



SEALANT, WATERPROOFING & RESTORATION INSTITUTE

# SAFETY & HEALTH MANUAL

## PROGRAM GUIDE



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# ABOUT THE SEALANT, WATERPROOFING & RESTORATION INSTITUTE

In 1978, a small group of sealant contractors met in Chicago to discuss the formation of a trade association. Today the Sealant, Waterproofing & Restoration Institute (SWR Institute) has applicators, manufacturers and consulting companies as members, as well as architectural/engineering firms and testing laboratories members from across the United States and throughout the world, all involved in activities designed to upgrade the standards in new construction, as well as restoration, repair and maintenance of existing structures. This has enabled SWR Institute to become the leading organization of its kind.

Through our educational programs and publications, our members promote industry-wide standards of application and products. The members of SWR Institute are very active and constantly strive to advance our industry and the quality of work that is performed. Publishing *The Applicator*,



SWR Institute's premier publication, which features news about various application techniques; providing the SWR Institute Validation Program, which verifies the performance claims listed on participating companies' sealant and wall coating technical data sheets; hosting the industry's only Online Searchable

Directory, which makes it convenient for Internet users

to contact area commercial contractors, manufacturers and design professionals; producing *Sealants: The Professionals' Guide*, *Clear Water Repellents for Above Grade Masonry* and *Horizontal Concrete Treatments*; creating *Applying Liquid Sealants: An Applicator Training Program*, *A Practical Guide to Waterproofing Exterior Walls* and topic-specific *Technical Bulletins* are among SWR Institute's major

achievements. In addition, the Institute serves as a technical clearinghouse, assisting members, architects, owners, contractors and engineers solve industry-related problems. And the scope of services continues to grow.

## 1 INTRODUCTION

This general Safety & Health Program Guide has been developed by SWR Institute as an outreach effort in order to help employers understand how to develop the Written Safety and Health Program as recommended by the Occupational Safety and Health Administration (OSHA). Employers should understand that this plan will be only partially completed by filling in the blanks.

It must be noted that the final determination of compliance with OSHA regulations, including compliance with the written Safety and Health Program requirement under 29 CFR 1926.21, is made by evaluation of all factors pertaining to potential hazards at a particular worksite with respect to employee safety and health. Also, employers who are contemplating the use of this guide should be aware that it is not to be considered a substitute for

any provision of the Occupational Safety and Health Act or for any standards issued by OSHA.

This is a generic safety and health program, and is designed to be used as a guideline for developing your own company's safety and health program. Each company is different; this program must be tailored to meet your specific needs, by adding or deleting parts of this guide. Determine your needs based on the hazards or potential hazards of your job site.

Sample forms are attached to give you an understanding of what is required.

## 2 POLICY STATEMENT

It is \_\_\_\_\_ belief that our people are our most important asset and that the preservation of employee Safety and Health must remain a constant consideration in every phase of our business. It is our intent to provide a work environment as free of hazards as possible.

All employees are responsible for working safely and productively, always remaining aware of hazards in their jobs and following recognized safe work practices, including the use of Personal Protective Equipment (PPE).

It is also \_\_\_\_\_ belief that any safety and health program must have total employee

involvement. Therefore this program has management's highest priority, support, and participation.

PRODUCTION IS NOT SO URGENT THAT WE CANNOT TAKE TIME TO DO OUR WORK SAFELY.

\_\_\_\_\_  
President

## 3 GOALS

Safety begins at the top and goes downward throughout the company. Our goal is to have an injury free work place. This can be achieved by delegating responsibility and accountability to all involved in this company's operation.

**Responsibility:** Having to answer for activities and results.

**Accountability:** The active measurement by management to ensure compliance or management doing something to ensure action.

In other words, to reach our goal of a safe work place, everyone needs to take responsibility. Then everyone will be held accountable.

Benefits of achieving our goals:

- The minimizing of all injury accidents
- The loss to property and equipment
- No fatalities
- No permanent disabilities
- Having the best Safety and Health conditions possible in the work place.

**YOUR COMPANY'S GOALS:**

## 4 OBJECTIVES AND SAFETY MEETINGS



The Safety and Health program shall be reviewed annually, and be revised, updated or changed at that time if needed.

All employees of \_\_\_\_\_ shall attend and participate in the (Daily/Week/Month) safety meetings.

A minimum of \_\_\_\_\_ min./hrs. shall be given each (Day/Week/Month) to the safety meeting. This shall be conducted by

(Safety Person)\_\_\_\_\_.

Problems that have arisen or that are anticipated shall be discussed along with any other safety and health topics. To keep the meeting a valuable educational experience the following is suggested:

- Keep the meeting moving
- Start and stop on time
- Use illustrated material and demonstrations to make the point
- Each topic should be discussed thoroughly
- Review accidents and injuries
- Evaluate close calls or near misses for trends, similar causes, and initiate corrective actions

**YOUR COMPANY'S OBJECTIVE:**

## 5 MANAGEMENT COMMITMENT

The management of \_\_\_\_\_ is committed to the company's safety policy, and to provide direction and motivation by:

The appointment of \_\_\_\_\_

\_\_\_\_\_ as our Safety Coordinator, who

will perform the following tasks:

- Establish our annual Company safety goals and objectives;
- Have a written safety and health program and be totally committed to it;
- Take part in employees' safety training;
- Establish and enforce disciplinary procedures for employees;
- Support for the safety and health program with people, providing authority and training; and
- Establish accountability and responsibilities for management and employees to follow.

**YOUR MANAGEMENT'S COMMITMENT:**

## 6 ASSIGNMENT OF RESPONSIBILITY

### SAFETY OFFICER

(Company Name) \_\_\_\_\_ has designated

(Person's Name) \_\_\_\_\_ as our safety and

health officer. The location of his/her office is \_\_\_\_\_

It shall be the duty of the safety officer to assist the Supervisor/Foreman and all other levels of Management in the initiation, education, and execution of an effective safety program generally and more specifically the following:

- Introduce the safety program to new employees;
- Follow up on recommendations, suggestions, etc., made at the Daily/ Weekly/ Biweekly/ Monthly safety meetings. All topics of safety concerns shall be documented accordingly;
- Be thoroughly familiar with the company safety program and assist the personnel in the execution of standard policies;
- Conduct safety inspections on a periodic basis;
- Address all hazards or potential hazards as needed;
- Prepare monthly accident reports and investigations;
- Maintain adequate stock of first aid supplies and other safety equipment to ensure their immediate availability, and make sure there is adequate number of qualified first aid certified people on the job; and
- Be thoroughly familiar with the OSHA, local and state safety codes and regulations.

**Note:** Employers should incorporate current copies of such codes and regulations in to their safety and health programs as resource material.

### EMPLOYEES

It is the duty of each and every employee to know the safety rules, and conduct his work in compliance. Disregard of the safety and health rules shall be grounds for disciplinary action up to and including termination. It is the duty of each employee to make full use of the safeguards provided for their protection. Every employee will receive an orientation when hired and receive a Company Safety and Health Program.

This is a partial list of these rules:

- Read, understand and follow safety and health rules.
- Personal Protection Equipment (PPE) will be worn at all times by employees working in areas where there is a possible danger of injury.
- Suitable work clothes will be worn; see your supervisor.
- Employees observed working in a manner that might cause injury to either themselves or other workers shall be warned of the danger and will immediately correct their method of operation.

- Employees shall report all injuries, no matter how slight to their supervisor/foreman immediately, and seek treatment promptly.
- Employees shall be aware of the location of first aid, fire fighting equipment, and other safety devices.
- Employees shall attend any and all required safety and health meetings.
- Until they are properly trained, employees are not to perform potentially hazardous tasks or to use any hazardous material.
- Employees are to follow all procedures when performing tasks.
- (Additional) \_\_\_\_\_
- (Additional) \_\_\_\_\_
- IF EVER IN DOUBT ABOUT SOMETHING, STOP AND ASK SOMEONE.

### SUPERVISOR / FOREMAN

Supervisor/Foreman will establish an operating atmosphere that ensures that safety and health is managed in the same manner and with the same emphasis as production, cost and quality control. The tasks are as follows:

- Define the responsibilities for safety and health of all subordinates and hold each person accountable for their results through the formal appraisal system and where necessary, disciplinary procedures;
- Regularly emphasize that accident and health hazard exposure prevention are not only moral responsibilities, but also a condition of employment, as accidents create unnecessary losses both personal and financial;
- Identify operational oversights that could contribute to accidents, which often result in injuries and property damage; and
- Participate in safety and health related activities, including routinely attending safety meetings, reviews of the facility, correcting employee behavior that can result in accidents and injuries, and quality control problems;
- Spend some time with each person hired explaining the safety policies and the hazards of his/her particular work (See that this initial orientation of "new hires" is carried out by (Safety Officer's Name) \_\_\_\_\_); and
- Make sure that if a "Competent Person" is required, that one is on-hand to oversee and instruct employees when necessary.



## 6 ASSIGNMENT OF RESPONSIBILITY CONTINUED

### DISCIPLINE / ENFORCEMENT

Two types or degrees of violation:

- **Serious Violation** – Violation of any company rule or regulation without premeditation. For a serious violation, (Safety Officer's Name)\_\_\_\_\_ can use his/her judgment determine the degree of discipline regarding the number of days off without pay.
- **Willful Violation** – Violation of any company rule or regulation with premeditation or forethought. For a willful violation, the discipline indicated below is the minimum that can be given. However, the degree of discipline may be extended or increased to termination of employment for willful violations. This decision is to be made by (Person's Name)\_\_\_\_\_.

### YOUR COMPANY'S DISCIPLINE POLICY:

## 7 HAZARD CONTROL

Where feasible, workplace hazards are prevented by effective design of the job site or job. Where it is not feasible to eliminate such hazards, they must be controlled to prevent unsafe and unhealthy exposure. Once a potential hazard is recognized, the elimination or control must be done in a timely manner. These procedures should include measures such as the following:

- Using engineering techniques where feasible and appropriate.
- Maintaining the facility and all equipment to prevent equipment breakdowns.
- Using administrative controls, such as reducing the duration of exposure.
- Supervisors/Foreman shall maintain a periodic site inspection program.



- Establishing a medical program that includes first aid on site, as well as nearby physician and emergency medical card to reduce the risk of any injury or illness that occurs.
- Address any and all safety hazards to employees whenever one is observed.

## 8 SAFETY COMMITTEE

The Committee shall consist of representatives from management and employees with (Safety Coordinator's Name)

\_\_\_\_\_ as the chairman. The committee is a forum, created for the purpose of fostering safety and health through communication. The responsibilities of Safety Committee Members include:

- Discuss safety policies and procedures with management and make recommendations for improvements,
- Serve as liaison between workers and management in safety matters,
- Provide technical reference materials,
- Review accident investigation reports on all accidents and "near-misses," and
- Identify unsafe conditions and practices and make recommendations for remedies.

### YOUR COMPANY'S SAFETY COMMITTEE POLICY:

## 9 TRAINING AND EDUCATION

Training is an essential component of an effective safety and health program. It addresses the responsibilities of both management and employees at the site. Training is often most effective when incorporated into other education on performance requirements and job practices.

At least annually, training programs should be provided as follows:

- Initially when the plan is developed;
- For all new employees;
- When new equipment, materials, or processes are introduced;
- When procedures have been updated or revised; and
- When experiences/operations show that employee performance must be improved.

Besides the standard training, employees should also be trained in the recognition of hazards. They must be able to look at something or someone and know that there is a problem. A list may include:

**Falls:** From floors, roofs and roof openings, ladders (Straight and Step), scaffolds, wall openings, tripping, trenches, steel erection, stairs, chairs, etc.

**Electrical:** Appliances, damaged cords, outlets, overloads, overhead high voltage, extension cords, portable tools (broken casing or damaged wiring), grounding, metal boxes, switches, ground fault circuit interrupters (GFCI), etc.

**Housekeeping:** Exits, walkways, floors, trash, storage of materials (hazardous and non-hazardous), protruding nails, etc.

**Fire:** Oily-dirty rags, combustibles, fuel gas cylinders, blocked exits, etc.

**Trips/Slips:** Stairs, uneven flooring, electrical cords, icy walkways, etc.

**Health:** Silicosis, asbestos, loss of hearing, eye injury due to flying objects, etc.

Employees trained in the recognition of hazards are less likely to be injured on the job. Overall production will increase, workers compensation insurance will decrease and management/employee relations will be substantially improved.

Training is not just for the worker, but also for everyone.

### YOUR TRAINING POLICY AND PROCEDURES:

## 10 RECORD KEEPING AND HAZARD ANALYSIS

If an injury or accident should ever occur, you are to report it to your supervisor/foreman as soon as possible.

A log and summary report shall be maintained for every recordable injury and illness. The entry should be done as soon as practicable, but no later than six working days after receiving information that a recordable injury or illness has occurred. The OSHA log No. 200 or equivalent shall be used for the recording.

A recordable injury or illness would include those accidents that result in a fatality, lost work days, transfer to another job, termination of employment, or an incident requiring medical treatment (other than first aid) or that involves loss of consciousness or restriction of work or motion.

First aid is any one-time treatment, and any follow up visit for the purpose of observation, of minor scratches, cuts, burns, splinters, and so forth that do not ordinarily require medical care.

An annual summary of recordable injuries and illnesses shall be posted and contain the following information: calendar year, company name, establishment name, establishment address, certification signature, title and date.

