Where cutting or welding is done near walls, partitions, ceiling or roof of combustible construction, fire-resistant shields or guards shall be provided to prevent ignition.
- 4.1.10 If welding is to be done on a metal wall, partition, ceiling or roof, precautions shall be taken to prevent ignition of combustibles on the other side, due to conduction or radiation, preferably by relocating combustibles. Where combustibles are not relocated, a fire watch on the opposite side from the work shall be provided.

- 4.1.11 Welding shall not be attempted on a metal partition, wall, ceiling or roof having a combustible covering or on walls or partitions of combustible sandwich-type panel construction.
 - 4.1.12 Cutting or welding on pipes or other metal in contact with combustible walls, partitions, ceilings or roofs shall not be undertaken if the work is close enough to cause ignition by conduction.
- 4.2 Fire prevention precautions:
- 4.2.1 Cutting or welding shall be permitted only in areas that are or have been made fire safe.
 - 4.2.2 When work cannot be moved practically, as in most construction work, the area shall be made safe by removing combustibles or protecting combustibles from ignition sources.
- 4.3 Welding or Cutting Containers:
- 4.3.1 No welding, cutting, or other hot work shall be performed on used drums, barrels, tanks or other containers until they have been cleaned so thoroughly as to make absolutely certain that there are no flammable materials present or any substances such as greases, tars, acids, or other materials which when subjected to heat, might produce flammable or toxic vapors.
 - 4.3.1.1 Any pipe lines or connections to the drum or vessel shall be disconnected or blanked.
 - 4.3.2 All hollow spaces, cavities or containers shall be vented to permit the escape of air or gases before preheating, cutting or welding.
 - 4.3.2.1 Purging with inert gas is recommended.
- 4.4 Confined Spaces:
- 4.4.1 For the purposes of this program, a confined space is intended to mean a relatively small or restricted space such as a tank, boiler, pressure vessel, or small compartment of a ship.
 - 4.4.2 Ventilation is a prerequisite to work in confined spaces.
 - 4.4.3 When welding or cutting is being performed in any confined spaces the gas cylinders and welding machines shall be left on the outside.
 - 4.4.4 Before operations are started, heavy portable equipment mounted on wheels shall be securely blocked to prevent accidental movement.

- 4.4.5 Where a welder must enter a confined space through a manhole or other small opening, means shall be provided for quickly removing the welder in case of emergency.
 - 4.4.5.1 When safety belts and lifelines are used for this purpose they shall be so attached to the welder's body that his body cannot be jammed in a small exit opening.
 - 4.4.5.2 An attendant with a preplanned rescue procedure shall be stationed outside to observe the welder at all times and be capable of putting rescue operations into effect.
- 4.4.6 When arc welding is to be suspended for any substantial period of time, such as during lunch or overnight, all electrodes shall be removed from the holders and the holders carefully located so that accidental contact cannot occur and the machine disconnected from the power source.
- 4.4.7 During gas welding or cutting operations, to eliminate the possibility of gas escaping through leaks of improperly closed valves, the torch valves shall be closed and the fuel-gas and oxygen supply to the torch positively shut off at some point outside the confined area whenever the torch is not to be used for a substantial period of time, such as during lunch hour or overnight.
 - 4.4.7.1 Where practicable the torch and hose shall also be removed from the confined space.
- 4.4.8 After welding operations are completed, the welder shall mark the hot metal or provide some other means of warning other workers.

5. Safety Information.

5.1 Protection of personnel:

5.1.1 General

- 5.1.1.1 A welder or helper working on platforms, scaffolds, or runways shall be protected against falling. This may be accomplished by the use of railings, safety belts, life lines, or some other equally effective safeguards.
- 5.1.1.2 Welders shall place welding cable and other equipment so that it is clear of passageways, ladders, and stairways.

5.1.2 Head Protection

- 5.1.2.1 Helmets or hand shields shall be used during all arc welding or arc cutting operations, excluding submerged arc welding.
- 5.1.2.2 Helmets and hand shields shall be made of a material which is an insulator for heat and electricity.

- 5.1.2.3 Helmets, shields and goggles shall be not readily flammable and shall be capable of withstanding sterilization.
- 5.1.2.4 Helmets and hand shields shall be arranged to protect the face, neck and ears from direct radiant energy from the arc.
- 5.1.2.5 Helmets shall be provided with filter plates and cover plates designed for easy removal.
- 5.1.2.6 All parts shall be constructed of a material which will not readily corrode or discolor the skin.

5.1.3 Eye Protection

- 5.1.3.1 Goggles or other suitable eye protection shall be used during all gas welding or oxygen cutting operations. Helpers or attendants shall be provided with proper eye protection.
- 5.1.3.2 Spectacles without side shields, with suitable filter lenses are permitted for use during gas welding operations on light work, for torch brazing or for inspection.
- 5.1.3.3 All operators and attendants of resistance welding or resistance brazing equipment shall use transparent face shields or goggles, depending on the particular job, to protect their faces or eyes, as required.
- 5.1.3.4 Eye protection in the form of suitable goggles shall be provided where needed for brazing operations.
- 5.1.3.5 Goggles shall be ventilated to prevent fogging of the lenses as much as practicable.
- 5.1.3.6 All glass for lenses shall be tempered, substantially free from striae, air bubbles, waves and other flaws.
- 5.1.3.7 Except when a lens is ground to provide proper optical correction for defective vision, the front and rear surfaces of lenses and windows shall be smooth and parallel.
- 5.1.3.8 Lenses shall bear some permanent distinctive marking by which the source and shade may be readily identified.

- 5.1.3.9 The following is a guide for the selection of the proper shade numbers. These recommendations may be varied to suit the individual's needs.

WELDING OPERATION		SHADE #
Shielded metal-arc welding:	1/16-, 3/32-, 1/8-, 5/32-inch electrodes	10
Gas-shielded arc welding-nonferrous:	1/16-, 3/32-, 1/8-, 5/32-inch electrodes	11
Gas-shielded arc welding-ferrous	1/16-, 3/32-, 1/8-, 5/32-inch electrodes	12
Shielded metal-arc welding:	3/16-, 7/32-, 1/4-inch electrodes	12
	5/16-, 3/8-inch electrodes	14
Atomic hydrogen welding:		10-14
Carbon arc welding:		14
Soldering:		2
Torch brazing:		3 or 4
Light cutting:	up to 1 inch	3 or 4
Medium cutting,	1 inch to 6 inches	4 or 5
Heavy cutting:	6 inches and over	5 or 6
Gas welding (light):	up to 1/8 inch	4 or 5
Gas welding (medium):	1/8 inch to 1/2 inch:	5 or 6
Gas welding (heavy):	1/2 inch and over:	6 or 8

- Note: In gas welding or oxygen cutting where the torch produces a high yellow light, it is desirable to use a filter or lens that absorbs the yellow or sodium line in the visible light of the operation.

- 5.1.3.10 All filter lenses and plates shall meet the test for transmission of radiant energy prescribed in ANSI Z87.1 - American National Standard Practice for Occupational and Educational Eye and Face Protection.

- 5.1.3.11 For protection from arc welding rays, where the work permits, the welder should be enclosed in an individual booth painted with a finish of low reflectivity such as zinc oxide (an important factor for absorbing ultraviolet radiations) and lamp black, or shall be enclosed with noncombustible screens similarly painted.

5.1.3.11.1 Booths and screens shall permit circulation of air at floor level.

5.1.3.11.2 Workers or other persons adjacent to the welding areas shall be protected from the rays by noncombustible or flameproof screens or shields or shall be required to wear appropriate goggles.

5.1.4 Protective Clothing - General Requirements

5.1.4.1 Employees exposed to the hazards created by welding, cutting, or brazing operations shall be protected by personal protective equipment.

5.1.4.1.1 Appropriate protective clothing required for any welding operation will vary with the size, nature and location of the work to be performed.

5.2 Health Protection and Ventilation:

5.2.1 General

5.2.1.1 The requirements for health protection and ventilation have been established on the basis of the following three factors in arc and gas welding which govern the amount of contamination to which welders may be exposed:

5.2.1.1.1 Dimensions of space in which welding is to be done (with special regard to height of ceiling).

5.2.1.1.2 Number of welders.

5.2.1.1.3 Possible evolution of hazardous fumes, gases, or dust according to the metals involved.

5.2.1.2 When performing welding in a space entirely screened on all sides, the screens shall be so arranged that no serious restriction of ventilation exists. It is desirable to have the screens so mounted that they are about 2 feet (0.61 m) above the floor unless the work is performed at so low a level that the screen must be extended nearer to the floor to protect nearby workers from the glare of welding.

5.2.1.3 Local exhaust or general ventilating systems shall be provided and arranged to keep the amount of toxic fumes, gases, or dusts below the maximum allowable concentration as specified in 29 CFR 1910.1000 – Air Contaminants.

5.2.1.4 A number of potentially hazardous materials are employed in fluxes, coatings, coverings, and filler metals used in welding and cutting or are released to the atmosphere during welding and cutting.

5.2.1.4.1 The suppliers of welding materials shall determine the hazard, if any, associated with the use of their materials in welding, cutting, etc.

- 5.2.1.4.2 All filler metals and fusible granular materials shall carry the following notice, as a minimum, on tags, boxes, or other containers:
 - 5.2.1.4.2.1 CAUTION
 - 5.2.1.4.2.2 Welding may produce fumes and gases hazardous to health. Avoid breathing these fumes and gases. Use adequate ventilation. See ANSI Z49.1 Safety in Welding and Cutting published by the American Welding Society.
- 5.2.1.4.3 Brazing (welding) filler metals containing cadmium in significant amounts shall carry the following notice on tags, boxes, or other containers:
 - 5.2.1.4.3.1 WARNING
CONTAINS CADMIUM - POISONOUS
FUMES MAY BE FORMED ON
HEATING
 - 5.2.1.4.3.2 Do not breathe fumes. Use only with adequate ventilation such as fume collectors, exhaust ventilators, or air-supplied respirators. See ANSI Z49.1
 - 5.2.1.4.3.3 If chest pain, cough, or fever develops after use call physician immediately.
- 5.2.1.4.4 Brazing and gas welding fluxes containing fluorine compounds shall have a cautionary wording to indicate that they contain fluorine compounds. One such cautionary wording recommended by the American Welding Society for brazing and gas welding fluxes reads as follows:
 - 5.2.1.4.4.1 CAUTION
CONTAINS FLUORIDES
 - 5.2.1.4.4.2 This flux when heated gives off fumes that may irritate eyes, nose and throat.
 - 5.2.1.4.4.3 Avoid fumes - use only in well-ventilated spaces.
 - 5.2.1.4.4.4 Avoid contact of flux with eyes or skin.
 - 5.2.1.4.4.5 Do not take internally.

5.2.2 Ventilation for General Welding and Cutting

5.2.2.1 Mechanical ventilation shall be provided when welding or cutting is done on specific metals.

5.2.2.1.1 In a space of less than 10,000 cubic feet (284 m³) per welder.

5.2.2.1.2 In a room having a ceiling height of less than 16 feet (5 m).

5.2.2.1.3 In confined spaces or where the welding space contains partitions, balconies, or other structural barriers to the extent that they significantly obstruct cross ventilation.

5.2.2.2 Such ventilation shall be at the minimum rate of 2,000 cubic feet (57 m³) per minute per welder, except where local exhaust hoods and booths as defined by 6.3, or airline respirators approved by the U.S. Bureau of Mines for such purposes are provided.

5.2.2.2.1 Natural ventilation is considered sufficient for welding or cutting operations where regulatory restrictions are not present.

5.2.3 Local Exhaust Hoods and Booth

5.2.3.1 Mechanical local exhaust ventilation may be by means of either of the following:

5.2.3.1.1 Freely movable hoods intended to be placed by the welder as near as practicable to the work being welded and provided with a rate of air-flow sufficient to maintain a velocity in the direction of the hood of 100 linear feet (30 m) per minute in the zone of welding when the hood is at its most remote distance from the point of welding. The rates of ventilation required to accomplish this control velocity using a 3-inch (7.6 cm) wide flanged suction opening are shown in the following table:

Welding zone	Minimum air flow *(1) cubic feet/minute	Duct Diameter
4 to 6 inches from arc or torch	150	3
6 to 8 inches from arc or torch	275	3 ½
8 to 10 inches from arc or torch	425	4 ½
10 to 12 inches from arc or torch	600	5 ½

➤ {Footnote}*(1) When brazing with cadmium bearing materials or when cutting on such materials increased rates of ventilation may be required.