The summary covering the previous calendar year shall be posted no later than Feb. 1 and shall remain in place until March 1.

If no injury or illness occurred in the year, zeros must be entered on the total line and posted.

OSHA log No. 200 should be evaluated by the employer to determine trends or patterns in injuries in order to address hazards to which employees are exposed.

## 11 ACCIDENT AND INVESTIGATION

### SUPERVISORS / FOREMAN

- Provide first aid, call for emergency medical care if required.
- If further medical treatment is required, arrange to have an employee accompany the injured employee to the medical facility.
- Secure area, equipment and personnel from injury and further damage.
- Investigate the incident (injury) — gather facts, record employee and witness statements, take pictures and physical measurements of incident site and equipment involved.
- Complete an incident investigation report form within 24 hours whenever possible.
- If the injury warrants time away from work, ensure that a physician authorizes the absence and that you maintain contact with your employee while he/she remains off work.
- Ensure that corrective action to prevent a recurrence is taken.
- Discuss incident, where appropriate, in safety and other employee meetings with the intent to prevent a recurrence. Discuss with other supervisors and other management.
- Monitor status of employee(s) off work, maintain contact with employee and encourage return to work even if the physician requires restrictions.
- When injured employee(s) return to work they should not be allowed to return to work without “return to work” release forms from the physician. Review the release carefully and ensure that the employee follows the restrictions indicated by the physician.

## 12 FIRST AID/MEDICAL EMERGENCIES

(Company Name) \_\_\_\_\_

has designated (Person or Person's Name) \_\_\_\_\_

\_\_\_\_\_ as having adequate training to render first aid in the event of a medical emergency.

First aid kits are located at the following locations:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

Every employee shall be trained in emergency procedures:

- Evacuation plan
- Alarm systems
- Shutdown procedures for equipment
- Types of potential emergencies

### YOUR COMPANY'S SPECIAL PROCEDURES:

Employer should review their typical job site and address any and all of their hazards or potential hazards by adding to this section.



## 13 SAFETY RULES AND PROCEDURES

- No employee is expected to undertake a job until that person has received adequate training.
- All employees shall be trained on every potential hazard that they could be exposed to and how to protect themselves.
- No employee is required to work under conditions that are unsanitary, dangerous or hazardous to their health.
- Only qualified trained personnel are permitted to operate machinery or equipment
- All injuries must be reported to your supervision/foreman. Manufacturer's specifications/limitations / instructions shall be followed.
- Particular attention should be given to new employees and to employees moving to new jobs or doing non-routine tasks.
- All OSHA posters shall be posted.
- Emergency numbers shall be posted and reviewed with employees.
- Each employee in an excavation/trench shall be protected from cave-ins by an adequate protective system. (See your own detailed section on excavations.)
- For employees working in areas where there is a possible danger of head injury, Personal Protection Equipment (PPE) shall protect excessive noise exposure, or potential eye and face injury.
- All hand and power tools and similar equipment, whether furnished by the employer or the employee, shall be maintained in a safe condition.
- All materials stored in tiers shall be stacked, racked, blocked, interlocked, or otherwise secured to prevent sliding, falling or collapse.
- The employer shall ensure that electrical equipment is free from recognized hazards that are likely to cause death or serious physical harm to employees.
- All scaffolding shall be erected in accordance with the CFR 1926.451 subpart L. Standard guardrails for fall protection and ladders for safe access shall be used. (See your own detailed section on scaffolding.)
- All places of employment shall be kept clean, the floor of every workroom shall be maintained, so far as practicable, in a dry condition; standing water shall be removed. Where wet processes are used, drainage shall be maintained and false floors, platforms, mats or other dry standing places or appropriate waterproof footwear shall be provided.
- To facilitate cleaning, every floor, working place, and passageway shall be kept free from protruding nails, splinters, loose boards, holes and openings.
- All floor openings, open sided floor and wall openings shall be guarded by standard railings and toe boards or cover. (See your own detailed section on fall hazards.)
- The employer shall comply with the manufacturer's specifications and limitations applicable to the operation of any and all cranes and derricks.
- All equipment left unattended at night, adjacent to a highway in normal use, or adjacent to construction areas where work is in progress, shall have appropriate lights or reflectors, or barricades equipped with appropriate lights or reflectors, to identify the location of the equipment.
- No construction loads shall be placed on a concrete structure or portion of a concrete structure unless the employer determines, based on information received from a person who is qualified in structural design, that the structure or portion of the structure is capable of supporting the loads.
- A stairway or ladder shall be provided at all personnel points of access where there is a break in elevation of 19 inches or more, and no ramp, runway, sloped embankment, or personnel hoist is provided. (See your own detailed section on ladders.)

### YOUR COMPANY'S SAFETY RULES AND PROCEDURES:

## 14 EMERGENCY RESPONSE TO HAZARDOUS SUBSTANCES

The employer shall determine beforehand whether they will be involved in a hazardous substance cleanup. If so, the employer shall develop and implement a written safety and health program for their employees involved in hazardous waste operations. The program shall be designed to identify, evaluate and control safety and health hazards, and to provide for emergency response for hazardous waste operations. The plan shall incorporate the following:

- An organizational structure
- A comprehensive work plan
- Site-specific safety and health plan
- Safety and health training program
- Employer's standard operating procedures for safety and health
- Any necessary interface between general program and site-specific activities

### INITIAL TRAINING

General site workers (including equipment operators, general laborers and supervisory personnel) engaged in hazardous substance removal or other activities that expose or potentially expose workers to hazardous substances and health hazards shall receive a minimum of 40 hours of instruction off the site, and a minimum of three days actual field experience under the direct supervision of a trained, experienced supervisor.

(Company Name)\_\_\_\_\_

WILL FOLLOW THE RULES AND REGULATIONS FROM THE 29 CFR 1910.120 PERTAINING TO HAZARDOUS WASTE OPERATIONS AND EMERGENCY RESPONSE.

Employer shall also read and follow the standard in 29 CFR 1910.1200.

*Note: Employers should incorporate current copies of such codes and regulations in to your safety and health program as resource material.*

## 15 EMERGENCY ACTION PLAN

The emergency action plan will be in writing and will cover those designated actions employers and employees must take to ensure employee safety from fire and other emergencies. The following elements at a minimum shall be included in the plan:

- Emergency escape procedures and emergency escape route assignments;
- Procedures to be followed by employees who remain to operate critical plant operations before they evacuate;
- Procedures to account for all employees after emergency evacuation has been completed;
- Rescue and medical duties for those employees who are able to perform them.;
- Means of reporting fires and other emergencies; and
- Names or regular job titles of persons who can be contacted for further information or explanation of duties under the plan.

### ALARM SYSTEMS

(Company Name)\_\_\_\_\_ will establish an employee alarm system which complies with 29 CFR 1926.159.

- If the employee alarm system is used for alerting fire brigade members or for other purposes, a distinctive signal for each purpose will be used.

### EVACUATION

(Company Name)\_\_\_\_\_ will establish in the emergency action plan the types of evacuation to be used in emergency circumstances.

### TRAINING

- Before implementing the emergency action plan, \*COMPANY NAME\* will designate and train a sufficient number of persons to assist in the safe and orderly emergency evacuation of employees.
- (Company Name)\_\_\_\_\_ will review the plan with each employee covered by the plan at the following times:
  - Initially when the plan is developed.
  - Whenever the employee's responsibilities or designated actions under the plan change.
  - Whenever the plan is changed.
- (Company Name)\_\_\_\_\_ will review with each employee upon initial assignment those parts of the plan which the employee must know to protect the employee in the event of an emergency.

## 15 SUMMARY

The plan shall be kept at the workplace and made available for employee review. For those employers with 10 or fewer employees the plan may be communicated orally to employees and the employer need not maintain a written plan.

ENTER ANY SPECIAL PROCEDURES YOUR COMPANY HAS HERE

THESE ARE SAMPLE DOCUMENTS THAT YOUR COMPANY MAY USE, OR MODIFY TO MEET YOUR OWN SPECIAL NEEDS.

## 16 APPENDIX/ADDITIONAL RESOURCES

### Most Frequently Cited Serious Violations

<http://www.4-safety.com/OSHA%20MFC/FY2003-MFC%20Construction.ppt>

### Consultation: Free On-site Safety and Health Services

<http://www.osha.gov/dcsp/smallbusiness/consult.html>



### DISCLAIMER

This general Safety & Health Program Guide has been prepared by industry representatives as an aid to help employers develop their own written Safety & Health Program as recommended by the Occupational Safety and Health Administration (OSHA). The Sealant, Waterproofing & Restoration Institute (SWR Institute) has merely compiled information from industry representatives and from OSHA. Accordingly, the SWR Institute, its members, employees and agents expressly disclaim any responsibility whatsoever for the accuracy of the terms, methods, procedures, specifications, views and opinions discussed herein. Employers should note that by filling in the blanks will NOT provide the necessary content of a written Safety & Health Program as required by OSHA. Each company is different and any written Safety & Health Program must be tailored to meet each company's specific needs. A final determination of compliance with OSHA regulations, including compliance with the written Safety & Health Program requirement under 29 CFR 1926.21, is made by

evaluation of all factors pertaining to potential hazards at a particular worksite with respect to employee safety and health. This Guide should not be considered a substitute for any provision of the Occupational Safety and Health Act or for any standards issued by OSHA or other federal, state and local agencies. SWR Institute, its members, employees and agents expressly disclaim any responsibility whatsoever for damages arising from the use, application or reliance on the recommendations and information contained in this generic safety and health program.

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SEALANT, WATERPROOFING & RESTORATION INSTITUTE

# SAFETY & HEALTH MANUAL

## CONFINED SPACE ENTRY • OSHA 29 CFR 1910.146



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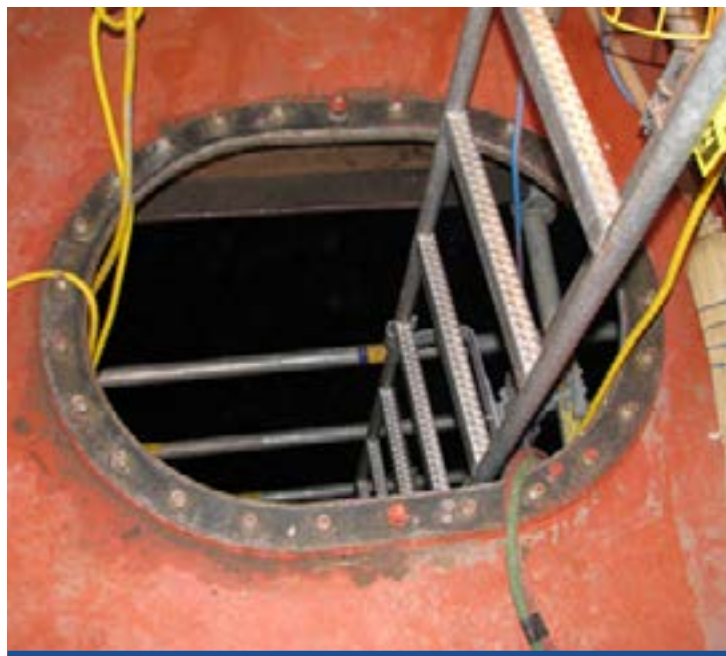
# 1 INTRODUCTION

This portion of the SWR Institute Safety & Health Manual describes the Occupational Safety and Health Administration (OSHA) Confined Space Entry Standard 29 CFR 1910.146, and outlines policies and procedures required to maintain compliance with this standard.

OSHA developed the confined space standard to protect workers by making the employer responsible for developing programs and procedures for employees who work in confined spaces. A confined space is a space that:

- Is large enough for an employee to enter and perform assigned work;
- Has limited or restricted means for entry and exit; and
- Is not designed for continuous employee occupancy.

Examples of confined spaces are furnaces, sewers, septic tanks, manholes, boilers, tunnels, pits, silos, vaults, storage bins, pumping stations, and wells. The confined space standard is a performance standard. A performance standard allows the employer flexibility to determine what procedures to use as long as the employee is protected. There are certain procedures the employer must follow.



# 2 POLICIES AND PROCEDURES

## HAZARDS OF A CONFINED SPACE

### ATMOSPHERIC

The air or atmosphere can contain any number of gases or vapors in amounts immediately dangerous to life or health. These conditions could include any of the following:

- Carbon monoxide (CO) is a colorless, odorless and tasteless gas caused by incomplete combustion. This is a very toxic gas. It can be present in exhaust fumes from internal combustion engines, such as gasoline engine powered pumps and compressors; improperly vented furnaces; welding or released as a gas from chemical reactions.
- Carbon dioxide (CO<sub>2</sub>) or other inert gases that displace the air (oxygen) in the space causing suffocation. Carbon dioxide is released from fire extinguishing systems, released as a result of fermentation in manholes, wells and garbage dumps, etc. It is also released in shielded arc welding. carbon dioxide gas (dry ice) is used to remove tiles.
- Methane is a colorless, odorless gas. It can asphyxiate; and it can explode. It commonly originates from sewage and rotting vegetation.
- Sulfur dioxide (SO<sub>2</sub>) is toxic in small concentrations. It is a non-flammable gas that has an acidic odor and pungent taste. It is used as a refrigerant in some commercial refrigerators and in water treatment.