➤ {Footnote}*(2) Nearest half-inch duct diameter based on 4,000 feet per minute velocity in pipe.

5.2.3.1.2 A fixed enclosure with a top and not less than two sides which surround the welding or cutting operations and with a rate of airflow sufficient to maintain a velocity away from the welder of not less than 100 linear feet (30 m) per minute.

5.2.4 Ventilation in Confined Spaces

5.2.4.1 All welding and cutting operations carried on in confined spaces shall be adequately ventilated to prevent the accumulation of toxic materials or possible oxygen deficiency.

5.2.4.1.1 This applies not only to the welder but also to helpers and other personnel in the immediate vicinity.

5.2.4.1.2 All air replacing that withdrawn shall be clean and respirable.

5.2.4.2 In circumstances for which it is impossible to provide such ventilation, NIOSH approved airline respirators or hose masks must be used.

5.2.4.3 In areas immediately hazardous to life, a full-facepiece, pressure-demand, self-contained breathing apparatus or a combination full-facepiece, pressure-demand supplied-air respirator with an auxiliary, self-contained air supply approved by NIOSH must be used.

5.2.4.4 Where welding operations are carried on in confined spaces and where welders and helpers are provided with hose masks, hose masks with blowers or self-contained breathing equipment approved by MSHA or NIOSH, a worker shall be stationed on the outside to insure the safety of those working within.

5.2.4.5 Oxygen shall never be used for ventilation.

5.2.5 Fluorine Compounds

5.2.5.1 A fluorine compound is one that contains fluorine, as an element in chemical combination, not as a free gas.

5.2.5.2 In confined spaces, welding or cutting involving fluxes, coverings, or other materials which contain fluorine compounds, additional ventilation shall be provided.

- 5.2.5.3 The need for local exhaust ventilation or airline respirators for welding or cutting in other than confined spaces will depend upon the individual circumstances. However, experience has shown such protection to be desirable for fixed-location production welding and for all production welding on stainless steels.
 - 5.2.5.3.1 Where air samples taken at the welding location indicate that the fluorides liberated are below the maximum allowable concentration, such protection is not necessary.
- 5.2.6 Zinc
 - 5.2.6.1 In confined spaces welding or cutting involving zinc-bearing base or filler metals or metals coated with zinc-bearing materials, additional ventilation shall be provided.
 - 5.2.6.2 Indoors, welding or cutting involving zinc-bearing base or filler metals coated with zinc-bearing materials shall be done under a hood or in an equivalent exhaust system.
- 5.2.7 Lead
 - 5.2.7.1 In confined spaces, welding involving lead-base metals (erroneously called lead-burning), additional ventilation shall be provided.
 - 5.2.7.2 Indoors, welding involving lead-base metals shall be done under a hood or in an equivalent exhaust system.
 - 5.2.7.3 In confined spaces or indoors, welding or cutting operations involving metals containing lead, other than as an impurity, or metals coated with lead-bearing materials, including paint, must be done using local exhaust ventilation or airline respirators.
 - 5.2.7.3.1 Such operations, when done outdoors, must be done using a NIOSH approved respirators.
 - 5.2.7.3.2 In all cases, workers in the immediate vicinity of the cutting operation must be protected by local exhaust ventilation or airline respirators.
- 5.2.8 Beryllium
 - 5.2.8.1 Welding or cutting indoors, outdoors, or in confined spaces involving beryllium-containing base or filler metals shall be done using local exhaust ventilation and airline respirators.
 - 5.2.8.1.1 Local exhaust ventilation and airline respirators are not required when atmospheric tests under the most adverse conditions have established that the workers' exposure is within the acceptable concentrations.

5.2.8.1.2 In all cases, workers in the immediate vicinity of the welding or cutting operations shall be protected as necessary by local exhaust ventilation or airline respirators.

5.2.9 Cadmium

5.2.9.1 In confined spaces or indoors, welding or cutting operations involving cadmium-bearing or cadmium-coated base metals must be done using local exhaust ventilation or airline respirators.

5.2.9.1.1 Local exhaust ventilation and airline respirators are not required when atmospheric tests under the most adverse conditions show that employee exposure is within the acceptable concentrations.

5.2.9.1.2 Such operations, when done outdoors, must be done using a NIOSH approved respirators, such as fume respirators.

5.2.9.2 Welding (brazing) involving cadmium-bearing filler metals shall be done using adequate ventilation.

5.2.10 Mercury

5.2.10.1 In confined spaces or indoors, welding or cutting operations involving metals coated with mercury-bearing materials, including paint, must be done using local exhaust ventilation or airline respirators.

5.2.10.1.1 Local exhaust ventilation and airline respirators are not required when atmospheric tests under the most adverse conditions show that employee exposure is within the acceptable concentrations.

5.2.10.1.2 Such operations, when done outdoors, must be done using NIOSH approved respirators.

5.2.11 Cleaning Compounds

5.2.11.1 In the use of cleaning materials, because of their possible toxicity or flammability, appropriate precautions such as manufacturer's instructions shall be followed.

5.2.11.2 Degreasing and other cleaning operations involving chlorinated hydrocarbons shall be so located that no vapors from these operations will reach or be drawn into the atmosphere surrounding any welding operation.

5.2.11.2.1 In addition, trichloroethylene and perchlorethylene should be kept out of atmospheres penetrated by the ultraviolet radiation of gas-shielded welding operations.

5.2.12 Cutting of Stainless Steel(s)

5.2.12.1 Oxygen cutting, using either a chemical flux or iron powder or gas-shielded arc cutting of stainless steel, shall be done using mechanical ventilation adequate to remove the fumes generated.

5.2.13 First-aid and Equipment

5.2.13.1 First-aid equipment shall be available at all times.

5.2.13.2 All injuries shall be reported as soon as possible for medical attention.

5.2.13.3 First aid shall be rendered until medical attention can be provided.

5.3 Industrial applications.

5.3.1 Transmission pipeline.

5.3.1.1 Where field shop operations are involved for fabrication of fittings, river crossings, road crossings, and pumping and compressor stations the requirements set in this program for fire prevention and protection, protection of personnel, health protection and ventilation, oxygen-fuel gas welding and cutting, and arc welding and cutting shall be observed.

5.3.1.2 When arc welding is performed in wet conditions, or under conditions of high humidity, special protection against electric shock shall be supplied.

5.3.1.3 In pressure testing of pipelines, the workers and the public shall be protected against injury by the blowing out of closures or other pressure restraining devices.

5.3.1.3.1 Protection shall be provided against expulsion of loose dirt that may have become trapped in the pipe.

5.3.1.4 The welded construction of transmission pipelines shall be conducted in accordance with the Standard for Welding Pipe Lines and Related Facilities, API Std. 1104.

5.3.1.5 The connection, by welding, of branches to pipelines carrying flammable substances shall be performed in accordance with Welding or Hot Tapping on Equipment Containing Flammables, API Std. PSD No. 2201.

5.3.1.6 The use of X-rays and radioactive isotopes for the inspection of welded pipeline joints shall conform with the American National Standard Safety Standard for Non-Medical X-ray and Sealed Gamma-Ray Sources, ANSI Z54.1.

5.3.2 Mechanical piping systems.

5.3.2.1 The requirements in this program for fire prevention and protection, protection of personnel, health protection and ventilation, oxygen-fuel gas welding and cutting, and arc welding and cutting shall be observed.

5.3.2.2 The use of X-rays and radioactive isotopes for the inspection of welded piping joints shall be in conformance with the American National Standard Safety Standard for Non-Medical X-ray and Sealed Gamma-Ray Sources, ANSI Z54.1.

6. Training and Information.

6.3 Fire Watchers must attend fire extinguisher use training, or training in equivalent fire protection methods.

7. Definitions.

- *Welder and welding operator* - Any operator of electric or gas welding and cutting equipment.
- *Approved* - Listed or approved by a nationally recognized testing laboratory. Refer to 29 CFR 1910.155(C) (3) – Scope, application and definitions applicable to Subpart L – Fire Protection for definitions of listed and approved, and 29 CFR 1910.7 – Definition and requirements for nationally recognized testing laboratory.
- *All other welding terms* - are used in accordance with American Welding Society

HOT-WORK PERMIT					
<i>NOTE: Hot Work will be performed only after a careful and complete review of all safety precautions and site preparation actions have proven it safe to begin work.</i>					
Permit Number:			Permit Location:		
Permit Validity Period:					
Date:		Start Time		Stop Time	
Work to be completed:					
<input type="checkbox"/> Hot Work Completed: Hot-Work was performed under this permit during the period:					
Date:		Start Time		Stop Time	
<input type="checkbox"/> Not Approved		Estimated Approval: Date/Time:			
Reason:					
Name:			Signature:		
Title:			Date:	Time:	
<input type="checkbox"/> Approved for Hot-Work		AUTHORIZATION			
I acknowledge that I have inspected the site and that the required precautions (1, 2, 3, and 4) on the reverse of this page have been completed. Arrangements have been made for item 5. Permission is granted to perform the work.					
Name:			Signature:		
Title:			Date:	Time:	
PERMIT RETENTION INFORMATION					
Permanent Retention File:			Location:		
Date Filed:			Filed By:		

HOT-WORK SAFETY REQUIREMENTS

IF EMERGENCY OCCURS CALL:

CONTACT:

EMERGENCY/FIRE/RESCUE PROCEDURES

Location of written Emergency Actions Plan:

Evacuation/Relocation Information:

Additional Information:

HOT WORK SAFETY CHECKLIST

WORK CANNOT BEGIN UNTIL THE FOLLOWING SAFETY PRECAUTIONS HAVE BEEN COMPLETED

Requirement

Completed

The location of the work to be done will be examined.

- | | | |
|---|------------------------------|-----------------------------|
| • Are Sprinklers, where provided, operational and will remain operable until the work is completed? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| • Have all flammable dusts, lint, vapors or liquids been cleared from the hot work area? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| • Have all unpurged tanks or equipment previously containing flammable material been removed? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| • Will the work be confined to the area specified in this permit? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

The following safeguards will be provided.

- | | | |
|---|------------------------------|-----------------------------|
| • Have all floors and surroundings been swept clean and wet down if required? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| • Has ample portable fire extinguishing equipment been provided and strategically located? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| • Have all unpurged tanks or equipment previously containing flammable material been removed? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

If the work involves spark producing equipment the following will be done.

- | | | |
|---|------------------------------|-----------------------------|
| • Have all combustibles been located 30 to 40 feet from the operation? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| • -Have all non-moveable combustibles been protected with fireproof curtains, flameproof covers etc.? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| • Has a firewatch been appointed to watch for dangerous sparks in the area above and below floors? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

Has flame- or spark-producing equipment been inspected and in good repair?

Yes No

Have arrangements been made for area patrol, including above and below floors, during rest periods and for at least one half hour after work completion?

Yes No

Were there any "no" answers in questions 1-5?

*** IF YES--REPORT TO YOUR SUPERVISOR - DO NOT PERFORM HOT-WORK!**

* Yes No

SUPPLEMENTAL ARC WELDING AND CUTTING INFORMATION

- General
 - Equipment selection. Welding equipment shall be chosen for safe application to the work to be done as specified in section 9.2.
 - Installation. Welding equipment shall be installed safely as specified in section 9.3.
 - Instruction. Workmen designated to operate arc welding equipment shall have been properly instructed and qualified to operate such equipment as specified section 9.4.
- Application of arc welding equipment
 - General. Assurance of consideration of safety in design is obtainable by choosing apparatus complying with the Requirements for Electric Arc-Welding Apparatus, NEMA EW-1-1962, National Electrical Manufacturers Association or the Safety Standard for Transformer-Type Arc-Welding Machines, ANSI C33.2-1956, and Underwriters' Laboratories.
 - Environmental conditions. Standard machines for arc welding service shall be designed and constructed to carry their rated load with rated temperature rises where:
 - The temperature of the cooling air does not exceed 40 deg. C. (104 deg. F.),
 - The altitude does not exceed 3,300 feet (1,005.8 m), and
 - Shall be suitable for operation in atmospheres containing gases, dust, and light rays produced by the welding arc.
 - Unusual service conditions may exist, and in such circumstances machines shall be especially designed to safely meet the requirements of the service. These conditions may include exposure to:
 - Unusually corrosive fumes.
 - Steam or excessive humidity.
 - Excessive oil vapor.
 - Flammable gases.
 - Abnormal vibration or shock.
 - Excessive dust.
 - Weather.
 - Unusual seacoast or shipboard conditions.
 - Voltage. The following limits shall not be exceeded:
 - Alternating-current machines
 - Manual arc welding and cutting - 80 volts.
 - Automatic (machine or mechanized) arc welding and cutting - 100 volts.
 - Direct-current machines
 - Manual arc welding and cutting - 100 volts.
 - Automatic (machine or mechanized) arc welding and cutting - 100 volts.
 - When special welding and cutting processes require values of open circuit voltages higher than voltage limits specified, means shall be provided to prevent the operator from making accidental contact with the high voltage by adequate insulation or other means.
 - For a.c. welding under wet conditions or warm surroundings where perspiration is a factor, the use of reliable automatic controls for reducing no load voltage is recommended to reduce the shock hazard.

- Design.
 - A controller integrally mounted in an electric motor driven welder shall:
 - Have capacity for carrying rated motor current,
 - Be capable of making and interrupting stalled rotor current of the motor, and
 - Serve as the running over-current device if provided with the number of over-current units as specified by 29 CFR 1910 Subpart S - Electrical.
 - On all types of arc welding machines, control apparatus shall be enclosed except for the operating wheels, levers, or handles.
 - Input power terminals, tap change devices and live metal parts connected to input circuits shall be completely enclosed and accessible only by means of tools.
 - Terminals for welding leads should be protected from accidental electrical contact by personnel or by metal objects i.e., vehicles, crane hooks, etc. Protection may be obtained by use of:
 - Dead-front receptacles for plug connections;
 - Recessed openings with non-removable hinged covers;
 - Heavy insulating sleeves or taping or other equivalent electrical and mechanical protection.
 - If a welding lead terminal which is intended to be used exclusively for connection to the work is connected to the grounded enclosure, It must be done by a conductor at least two AWG sizes smaller than the grounding conductor, and the terminal shall be marked to indicate that it is grounded.
 - No connections for portable control devices such as push buttons to be carried by the operator shall be connected to an a.c. circuit of higher than 120 volts.
 - Exposed metal parts of portable control devices operating on circuits above 50 volts shall be grounded by a grounding conductor in the control cable.
 - Auto transformers or a.c. reactors shall not be used to draw welding current directly from any a.c. power source having a voltage exceeding 80 volts.
- Installation of arc welding equipment
 - General. Installation including power supply shall be in accordance with the requirements of 29 CFR 1910 Subpart S - Electrical.
 - Grounding.
 - The frame or case of the welding machine (except engine-driven machines) shall be grounded under the conditions and according to the methods prescribed in by 29 CFR 1910 Subpart S - Electrical.
 - Conduits containing electrical conductors shall not be used for completing a work-lead circuit.
 - Pipelines shall not be used as a permanent part of a work-lead circuit. Pipelines may be used during construction, extension or repair providing current is not carried through threaded joints, flanged bolted joints, or caulked joints and special precautions are used to avoid sparking at connection of the work-lead cable.
 - Chains, wire ropes, cranes, hoists, and elevators shall not be used to carry welding current.
 - Where a structure, conveyor, or fixture is regularly employed as a welding current return circuit, joints shall be bonded or provided with adequate current collecting devices.
 - All ground connections shall be checked to determine that they are mechanically strong and electrically adequate for the required current.

- Supply connections and conductors.
 - A disconnecting switch or controller shall be provided at or near each welding machine which is not equipped with such a switch.
 - The switch shall be in accordance with 29 CFR 1910 Subpart S - Electrical.
 - Over-current protection shall be provided as specified in 29 CFR 1910 Subpart S - Electrical.
 - A disconnect switch with overload protection or equivalent disconnect and protection means, permitted by 29 CFR 1910 Subpart S - Electrical, shall be provided for each outlet intended for connection to a portable welding machine.
 - For individual welding machines, the rated current-carrying capacity of the supply conductors shall be not less than the rated primary current of the welding machines.
 - For groups of welding machines, the rated current-carrying capacity of conductors may be less than the sum of the rated primary currents of the welding machines supplied.
 - The conductor rating shall be determined in each case according to the machine loading based on:
 - The use to be made of each welding machine, and
 - The allowance permissible in the event that all the welding machines supplied by the conductors will not be in use at the same time.
 - In operations involving several welders on one structure, d.c. welding process requirements may require the use of both polarities; or supply circuit limitations for a.c. welding may require distribution of machines among the phases of the supply circuit.
 - In such cases no load voltages between electrode holders will be 2 times normal in d.c. or 1, 1.41, 1.73, or 2 times normal on a.c. machines.
 - Similar voltage differences will exist if both a.c. and d.c. welding are done on the same structure.
 - All d.c. machines shall be connected with the same polarity.
 - All a.c. machines shall be connected to the same phase of the supply circuit and with the same instantaneous polarity.
- Operation and maintenance
 - Workmen assigned to operate or maintain arc welding equipment shall be acquainted with the requirements of sections 4, 5, 6 and,
 - Operation.
 - Before starting operations all connections to the machine shall be checked to make certain they are properly made.
 - The work lead shall be firmly attached to the work;
 - Magnetic work clamps shall be freed from adherent metal particles of spatter on contact surfaces.
 - Coiled welding cable shall be spread out before use to avoid serious overheating and damage to insulation.
 - Grounding of the welding machine frame shall be checked. Special attention shall be given to safety ground connections of portable machines.
 - There shall be no leaks of cooling water, shielding gas or engine fuel.

- It shall be determined that proper switching equipment for shutting down the machine is provided.
- Printed rules and instructions covering operation of equipment supplied by the manufacturers shall be strictly followed.
- Electrode holders when not in use shall be so placed that they cannot make electrical contact with persons, conducting objects, fuel or compressed gas tanks.
- Cables with splices within 10 feet (3 m) of the holder shall not be used.
- The welder should not coil or loop welding electrode cable around parts of his body for danger of electric shock.
- Maintenance.
 - The operator should report any equipment defect or safety hazard to his supervisor and the use of the equipment shall be discontinued until its safety has been assured.
 - Repairs shall be made only by qualified personnel.
 - Machines which have become wet shall be thoroughly dried and tested before being used.
 - Cables with damaged insulation or exposed bare conductors shall be replaced.
 - Joining lengths of work and electrode cables shall be done by the use of connecting means specifically intended for the purpose. The connecting means shall have insulation adequate for the service conditions.

SUPPLEMENTAL OXYGEN-FUEL GAS WELDING & CUTTING INFORMATION

- General Requirements
 - Mixtures of fuel gases and air or oxygen may be explosive and shall be prevented.
 - No device or attachment facilitating or permitting mixtures of air or oxygen with flammable gases prior to consumption, except at the burner or in a standard torch, shall be allowed unless approved for the purpose.
 - Under no condition shall acetylene be generated, piped (except in approved cylinder manifolds) or used at a pressure in excess of 15 psig (103 kPa gauge pressure) or 30 psia (206 kPa absolute). (The 30 psia (206 kPa absolute) limit is intended to prevent unsafe use of acetylene in pressurized chambers such as caissons, underground excavations or tunnel construction.)
 - This does not apply to storage of acetylene dissolved in a suitable solvent in cylinders manufactured and maintained according to U.S. Department of Transportation requirements, or to acetylene for chemical use.
 - The liquid acetylene will not be used.
- Apparatus.
 - Only approved apparatus such as torches, regulators or pressure-reducing valves, acetylene generators, and manifolds shall be used.
- Personnel.
 - Workmen in charge of the oxygen or fuel-gas supply equipment, including generators, and oxygen or fuel-gas distribution piping systems shall be instructed and judged competent by their employers for this important work before being left in charge. Rules and instructions covering the operation and maintenance of oxygen or fuel-gas supply equipment including generators, and oxygen or fuel-gas distribution piping systems shall be readily available.
- Cylinders and Containers Approval and Marking.
 - General
 - All portable cylinders used for the storage and shipment of compressed gases shall be constructed and maintained in accordance with the regulations of the U.S. Department of Transportation, 49 CFR Parts 171-179.
 - Compressed gas cylinders shall be legibly marked, for the purpose of identifying the gas content, with either the chemical or the trade name of the gas.
 - Such marking shall be by means of stenciling, stamping, or labeling, and shall not be readily removable.
 - Whenever practical, the marking shall be located on the shoulder of the cylinder. This method conforms to the American National Standard Method for Marking Portable Compressed Gas Containers to Identify the Material Contained, ANSI Z48.1,
 - Compressed gas cylinders shall be equipped with connections complying with the American National Standard Compressed Gas Cylinder Valve Outlet and Inlet Connections, ANSI B57.1,
 - All cylinders with a water weight capacity of over 30 pounds (13.6 kg) shall be equipped with means of connecting a valve protection cap or with a collar or recess to protect the valve.
 - Storage of cylinders-general.
 - Cylinders shall be kept away from radiators and other sources of heat.
 - Inside of buildings, cylinders shall be stored in a well-protected, well-ventilated, dry location, at least 20 (6.1 m) feet from highly combustible materials such as oil or excelsior.
 - Cylinders should be stored in definitely assigned places away from elevators, stairs, or gangways.
 - Assigned storage spaces shall be located where cylinders will not be knocked over or damaged by passing or falling objects, or subject to tampering by unauthorized persons.
 - Cylinders shall not be kept in unventilated enclosures such as lockers and cupboards.

- Empty cylinders shall have their valves closed.
- Valve protection caps, where cylinder is designed to accept a cap, shall always be in place, hand-tight, except when cylinders are in use or connected for use.
- Fuel-gas cylinder storage.
 - Inside a building, cylinders, except those in actual use or attached ready for use, shall be limited to a total gas capacity of 2,000 cubic feet (56 m³) or 300 pounds (135.9 kg) of liquefied petroleum gas.
 - Total gas capacity of cylinders in excess of 2,000 cubic feet (56 m³) or 300 pounds (135.9 kg) of liquefied petroleum gas, will be stored:
 - Outside, or
 - In a special building,
 - In a separate room or compartment conforming to the requirements of section 8.6.6 Outside generator houses and inside generator rooms for stationary acetylene generators.
 - Special buildings, rooms or compartments shall:
 - Have no open flame for heating or lighting, and
 - Be well ventilated.
 - Special buildings, rooms or compartments may also be used for storage of calcium carbide in quantities not to exceed 600 (271.8 kg) pounds, when contained in metal containers.
 - Acetylene cylinders shall be stored valve end up.
- Oxygen storage.
 - Oxygen cylinders shall not be stored:
 - Near highly combustible material, especially oil and grease; or
 - Near reserve stocks of carbide and acetylene or other fuel-gas cylinders, or
 - Near any other substance likely to cause or accelerate fire; or
 - In an acetylene generator compartment.
 - Oxygen cylinders stored in outside generator houses shall be separated from the generator or carbide storage rooms by a noncombustible partition having a fire-resistance rating of at least 1 hour. This partition shall be without openings and shall be gastight.
 - Oxygen cylinders in storage shall be separated from fuel-gas cylinders or combustible materials (especially oil or grease), a minimum distance of 20 feet (6.1 m) or by a noncombustible barrier at least 5 feet (1.5 m) high having a fire-resistance rating of at least one-half hour.
 - Where a liquid oxygen system is to be used to supply gaseous oxygen for welding or cutting and the system has a storage capacity of more than 13,000 cubic feet (364 m³) of oxygen (measured at 14.7 psia (101 kPa) and 70 deg. F (21.1 deg. C)), connected in service or ready for service, or more than 25,000 cubic feet (700 m³) of oxygen (measured at 14.7 psia (101 kPa) and 70 deg. F (21.1 deg. C)), including unconnected reserves on hand at the site, it shall comply with the provisions of the Standard for Bulk Oxygen Systems at Consumer Sites, NFPA No. 566-1965,
- Operating procedures.
 - Cylinders, cylinder valves, couplings, regulators, hose, and apparatus shall be kept free from oily or greasy substances.
 - Oxygen cylinders or apparatus shall not be handled with oily hands or gloves.
 - A jet of oxygen must never be permitted to strike an oily surface, greasy clothes, or enter a fuel oil or other storage tank.
 - When transporting cylinders by a crane or derrick, a cradle, boat, or suitable platform shall be used. Slings or electric magnets shall not be used for this purpose. Valve-protection caps, where cylinder is designed to accept a cap, shall always be in place.
 - Cylinders shall not be dropped or struck or permitted to strike each other violently.
 - Valve-protection caps shall not be used for lifting cylinders from one vertical position to another and are designed to protect cylinder valves from damage. Bars shall not be used under valves or valve-protection caps to pry cylinders loose when frozen to the ground or otherwise fixed; the use of warm (not boiling) water is recommended.