- Hydrogen sulfide (H<sub>2</sub>S) is released from decaying organic matter in sewers, from closed containers containing organic matter and from sewage treatment. It is a colorless gas with a strong odor of rotten eggs. The odor should not be used as a warning because its presence may deaden the sense of smell. At high concentrations it is a sudden asphyxiant that can cause immediate unconsciousness.
- Any other chemical, cleaning compound, solvent, toxic gas, vapor, fume, mist, or dust could build up to dangerous concentrations. Chemicals used to clean the space can combine with materials in the space to form dangerous atmospheres.

Oxygen in the space or the atmosphere could be at high levels (enriched), which could be a fire or explosion hazard. Breathable air contains 19.5-21 percent oxygen. At 16 percent breathing becomes fast and a person suffers rapid heartbeat; at 12 percent a person becomes unconscious; at 6 percent it is fatal. Oxygen can get into the air from leaks from welding lines, by venting pure oxygen into the air to improve air quality, from chemical reactions that generate oxygen, and from improperly isolated supply lines.

### FLAMMABLE/COMBUSTIBLE

A flammable or combustible gas, vapor, fume, mist or dust may be in the air of a confined space that can be ignited by a spark, flame, static electricity, friction, cigarette or gasoline vapors. In fact, a spark produced by lifting a manhole cover could cause a fire or explosion in the manhole.



## 2 POLICIES AND PROCEDURES CONTINUED

### ENGULFMENT

Engulfment could be caused by liquid, soil, sand or grain that could surround the worker. Workers who enter a hopper or silo are at risk of being buried by the contents. Engulfment could also occur in a space that is configured so that the worker could get wedged in and not be able to get out.

### MECHANICAL

A mechanical hazard could include pipes, ducts or lines whose ports are not blanked or binded off (completely closed pipe or line) to prevent sudden release of their contents. Built up pressure must be released and any hazardous residue drained after blanking and binding to prevent injury.

Also, valves controlling steam, water or gas that are not locked out or tagged or gears, rotors, mulchers or cutters that are not guarded or isolated, can present additional hazards.

### ELECTRICAL

Exposed electrical parts could cause shock and electrocution, particularly if the ground is damp or wet. There could also be disconnect switches, circuit breakers, fuse boxes, etc., not locked out and tagged or grounded.

### OTHER

Loud noises can interfere with the ability of workers to hear directions or warnings. Loud noises can also cause such physical problems as high blood pressure, rapid heartbeat, stress, fatigue and deafness.



The lighting in the space may be very poor or nonexistent. Explosion-proof lighting and controls should be used.

An excessively hot or cold environment could cause exhaustion, dizziness or cause the worker to become unconscious.

### UNTRAINED RESCUERS

Untrained rescuers can become trapped or overcome themselves and make the situation much more dangerous.

### PERMIT-REQUIRED CONFINED SPACE

The employer must protect workers entering confined spaces. Entry is considered to have occurred as soon as any part of the

entrant's body breaks the plane of an opening into the space. A worker is considered in a confined space when he/she looks into a tank and his or her face is in the tank, or if a worker goes part way down a ladder into the space, or if the worker's foot enters the space. There are two different categories of confined space:

- **NON-PERMIT REQUIRED CONFINED SPACE** is a space that does not contain or have the potential to contain atmospheric, mechanical, electrical, engulfment or other hazards that can cause physical harm or death. Examples of non-permit confined spaces include vented vaults, motor control cabinets and spaces above dropped ceilings. These confined spaces have permanent natural or mechanical ventilation to prevent accumulation of a hazardous atmosphere and do not present an engulfment hazard or other serious hazard. Non-permit confined spaces may be covered by other standards such as lockout/tag out, welding, personal protective equipment, hazard communication, etc. The OSHA construction standard 29 CFR 1926.21(6) also protects employees involved in construction and renovation in confined spaces.
- **PERMIT-REQUIRED CONFINED SPACE** is a space that contains or has the potential to contain a hazardous atmosphere or contains a material that can engulf an employee, or has an internal configuration that can cause an employee to be trapped or asphyxiated by inwardly converging walls or by a floor that slopes downward and tapers to a small cross section or contains any other recognized serious safety or health hazard (i.e., furnaces, sewers, manholes, boilers, tunnels, pits, silos, vaults, storage bins, pumping stations and wells that have any of the above characteristics).

### EMPLOYER RESPONSIBILITIES

The employer must **EVALUATE** the workplace to determine if there are any permit required confined spaces and **IDENTIFY** the permit required confined spaces by signs or other effective means.

## DANGER

**INFORM** affected employees of these areas. The employer then must decide how to categorize each permit required confined space.

The options are:

- 1 **NO EMPLOYEE** will be required to enter the space. The employer then must:
  - Tell affected employees.
  - Prevent entry by means of locks or other procedures that ensure no one can enter the space.
  - Re-evaluate the space if its use changes to a permit-required space.
  - Alert contractors who may enter the space of any hazards.

## 2 POLICIES AND PROCEDURES CONTINUED



OR

2 Employees are required to enter the permit-required confined space. The employer then must have:

- A written program
- A permit system
- Entry permits
- Training
- Proper personnel protective equipment
- Have attendants and entry supervisors
- Provision for rescue and emergency services

OR

### Atmospheric Hazard Only

3 Determine that the only hazard within the permit-required confined space is an actual or potential atmospheric hazard, and that continuous ventilation alone will maintain the space safe for entry.

OR

### Reclassify as a Non-Permit Required Confined Space

4 Remove all hazards without entry or follow permit-required procedures to eliminate all hazards. An example of removing all hazards without entry — if the only hazard in the space is exposed electrical equipment, power to the space can be locked out and tagged from a location not in the space. This allows the space to be reclassified as a non-permit required confined space. This lockout /tag out must be enforced while employees are in the space.

OR

### Contractor Only Entry

5 Determine that only contractors will enter these spaces. The employer must inform the contractor of potential hazards and coordinate safe entry procedures.

## TRAINING AND EDUCATION FOR PERMIT-REQUIRED CONFINED SPACES

Training of employees is required for all classifications of permit-required confined spaces. Training must be given to employees who have access or potential access to permit required confined spaces and to all other employees involved in permit required confined spaces. This is necessary so they

have the understanding, knowledge, and skills necessary for safe performance of their duties.

Training must be provided:

- Before the employee is assigned duties in confined spaces.
- Before there is a change in assigned duties.
- Whenever there is a change in permit space operations that presents a hazard about which an employee has not been previously trained. For example, if a different cleaning solvent is used, training on the use of the new solvent is required.
- Whenever the employer has reason to believe either that there are deviations from the permit space entry procedures required or that there are inadequacies in the employees' knowledge or use of these procedures. Training must establish employee proficiency in the duties required by the confined space standard and shall introduce new or revised procedures, as necessary, for compliance with the standard. The employer must certify that the required training has been accomplished. This certification must contain each employee's name, the signatures or initials of the trainers, and the dates of training. The certification must be available for inspection by employees and their authorized representatives.

*Note:* The trainer must be competent and knowledgeable in recognizing the hazards of permit-required confined spaces. Trainers should also have actual working knowledge of the hazards specific to that site.

## WRITTEN PROGRAM

If the employer determines that authorized employees will enter permit-required spaces, the employer must develop and implement a written program. The written program must contain the following procedures and information:

- Implement the measures necessary to prevent unauthorized entry.
- Identify and evaluate the hazards of permit spaces before employees enter them.
- Develop and implement the means, procedures, and practices necessary for safe permit space entry operations, including, but not limited to, the following:

## 2 POLICIES AND PROCEDURES CONTINUED

- ① Specifying acceptable entry conditions;
- ② Isolating the permit space;
- ③ Purging, inerting, flushing, or ventilating the permit space as necessary to eliminate or control atmospheric hazards;
- ④ Providing pedestrian, vehicle or other barriers as necessary to protect entrants from external hazards; and
- ⑤ Verifying that conditions in the permit space are acceptable for entry throughout the duration of an authorized entry.
- Provide the following equipment at no cost to employees, maintain that equipment properly and ensure employees use the equipment properly:
  - ① Testing and monitoring equipment
  - ② Ventilating equipment
  - ③ Communications equipment
  - ④ Personal protective equipment
  - ⑤ Lighting equipment
  - ⑥ Barriers and shields
  - ⑦ Equipment, such as ladders, so authorized entrants can safely enter or exit the permit space
  - ⑧ Rescue and emergency equipment if not provided by outside rescue services
  - ⑨ Any other equipment necessary for safe entry into and rescue from permit spaces
- Evaluate permit space conditions as follows when entry operations are conducted:
  - ① Test conditions in the permit space to determine if acceptable entry conditions exist before entry is authorized. If the space cannot be isolated because it is large or is a continuous system (such as a sewer), pre-entry testing must be done to the extent feasible before entry is authorized. If entry is authorized, entry conditions must be continuously monitored.
  - ② Test or monitor the space as necessary to determine if acceptable entry conditions are being maintained during the course of entry operations.
  - ③ When testing for atmospheric hazards, test first for oxygen, then for combustible gases and vapors, and then for toxic gases and vapors.

Provide at least one attendant outside the permit space into which entry is authorized for the duration of entry operations.

If multiple spaces are to be monitored by a single attendant, include in the permit program the means and procedures to enable the attendant to respond to emergencies affecting one or more of the permit spaces without distraction from the attendant's responsibilities.

- Designate the persons who have active roles in operations, identify the duties of each employee and the employees with the required training.
- Develop and implement procedures for summoning rescue and emergency services for rescuing entrants, for supplying emergency services to rescued employees and for preventing unauthorized personnel from attempting rescue.
- Develop and implement a system for the preparation, issuance, use and cancellation of entry permits as required by the standard.
- Develop and implement procedures to coordinate entry operations when employees of more than one employer are working at the same time in a permit space, so the employees of one employer do not endanger the employees of any other employer.
- Develop and implement procedures necessary for concluding the entry after entry operations have been completed.

Review entry operations when the employer has reason to believe the measures taken under the permit space program may not protect employees and revise the program to correct deficiencies before subsequent entries are authorized. Examples of circumstances requiring review of a permit are:

- Unauthorized entry of a permit space
- The detection of a permit space hazard not covered by the permit
- A condition prohibited by the permit
- Occurrence of an injury or near-miss during entry
- A change in use or configuration of the permit space
- Employee complaints about the effectiveness of the program

Review the permit space program using retained cancelled permits within one year after each entry and revise the program as necessary to ensure employees are protected from permit space hazards.

### PERMIT SYSTEM

A permit system is the employer's written procedure for preparing and issuing permits for entry and for returning the permit space to service following termination of entry.

- The employer must document all steps necessary for entry by preparing an entry permit.
- The entry supervisor must sign the permit to authorize entry.
- The permit must be posted at the entry portal or otherwise made available to entrants.

## 2 POLICIES AND PROCEDURES CONTINUED

- The entry supervisor must cancel the permit when:

- The work has been completed.
- A condition arises not allowed under the permit.

The cancelled permit must be retained at least one year so a review of the permit-required confined space program can be made.

**Note:** Any problems during an entry operation must be noted on the permit so appropriate changes can be made.

### ENTRY PERMIT

The employer must develop an entry permit that includes the following:

- The permit space to be entered;
- The purpose of the entry;
- Date and authorized duration of the permit;
- The names of the authorized entrant(s);
- The names of the attendant(s);
- The names and signatures of entry supervisors;
- Hazards of the permit space;
- Measures used to isolate the space and eliminate or control hazards. These measures include locking out and tagging of equipment, purging or ventilating the space of toxic gases, and flushing and removing other hazards;
- What acceptable conditions must exist before entry can be made;
- Test results with the names or initials of the testers and when the tests were performed;
- Rescue services that can be called and the means (telephone, two-way radio, etc.) to use to call them during entry;
- Communications procedures used between authorized entrants and attendants;
- Personal protective equipment, test equipment, communications equipment, alarm systems, and rescue equipment that is provided;
- Other information as may be necessary to ensure safe entry for the particular circumstances of that permit required confined space; and
- Any additional permits, such as hot work, that have been issued, which are necessary if welding, cutting, or other operations are done that generate a source of ignition in the permit space.

### AUTHORIZED ENTRANT DUTIES

An authorized entrant is an employee who is authorized by the employer to enter the space. The employer must ensure that authorized entrants:

- Know the hazards that may be faced on entry including the way the hazard can affect the body (inhalation or skin absorption), the symptoms of exposure and what the consequences are of the exposure.
- Use personal protective equipment (PPE) such as respirators, head, face, eye, hand and body protection. This includes the use of hard hats, safety glasses or goggles, gloves, aprons, coveralls, etc.
- Know how to communicate with the attendant so the attendant can alert entrants when it is necessary to exit the space. Communication is also necessary so the attendant knows the status of the entrant at all times.
- Have the entrant alert the attendant when the following conditions arise:
  - The entrant recognizes any warning sign or symptom of exposure to a dangerous situation.
  - The entrant detects a condition by the permit.
- Have the entrant exit the space as quickly as possible when:
  - An order to evacuate is given by the attendant or entry supervisor.
  - The entrant recognizes any warning of sign or symptom of exposure to a dangerous situation.
  - The entrant detects a condition prohibited.
  - An evacuation alarm is activated. If hazardous conditions are detected while employees are in the space, employees must immediately leave the space and the employer must evaluate the space to determine the cause of the hazardous condition.
- Some of the symptoms that occur when employees are in unsafe atmosphere include:
  - Shallow rapid breathing
  - Blurred vision, spots in front of the eyes, vision blackouts
  - An exaggerated sense of feeling good
  - Disorientation
  - Profuse sweating
  - Ringing in the ears
  - Smells of gases, vapors, solvents, etc.
  - Throat dryness
  - Chest pains
  - Change in heart rate
  - Sudden skin irritation
  - Loss of manual dexterity
  - Loss of coordination
  - Weakness in the knees



## 2 POLICIES AND PROCEDURES CONTINUED

### ATTENDANT DUTIES

The attendant is the person stationed outside one or more permit spaces who monitors the authorized entrant(s) and who performs all attendant duties assigned in the employer's space permit program. It is preferable to have one attendant for each permit required confined space. The attendant cannot perform other duties that would interfere with their primary duty to monitor and protect the entrants. OSHA allows one attendant to monitor more than one permit space only if the attendant can respond immediately to an emergency and without distraction. They cannot perform any other duties other than those required by this standard.