- Unless cylinders are secured on a special truck, regulators shall be removed and valve-protection caps, when provided for, shall be put in place before cylinders are moved.
- Cylinders not having fixed hand wheels shall have keys, handles, or nonadjustable wrenches on valve stems while these cylinders are in service.
- In multiple cylinder installations only one key or handle is required for each manifold.
- Cylinder valves shall be closed:
 - Before moving cylinders.
 - When work is finished.
 - When cylinders are empty
- Cylinders shall be kept far enough away from the actual welding or cutting operation so that sparks, hot slag, or flame will not reach them. When maintaining safe distance is not possible, fire-resistant shields shall be used.
- Cylinders shall not be placed where they might become part of an electric circuit.
 - Avoid contact with third rails, trolley wires, etc.,
 - Cylinders shall be kept away from radiators, piping systems, layout tables, etc., that may be used for grounding electric circuits such as for arc welding machines.
 - Any practice such as the tapping of an electrode against a cylinder to strike an arc shall be prohibited.
- Cylinders shall never be used as rollers or supports, whether full or empty.
- The numbers and markings stamped into cylinders shall not be tampered with.
- No person, other than the gas supplier, shall attempt to mix gases in a cylinder.
- No one, except the owner of the cylinder or person authorized by him, shall refill a cylinder.
- No one shall tamper with safety devices in cylinders or valves.
- Cylinders shall not be dropped or otherwise roughly handled.
- Unless connected to a manifold, oxygen from a cylinder shall not be used without first attaching an oxygen regulator to the cylinder valve.
- Before connecting a regulator to a cylinder valve, the valve shall be opened slightly and closed immediately.
- The valve shall be opened while standing to one side of the outlet; never in front of it.
- Never crack a fuel-gas cylinder valve near other welding work or near sparks, flame, or other possible sources of ignition.
- Do not use a hammer or wrench to open cylinder valves. If valves cannot be opened by hand, notify the supplier.
- Do not tamper with or attempt to repair cylinder valves. If trouble is experienced, promptly report to the supplier the character of the trouble and the cylinder's serial number. Follow the supplier's instructions as to its disposition.
- Avoid complete removal of the stem from a diaphragm-type cylinder valve.
- Fuel-gas cylinders shall be placed with valve end up whenever they are in use. .
- Liquefied gases shall be stored and shipped with the valve end up.
- Handle cylinders carefully.
- Rough handling, knocks, or falls are liable to damage the cylinder, valve or safety devices and cause leakage.
- Before removing a regulator from a cylinder valve, the cylinder valve shall be closed and the gas released from the regulator.
- Do not place anything on top of an acetylene cylinder when in use which may damage the safety device or interfere with the quick closing of the valve.
- If cylinders are found to have leaky valves or fittings which cannot be stopped by closing of the valve, the cylinders shall be taken outdoors away from sources of ignition and slowly emptied.
- A warning should be placed near cylinders having leaking fuse plugs or other leaking safety devices not to approach them with a source of ignition (including a lit cigarette).
 - Plainly tag such cylinders;
 - Promptly notify the supplier of the trouble, and
 - Follow the supplier's instructions as to the return such cylinders.
- Do not tamper with safety devices.
- Fuel-gas shall never be used from cylinders through torches or other devices equipped with shutoff valves without reducing the pressure through a suitable regulator attached to the cylinder valve or manifold.

- Always slowly open a cylinder valve.
- Do not open an acetylene cylinder valve more than one and one-half turns of the spindle, and preferably no more than three-fourths of a turn.
- Where a special wrench is required it shall be left in position on the stem of the valve while the cylinder is in use so that the fuel-gas flow can be quickly turned off in case of emergency. In the case of manifolded or coupled cylinders at least one such wrench shall always be available for immediate use.
- Manifolding of cylinders
 - Fuel-gas manifolds.
 - Manifolds shall be approved either separately for each component part or as an assembled unit.
 - Fuel-gas cylinders connected to one manifold inside a building shall be limited to a total capacity not exceeding 300 pounds (135.9 kg) of liquefied petroleum gas or 3,000 cubic feet (84 m³) of other fuel-gas.
 - More than one such manifold with connected cylinders may be located in the same room provided the manifolds are:
 - At least 50 feet (15 m) apart, or
 - Separated by a noncombustible barrier at least 5 feet (1.5 m) high having a fire-resistance rating of at least one-half hour.
 - Fuel-gas cylinders connected to one manifold having an aggregate capacity exceeding 300 pounds (135.9 kg) of liquefied petroleum gas or 3,000 cubic feet (84 m³) of other fuel-gas shall be located outdoors, or in a separate building or room constructed conforming to the requirements of section 8.6.6 Outside generator houses and inside generator rooms for stationary acetylene generators.
 - Separate manifold buildings or rooms may also be used for the storage of drums of calcium carbide and cylinders containing fuel gases conforming to the requirements of section 8.2.3 Fuel gas cylinder storage. Such buildings or rooms shall:
 - Have no open flames for heating or lighting, and
 - Be well-ventilated.
 - High-pressure fuel-gas manifolds shall be provided with approved pressure regulating devices.
 - High-pressure oxygen manifolds (for use with cylinders having a Department of Transportation service pressure above 200 psig (1.36 MPa)).
 - Manifolds shall be approved either separately for each component part or as an assembled unit.
 - Do not locate Oxygen manifolds in an acetylene generator room.
 - Oxygen manifolds shall be separated from fuel-gas cylinders or combustible materials (especially oil or grease), a minimum distance of 20 feet (6.1 m) or by a noncombustible barrier at least 5 feet (1.5 m) high having a fire-resistance rating of at least one-half hour.
 - Oxygen cylinders connected to one manifold shall be limited to a total gas capacity of 6,000 cubic feet (168 m³).
 - More than one such manifold with connected cylinders may be located in the same room provided the manifolds are:
 - At least 50 feet (15 m) apart, or
 - Separated by a noncombustible barrier at least 5 feet (1.5 m) high having a fire-resistance rating of at least one-half hour.
 - An oxygen manifold, to which cylinders having an aggregate capacity of more than 6,000 cubic feet (168 m³) of oxygen are connected, should be located outdoors or in a separate noncombustible building.
 - Such a manifold, if located inside a building having other occupancy, shall be located in a separate room of noncombustible construction having a fire-resistance rating of at least one-half hour or in an area with no combustible material within 20 feet (6.1 m) of the manifold.
 - An oxygen manifold or oxygen bulk supply system which has storage capacity of more than 13,000 cubic feet (364 m³) of oxygen (measured at 14.7 psia (101 kPa) and 70 deg. F (21.1 deg. C)), connected in service or ready for service, or more than 25,000 cubic feet (700 m³) of oxygen (measured at 14.7 psia (101 kPa) and 70 deg. F (21.1 deg. C)), including unconnected reserves on hand at the site, shall comply with the provisions of the Standard for Bulk Oxygen Systems at Consumer Sites, NFPA No. 566-1965.
 - High-pressure oxygen manifolds shall be provided with approved pressure-regulating devices.

- Low-pressure oxygen manifolds (for use with cylinders having a Department of Transportation service pressure not exceeding 200 psig (1.36 MPa)).
 - Manifolds shall be of substantial construction suitable for use with oxygen at a pressure of 250 psig (1.7 MPa). These manifolds shall:
 - Have a minimum bursting pressure of 1,000 psig (6.8 MPa), and
 - Be protected by a safety relief device which will relieve at a maximum pressure of 500 psig (3.4 MPa). DOT-4L200 cylinders have safety devices which relieve at a maximum pressure of 250 psig (1.7 MPa) (or 235 psig (1.6 MPa) if vacuum insulation is used).
 - Hose shall have a minimum bursting pressure of 1,000 psig (6.8 MPa). Refer to section 8.5.5 Hose and Hose Connections for requirements of Hose and hose connections subject to cylinder pressure.
 - The assembled manifold including leads shall be tested and proven gas-tight at a pressure of 300 psig (2.04 MPa). The fluid used for testing oxygen manifolds shall be oil-free and not combustible.
 - The following sign shall be conspicuously posted at each manifold:
 - Low-Pressure Manifold
 - Do Not Connect High-Pressure Cylinders
 - Maximum Pressure - 250 psig (1.7 MPa)
- Portable outlet headers.
 - Do not use portable outlet headers indoors except for temporary service where the conditions prevent a direct supply from outlets located on the service piping system.
 - Each outlet on the service piping from which oxygen or fuel-gas is withdrawn to supply a portable outlet header shall be equipped with a readily accessible shutoff valve.
 - Refer to section 8.5.5 Hose and Hose Connections for requirements of Hose and Hose Connections for the requirements of hose and hose connections used for connecting portable outlet headers to the service piping
 - The entry end of the portable outlet headers will be equipped with master shutoff valves for both oxygen and fuel-gas.
 - Portable outlet headers for fuel-gas service shall be provided with an approved hydraulic back-pressure valve installed at the inlet and preceding the service outlets, unless an approved:
 - Pressure-reducing regulator,
 - Back-flow check valve, or
 - Hydraulic back-pressure valve is installed at each outlet.
 - Outlets provided on headers for oxygen service may be fitted for use with pressure-reducing regulators or for direct hose connection.
 - A valve assembly with a detachable outlet seal cap, chained or otherwise attached to the body of the valve will be provided for each service outlet on portable outlet headers.
 - Materials and fabrication procedures for portable outlet headers shall comply with the Service Piping System requirements, specifically sections 8.4.1 - Materials & Design, 8.4.2- Piping Joints and 8.4.5 Testing
 - Portable outlet headers shall be provided with frames which will support the equipment securely in the correct operating position and protect them from damage during handling and operation.
- Manifold operating procedures.
 - Installation of cylinder manifolds will only occur under the supervision of someone familiar with their construction and use.
 - All manifolds and parts used in methods of manifolding shall be used only for the gas or gases for which they are approved.
 - When acetylene cylinders are coupled, approved flash arresters shall be installed between each cylinder and the coupler block. For outdoor use only, and when the number of cylinders coupled does not exceed three, one flash arrester installed between the coupler block and regulator is acceptable.
 - The aggregate capacity of fuel-gas cylinders connected to a portable manifold inside a building shall not exceed 3,000 cubic feet (84 m³) of gas.

- Acetylene and liquefied fuel-gas cylinders shall be manifolded in a vertical position.
- The pressure in the gas cylinders connected to and discharged simultaneously through a common manifold shall be approximately equal.
- Service piping systems
 - Materials and design. Piping and fittings shall comply with section 2, Industrial Gas and Air Piping Systems, of the American National Standard Code for Pressure Piping ANSI B31.1, unless it conflicts with the following:
 - Pipe shall be at least Schedule 40 and fittings shall be at least standard weight in sizes up to and including 6-inch nominal.
 - Copper tubing shall be Types K or L in accordance with the Standard Specification for Seamless Copper Water Tube, ASTM B88-66a.
 - Piping shall be steel, wrought iron, brass or copper pipe, or seamless copper, brass or stainless steel tubing, with the following exceptions.
 - Oxygen piping and fittings at pressures in excess of 700 psi (4.8 MPa), shall be stainless steel or copper alloys.
 - Hose and hose connections as specified in section 8.5.5 Hose and Hose Connections will be used to connect the outlet of a manifold pressure regulator to piping providing:
 - The working pressure of the piping is 250 psi (1.7 MPa) or less,
 - The length of the hose does not exceed 5 feet (1.5 m) and has a minimum bursting pressure of 1,000 psig (6.8 MPa).
 - When oxygen is supplied to a service piping system from a low-pressure oxygen manifold without an intervening pressure regulating device, the piping system shall have a minimum design pressure of 250 psig (1.7 MPa). When the connected equipment is for use at pressures less than 250 psig (1.7 MPa), a pressure regulating device shall be used at each station outlet.
 - Piping for acetylene or acetylenic compounds shall be steel or wrought iron. Unalloyed copper shall not be used for acetylene or acetylenic compounds except in listed equipment.
- Piping joints.
 - Joints in steel or wrought iron piping shall be welded, threaded or flanged.
 - Fittings, such as ells, tees, couplings, and unions, may be rolled, forged or cast steel, malleable iron or nodular iron.
 - Gray or white cast iron fittings are prohibited.
 - Joints in brass or copper pipe shall be welded, brazed, threaded, or flanged. If of the socket type, they shall be brazed with silver-brazing alloy or similar high melting point (not less than 800 deg. F (427 deg. C)) filler metal.
 - Joints in seamless copper, brass, or stainless steel tubing shall be approved gas tubing fittings or the joints shall be brazed. If of the socket type, they shall be brazed with silver-brazing alloy or similar high melting point (not less than 800 deg. F (427 deg. C)) filler metal.
- Installation.
 - Distribution lines shall be installed and maintained in a safe operating condition.
 - All piping shall be run as directly as practicable, protected against physical damage, proper allowance being made for expansion and contraction, jarring and vibration.
 - Pipe laid underground in earth shall be located below the frost line and protected against corrosion.
 - After assembly, piping shall be thoroughly blown out with air, nitrogen, or carbon dioxide to remove foreign materials. For oxygen piping, only oil-free air, oil-free nitrogen, or oil-free carbon dioxide shall be used.
 - Only piping which has been welded or brazed shall be installed in tunnels, trenches or ducts.
 - Shutoff valves shall be located outside such conduits.
 - Oxygen piping may be placed in the same tunnel, trench or duct with fuel-gas pipelines, provided there is ventilation (natural or forced)
 - Low points in piping carrying moist gas shall be drained into drip pots constructed to permit pumping or draining out the condensate at necessary intervals.
 - Drain valves shall be installed for this purpose having outlets normally closed with screw caps or plugs.