The employer must ensure that each attendant is responsible for the following:

- Know the hazards that may be faced on entry including information on how the hazard can affect the body (inhalation or skin absorption), the symptoms of exposure, and the results of the exposure.
- Know how the entrant may behave due to a hazardous toxic exposure.
- The material safety data sheet should be reviewed so that the attendant will know the possible behavioral affects of chemical exposure on the entrant. For example, some chemicals may make the entrant groggy and unable to respond. The attendant should also know when the entrant is disoriented or panicky.
- Know how many entrants are in the space at all times. This cannot be done by head count. The attendant must know the names of the workers in the confined space.
- Remain outside the space continuously until relieved by another attendant.

**Note:** If the employee's permit entry program allows the attendant to enter the space to attempt a rescue, the attendants must have been previously trained and equipped for rescue operations and they must be relieved by another attendant before attempting a rescue.

- Keep in communication with entrants to monitor entrant's status whether by telephone, radio, or visual observation, and to alert entrants when evacuation becomes necessary. The attendant is required to maintain communication with the authorized entrant to monitor his/her status and to alert the entrant of any need to evacuate the space. Subtle behavioral changes detected in the authorized entrants speech or deviation from an established procedure could be the first sign of trouble.
- Monitor activities inside and outside the space to determine if it is safe for entrants to remain inside the space.
- Have attendant order evacuation when:

- 1 A condition is detected that is not permitted.

- 2 A behavioral affect of a hazardous exposure is noticed in an authorized entrant.
  - 3 A situation is detected outside the space that could endanger authorized entrants such as weather and other work activities.
  - 4 The attendant cannot effectively perform all required duties.
- Summon rescue and emergency services as soon as attendant determines entrants may need assistance to escape from the space.
  - Warn unauthorized persons to stay away from permit spaces and to exit immediately if they have entered the space. Supervisors and authorized entrants must be notified of any unauthorized entry.
  - Perform non-entry rescue as specified by the employee rescue procedure. This includes the use of mechanical winches and harnesses.

### ENTRY SUPERVISOR DUTIES

The entry supervisor is a person (employer, foreman, or crew chief) responsible for determining if acceptable entry conditions are present at a permit space where entry is planned, for authorizing entry and overseeing entry operations, and for terminating entry as required by the regulation. An entry supervisor may also be an authorized entrant or attendant as long as that person is trained and equipped as required by the standard. If the entry supervisor becomes an authorized entrant, provisions must be made by the employer to have another attendant assigned to the permit space before the entry supervisor goes into the space. The duties of an entry supervisor may be transferred from one person to another during the course of an entry operation.

The employer must ensure the entry supervisor:

- Knows the hazards of the space during entry including information on how the hazard can affect the body (inhalation or skin absorption), the symptoms of exposure, and the results of the exposure.
- Verifies that all entries have been made by checking the permit that all tests specified by the permit have been conducted, and all procedures and equipment specified by the permit are in place before allowing entry.
- Terminates entry and cancels the permit when entry operations are completed or a new condition exists that is not indicated on the permit.
- Removes unauthorized persons who enter or attempt to enter the permit space.
- Ensures that entry operations are followed according to the permit and that approved entry conditions are maintained.
- Verifies that rescue services are available and the means for summoning them are operable.



## 2 POLICIES AND PROCEDURES CONTINUED

*Note:* The entry supervisor is required to determine whenever responsibility for permit space entry is transferred to another person. He or she is also responsible to ensure that entry operations remain consistent.

### RESCUE AND EMERGENCY SERVICES

Employers who have employees perform rescue services must ensure:

- Each member of the rescue service must be provided with and trained to properly use personal protective and rescue equipment.
- Each member of the rescue service must be trained in assigned rescue duties and also receive the training of authorized entrants.
- Each member of the rescue service must practice at least once every 12 months the removals of authorized entrants from permit spaces. The practice may involve dummies, mannequins, or actual persons. The permit space may be actual or representative of the space. If it is not the actual space, it must simulate the actual space where emergency procedures will be carried out.
- Every rescue service worker must be trained in basic first aid and in cardio-pulmonary resuscitation (CPR). At least one person of the rescue service must hold a current certification and be available. These people are protected under OSHA blood borne pathogens standard, personal protective equipment standard, and other appropriate standards.

*OSHA's Requirement:* A rescue is to be set up between five to seven minutes. To rely on an outside source or such city agency as the fire department, normally would not comply with OSHA, and retrieval within five to seven minutes. In-house training is highly recommended.

### RETRIEVAL EQUIPMENT

- Where appropriate, authorized entrants must wear a chest or full-body harness with a retrieval line attached to the center of the back near shoulder level or above the head. Wristlets may be used if the employer can show that the use of a full body harness is not feasible or creates a greater hazard.
- The other end of the retrieval must be attached to a mechanical device or to a fixed point outside the permit space.
- A mechanical device must be available to retrieve personnel from vertical type permit spaces more than five feet deep.
- If an injured entrant is exposed to a substance for which there is a Material Safety Data Sheet (MSDS) or similar material required at the worksite, the MSDS or other material must be made available to the medical facility treating the entrant.

- When an employer arranges to have other than his or her employees perform rescue services, the employer must:
  - 1 Inform the rescue services of the hazards they may confront when called on to perform rescue at the host employer's facility.
  - 2 Provide the rescue service with access to all permit spaces from which rescue may be necessary so that the rescue service can develop appropriate rescue plans and practice rescue operations.
  - 3 So non-entry rescue can be made easier, the employer must use retrieval systems or methods, unless the retrieval equipment would increase the overall risk of entry or would not help in the rescue of the entrant. Whenever possible, rescue should be performed outside the permit required confined space where the rescuers are not exposed to hazardous conditions.

### PROTECTING AGAINST THE HAZARD

When entry is prohibited, the employer must take effective measures to prevent unauthorized entry. Before entering a permit-required confined space, it must be ventilated of all combustible and toxic gases and then continuously monitored to make sure the atmosphere is safe to enter. The ventilation must continue until all employees have left the space. There are meters that can be used to detect specific gases and vapors. Meters can test the flammability, combustibility and toxic levels of the gases or vapors in the air.

- The material safety data sheet should be consulted so it can be determined if the gas or vapor is lighter or heavier than air. This is determined by its density. Air is assigned a density of one. If the gas or vapor has a density of less than one it is lighter than air and will move upward. If it has a density greater than one it is heavier than air and will move close to the ground. If the density of the gas or vapor is known, the meter can be placed in its most effective position to detect the level.
- The worker must be equipped with a lifeline with hoist apparatus (retrieval system) so he/she can be pulled to safety if they become distressed or unconscious. The use of a retrieval system is required if the depth of the space is more than five feet and the retrieval system in itself does not present a hazard and the employer does not have an entry rescue procedure.
- Air lines, hydraulic lines, ducts, pipelines and other lines must have their ports blanked or banded to prevent sudden release of their contents. The blanks and binders must be able to withstand the same pressure as the pipelines, ducts, or lines.
- Valves controlling steam, air, water, hydraulic fluid, gas, etc. must be locked out and tagged to prevent sudden release of energy.

## 2 POLICIES AND PROCEDURES CONTINUED

- Electrical disconnect switches, circuit breakers and fuse boxes must be locked out or tagged to prevent accidental re-energization when working on equipment controlled by the switches, breakers, or fuses.
- Large portable objects must be secured so they so they don't accidentally move to block exits or crush workers.
- The employer must ensure that proper personal protective equipment is worn for the hazard such as respirators, hard hats, gloves, and eye protection. This must be required if work practices or engineering controls such as ventilation are not adequate to eliminate the hazard. If respirators are worn, the employer must conform to 29 CFR 1910.134 respirator standards.
- Lighting equipment must be issued when needed to enable the employee to see well enough to safely work in the space and to exit quickly in an emergency.
- Barricades and shields must be installed to prevent unauthorized entry.
- A sign must be posted at the space with the following wording:
- Boilers can be made temporarily safe for entry by shutting them down, opening access ports to allow the interior temperature to decrease and for natural ventilation. The space then can be entered to remove residual hazards such as loose scale or build-up that could fall on entrants.
- If the only hazard is possible release of uncontrolled energy, locking and tagging of energy releasing devices can temporarily classify the space as non-permit required.
- If the only hazard is atmospheric, ventilation of the space and documentation that no hazards exist can temporarily classify the space as non-permit required. In these cases, initial entry to make the space non-permit required, must be done in accordance with permit required confined space procedures.

### DANGER

**The employer, when necessary, must issue ladders for safe entry and exit.**

**Rescue and emergency equipment must be available except equipment provided by rescue services.**

**Contractors normally have their own program but it's no substitute for site specific training requirements for each space. This is normally done by the host employer.**

### EMPLOYER RESPONSIBILITIES WHEN PERMIT REQUIRED CONFINED SPACES ARE RECLASSIFIED AS NON-PERMIT REQUIRED

The employer must re-evaluate non-permit required confined spaces when there are changes in use, configuration, or atmospheres and reclassify them as necessary. If testing and inspection data show that a permit required confined space no longer poses a hazard, it may be temporarily re-classified as a non-permit required confined space as long as no permit required confined space hazards exist. The employer must show written certification indicating the space is safe to enter. The certification must include the date, location of the space, and the signature of the person making the certification.

If authorized employee(s) must enter the space prior to making it safe to re-classify it, the procedures for a permit required confined space must be followed.

#### EXAMPLE:

- Chemical tanks can be made safe by draining them of their contents and purging the residual chemical with water, and then ventilating the space after purging.

### EMPLOYER RESPONSIBILITIES WHEN EMPLOYEES ENTER A PERMIT-REQUIRED CONFINED SPACE WITH ATMOSPHERIC HAZARDS ONLY (ALTERNATE PROCEDURES)

An employer does not have to comply with some parts of the permit required confined space procedures providing that:

- The employer can demonstrate that the only hazard present in the permit space is an actual or potential hazardous atmosphere.
- The employer can demonstrate that continuous forced air ventilation alone is sufficient to maintain the permit space safe for entry.
- The employer develops monitoring and inspection data required by the standard.
- No hazardous atmospheres are in the space while employees are in it.
- Forced ventilation is used until the entire hazardous atmosphere is eliminated and directed to ventilate employee areas until they leave the space. The air must come from a clean source.
- The space atmosphere is periodically tested.
- If a hazardous atmosphere is detected during entry, each employee must leave the space immediately; the space must be evaluated to determine how the hazardous atmosphere developed, and measures must be taken to protect employees before entry again takes place.
- If initial entry of the permit space is required to obtain data required for alternate procedures, entry is performed in compliance with permit required space entry procedures of the standard.

## 2 POLICIES AND PROCEDURES CONTINUED

- Entry into the space is made by meeting the following conditions:
  - 1 Any conditions making it unsafe to remove the cover are eliminated.
  - 2 When the cover is off, all openings are promptly guarded.
  - 3 Before an employee enters the space, internal atmospheres are tested with calibrated direct reading instruments for oxygen content, flammable/combustible gases and vapors and toxic contaminants.

*Note:* Even though some of the permit required confined space regulations do not have to be followed in this case, training is still a requirement and the employer must document that all hazards have been eliminated.

### EXAMPLE

Telephone manholes may be made safe to enter and thus classified temporarily as non-permit required confined spaces if the above procedures can be met. Reminder: The only condition making the space a permit-required confined space is the presence of a hazardous atmosphere. No other hazards can exist.

### EMPLOYER RESPONSIBILITIES

*(when using contractors to enter permit-required confined spaces)*

The employer must inform the contractor of any permit-required spaces and entry requirements, any identified hazards, the employer's knowledge of hazardous conditions, and precautions and procedures to be followed when in or near permit spaces. The employer must also debrief (obtain information) from contractors at the conclusion of operations in order to evaluate entry and work procedures. Employers must coordinate entry operations if workers from more than one employer are entering permit required confined spaces. This is necessary to ensure that the employees are properly protected from permit space hazards.

In addition to complying with permit space requirements that apply to employers, each contractor must:

- Obtain information concerning permit space hazards and entry operations from the employer (host) who hired the contractor.
- Coordinate entry operations when both host employer workers and contractor personnel will be working in or near permit spaces.
- Inform the host employer of the permit space program that the contractor will follow and of any hazards confronted or created in permit spaces. This must be done either through a debriefing or during entry.



### EXAMPLE:

A contractor is on the employer's premises to do repair work in a lift station or power and signal manhole that is classified as a permit-required confined space. The contractor must inform the host employer if there is a hazardous atmosphere in the space, it is configured to trap employees or that other hazards exist.