- No open end valves or petcocks shall be used, except that in drips located out of doors, underground, and not readily accessible. Valves may be used at such points if they are equipped with means to secure them in the closed position.
 - Pipes leading to the surface of the ground shall be cased or jacketed where necessary to prevent loosening or breaking.
 - Gas cocks or valves shall be provided for all buildings at points where they will be readily accessible for shutting off the gas supply to these buildings in any emergency. There shall also be provided a shutoff valve in the discharge line from the generator, gas holder, manifold or other source of supply.
 - Shutoff valves will be installed in safety relief lines so that the safety relief device cannot be rendered ineffective.
 - Before assembly, examine fittings and lengths of pipe removing scale or dirt if necessary.
 - Oxygen piping and fittings shall be washed out with a suitable solution which will effectively remove grease and dirt but will not react with oxygen. Hot water solutions of caustic soda or trisodium phosphate are effective cleaning agents for this purpose.
 - Piping shall be thoroughly blown out after assembly to remove foreign materials.
 - For oxygen piping, oil-free air, oil-free nitrogen, or oil-free carbon dioxide shall be used.
 - For other piping, air or inert gas may be used.
 - During purging of air or gas from flammable gas lines or other parts of equipment, open lights or other sources of ignition are not permitted near uncapped openings.
 - Welding or cutting on an acetylene or oxygen pipeline, including the attachment of hangers or supports, will not be performed until the line has been purged. Oxygen lines will be purged only with oil-free air, oil-free nitrogen, or oil-free carbon dioxide.
- Painting and signs.
 - Underground pipe and tubing and outdoor ferrous pipe and tubing shall be covered or painted with a suitable material for protection against corrosion.
 - Aboveground piping systems shall be marked in accordance with the American National Standard Scheme for the Identification of Piping Systems, ANSI A13.1-1956.
 - Station outlets shall be marked to indicate the name of the gas.
 - Testing.
 - Piping systems shall be tested and proved gastight at 1 1/2 times the maximum operating pressure, and shall be thoroughly purged of air before being placed in service. The material used for testing oxygen lines shall be oil free and noncombustible.
 - Do not use flames to detect leaks.
 - Protective equipment, hose, and regulators
 - Equipment shall be installed and used only in the service for which it is approved and recommended by the manufacturer.
 - Service piping systems shall be protected by pressure relief devices set to function at not more than the design pressure of the systems and discharging upwards to a safe location.
 - Piping protective equipment.
 - The fuel-gas and oxygen piping systems, including portable outlet headers shall incorporate protective equipment. When only a portion of a fuel-gas system is to be used with oxygen, only that portion need comply with protective equipment requirements
 - Approved protective equipment (designated P(F) Appendix A) shall be installed in fuel-gas piping to prevent:
 - Backflow of oxygen into the fuel-gas supply system;
 - Passage of a flash back into the fuel-gas supply system; and
 - Excessive back pressure of oxygen in the fuel-gas supply system.
 - The three functions of the protective equipment may be combined in one device or may be provided by separate devices.
 - The protective equipment shall be located in the main supply line, at the head of each branch line, or at each location where fuel-gas is withdrawn, (refer to Appendix A).
 - Where branch lines are of 2-inch pipe size or larger or of substantial length, protective equipment shall be located at the head of each branch line, or at each location where fuel-gas is withdrawn.

- Backflow protection shall be provided by an approved device that will prevent oxygen from flowing into the fuel-gas system or fuel from flowing into the oxygen system.
- Flash-back protection shall be provided by an approved device that will prevent flame from passing into the fuel-gas system.
- Back-pressure protection shall be provided by an approved pressure-relief device set at a pressure not greater than the pressure rating of the backflow or the flashback protection device, whichever is lower.
 - The pressure-relief device shall be located on the downstream side of the backflow and flashback protection devices.
 - The vent from the pressure-relief device shall be at least as large as the relief device inlet and installed without low points that may collect moisture. If low points are unavoidable, drip pots with drains closed with screw plugs or caps shall be installed at the low points.
 - The vent terminus shall:
 - Not endanger personnel or property through gas discharge;
 - Be located away from ignition sources; and
 - Terminate in a hood or bend.
- If pipeline protective equipment incorporates a liquid, the liquid level shall be maintained, and suitable antifreeze may be used to prevent freezing.
- Fuel gas for use with equipment not requiring oxygen shall be withdrawn upstream of the piping protective devices.
- Station outlet protective equipment.
 - For each station outlet, including those on portable headers, to prevent backflow, the following devices will be provided (refer to Appendix A):
 - Check valve,
 - Pressure regulator,
 - Hydraulic seal, or
 - A combination of these devices
 - When approved pipeline protective equipment is located at the station outlet, no additional check valve, pressure regulator, or hydraulic seal is required.
 - A shutoff valve shall be installed at each station outlet on the upstream side of other station outlet equipment.
 - If the station outlet is equipped with a detachable regulator, the outlet shall terminate in a union connection that complies with the Regulator Connection Standards, 1958, Compressed Gas Association.
 - If the station outlet is connected directly to a hose, the outlet shall terminate in a union connection complying with the Standard Hose Connection Specifications, 1957, Compressed Gas Association.
 - Station outlets may terminate in pipe threads to which permanent connections are to be made (ex. to a machine).
 - Station outlets shall be equipped with a detachable outlet seal cap secured in place. This cap shall be used to seal the outlet except when a hose, a regulator, or piping is attached.
 - Where station outlets are equipped with approved backflow and flashback protective devices, no more than four torches may be supplied from one station outlet through rigid piping, provided:
 - Each outlet from such piping is equipped with a shutoff valve, and
 - The fuel-gas capacity of any one torch does not exceed 15 cubic feet (0.42 m³) per hour.
 - This does not apply to machines.
- Hose and hose connections.
 - Hose for oxy-fuel gas service shall comply with the Specification for Rubber Welding Hose, 1958, Compressed Gas Association and Rubber Manufacturers Association.
 - When parallel lengths of oxygen and acetylene hose are taped together for convenience and to prevent tangling, not more than 4 inches (10.2 cm) out of 12 inches (30.5 cm) shall be covered by tape.
 - Hose connections shall comply with the Standard Hose Connection Specifications, 1957, Compressed Gas Association.
- Hose connections shall be securely fastened in a manner that will withstand, without leakage, twice the pressure to which they are normally subjected in service, but in no case less than a pressure of 300 psi (2.04 MPa). Oil-free air or an oil-free inert gas shall be used for the test.
- Hose showing leaks, burns, worn places, or other defects rendering it unfit for service shall be repaired or replaced.
- Pressure-reducing regulators.
 - Pressure-reducing regulators shall be used only for the gas and pressures for which they are intended. The regulator inlet connections shall comply with Regulator Connection Standards, 1958, Compressed

- Gas Association.
 - When regulators or parts of regulators, including gages, need repair, the work shall be performed by skilled mechanics who have been properly instructed.
 - Gages on oxygen regulators shall be marked "USE NO OIL."
 - Union nuts and connections on regulators shall be inspected before use to detect faulty seats which may cause leakage of gas when the regulators are attached to the cylinder valves.
- Acetylene generators
 - Approval and marking.
 - Generators shall be of approved construction, and plainly marked with the:
 - Maximum rate of acetylene in cubic feet per hour for which they are designed;
 - Weight and size of carbide necessary for a single charge;
 - Manufacturer's name and address; and
 - Name or number of the type of generator.
 - Carbide shall be of the size marked on the generator nameplate.
 - Rating and pressure limitations.
 - The total hourly output of a generator shall not exceed the rate for which it is approved and marked. Unless specifically approved for higher ratings, carbide-feed generators shall be rated at 1 cubic foot (0.028 m³) per hour per pound of carbide required for a single complete charge.
 - Relief valves shall be regularly operated to insure proper functioning. Relief valves for generating chambers shall be set to open at a pressure less than 15 psig (103 kPa gauge pressure). Relief valves for hydraulic back pressure valves shall be set to open at a pressure less than 20 psig (137 kPa gauge pressure).
 - Non-automatic generators shall not be used for generating acetylene at pressures exceeding 1 psig (7 kPa gauge pressure), and all water overflows shall be visible.
 - Location.
 - The space around the generator shall allow for free, unobstructed operation and maintenance, and permit ready adjustment and charging.
 - Stationary acetylene generators (automatic and Non-automatic).
 - General.
 - The foundation shall be arranged so that the generator will be level and that no excessive strain will be placed on the generator or its connections.
 - Acetylene generators shall be grounded.
 - Generators shall be placed where water will not freeze. Common salt (sodium chloride) or other corrosive chemicals for protection against freezing is not permitted.
 - Sources of ignition are not permitted in outside generator houses or inside generator rooms.
 - Water shall not be supplied through a continuous connection to the generator except when the generator is provided with an adequate open overflow or automatic water shutoff which will effectively prevent overfilling of the generator. Where a non-continuous connection is used, the supply line shall terminate at a point not less than 2 inches (5 cm) above the regularly provided opening for filling so that the water can be observed as it enters the generator.
 - Unless otherwise specifically approved, generators shall not be fitted with continuous drain connections leading to sewers.
 - Generators shall discharge through an open connection into a suitably vented outdoor receptacle or residue pit which may have connections leading to sewers. An open connection for the sludge draw-off is desirable to enable the generator operator to observe leakage of generating water from the drain valve or sludge cock.

- Each generator shall be provided with an escape or relief vent pipe.
 - Shall be rigidly installed without traps to ensure that any condensation will drain back to the generator.
 - Shall be carried full size to a suitable point outside the building.
 - It shall terminate in a hood or bend located at least 12 feet (3.7 m) above the ground, preferably above the roof, and as far away as practicable from windows or other openings into buildings and as far away as practicable from sources of ignition such as flues or chimneys and tracks used by locomotives.
- Generating chamber relief pipes shall not be inter-connected but shall be separately led to the outside air.
 - The hood or bend shall be so constructed that it will not be obstructed by rain, snow, ice, insects, or birds.
 - The outlet shall be at least 3 feet (0.9 m) from combustible construction.
- Gas Holders
 - Shall be constructed on the gasometer principle, the bell being suitably guided. The gas bell shall move freely without tendency to bind and have a clearance of at least 2 inches (5 cm) from the shell.
 - May be located in the generator room, in a separate room or out of doors.
 - In order to prevent collapse of the gas bell or infiltration of air due to a vacuum caused by the compressor or booster pump or cooling of the gas, a compressor or booster cutoff shall be provided at a point 12 inches (0.3 m) or more above the landing point of the bell.
 - When the gas holder is located indoors, the room shall be ventilated in accordance with section 8.6.6.10., and heated and lighted in accordance with sections 8.6.6.11 and 8.6.6.12.
 - Gas holder seals shall be protected against freezing.
 - Means shall be provided to stop the generator-feeding mechanism before the gas holder reaches the upper limit of its travel.
 - When the gas holder is connected to only one generator, the gas capacity of the holder shall be not less than one-third of the hourly rating of the generator.
 - If acetylene is used from the gas holder without increase in pressure at some points but with increase in pressure by a compressor or booster pump at other points, approved piping protective devices shall be installed in each supply line.
 - The low-pressure protective device shall be located between the gas holder and the shop piping, and
 - The medium-pressure protective device shall be located between the compressor or booster pump and the shop piping.
 - Approved protective equipment (designated P(F)) is used to prevent:
 - Backflow of oxygen into the fuel-gas supply system;
 - Passage of a flashback into the fuel-gas supply system; and
 - Excessive back pressure of oxygen in the fuel-gas supply system.
 - The three functions of the protective equipment may be combined in one device or may be provided by separate devices.