### EMPLOYEE INVOLVEMENT

OSHA supports the position that involvement by employees is vital to the creation of an effective permit space program. The employer should encourage employees to voice their concerns and opinions in making the permit required confined space program more effective. The employees working in these spaces are in the best position to come up with constructive ideas and methods to make for a safer workplace.

### COMMON GASES FOUND IN THE ATMOSPHERE

These are common gases found in the atmosphere and are likely to be found in a Confined Space as well. All precautionary measures should be exhausted. Use proper air monitoring equipment to detect such hazardous gases when entering a confined space.

- Ammonia
- Benzene
- Excessive Carbon Dioxide
- Carbon Disulfide
- Carbon Monoxide
- Chlorine
- Dimethyl Sulfide
- Ethlene
- Hexane
- Hydrogen Sulfide
- Methane
- Nitric Oxide
- Nitrogen Dioxide
- Oxygen Deficient (below 19.5%)
- Oxygen Enrichment (above 23.5%)
- Sulfur Dioxide

### 3 SUMMARY

The awareness alone, of a confined space, is one of the most important points about this section of the safety manual. Once you realize you will be working in a confined space, following the correct procedures written above will ensure safety in the work place. Many times people do not even realize they are in a confined space situation until it is too late.

Always refer to the MSDS for the particular health hazard.



### 4 CONFINED SPACES GENERAL CHECKLIST

- |   |   |
|---|---|
| <ul style="list-style-type: none"> <li><input type="radio"/> Are confined spaces thoroughly emptied of any corrosive or hazardous substances, such as acids or caustics, before entry?</li> <li><input type="radio"/> Are all lines to a confined space, containing inert, toxic, flammable, or corrosive materials valved off and blanked or disconnected and separated before entry?</li> <li><input type="radio"/> Are all impellers, agitators, or other moving parts and equipment inside confined spaces locked-out if they present a hazard?</li> <li><input type="radio"/> Is either natural or mechanical ventilation provided prior to confined space entry?</li> <li><input type="radio"/> Are appropriate atmospheric tests performed to check for oxygen deficiency, toxic substances and explosive concentrations in the confined space before entry?</li> <li><input type="radio"/> Is adequate illumination provided for the work to be performed in the confined space?</li> <li><input type="radio"/> 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?</li> <li><input type="radio"/> Is the standby employee appropriately trained and equipped to handle an emergency?</li> <li><input type="radio"/> 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?</li> </ul> | <ul style="list-style-type: none"> <li><input type="radio"/> Is approved respiratory equipment required if the atmosphere inside the confined space cannot be made acceptable?</li> <li><input type="radio"/> Is all portable electrical equipment used inside confined spaces either grounded and insulated, or equipped with ground fault protection?</li> <li><input type="radio"/> 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 lighted 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?</li> <li><input type="radio"/> If employees will be using oxygen-consuming equipment—such as salamanders, torches, and furnaces, 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?</li> <li><input type="radio"/> Whenever combustion-type equipment is used in a confined space, are provisions made to ensure the exhaust gases are vented outside of the enclosure?</li> <li><input type="radio"/> Is each confined space checked for decaying vegetation or animal matter which may produce methane?</li> <li><input type="radio"/> Is the confined space checked for possible industrial waste which could contain toxic properties?</li> <li><input type="radio"/> 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?</li> </ul> |
|---|---|



## 5 GLOSSARY

**Acceptable Entry Condition:** The condition that must exist in a permit space before authorized employees are allowed to enter.

**Attendant:** Authorized employee who is outside the permit space to assist the entrants in accordance with the employer's space permit program.

**Authorized Entrant:** Employee, determined by the employer, who is trained and permitted to enter a permit space to do assigned work.

**Blanking or Binding:** The closure of a pipe, line, or duct by fastening a solid plate that covers the hole (bore) and is capable of withstanding the maximum pressure of the pipe, line or duct.

**Confined Space:** A space large enough for employees to enter to do assigned work but with limited or restricted means for entry or exit and is not designed for continuous occupancy.

**Engulfment:** The surrounding of a person by a liquid or a fine, flowable powder such as sand, grain, etc. that can cause death by asphyxiation, crushing or strangulation.

**Entry Permit:** Written document developed by the employer that allows authorized entry into permit spaces when conditions of the confined entry standards are met.

**Entry Supervisor:** The person (employer, foreman, or crew chief) responsible for determining if acceptable entry conditions are present at a permit space, authorizing entry, overseeing entry operations, and terminating entry when required. Entry supervisors may also serve as attendants or entrant provided they have received the required training.

**Hazardous Atmosphere:** Any atmosphere that may expose employees to the risk of death, incapacitation, impairment, of ability to exit the permit space without assistance, injury or acute illness.

**Hot Work Permit:** Written authorization for an employee to perform riveting, welding, cutting, burning, and heating capable of igniting materials.

**Immediately Dangerous to Life or Health (IDLH):** Any condition that poses an immediate or delayed threat to life, would cause irreversible adverse health effects, or interfere with a person's ability to exit the permit space.

**Non-Permit Confined Space:** A space that does not contain or have the potential to contain hazards that can cause serious physical harm or death.

**Performance Standard:** OSHA standard that allows the employer to determine what methods and procedures to use to comply with the regulation.

**Permit-Required Confined Space:** A space that contains or has the potential to contain a hazardous atmosphere or contains a hazard that can engulf an employee or has an internal configuration that can cause the employee to be trapped by inwardly converging walls or by a floor which slopes downward and tapers to a small cross-section or contains any other recognized serious safety or health hazard.

**Permit-Required Confined Space Program:** Program developed by the employer that describes procedures for protecting employees from permit space hazards and for regulating entry into permit spaces.

**Rescue Service:** The personnel designated to rescue employees from permit spaces.

**Retrieval System:** The equipment (retrieval line, chest or full body harness, wristlets if appropriate, and lifting device) used for non-entry rescue of persons from permit spaces.

**U.S. Department of Labor  
Occupational Safety & Health Administration Offices** *(for private sector employees)*

NEW YORK REGIONAL OFFICE  
201 Varick St., Room 670  
New York, New York 10014  
(212) 337-2378



## 5 GLOSSARY

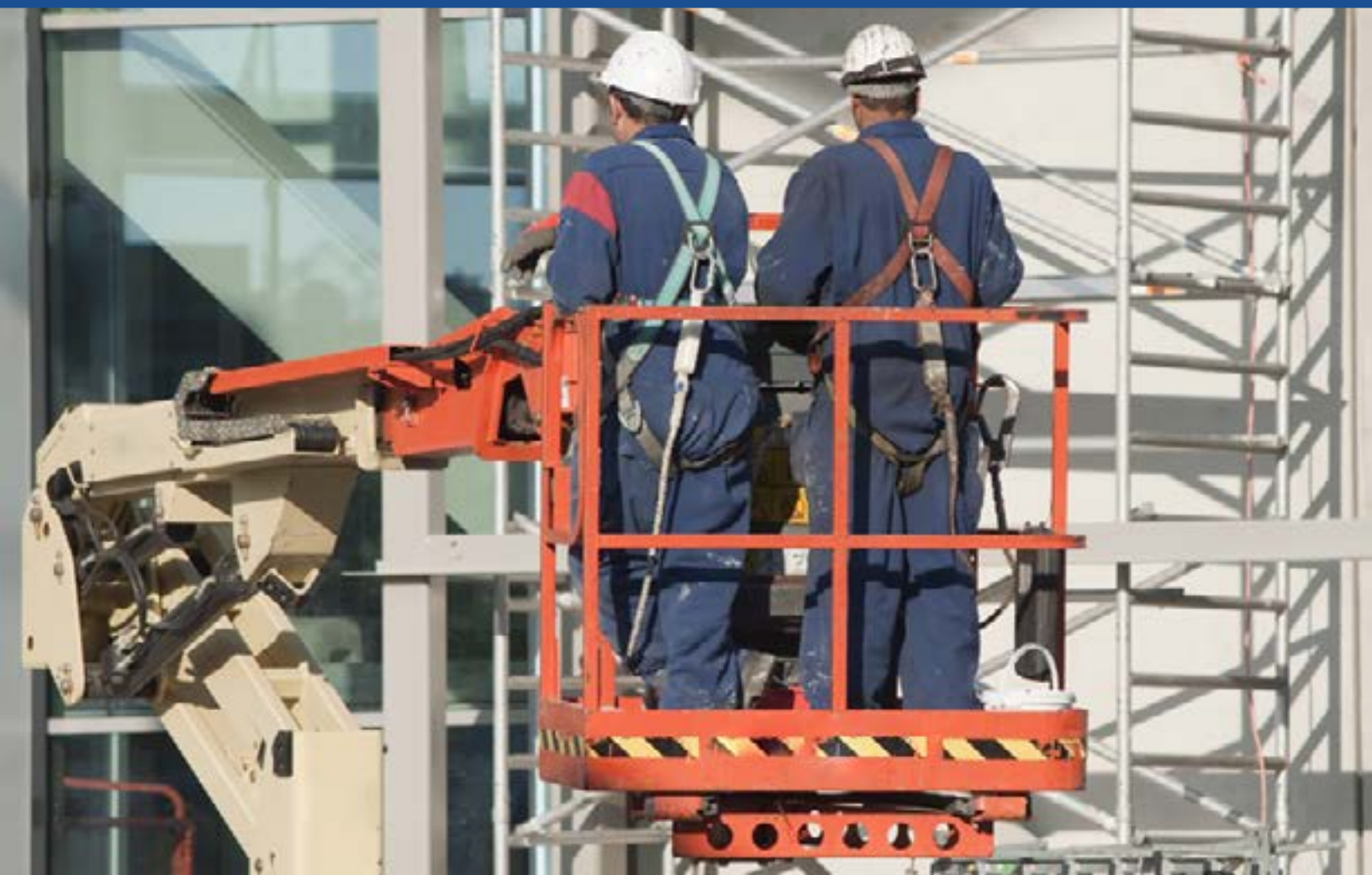
Consultation: Free On-site Safety and Health Services  
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SEALANT, WATERPROOFING & RESTORATION INSTITUTE

# SAFETY & HEALTH MANUAL

## FALL PROTECTION • OSHA 29 CFR 1926.500



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## 1 INTRODUCTION

This section of the SWR Institute Safety & Health Manual describes the Occupational Safety & Health Administration (OSHA) Fall Protection Standard. Included within are requirements for different systems, rules for a training program and a glossary to adhere to the OSHA standard 29 CFR 1910 and 29 CFR 1926. This section is only a portion of the full standard regulation. For a complete standard please refer to the most current publication of 29 CRF parts 1910 and 1926.

In the construction industry in the United States, falls are the leading cause of worker fatalities. Each year, on average, between 150 and 200 workers are killed and more than 100,000 are injured as a result of falls at construction sites. Consequently, the standard for fall protection deals with both the human and equipment-related issues in protecting workers from fall hazards. For example, employers and employees need to do the following:

- Where protection is required, select fall protection systems appropriate for given situations.
- Use proper construction and installation of safety systems.
- Supervise employees properly.
- Use safe work procedures.
- Train workers in the proper selections, use and maintenance of fall protection systems.

The rule covers most construction workers except those inspecting, investigating or assessing workplace conditions prior to the actual start of work or after all work has been completed.

The rule identifies areas or activities where fall protection is needed. These include, but are not limited to, ramps, runways and other walkways, excavations, hoist areas, holes, formwork and reinforcing steel, leading edge work, unprotected sides and edges, overhand bricklaying and related work, roofing work, precast concrete erection, wall openings, residential construction and other walking/working surfaces. The rule sets a uniform threshold height of 6 feet (1.8 meters), thereby providing consistent protection. This means that construction employers must protect their employees from fall hazards and falling objects whenever an affected employee is 6 feet (1.8 meters) or more above a lower level. Protection also must be provided for construction workers who are exposed to the hazard of falling into dangerous equipment.

Under the standard, employers are able to select fall protection measures compatible with the type of work being performed. Fall protection generally can be provided through the use of guardrail systems, safety net systems, and personal fall arrest systems, positioning device systems and warning line systems, among others.

## 2 REQUIREMENTS

The standard prescribes the duty to provide fall protection, sets the criteria and practices for fall protection systems and requires training. It covers hazard assessment and fall protection and safety monitoring systems. Also addressed are controlled access zones, safety nets and guardrail, personal fall arrest, warning line and positioning device systems.

Under OSHA's 29 CFR 1926.501, Subpart M, Fall Protection, employers must assess the workplace to determine if the walking or working surfaces on which employees are to work have the strength and structural integrity to safely support workers. Employees are not permitted to work on those surfaces until it has been determined that the surfaces have the requisite strength and structural integrity to support the workers. Once employers have determined that the surface is safe for employees to work on, the employer must select one of the options listed for the work operation if a fall hazard is present.

For example, if an employee is exposed to falling 6 feet (1.8 meters) or more from an unprotected side or edge, the employer must select a guardrail system, safety net system, or personal fall arrest system to protect the worker.

### EXCAVATIONS —

#### OSHA 29 CFR 1926.501(B)(7)

Each employee at the edge of an excavation 6 feet (1.8 meters) or more deep shall be protected from falling by guardrail systems, fences, barricades or covers. Where walkways are provided to permit employees to cross over excavations, guardrails are required on the walkway if the fall would be 6 feet (1.8 meters) or more to the lower level.