- The compressor or booster system
 - Shall be of an approved type.
 - Wiring and electrical equipment in compressor or booster pump rooms or enclosures shall conform to the provisions of 29 CFR 1910 Subpart S – Electrical for Class I, Division 2 locations.
 - Compressors and booster pump equipment shall be located in well-ventilated areas away from open flames, electrical or mechanical sparks, or other ignition sources.
 - Compressor or booster pumps shall be provided with pressure relief valves which will relieve pressure exceeding 15 psig (103 kPa gauge pressure) to a safe outdoor location as provided in section 8.6.4.2.6, or by returning the gas to the inlet side or to the gas supply source.
 - Compressor or booster pump discharge outlets shall be provided with approved protective equipment. (Refer to section 8.5)
- Portable acetylene generators.
 - Shall be of a type approved for portable use.
 - Portable generators shall not be used within 10 feet (3 m) of combustible material other than the floor.
 - Portable generators shall not be used in rooms of total volume less than 35 times the total gas-generating capacity per charge of all generators in the room. Generators shall not be used in rooms having a ceiling height of less than 10 feet (3 m). (To obtain the gas-generating capacity in cubic feet per charge, multiply the pounds of carbide per charge by 4.5.)
 - Portable generators shall be protected against freezing. The use of salt or other corrosive chemical to prevent freezing is prohibited.
 - Portable generators shall be cleaned and recharged and the air mixture blown off outside buildings.
 - When charged with carbide, portable generators shall not be moved by crane or derrick.
 - When not in use, portable generators shall not be stored in rooms in which open flames are used unless the generators contain no carbide and have been thoroughly purged of acetylene. Storage rooms shall be well ventilated.
 - When transported and operated on vehicles, portable generators shall be securely anchored to the vehicles. If transported by truck, the motor shall be turned off during charging, cleaning, and generating periods.
 - Portable generators shall be located at a safe distance from the welding position so that they will not be exposed to sparks, slag, or misdirection of the torch flame or overheating from hot materials or processes.
- Outside generator houses and inside generator rooms for stationary acetylene generators.
 - No opening in any outside generator house shall be located within 5 feet (1.5 m) of any opening in another building.
 - Walls, floors, and roofs of outside generator houses shall be of noncombustible construction.
 - When a part of the generator house is to be used for the storage or manifolding of oxygen cylinders, such space shall be separated from the generator or carbide storage section by partition walls continuous from floor to roof or ceiling. Such separation walls shall be without openings and shall be joined to the floor, other walls and ceiling or roof so a permanent gas-tight joint is achieved.
 - Exit doors shall be readily accessible in case of emergency.
 - Explosion venting for outside generator houses and inside generator rooms shall be provided in exterior walls or roofs. The venting areas shall be equal to not less than 1 square foot (0.09 m²) per 50 cubic feet (1.4 m³) of room volume and may consist of any one or any combination of the following:
 - Walls of light, noncombustible material preferably single-thickness, single-strength glass;
 - Lightly fastened hatch covers;
 - Lightly fastened swinging doors in exterior walls opening outward;
 - Lightly fastened walls or roof designed to relieve at a maximum pressure of 25 pounds per square foot (0.001 MPa).

- The installation of acetylene generators within buildings (may be on the roof or top floor of a building) shall be restricted to buildings not exceeding one story in height.
- Generators installed inside buildings shall be enclosed in a separate room.
- The walls, partitions, floors, and ceilings of inside generator rooms shall be of noncombustible construction having a fire-resistance rating of at least 1 hour. The walls or partitions shall be continuous from floor to ceiling and shall be securely anchored. At least one wall of the room shall be an exterior wall.
- Openings from an inside generator room to other parts of the building shall be protected by a swinging type, self-closing fire door for a Class B opening and having a rating of at least 1 hour. Windows in partitions shall be wired glass and approved metal frames with fixed sash. Installation shall be in accordance with the Standard for the Installation of Fire Doors and Windows, NFPA 80-1970.
- Inside generator rooms or outside generator houses shall be well ventilated with vents located at floor and ceiling levels.
- Heating shall be by steam, hot water, enclosed electrically heated elements or other indirect means. Heating by flames or fires shall be prohibited in outside generator houses or inside generator rooms, or in any enclosure communicating with them.
- Generator houses or rooms shall have natural light during daylight hours.
 - Where artificial lighting is necessary it shall be restricted to electric lamps installed in a fixed position. Unless specifically approved for use in atmospheres containing acetylene, such lamps shall be provided with enclosures of glass or other noncombustible material so designed and constructed as to prevent gas vapors from reaching the lamp or socket and to resist breakage. Rigid conduit with threaded connections shall be used.
- Lamps installed outside of wired-glass panels set in gas-tight frames in the exterior walls or roof of the generator house or room are acceptable.
- Electric switches, telephones, and all other electrical apparatus which may cause a spark, unless specifically approved for use inside acetylene generator rooms, shall be located outside the generator house or in a room or space separated from the generator room by a gas-tight partition,
 - **Exception:** Electrical equipment in the generator house or room shall conform to the provisions of 29 CFR 1910 Subpart S – Electrical for Class I, Division 2 locations where the generator system is designed so that no carbide fill opening or other part of the generator is open to the generator house or room during the operation of the generator, and residue is carried in closed piping from the residue discharge valve to a point outside the generator house or room.
- Maintenance and operation.
 - Unauthorized persons shall not be permitted in outside generator houses or inside generator rooms.
 - Operating instructions shall be posted in a conspicuous place near the generator or kept in a suitable place available for ready reference.
 - When recharging generators the order of operations specified in the instructions supplied by the manufacturer shall be followed.
 - In the case of batch-type generators, when the charge of carbide is exhausted and before additional carbide is added, the generating chamber shall always be flushed out with water, renewing the water supply in accordance with the instruction card furnished by the manufacturer.
 - The water-carbide residue mixture drained from the generator shall not be discharged into sewer pipes or stored in areas near open flames. Clear water from residue settling pits may be discharged into sewer pipes.
 - The carbide added each time the generator is recharged shall be sufficient to refill the space provided for carbide without ramming the charge. Steel or other ferrous tools shall not be used in distributing the charge.
 - Generator water chambers shall be kept filled to proper level at all times except while draining during the recharging operation.

- Whenever repairs are to be made or the generator is to be charged or carbide is to be removed, the water chamber shall be filled to the proper level.
 - Previous to making repairs involving welding, soldering, or other hot work or other operations which produce a source of ignition, the carbide charge and feed mechanism shall be completely removed.
 - All acetylene shall be expelled by completely flooding the generator shell with water and the generator shall be disconnected from the piping system.
 - The generator shall be kept filled with water, if possible, or positioned to hold as much water as possible.
 - Hot repairs shall not be made in a room where there are other generators unless all the generators and piping have been purged of acetylene.
- Calcium carbide storage
 - Packaging.
 - Calcium carbide shall be contained in metal packages of sufficient strength to prevent rupture. The packages shall be:
 - Provided with a screw top or equivalent.
 - Constructed water- and air-tight.
 - Solder shall not be used in such a manner that the package would fail if exposed to fire.
 - Packages containing calcium carbide shall be conspicuously marked "Calcium Carbide - Dangerous If Not Kept Dry" or with equivalent warning.
 - Caution: Metal tools, even the so-called spark resistant type may cause ignition of an acetylene and air mixture when opening carbide containers.
 - Sprinkler systems shall not be installed in carbide storage rooms.
 - Storage indoors.
 - Calcium carbide in quantities not to exceed 600 pounds (272.2 kg) may be stored indoors in dry, waterproof, and well-ventilated locations.
 - Calcium carbide not exceeding 600 pounds (272.2 kg) may be stored indoors in the same room with fuel-gas cylinders.
 - Packages of calcium carbide, except for one of each size, shall be kept sealed. The seals shall not be broken when there is carbide in excess of 1 pound (0.5 kg) in any other unsealed package of the same size of carbide in the room.
 - Calcium carbide exceeding 600 pounds (272.2 kg) but not exceeding 5,000 pounds (2,268 kg) shall be stored:
 - In accordance with section 8.7.2.3
 - In an inside generator room or outside generator house; or
 - In a separate room in a one-story building which may contain other occupancies, but without cellar or basement beneath the carbide storage section. Such rooms shall be constructed in accordance with sections 8.6.6.8 and 8.6.6.9 and ventilated in accordance section 8.6.6.10. These rooms shall be used for no other purpose.
 - Calcium carbide in excess of 5,000 pounds (2,268 kg) shall be stored in one-story buildings without cellar or basement and used for no other purpose, or in outside generator houses.
 - If the storage building is of noncombustible construction, it may adjoin other one-story buildings if it is separated by un-pierced firewalls or detached less than 10 feet (3 m) from such building or buildings,
 - There shall be no opening in any of the mutually exposing sides of such buildings within 10 feet (3 m).
 - If the storage building is of combustible construction, it shall be at least 20 feet (6.1 m) from any other one- or two-story building, and at least 30 feet (9.1 m) from any other building exceeding two stories.
 - Storage outdoors.
 - Calcium carbide in unopened metal containers may be stored outdoors.
 - Carbide containers to be stored outdoors shall be examined to make sure that they are in good condition. Periodic reexaminations shall be made for rusting or other damage to a container that might affect its water or air tightness.
 - The bottom tier of each row shall be placed on wooden planking or equivalent, so that the containers will not come in contact with the ground or ground water.
 - Containers of carbide which have been in storage the longest shall be used first.

SUPPLEMENTAL RESISTANCE WELDING INFORMATION

- **General**
 - All equipment shall be installed by a qualified electrician in conformance with by 29 CFR 1910 Subpart S - Electrical.
 - There shall be a safety-type disconnecting switch or a circuit breaker or circuit interrupter to open each power circuit to the machine.
 - The disconnecting switch shall be conveniently located at or near the machine, so that the power can be shut off when the machine or its controls are to be serviced.
 - Ignition tubes used in resistance welding equipment shall be equipped with a thermal protection switch.
 - Workmen designated to operate resistance welding equipment shall have been properly instructed and judged competent to operate such equipment.
 - Controls of all automatic or air and hydraulic clamps shall be arranged or guarded to prevent the operator from accidentally activating them.
- **Spot and seam welding machines (non-portable)**
 - All external weld initiating control circuits shall operate on low voltage, not over 120 volts, for the safety of the operators.
 - Stored energy or capacitor discharge type of resistance welding equipment and control panels involving high voltage (over 550 volts) shall be suitably insulated and protected by complete enclosures. All doors of the enclosures shall be provided with suitable interlocks and contacts wired into the control circuit.
 - Such interlocks or contacts shall be so designed as to effectively interrupt power and short circuit all capacitors when the door or panel is open.
 - A manually operated switch or suitable positive device shall be installed, in addition to the mechanical interlocks or contacts, as an added safety measure assuring absolute discharge of all capacitors.
 - All doors and access panels of all resistance welding machines and control panels shall be kept locked and interlocked to prevent access, by unauthorized persons, to live portions of the equipment.
 - All press welding machine operations, where there is a possibility of the operator's fingers being under the point of operation, shall be effectively guarded by the use of device such as an electronic eye safety circuit, two hand controls or protection similar to that prescribed for punch press operation, 29 CFR 1910.217 – Mechanical Power Presses. All chains, gears, operating bus linkage, and belts shall be protected by adequate guards, in accordance with 29 CFR 1910.219 - Mechanical Power Transmission Apparatus.
 - The hazard of flying sparks shall be, wherever practical, eliminated by installing a shield guard of safety glass or suitable fire-resistant plastic at the point of operation. Additional shields or curtains shall be installed as necessary to protect passing persons from flying sparks. (See section 5.2.1.5.)
 - All foot switches shall be guarded to prevent accidental operation of the machine.
 - Two or more safety emergency stop buttons shall be provided on all special multi-spot welding machines, including 2-post and 4-post weld presses.
 - On large machines, four safety pins with plugs and receptacles (one in each corner) shall be provided so that when safety pins are removed and inserted in the ram or platen, the press becomes inoperative.
 - Where technically practical, the secondary of all welding transformers used in multi-spot, projection and seam welding machines shall be grounded.
 - This may be done by permanently grounding one side of the welding secondary current circuit.
 - Where not technically practical, a center tapped grounding reactor connected across the secondary or the use of a safety disconnect switch in conjunction with the welding control are acceptable alternates.
 - Safety disconnect shall be arranged to open both sides of the line when welding current is not present.

- **Portable welding machines**
 - All portable welding guns shall have suitable counterbalanced devices for supporting the guns, including cables, unless the design of the gun or fixture makes counterbalancing impractical or unnecessary.
 - All portable welding guns, transformers and related equipment that is suspended from overhead structures, eye beams, trolleys, etc. shall be equipped with safety chains or cables. Safety chains or cables shall be capable of supporting the total shock load in the event of failure of any component of the supporting system.
 - Each clevis shall be capable of supporting the total shock load of the suspended equipment in the event of trolley failure.
 - All initiating switches, including retraction and dual schedule switches, located on the portable welding gun shall be equipped with suitable guards capable of preventing accidental initiation through contact with fixtures, operator's clothing, etc. Initiating switch voltage shall not exceed 24 volts.
 - The movable holder, where it enters the gun frame, shall have sufficient clearance to prevent the shearing of fingers carelessly placed on the operating movable holder.
 - The secondary and case of all portable welding transformers shall be grounded. Secondary grounding may be by center tapped secondary or by a center tapped grounding reactor connected across the secondary.
- **Flash welding equipment**
 - Flash welding machines shall be equipped with a hood to control flying flash. In cases of high production, where materials may contain a film of oil and where toxic elements and metal fumes are given off, ventilation shall be provided in accordance with 1910.252(c) of this section.
 - For the protection of the operators of nearby equipment, fire-resistant curtains or suitable shields shall be set up around the machine and in such a manner that the operator's movements are not hampered.
- **Maintenance**
 - Periodic inspection shall be made by qualified maintenance personnel, and a documented record maintained. The documented record shall include the:
 - Date of inspection,
 - Signature of the person who performed the inspection and
 - Serial number, or other identifier, for the equipment inspected.
 - The operator shall be instructed to report any equipment defects to his supervisor and the use of the equipment shall be discontinued until safety repairs have been completed.

WELDING, CUTTING, AND BRAZING PROGRAM ASSESSMENT		
Unit Assessed:	Assessor:	Date:
Description of Requirement		Compliant?
General Requirements		
Are welding locations approved by management, safety or the Fire and Emergency Services provider?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Are newly welded materials kept from causing a fire or a burning hazard to employees?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Are pressure vessels and pipes that have been welded, pressure tested to assure that no hazards are presented?		<input type="checkbox"/> Yes <input type="checkbox"/> No
PPE and Health Protection		
Is the appropriate PPE worn when welding metals of toxic significance to protect welders and any exposed employees?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Is adequate ventilation provided during welding and cutting (e.g. local hoods or booths) to maintain the amount of toxic fumes, gases or dusts below regulatory levels?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Is PPE worn (and provided) to protect welders and employees from welding flashes and other welding hazards?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Area Hazards		
Wherever possible, are materials to be welded removed from their location and taken to a designated welding area?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Are all welding areas inspected for hazards (by the Welder and or Safety/Fire Services provider) prior to commencing field work?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Are all readily ignitable and combustible materials removed from the welding area (minimum 10m/35ft radius) prior to commencing work?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Is the welding area swept and clean from dusts?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Is welding prohibited from being performed when hazardous or ignitable vapors, gases or mists are present?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Are guards (i.e. screens and shields) utilized to confine heat, sparks and slag if objects to be welded cannot be removed to a safe area and if all fire hazards cannot be removed?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Equipment – Safe Use and Inspection		
Are all cutters or welders and their supervision trained in the safe operation of the equipment and in the process for the safe use of the equipment?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Are cutters or welders held responsible for the safety of the equipment and its safe use?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Are welding cables and other equipment kept clear of passageways, ladders and stairways?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Are welding cables in good condition?		<input type="checkbox"/> Yes <input type="checkbox"/> No

Description of Requirement	Compliant?
“Hot Work”/Open Flame Permits	
Are “Hot Work Permits” (open flame permits) obtained prior to the start of the task, if applicable?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are restrictions on the permits, if any, adhered to?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Gas and Fuel Cylinders	
Are compressed gas cylinders legibly marked with gas content?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are acetylene cylinders stored valve end up and secured?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are empty cylinders stored with valves closed?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Is cylinder storage inside buildings well protected, well ventilated, dry and at least 20 feet from any highly combustible material?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are cylinders in storage areas secured and equipped with a valve protection cap?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are oxygen cylinders in storage separated from fuel-gas cylinders or combustible materials by a distance of 20 feet or by a non-combustible barrier at least 5 feet high and having a ½ hour fire resistance rating?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Fire Watchers	
Are firewatchers present and cognizant of their duties whenever required?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Do firewatchers have suitable fire-extinguishing materials available to them at all times?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Have firewatchers been properly trained in their duties (i.e. operating an extinguisher, sounding an alarm, remaining at the welding location for at least ½ hour after work stops, wetting down combustible floors, etc.)?	<input type="checkbox"/> YES <input type="checkbox"/> NO

PROGRAM OVERVIEW

WORKING IN EXTREME TEMPERATURES SAFETY PROGRAM

OSHA Act Paragraph 5, A, 1 (General Duty Clause)

INTRODUCTION: Exposure to extreme heat or cold stress in the workplace must be controlled. This safety program is intended to address issues and identify the specific temperature hazards where work is performed, communicating information concerning these hazards, and establishing appropriate procedures and protective measures for employees. Control or protective measures must be implemented at ranges above 90°F or below 62°F, and short duration exposures to temperatures <45°F or >100°F (including wind chill factors).

TRAINING:

- When working in extreme temperatures, employees will be provided with hazard information and/or training, upon initial assignment and as needed. This training may be required in some states.

ACTIVITIES:

- Monitor workplace temperatures
- Ensure employees and supervisors are able to recognize early signs and symptoms of cold and heat intolerance
- Provide engineering controls, work practices and protective equipment to reduce exposure levels to the lowest achievable level
- Ensure the availability of water or other appropriate beverages to employees
- Provide appropriate medical care to employees who have symptoms of a temperature-related condition
- Perform periodic inspections to identify any recognized risk factors, situations where actions may be needed to reduce employee exposures, and any deficiencies in the procedures or protective equipment requirements of the area

FORMS:

- Cold Related Injuries and Illnesses
- Heat Illness Prevention Plan
- Training Attendance Roster

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- 1. Purpose**
- 2. Scope**
- 3. Responsibilities**
- 4. Procedure**
- 5. Safety Information**
- 6. Training Information & Requirements**
- 7. Definitions**

Working in Extreme Temperatures

1. **Purpose.** This program outlines some of the safety requirements and precautions needed to protect employees who work in temperature extremes. Extreme heat or cold presents unique hazards to employee health and safety, including reduced awareness of their surroundings and reduced dexterity and ability for the human body to function normally.
2. **Scope.** Applies to any work area where employees must work for more than an hour in an area where the temperature range is above 90°F or below 62°F, or short-duration (15 minutes or less) exposures to <45°F or >100°F (including wind chill factors).
3. **Responsibilities.**
 - 3.1 Management and Supervisors:
 - 3.1.1 Monitor workplace temperatures.
 - 3.1.2 Ensure employees and supervisors are able to recognize early signs and symptoms of cold intolerance such as weakness, shivering, inability to do complex motor functions, lethargy, and mild confusion.
 - 3.1.3 Provide engineering controls, work practices and protective equipment to reduce exposure levels to the lowest achievable level.
 - 3.1.4 Ensure the availability of water or other appropriate beverages to employees.
 - 3.1.5 Ensure employees that are new to the work area are provided with an appropriate acclimation or conditioning period. Integrate employees into a full work load as appropriate. Supervisors should closely monitor these employees during the acclimation timing.
 - 3.1.6 Ensure that employees who have had time off (thereby reducing their ability to more easily acclimate to the environment) are reminded of this reduction in tolerance. (Time off includes weekends, holidays, etc.)
 - 3.1.7 Ensure that employees who have symptoms of a temperature-related condition have access to a health care provider, should they wish to seek medical treatment.
 - 3.1.8 Perform periodic inspections (recommended frequency is monthly). Inspections should identify any recognized risk factors, situations where actions may be needed to reduce employee exposures, and any deficiencies in the procedures or protective equipment requirements of the area.
 - 3.1.9 Perform periodic surveys to measure employee exposures. Surveys should be anonymous to increase employee participation.
 - 3.1.10 Post appropriate warning signs at entrances to work areas, buildings or enclosures where temperature extremes are present or likely to be present.

3.2 Employees:

- 3.2.1 Follow proper work practices and procedures to help protect their health and safety.
- 3.2.2 Be aware of the signs and symptoms of cold/heat related illness and injuries (frostbite or other cold related injuries; heat stroke or other heat related injuries) and report such symptoms to your supervisor immediately.
- 3.2.3 Be aware of the signs and symptoms of cold/heat related illness that may occur in fellow employees and report such symptoms to your supervisor immediately.
- 3.2.4 Notify your supervisor before beginning work of any personal factors that could impact the effects of cold/heat stress (i.e. medications or alcohol can significantly effect the body's ability to manage cold/heat tolerance and may increase the risk of injury).
- 3.2.5 Wear appropriate clothing and attire, and use provided protective equipment as needed or required to assist the body in managing the effects of extreme temperatures.

3.3 Safety Officer (as needed or required):

- 3.3.1 Assist in the development, and implementation of this program.

4. Procedure.

4.1 Control Measures:

- 4.1.1 Engineering controls will be implemented to reduce exposures to the lowest level achievable. Where controls insufficient, they will be supplemented by the use of safe work practices. Protective clothing or equipment should be added only if engineering controls and work practices are insufficient to reduce exposures to acceptable levels.
 - 4.1.1.1 Engineering controls may include temperature regulators, spaces for warm-up or cool-down to acclimate employees to temperature extremes, protective enclosures or specialized tools to reduce the demands of activity on the body.
 - 4.1.1.2 When the temperature of surrounding solid objects are cold enough to cause skin damage the hazard will be reduced by insulating or shielding either the object or the skin whenever possible, or otherwise isolating the cold source from contact.
- 4.1.2 Work practices will be introduced to reduce the effects of cold when engineering controls are not adequate or are not feasible.
 - 4.1.2.1 Work practices include written procedures, time restrictions for extreme temperature exposures, increased recovery or warm-up time, increasing the number of employees per task, providing adequate water to hydrate employees with exposure, and encouraging physical fitness in employees.

4.1.3 Protective equipment and clothing will be provided when engineering controls and work practices are not sufficient to reduce employee exposures to acceptable levels.

4.1.3.1 Protective equipment includes standard insulated clothing for cold conditions (coats, gloves, hats, face protection, thermal clothing), specialized temperature regulated clothing (cool down or warm up vests), and shelter from sun or cold environments.

4.1.3.2 Access to shade or cooling environments will be provided for employees suffering from heat illness or believing a preventative recovery period is needed. Shade areas should have access to the open air or be provided with ventilation or cooling equipment such as fans, air conditioners or misting equipment.

4.2 Recordkeeping:

4.2.1 Environmental surveillance. Establish and maintain an accurate record of all measurements made to determine environmental and metabolic temperature exposures to employees. Where it is determined that no metabolic measurements are required, maintain a record of the evaluations or surveys relied upon to reach that determination.

4.2.2 Records retention.

4.2.2.1 Injuries and illnesses must be placed on the OSHA 300 logs, if your company is required to maintain them. Logs and supplemental information must be kept for at least 5 years.

4.2.2.2 Medical exposure records must be retained for the duration of employment plus 30 years, if a detrimental health effect (injury or illness) is sustained, regardless of the need to keep OSHA 300 logs.

4.2.2.3 Records must be made available to employees, former employees or their legal representatives at any time during the retention period.

4.3 Heat Stress Information:

4.3.1 If heat stress is recognized and treated appropriately early, a more serious condition likely can be prevented; therefore, it is important to identify and treat as early as possible.

4.3.2 There are established recommended exposure limits (RELs) and threshold limitation values (TLVs) for metabolic and environmental heat that have been established by the American Conference of Governmental Industrial Hygienists (ACGIH). These RELs and TLVs assume that the worker is healthy and medically fit for the activity levels required by the job, and that the employees are assumed to be wearing the appropriate type of clothing for the conditions.

4.3.3 Environmental heat (external temperature) is measured by the Wet Bulb Globe Thermometer (WBST) method. Standard external temperature gauges normally utilize this method. Temperature measurements should be made as close to the work area as possible, to prevent exceeding the established guidelines. During the hottest part of the work shift, temperatures should be monitored hourly, and if the RELs are exceeded twice in succession, then work conditions should be modified to accommodate the extreme heat.