### FALL PROTECTION SYSTEMS CRITERIA AND PRACTICES—

#### OSHA 29 CFR 1926.502(I)

Covers located in roadways and vehicular aisles must be able to support at least twice the maximum axle load of the largest vehicle to which the cover might be subjected. All other cover must be able to support at least twice the weight of employees, equipment and materials that may be imposed on the cover at any one time. To prevent accidental displacement resulting from wind, equipment, or workers' activities, all covers must be secured. All covers shall be color-coded or bear the markings "HOLE" or "COVER."

# 1 INTRODUCTION CONTINUED

## GUARDRAIL SYSTEMS —

### OSHA 29 CFR 1926.501(B)(1) AND 502(B)(1)

If the employer chooses to use guardrail systems to protect workers from falls, the systems must be at least one-quarter inch (0.6 centimeters) nominal diameter or thickness to prevent cuts and lacerations. If wire rope is used for top rails, it must be flagged at not more than 6 foot intervals (1.8 meters) with high-visibility materials.

Screens, midrails, mesh, intermediate vertical members, or equivalent intermediate structural members must be installed between the top edge of the guardrail system and the walking/working surface when there are no walls or parapet walls at least 21 inches (23 centimeters) high. When midrails are used, they must be installed at a height midway between the top edge of the guardrail system and the walking/working level. When screens and mesh are used, they must extend from the top rail to the walking/working level and along the entire opening between top rail supports. Intermediate members, such as balusters, when used between posts, shall not be more than 19 inches (48 centimeters) apart.

Guardrail systems shall be surfaced to protect workers from punctures or lacerations and to prevent clothing from snagging.

The ends of top rails and midrails must not overhang terminal post, except where such an overhang does not constitute a projection hazard.

## PERSONAL FALL ARREST SYSTEM —

### OSHA 29 CFR 1926.502(D)(16)

These consist of an anchorage, connectors and body belt or body harness and may include a deceleration device, lifeline or suitable combinations. If a personal fall arrest system is used for fall protection, it must do the following:

- Limit maximum arresting force on an employee to 900 pounds (4 kiloNewtons) when used with a body belt;
- Limit maximum arresting force on an employee to 1,800 pounds (8 kiloNewtons) when used with a body harness;
- Being rigged so that an employee can neither free fall more than 6 feet (1.8 meters) nor contact any lower level;
- Bring an employee to a complete stop and limit maximum deceleration distance an employee travels to 3.5 feet (1.07 meters); and
- Have sufficient strength to withstand twice the potential impact energy of an employee free falling a distance of 6 feet (1.8 meters) or the free fall distance permitted by the system, whichever is less.
- Personal fall arrest systems must be inspected prior to each use for wear damage and other deterioration. Defective components must be removed from service. Dee-rings and snap hooks must have a minimum tensile strength of 5,000 pounds (22.2 kiloNewtons). Dee-rings and snap hooks shall be proof-tested to a minimum tensile load of 3,600 pounds (16 kiloNewtons) without cracking, breaking or suffering permanent deformation.

- As of Jan. 1, 1998, the use of non-locking snap hooks will be prohibited.
- On suspended scaffolds or similar work platforms with horizontal lifelines that may become vertical lifeline shall be capable of locking in both directions on the lifeline.
- Horizontal lifelines shall be designed, installed and used under the supervision of a qualified person, as part of a complete personal fall arrest system that maintains a safety factor of at least two. Lifelines shall be protected against being cut or abraded.
- Self-retracting lifelines and lanyards that automatically limit free fall distance to 2 feet (0.61 meters) or less shall be capable of sustaining a minimum tensile load of 3,000 pounds (13.3 kiloNewtons) applied to the device with lifeline or lanyard in the fully extended position.
- Ropes and straps (webbing) used in lanyards, lifelines and strength components of body belts and body harness shall be made of synthetic fibers.
- Anchorages shall be designed, installed and used under the supervision of a qualified person, as part of a complete personal fall arrest system that maintains a safety factor of at least two, i.e., capable of supporting at least twice the weight expected to be imposed upon it. Anchorages used to attach personal fall arrest systems shall be independent of any anchorage being used to support or suspend platforms and must be capable of supporting at least 5,000 pounds (22.2 kiloNewtons) per person attached.
- Lanyards and vertical lifelines must have a minimum breaking strength of 5,000 pounds (22.2 kiloNewtons).

## POSITIONING DEVICE SYSTEMS —

### OSHA 29 CFR 1926.502(E)

These body harness systems are to be set up so that workers can free fall no farther than 2 feet (0.6 meters). They shall be secured to an anchorage capable of supporting at least twice the potential impact load of an employee's fall or 3,000 pounds (13.3 kiloNewtons), whichever is greater. Requirements for snap hooks, Dee-rings and other connectors used with positioning device systems must meet the same criteria as those for personal fall arrest systems.

## SAFETY MONITORING SYSTEMS —

### OSHA 29 CFR 1926.502(H)

Are only available for 501(b)(10) employees engaged in low slope roofing work or 502(k) employees engaged in 501(b) leading edge work, 501(b)(12) precast concrete erection work; 501(b)(13) residential construction work – who can demonstrate that conventional fall protect is infeasible or creates a greater hazard. When no other alternative fall protection has been implemented, the employer shall implement a safety monitoring system. Employers must appoint a competent person to monitor the safety of workers and the employer shall ensure that the safety monitors:



# 1 INTRODUCTION CONTINUED

- Is competent in the recognition of fall hazards;
- Is capable of warning workers of fall hazard dangers and in detecting unsafe work practices;
- Is operating on the same walking/working surfaces of the workers and can see them; and
- Is close enough to work operations to communicate orally with workers and has no other duties to distract from the monitoring function.

## SAFETY NET SYSTEMS —

### OSHA 29 CFR 1926.502(C)

Safety nets must be installed as close as practicable under the walking/working surface on which employees are working and never more than 30 feet (9.1 meters) below such levels. Defective nets shall not be used. Safety nets shall be inspected at least once a week for wear, damage and other deterioration.

Safety nets shall be installed with sufficient clearance underneath to prevent contact with the surface or structure below.

When nets are used on bridges, the potential fall area from the walking/working surface to the net shall be unobstructed.

Safety nets must extend outward from the outermost projection of the work surfaces as follows:

Vertical distance from working level to horizontal plane of net surface.	Minimum required horizontal distance of outer edge of net from edge of working surface.
• Up to 5 feet (1.5 meters)	• 8 feet (2.4 meters)
• More than 5 feet (1.5 meters)	• 10 feet (3 meters)
• Up to 10 feet (3 meters)	• 13 feet (3.9 meters)
• More than 10 feet (3 meters)	

## WARNING LINE SYSTEMS —

### OSHA 29 CFR 1926.502(F)

Warning Line Systems only applies to low-sloped roofs 501(b) (10). Warning line systems consist of ropes, wires or chains and supporting stanchions.

Warning lines shall be erected around all sides of roof work areas. When mechanical equipment is being used, the warning line shall be erected not less than 6 feet (1.8 meters) from the roof edge parallel to the direction of mechanical equipment operation and not less than 10 feet (3 meters) from the roof's edge, perpendicular to the direction of mechanical equipment operation.

When mechanical equipment is not being used, the warning line must be erected not less than 6 feet (1.8 meters) from the roof edge.



## HOIST AREAS —

### OSHA 29 CFR 1926.501(B)(3)

Each employee in a hoist area shall be protected from falling 6 feet arrest systems. If guardrail systems (or chain gate or guardrail or portions thereof must be removed to facilitate hoisting operations, as during the landing of materials and a worker must lean through the access opening or out over the edge of the access opening to receive or guide equipment and materials, that employee must be protected by a personal fall arrest system.

## HOLES —

### OSHA 29 CFR 1926.501(B)(4)

Personal fall arrest systems, covers or guardrail systems shall be erected around holes (including skylights) that are more than 6 feet (1.8 meters) above lower levels.

## LEADING EDGES —

### OSHA 29 CFR 1926.501(B)(2)

Each employee who is constructing a leading edge 6 feet (1.8 meters) or more above lower levels shall be protected by guardrail systems, safety net systems or personal fall arrest systems. If employer can demonstrate that it is infeasible or creates a greater hazard to implement these systems, he or she must develop and implement a fall protection plan that meets the requirement of 29 CFR 1926.502 (k).

## OVERHAND BRICKLAYING AND RELATED WORK —

### OSHA 29 CFR 1926.501(B)(9)

Each employee performing overhand bricklaying and related work 6 feet (1.8 meters) or more above lower levels shall be protected by guardrail systems, safety net systems, or personal fall systems, or shall work in controlled access zone. All employees reaching more than 10 inches (25 centimeters) below the level of walking/working surface on which they are working shall be protected by a guardrail system, safety net system, or personal fall system.

**1 INTRODUCTION CONTINUED****PROTECTION FROM FALLING OBJECTS —****OSHA 29 CFR 1926.502(J)**

When guardrail systems are used to prevent materials from falling from one level to another, any openings must be small enough to prevent passage of potential falling objects. No materials or equipment except masonry and mortar shall be stored within 4 feet (1.2 meters) of working edges. Excess mortar, broken or scattered masonry units and all other materials and debris shall be kept clear of the working area by removal at regular intervals.

**CANOPIES —****OSHA 29 CFR 1926.502(J)(8)**

When used as protection from falling objects canopies must be strong enough to prevent collapse and to prevent penetration by any objects that may fall onto them.

**TOE BOARDS —****OSHA 29 CFR 1926.502(J)(2), (3), AND (4)**

When toe boards are used as protection from falling objects, they must be erected along the edges of the overhead walking or working surface for a distance sufficient to protect persons working below.

When tools, equipment, or materials are piled higher than the top edge of a toe board, paneling or screening must be erected from the walking/working surface or toe board to the top of a guardrail system's top rail or midrails, for a distance sufficient to protect employees below.

**TRAINING —****OSHA 29 CFR 1926.503**

Employers must provide a training program that teaches employees who might be exposed to fall hazards how to recognize such hazards and how to minimize them. Employees must be trained in the following areas: (a) the nature of fall hazards in the work area; (b) the correct procedures for erecting, maintaining, disassembling and inspecting fall protection systems; (c) the use and operation of controlled access zones and guardrail, personal fall arrest, safety net, warning line and safety monitoring systems; (d) the role of each employee in the safety monitoring system when the system is in use; (e) the limitations on the use of mechanical equipment during the performance of roofing work on low-slope roofs; (f) the correct procedures for equipment and materials handling and storage and the erection of overhead protection; and (g) employees' role in fall protection plans; and (h) the standards in this subpart.

Employers must prepare a written certification that identifies the employee trained and the date of the training. The employer or trainer must sign the certification record. Retraining also must be provided when necessary.

**WALL OPENINGS —****OSHA 29 CFR 1926.501(B)(14)**

Each employee working on, at, above, or near wall openings (including those with chutes attached) where the outside bottom edge of the wall opening is 6 feet (1.8 meters) or more above lower levels and the inside bottom edge of the wall opening is less than 39 inches (1.0 meter) above the walking/working surface must be protected from falling by the use of either a guardrail system, a safety net system, or a personal fall arrest system.

The guidelines identify four general elements that are critical to the development of a successful safety and health management program:

- Management commitment and employee involvement;
- Worksite analysis;
- Hazard preventions and control; and
- Safety and health training.

## 3 GLOSSARY

**Anchorage:** A secure point of attachment for lifelines, lanyards or deceleration devices.

**Body belt:** A strap with means both for securing it about the waist and for attaching it to a lanyard, lifeline, or deceleration device.

**Body harness:** Straps that may be secured about the person in a manner that distributes the fall-arrest forces over at least the thighs, pelvis, waist chest and shoulders with a means for attaching the harness to other components of a personal fall arrest system.

**Connector:** A device that is used to couple (connect) parts of a personal fall arrest system or positioning device system together.

**Controlled access zone:** A work area designated and clearly marked in which certain types of work (such as overhand bricklaying) may take place without the use of conventional fall protection systems-guardrail, personal arrest or safety net-to protects the employees working in the zone.

**Deceleration device:** Any mechanism-such as rope, grab, rip stitch lanyards, automatic self-retracting lifelines/lanyards-which serves to dissipate a substantial amount of energy during a fall arrest, or otherwise limits the energy imposed on an employee during fall arrest.

**Deceleration distance:** The additional vertical distance a falling person travels, excluding lifeline elongation and free fall distance, before stopping, from the point at which a deceleration device begins to operate.

**Guardrail system:** A barrier erected to prevent employees from falling to lower levels.

**Hole:** A void or gap 2 inches (5.1 centimeters) or more in the least dimension in a floor, roof, or other walking/working surface.

**Lanyard:** A flexible line of rope, wire rope, or strap that generally has a connector at each end for connection the body belt or body harness to a deceleration device, lifeline, or anchorage.

**Leading edge:** The edge of a floor, roof or formwork for a floor or other walking/working surface (such as the deck), which changes location as additional floor, roof, decking, or formwork sections are placed, formed or constructed.

**Lifeline:** A component consisting of a flexible line for connection to an anchorage at one end to hang vertically (vertical lifeline), or for connection to anchorages at both ends to stretch horizontally (horizontal lifeline) and that serves as a means for connecting other components of a personal fall arrest system to the anchorage.

**Low-slope roof:** A roof having a slope less than or equal to 4 in 12 (vertical to horizontal).

**Opening:** A gap or void 30 inches (76 centimeters) or more high and 18 inches (46 centimeters) or more wide, in a wall or partition, through which employees can fall to a lower level.