4.3.3.1 Modifications may include the use of fans or other ventilation systems (1.5 meters per second or 300 ft/min is recommended).

4.3.3.2 Placement of shielding, barriers or heat deflective materials between radiant objects and employees, or otherwise isolating objects and equipment which give off heat.

4.3.3.3 Reduction in vapor, steam or humidity levels that may contribute to the surrounding temperature.

4.4 Cold/Hot Weather Alert Safety Program:

4.4.1 In the event of an alert from the National Weather Service or local weather forecast services, the following should be considered:

4.4.1.1 Postpone tasks which are not urgent

4.4.1.2 Increase the number of workers in each team in order to reduce each workers cold exposure.

4.4.1.3 Increase rest allowances.

4.4.1.4 Remind employees to drink water frequently to prevent excessive dehydration.

4.4.1.5 Monitor the environmental cold at the job sites and resting places.

4.4.1.6 Exercise additional caution on the first day of a shift change to make sure that the employee(s) is/are not overexposed to cold, because they may have lost some of their acclimatization over the weekend and or during days off.

4.4.1.7 Restrict overtime work, as needed.

4.4.1.8 Turning on/off equipment that contributes to the temperature in the area.

5. Safety Information.

5.1 Hot Work Areas:

5.1.1 General Information

- 5.1.1.1 Symptoms of heat stress include weakness, unsteady gait, irritability, disorientation, changes in skin color or general malaise.
- 5.1.1.2 Treatment generally includes drinking cool water and rest. Water (including drinking-fountains or individual drinking cups) will be provided. In general employees should be encouraged to drink cool water (50-59°F) at about one-cup (5-7 oz.) every 20 minutes to remain hydrated in extreme heat situations.

5.1.2 Warning Signs

- 5.1.2.1 Warning signs may be required at entrances to work areas, buildings or enclosures where there is a reasonable likelihood of heat stress and other heat related conditions.
- 5.1.2.2 Heat warning signs should state:

DANGER – HEAT-STRESS AREA

Heat Stress Protective Clothing or Equipment Required
Exposure to Excessive Work Load in Hot Areas May be Harmful
Fainting, Exhaustion, Cramps, Heat Rash or Heat Stroke May Occur

- 5.1.2.3 Where emergency situations are likely due to cold stress, first aid instructions should be posted with the above warning sign and at strategic locations throughout the area.
- 5.1.2.4 Warning signs and instructions must be in English. Additional or supplemental signs may be posted in other languages based on the predominant language of the employee population.

5.2 Cold Work Areas:

5.2.1 General Information

- 5.2.1.1 There are four major conditions that cause cold related stress. They are low temperatures, wind chill, dampness or humidity, and cold water.
- 5.2.1.2 Inadequate or wet clothing increases the effects of cold on the body.
- 5.2.1.3 Medication, alcohol, nicotine, and caffeine may inhibit the body's ability to manage cold or impair judgment.
- 5.2.1.4 Certain diseases (diabetes, heart or vascular problems or thyroid conditions) may increase susceptibility to cold injury.

- 5.2.1.5 Exhaustion or extreme tiredness, falling asleep or becoming immobilized in a cold environment will speed the effects of cold on the body.
- 5.2.1.6 Age plays a part in the body's ability to manage cold environments. The elderly are more susceptible to cold extremes than younger people.
- 5.2.2 Warning Signs:
 - 5.2.2.1 Warning signs may be required at entrances to work areas, buildings or enclosures where there is a reasonable likelihood of cold stress and other cold related conditions.
 - 5.2.2.2 Cold warning signs should state:

DANGER – COLD-HAZARD AREA
Cold Weather Protective Clothing or Equipment Required
Excessive Exposure to Cold Can Cause:
Hypothermia, Frostbite, Trench foot
 - 5.2.2.3 Where emergency situations are likely due to cold stress, first aid instructions should be posted with the above warning sign and at strategic locations throughout the area.
 - 5.2.2.4 Warning signs and instructions must be in English. Additional or supplemental signs may be posted in other languages based on the predominant language of the employee population.

6. Training and Information.

- 6.1 Upon initial assignment, and as needed thereafter for refresher training, employees will be provided with information and/or training in the hazards associated in working in extreme temperatures. They will be provided with the means to protect themselves from extreme heat or cold working conditions.
 - 6.1.1 General Training
 - 6.1.1.1 Employees should understand the environmental and personal risk factors including:
 - 6.1.1.1.1 any specific procedures,
 - 6.1.1.1.2 the need for water,
 - 6.1.1.1.3 the importance of acclimatization to the temperature,
 - 6.1.1.1.4 the different types of and common signs of temperature related illness,
 - 6.1.1.1.5 the importance of reporting signs and symptoms,

- 6.1.1.1.6 the first aid measures to take should signs or symptoms be apparent,
- 6.1.1.1.7 the process for contacting emergency response services and information needed to be provided to the emergency response service (including clear and precise directions to the area).
- 6.1.1.2 Supervisors should understand all of the employee requirements as well as the procedures to follow to implement the requirements and the procedures to follow for contacting and implementing emergency medical response. These procedures should be in writing and maintained.
- 6.1.2 Cold Conditions
 - 6.1.2.1 Cold stress hazards involved in the work area
 - 6.1.2.2 Factors, signs and symptoms of cold injury and illness
 - 6.1.2.3 Potential health effects of excessive cold
 - 6.1.2.4 First aid procedures for cold stress and frostbite
 - 6.1.2.5 Precautions to be taken, protective equipment and clothing required
- 6.1.3 Hot Conditions
 - 6.1.3.1 Heat stress hazards involved in the work area
 - 6.1.3.2 Factors, signs and symptoms of heat injury and illness (heat stroke, sun stroke, sunburn, heat burn, etc.)
 - 6.1.3.3 Potential health effects of excessive heat
 - 6.1.3.4 First aid procedures for heat related injuries or illnesses
 - 6.1.3.5 Precautions to be taken, protective equipment and clothing required

7. Definitions.

- *Acclimatization* - means temporary adaptation of the body to work in the heat that occurs gradually when a person is exposed to it. Acclimatization peaks in most people within four to fourteen days of regular work for at least two hours per day in the heat.
- *Cold Work Area* – An area where the temperature (including wind chill) is lower than 62 degrees Fahrenheit.
- *Hot Work Area* – An area where the temperature exceeds 90 degrees Fahrenheit

- *Environmental risk factors for heat illness* - means working conditions that create the possibility that heat illness could occur, including air temperature, relative humidity, radiant heat from the sun and other sources, conductive heat sources such as the ground, air movement, workload severity and duration, protective clothing and personal protective equipment worn by employees.
- *Extreme Temperature* –Extreme temperature takes into account wind chill and other environmental factors that reduce or increase the ambient air temperature. With such factors included, extreme temperatures are either a constant working temperature of <62°F or >90°F, or short-duration (15 minutes or less) exposures to <45°F or >100 degrees Fahrenheit.
- *Heat Illness* - means a serious medical condition resulting from the body's inability to cope with a particular heat load, and includes heat cramps, heat exhaustion, heat syncope and heat stroke.
- *Personal risk factors for heat illness* - means factors such as an individual's age, degree of acclimatization, health, water consumption, alcohol consumption, caffeine consumption, and use of prescription medications that affect the body's water retention or other physiological responses to heat.
- *Preventative recovery period* - means a period of time to recover from the heat in order to prevent heat illness.
- *Shade* - means blockage of direct sunlight. Canopies, umbrellas and other temporary structures or devices may be used to provide shade. One indicator that blockage is sufficient is when objects do not cast a shadow in the area of blocked sunlight. Shade is not adequate when heat in the area of shade defeats the purpose of shade, which is to allow the body to cool. For example, a car sitting in the sun does not provide acceptable shade to a person inside it, unless the car is running with air conditioning.
- *Wind Chill* – A combination of temperature and wind velocity. Wind chill cools the air further than the ambient temperature of the air. For example, if the temperature is 40°F and the wind velocity is 35 mph, the wind chill provides conditions that equal 11°F.

COLD RELATED INJURIES AND ILLNESSES

Trench foot. Trench Foot is caused by long, continuous exposure to a wet, cold environment, or actual immersion in water. Where these types of cold, wet environments are frequently present, employees need to be especially cautious.

- **Trench Foot Symptoms:** A tingling and/or itching sensation, burning, pain, and swelling, sometimes forming blisters in more extreme cases.
- **Trench Foot Treatment:** Move individuals with trench foot to a warm dry area, where the affected tissue can be treated with careful washing and drying, rewarming and slight elevation. Seek medical assistance as soon as possible.

Frostbite. Frostbite occurs when the skin tissue actually freezes, causing ice crystals to form between cells and draw water from them, which leads to cellular dehydration. Although this typically occurs at temperatures below 30°F (-1°C), wind chill effects can cause frostbite at above-freezing temperatures.

- **Frostbite Symptoms:** Reddening and extreme numbness of the skin.
- **Frostbite Treatment:** Seek medical assistance immediately. Any existing hypothermia should be treated first. Frostbitten parts should be covered with dry, sterile gauze or soft, clean cloth bandages. Do not massage frostbitten tissue. Severe cases may require hospitalization and even amputation of affected tissue. Take measures to prevent further cold injury.

Hypothermia. General Hypothermia occurs when body temperature falls to a level where normal muscular and cerebral functions are impaired. While hypothermia is generally associated with freezing temperatures, it may occur in any climate where a person's body temperature falls below normal.

- **Hypothermia Symptoms:** The first symptoms of hypothermia include, shivering, an inability to do complex motor functions, lethargy, and mild confusion. These occur as the core body temperature decreases to around 95°F (35°C). As hypothermia becomes more severe, the individual falls into a state of dazed consciousness, failing to complete even simple motor functions. The victim's speech becomes slurred and his or her behavior may become irrational. The most severe state of hypothermia occurs when body temperature falls below 90°F (32°C). As a result, the body moves into a state of hibernation, slowing the heart rate, blood flow, and breathing. Unconsciousness and full heart failure can occur in the severely hypothermic state.
- **Hypothermia Treatment:** Treatment of hypothermia involves conserving the victim's remaining body heat and providing additional heat sources. Handle hypothermic people very carefully because of potential heart dysfunction. Seek medical assistance for persons suspected of being moderately or severely hypothermic. If the person is unresponsive and not shivering, assume they are suffering from severe hypothermia. Reduction of heat loss can be accomplished by: obtaining shelter, removal of wet clothing, adding layers of dry clothing, blankets, or using a pre-warmed sleeping bag. For mildly hypothermic cases or cases where medical treatment will be significantly delayed, external rewarming techniques may be applied. This includes body-to-body contact (e.g., placing the person in a pre-warmed sleeping bag with a person of normal body temperature), chemical heat packs (placed on armpits, neck, chest or groin area), insulated hot water bottles, or giving warm beverages (non-caffeinated and non-alcoholic).

HEAT ILLNESS PREVENTION PLAN

(California Required)

Company Name:
RESPONDING TO AN ILLNESS In the event of a heat-related illness, contact the area or job-site supervisor. The supervisor will make a determination if emergency medical response is required, and will contact 911 or other emergency medical assistance, as needed. If necessary, the affected employee will be transported to a medical provider using a company or other available vehicle.
WORK SITE DIRECTIONS Job supervisors will be familiar with each work site address and will provide clear and precise directions to the site to emergency medical services if they are called to assist an affected employee.
ACCESS TO WATER Access to drinkable water or other appropriate non-caffeinated beverages will be provided. At least one quart of beverage per employee, per hour will be available. This will be accomplished by _____. If more drinking water were to be required, additional supplies will be obtained by _____.
ACCESS TO SHADE Access to a shaded or cool area will be provided at all times for employees to cool off when overheating is likely. The location will be designated by the job supervisor on a job-to-job basis. The supervisor will advise the employees where the designated area is located.
IDENTIFYING RISK FACTORS - EMPLOYEES Employees will be informed of the risk factors, importance of consuming water, different types and symptoms of heat-related illness, the importance of and how to report symptoms or illness, and the procedures for contacting and directing emergency response personnel to the area. This will be accomplished by providing the related training upon assignment to outdoor activities.
IDENTIFYING RISK FACTORS - SUPERVISORS Area or job-site supervisors will be trained in the procedures to follow in case of heat-related illness as noted in this plan. This will be accomplished by providing the related training upon assignment of the supervisory position.
ACCESS AND LOCATION OF PLAN The Heat Illness Prevention Plan will be made available to all employees, their representatives or a representative of OSHA upon request. The plan is located in the principal place of business.