**Personal fall arrest system:** A system including but not limited to an anchorage, connectors and a body belt or body harness used to arrest an employee in a fall from a working level. As of Jan. 1, 1998, the use of a body belt for fall arrest is prohibited.

**Positioning device system:** A body belt or body harness system rigged to allow an employee to be supported on an elevated vertical surface, such as wall and work with both hands free while leaning backwards.

**Rope grab:** A deceleration device that travels on a lifeline and automatically, by friction, engages the lifeline and locks to arrest a fall.

**Safety-monitoring system:** A safety system in which a competent person is responsible for recognizing and warning employees of fall hazards.

**Self-retracting lifeline/lanyard:** A deceleration device containing a drum-wound line which can be slowly extracted from, or retracted onto, the drum under minimal tension during normal employee movement and which, after onset of a fall, automatically locks the drum and arrests the fall.

**Snap hook:** A connector consisting of a hook-shaped member with a normally closed keeper, or similar arrangement, which may be opened to permit the hook to receive an object and, when released automatically closes to retain the object.

**Steep roof:** A roof having a slope greater than 4 in 12 (vertical to horizontal).

**Toe board:** A low protective barrier that prevents material and equipment from falling to lower levels and which protects personnel from falling.

**Unprotected sides and edges:** Any side or edge (except at entrances to points of access) of a walking/working surface (e.g., floor, roof, ramp or runway) where there is no wall or guardrail system at least 39 inches (1 meter) high.

**Walking/working surface:** Any surface, whether horizontal or vertical, on which an employee walk or works, including but not limited to floors, roofs, ramps, bridges, runways, formwork and concrete reinforcing steel. Does not include ladders, vehicles, or trailers on which employees must be located to perform their work duties.

**Warning line system:** A barrier erected on a roof to warn employees that they are approaching an unprotected roof side or edge and which designates an area in which roofing work may take place without the use of guardrail, body belt, or safety net systems to protect employees in the area.

## 4 APPENDIX / ADDITIONAL RESOURCES

Consultation: Free On-site Safety and Health Services  
<http://www.osha.gov/dcsp/smallbusiness/consult.html>

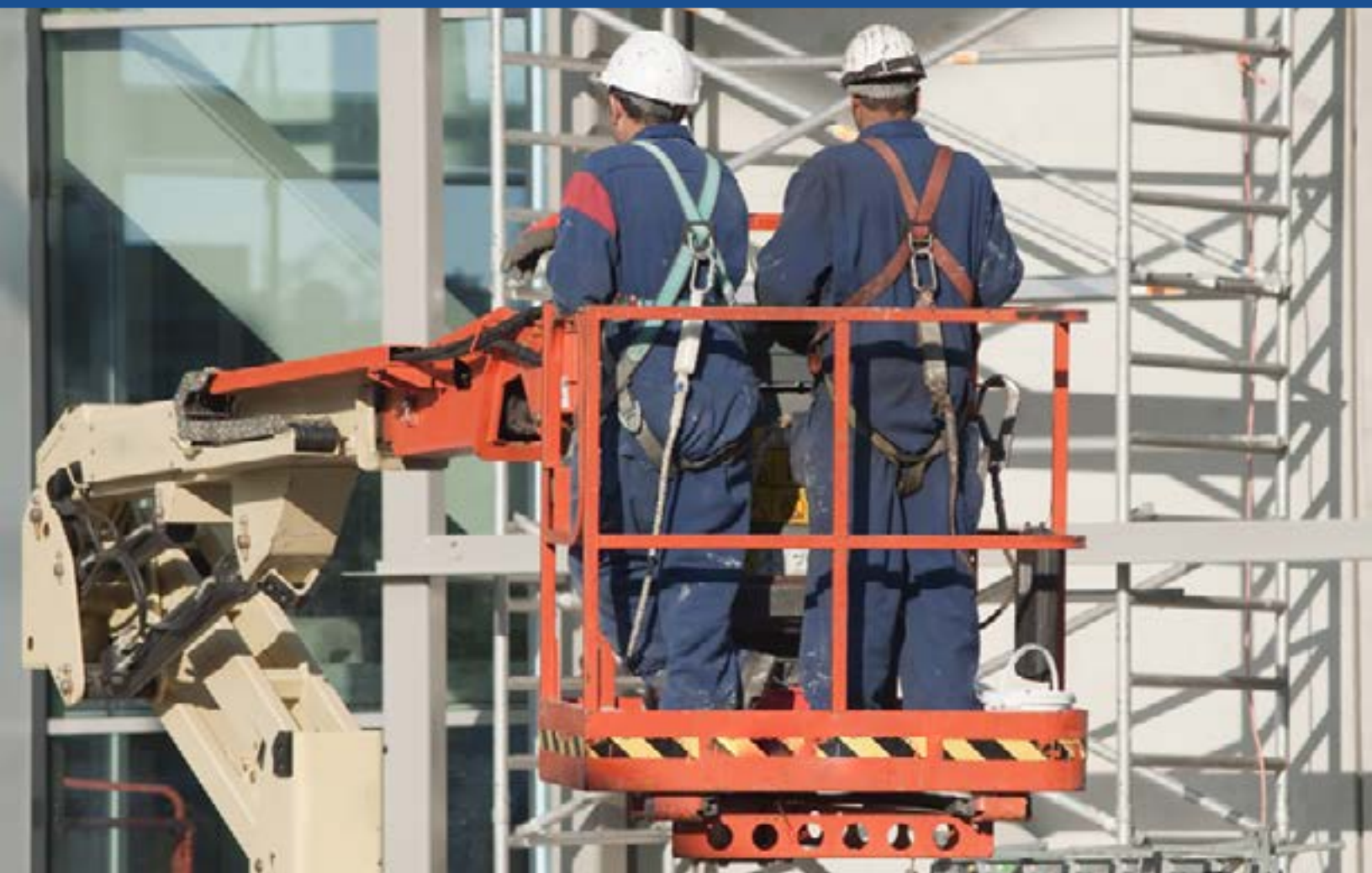




SEALANT, WATERPROOFING & RESTORATION INSTITUTE

# SAFETY & HEALTH MANUAL

## HAZARD COMMUNICATION • OSHA 29 CFR 1910.1200



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## 1 INTRODUCTION

This portion of the SWR Institute Safety & Health Manual describes the Occupational Safety and Health Administration (OSHA) Hazard Communication Standard and outlines the policies and procedures required to maintain compliance with this standard.

Hazardous and toxic substances can be defined as those chemicals present in the workplace that are capable of causing harm. In this definition, the term chemicals includes dusts, mixtures and such common materials as paints, fuels and solvents.

Chemicals pose a wide range of health hazards (i.e., irritation, sensitization and carcinogenicity) and physical hazards (such as flammability, corrosion, and reactivity). OSHA's Hazard Communication Standard (HCS) is designed to ensure that information about these hazards and associated protective measures is disseminated to workers and employers. This is accomplished by requiring chemical manufacturers and importers to evaluate the hazards of the

chemicals they produce or import, and to provide information about them through labels on shipped containers and more detailed information sheets called material safety data sheets (MSDSs). All employers with hazardous chemicals in their workplaces must prepare and implement a written hazard communication program, and must ensure that all containers are labeled, employees are provided access to MSDSs, and an effective training program is conducted for all potentially exposed employees.

The HCS provides workers the **right-to-know** the hazards and identities of the chemicals they are exposed to in the workplace. When workers have this information, they can effectively participate in their employers' protective programs and take steps to protect themselves. In addition, the standard gives employers the information they need to design and implement an effective protective program for employees potentially exposed to hazardous chemicals. Together these actions will result in a reduction of chemical source illnesses and injuries in American workplaces.



## 2 POLICIES AND PROCEDURES

Chemical manufacturers, importers, and distributors of hazardous chemicals are all required to provide the appropriate labels and MSDSs to the employers to whom they ship chemicals. The information must be provided automatically. Every container of hazardous chemicals you receive must be labeled, tagged or marked with the required information. Your suppliers also must send you a properly completed MSDS at the time of the first shipment of the chemicals and when the MSDS is updated with new and significant information about the hazards.

Employers that “use” hazardous chemicals must have a program to ensure the information is provided to exposed employees. “Use” means to package, handle, react or transfer. This is an intentionally broad scope, and includes any situation where a chemical is present in such a way that employees may be exposed under normal conditions of use or in a foreseeable emergency.

The HCS requires all workplaces where employees are exposed to hazardous chemicals to have a written program that describes how that facility will implement the standard. Preparation of the plan is not just a paper exercise – all of the elements must be implemented in the workplace to comply with the rule.

For example, the written plan must list the chemicals present at the site and indicate where written materials will be made available to employees. It also may indicate who is responsible for the various aspects of the program in your facility.

The written program must describe how the requirements for the labels and other forms of warning, MSDS, and employee information and training, are going to be met in your facility. The following discussion provides the type of information compliance officers will be looking for to decide whether you have properly addressed these elements of the hazard communication program.

## 2 POLICIES AND PROCEDURES CONTINUED

### IN-HOUSE LABELING



In-plant containers of hazardous chemicals must be labeled, tagged, or marked with the identity of the material and appropriate hazard warnings. The primary information to be obtained from an OSHA-required label is the identity for the material and appropriate hazard warnings. Employers that are purchasing and using hazardous chemicals will primarily be concerned with ensuring that every purchased container is labeled.

### MSDS

Chemical manufacturers and importers are required to obtain or develop an MSDS for each hazardous chemical they produce or import. Distributors are responsible for ensuring that their customers are provided a copy of these MSDSs. Employers must have an MSDS for each hazardous chemical that they use.

In Accordance with the Chemical Hazard Communication Standard (OSHA Publication 3084), the role of MSDSs is to provide detailed information on each hazardous chemical, including its potential hazardous effects, its physical and chemical characteristics and recommendations for appropriate protective measures. This information should be useful to you as the employer responsible for designing protective programs, as well as to the workers.

MSDSs must be readily accessible to employees when they are in their work areas during their work shifts. Some employers keep the MSDSs in a binder in a central location (e.g., in the pickup truck on a construction site).

For employers using hazardous chemicals, the most important aspect of the written program in terms of MSDSs is to ensure that someone is responsible for obtaining and maintaining the MSDSs for every hazardous chemical in the workplace. The list of hazardous chemicals required to be maintained as part of the written program will serve as an inventory. As new chemicals are purchased, the list should be updated.

Training each employee who may be “exposed” to hazardous chemicals when working must be provided information and be trained prior to initial assignment to work with a hazardous chemical, and whenever the hazard changes.

Information and training are critical parts of the hazard communication program. Workers obtain information regarding hazards and protective measures through written labels and MSDSs. It is through effective information and training, however, that workers will learn to read and understand such information, determine how to acquire and use it in their own workplace, and understand the risks of exposure to the chemicals in their workplaces, as well as the ways to protect themselves. A properly conducted training program will ensure comprehension and understanding.

When reviewing your written program regarding information and training, consider the following items:

- Designation of person(s) responsible for conducting training;
- Format of the program used (audiovisuals, class room instruction); and
- Procedure to train new employees at the time of their initial assignment to work with a hazardous chemical, and to train employees when introducing a new hazard into the workplace.

The following checklist will help to ensure you comply with the rule:

- Obtain a copy of the rule Chemical Hazard Communication Standard (OSHA Publication # 3084).
- Read and understand the requirements.
- Assign responsibility for tasks.
- Prepare an inventory of chemicals.
- Ensure containers are labeled.
- Obtain MSDS for each chemical.
- Prepare written program.
- Make MSDSs available to workers.
- Conduct training of workers.
- Establish procedures to maintain current program.
- Establish procedures to evaluate effectiveness.

### CHEMICAL INVENTORY

A contractor should maintain an inventory of all known chemicals in use on the work site. A chemical inventory list is available from the Safety Coordinator.

Hazardous chemicals brought onto the work site by a contractor/subcontractor will be included on the hazardous chemical inventory list.

### CONTAINER LABELING

All chemicals onsite will be stored in their original or approved containers with a proper label attached, except small quantities for immediate use. Any containers not properly labeled should be given to the superintendent for proper labeling or disposal.

Workers may dispense chemicals from original containers only in small quantities intended for immediate use. Any chemical left after work is completed must be returned to the original container or to the superintendent for proper handling.

No unmarked containers of any size are to be left in the work area unattended.

Contractor/subcontractor will rely on manufactured applied labels whenever possible, and will ensure that these labels are maintained. Containers that are not labeled will be re-labeled.

Contractor/subcontractor will ensure that each container is labeled to identify any chemical inside and any hazard warnings.



## 2 POLICIES AND PROCEDURES CONTINUED

### EMPLOYEE TRAINING

Employees will be trained to work safely with hazardous chemicals. Employee training will include:

- Methods that may be used to detect a release of hazardous chemical in the work place.
- Physical and health hazards associated with chemicals.
- Protective measures to be taken.
- Safe work practices, emergency responses and use of personal protective equipment (PPE).
- Information on the Hazard Communication Standard, including:
  - ① Labeling and warning systems
  - ② Explanation of MSDS

### EMERGENCY RESPONSE

- Any signs or symptoms of an overexposure or spill of hazardous chemical/substance must be reported to the Job Foreman and/or the Safety Coordinator at once.

- The Job Foreman or Supervisor will be responsible for ensuring that proper emergency response actions are taken in leak/spill situations.

### HAZARD OF NON-ROUTINE TASKS

- Job Foreman will inform employees of any special tasks that may arise that would involve possible exposure to Hazardous Chemicals.
- Review of safe work procedures and the use of PPE will be conducted prior to the start of such tasks.
- Where necessary, areas will be posted to indicate the nature of the hazard involved.

### INFORMING OTHER EMPLOYEES

- Other onsite employees are required to adhere to the provisions of the Hazard Communication Standard.
- Information on hazardous chemicals known to be present will be exchanged with other employers.
- Employers will be responsible for providing necessary information to their employees.
- Contractor/subcontractor will be readily available to other onsite employees.

## 3 GENERAL CHECKLIST

- Is there a list of hazardous substances used in your workplace?
- Is there a written hazard communication program that includes 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 an MSDS readily available for each hazardous substance used?
- Is there an employee training program for hazardous substances?

### DOES THIS PROGRAM INCLUDE:

- An explanation of what an MSDS is and how to obtain and use one?
- MSDS contents for each hazardous substance or class of substances?
- Explanation of "Right to Know?"

- Identification of where an employee can see the employers written hazard communication program and where hazardous substances are present in their work areas?
- The physical and health hazards of substances in the work area and specific protective measures to be used?
- Details of the hazard communication program, including how to use the labeling system and MSDSs?

### ARE EMPLOYEES TRAINED IN THE FOLLOWING:

- How to recognize tasks that might result in occupational exposure?
- How to use work practice and engineering controls and personal protective equipment and to know their limitations?
- How to obtain information on the substance's selection, proper use, location, removal, handling, decontamination, and disposal of personal protective equipment?
- Who to contact and what to do in an emergency?



## 4 SUMMARY



In general, the most important aspects of training under the Hazard Communication Standard are to ensure that employees are aware that they are exposed to hazardous chemicals, that they know how to read and use labels and MSDS sheets. As a consequence of learning this information, the employees should follow the appropriate protective measures established by the employer.

## 5 APPENDIX / ADDITIONAL RESOURCES

### **Construction eTool (English)**

<http://www.osha.gov/SLTC/etools/construction/index.html>

### **Construction: Preventing Fatalities eTool (Spanish)**

[http://www.osha.gov/SLTC/etools/construction\\_sp/index.html](http://www.osha.gov/SLTC/etools/construction_sp/index.html)

### **eLaws – OSHA Hazard Awareness Advisor**

<http://www.dol.gov/elaws/oshahaz.htm>

### **Hazard Communication: Foundation of Workplace Chemical Safety Programs**

<http://www.osha.gov/SLTC/hazardcommunications/index.html>

### **Most Frequently Cited Serious Violations**

<http://www.4-safety.com/OSHA%20MFC/FY2003-MFC%20Construction.ppt>

### **Consultation: Free On-site Safety and Health Services**

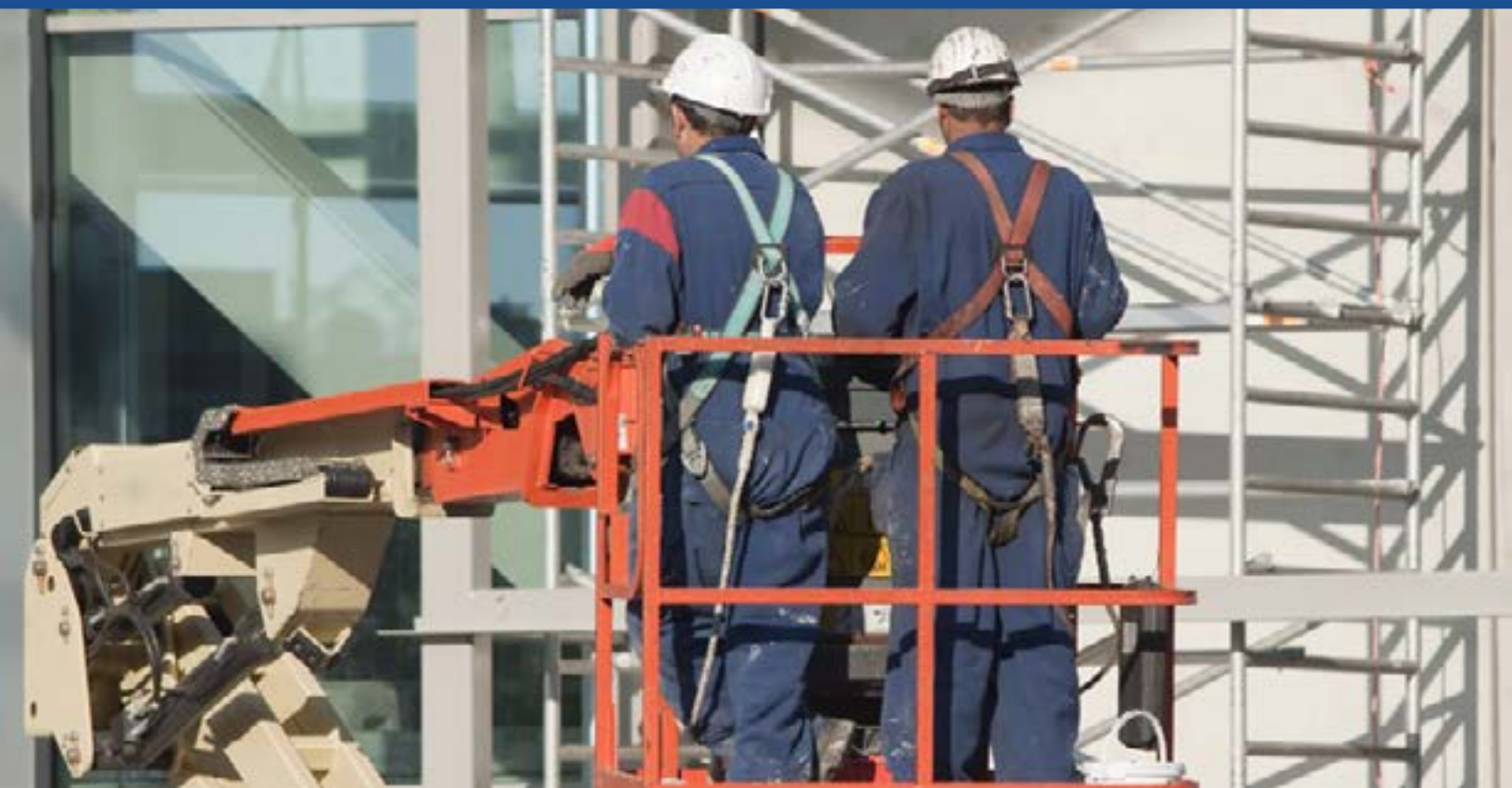
<http://www.osha.gov/dcsp/smallbusiness/consult.html>



SEALANT, WATERPROOFING & RESTORATION INSTITUTE

# SAFETY & HEALTH MANUAL

## LEAD IN CONSTRUCTION • OSHA 29 CFR 1926.62



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## 1 INTRODUCTION

This section of the SWR Institute’s Safety & Health Manual describes the Lead in Construction Standard. Included in this section are elements regarding exposure, responsibilities and protection standards. For additional information, please refer to the most current publication of OSHA 3142-09R.



## 2 HEALTH HAZARDS OF LEAD EXPOSURE

Pure lead (Pb) is a heavy metal at room temperature and pressure. A basic chemical element, it can combine with various other substances to form numerous lead compounds. Lead has been poisoning workers for thousands of years. Lead can damage the central nervous system, cardiovascular system, reproductive system, hematological system and kidneys. When absorbed into the body in high enough doses, lead can be toxic. In addition, workers’ lead exposure can harm their children’s development. Short-term (acute) overexposure—as short as days—can cause acute encephalopathy, a condition affecting the brain that develops quickly into seizures, coma and death from cardio respiratory arrest. Short-term occupational exposures of this type are highly unusual but not impossible. Extended, long-term (chronic) overexposure can result in severe damage to the central nervous system, particularly the brain. It can also damage the blood-forming, urinary and reproductive systems. There is no sharp dividing line between rapidly developing acute effects of lead and chronic effects that take longer to develop.



### SYMPTOMS OF CHRONIC OVEREXPOSURE

Some of the common symptoms include:

- Loss of appetite
- Constipation
- Nausea
- Excessive tiredness
- Headache
- Fine tremors
- Colic with severe abdominal pain
- Metallic taste in the mouth
- Weakness
- Nervous irritability
- Hyperactivity
- Muscle and joint pain or soreness
- Anxiety
- Pallor
- Insomnia
- Numbness
- Dizziness

### REPRODUCTIVE RISKS

Lead is toxic to both male and female reproductive systems. Lead can alter the structure of sperm cells and there is evidence of miscarriage and stillbirth in women exposed to lead or whose partners have been exposed. Children born to parents who were exposed to excess lead levels are more likely to have birth defects, mental retardation or behavioral disorders or to die during the first year of childhood. Workers who desire medical advice about reproductive issues related to lead should contact qualified medical personnel to arrange for a job evaluation and medical follow-up —particularly if they are pregnant or actively seeking to have a child. Employers whose employees may be exposed to lead and whom employees have contacted with concerns about reproductive issues must make medical examinations and consultations available.

### CHELATING AGENTS

Under certain limited circumstances, a physician may prescribe special drugs called chelating agents to reduce the amount of lead absorbed in body tissues. Using chelation as a preventive measure — to lower blood level but continue to expose a worker — is prohibited and therapeutic or diagnostic chelations of lead that are required must be done under the supervision of a licensed physician in a clinical setting with thorough and appropriate medical monitoring. The employee must be notified of potential consequences in writing before treatment and allowed to obtain a second opinion.

### 3 WORKER EXPOSURE

Lead is most commonly absorbed into the body by inhalation. When workers breathe in lead as a dust, fume, or mist, their lungs and upper respiratory tract absorb it into the body. They can also absorb lead through the digestive system if it enters the mouth and is ingested. A significant portion of the lead inhaled or ingested gets into the bloodstream. Once in the bloodstream, lead circulates through the body and is stored in various organs and body tissues. Some of this lead is filtered out of the body quickly and excreted, but some remains in the blood and tissues. As exposure continues, the amount stored will increase if the body absorbs more lead than it excretes. The lead stored in the tissue can slowly cause irreversible damage, first to individual cells, then to organs and whole body systems.



### 4 CONSTRUCTION WORKERS AND LEAD EXPOSURE

#### HOW LEAD IS USED

In construction, lead is used frequently for roofs, cornices, tank linings, and electrical conduits. In plumbing, soft solder, used chiefly for soldering tinfoil and copper pipe joints, is an alloy of lead and tin. Soft solder has been banned for many uses in the United States. In addition, the Consumer Product Safety Commission bans the use of lead-based paint in residences. Because lead-based paint inhibits the rusting and corrosion of iron and steel, however, lead continues to be used on bridges, railways, ships, lighthouses, and other steel structures, although substitute coatings are available. Construction projects vary in their scope and potential for exposing workers to lead and other hazards. Projects such as removing paint from a few interior residential doors may involve limited exposure. Others projects, however, may involve removing or stripping substantial quantities of lead-based paints on large bridges and other structures.

#### MOST VULNERABLE WORKERS

Workers potentially at risk for lead exposure include those involved in iron work; demolition work; painting; lead-based paint abatement; plumbing; heating and air conditioning maintenance and repair; electrical work; and carpentry, renovation and remodeling work. Plumbers, welders and painters are among those workers most exposed to lead. Significant lead exposures also can arise from removing paint from surfaces previously coated with lead-based paint such as

bridges, residences being renovated, and structures being demolished or salvaged. With the increase in highway work, bridge repair, residential lead abatement, and residential remodeling, the potential for exposure to lead-based paint has become more common. Workers at the highest risk of lead exposure are those involved in:

- Abrasive blasting
- Welding, cutting, and burning on steel structures

Other operations with the potential to expose workers to lead include:

- Lead burning
- Using lead-containing mortar
- Power tool cleaning without dust collection systems
- Rivet busting
- Cleanup activities where dry expendable abrasives are used
- Movement and removal of abrasive blasting enclosures
- Manual dry scraping and sanding
- Manual demolition of structures
- Heat-gun applications
- Power tool cleaning with dust collection systems
- Spray painting with lead-based paint



## 5 OSHA'S LEAD STANDARD

**O**SHA's Lead Standard for the Construction Industry, Title 29 Code of Federal Regulations OSHA 29 CFR 1926.62 - Lead, covers lead in a variety of forms, including metallic lead, all inorganic lead compounds and organic lead soaps.

### EXPOSURE LIMITS

The standard establishes maximum limits of exposure to lead for all workers covered, including a permissible exposure limit (PEL) and action level (AL). The PEL sets the maximum worker exposure to lead: 50 micrograms of lead per cubic meter of air (50µg/m<sup>3</sup>) averaged over an eight-hour period. If employees are exposed to lead for more than eight hours in a workday, their allowable exposure as a TWA for that day must be reduced according to this formula:

Employee exposure (in µg/m<sup>3</sup>) = 400 divided by the hours worked in the day. The AL, regardless of respirator use, is an airborne concentration of 30µg/m<sup>3</sup>, averaged over an eight-hour period. The AL is the level at which an employer must begin specific compliance activities outlined in the standard.

### APPLICABILITY TO CONSTRUCTION

OSHA's lead in construction standard applies to all construction work where an employee may be exposed to lead. All work related to construction, alteration or repair, including painting and decorating, is included. Under this standard, construction includes but is not limited to:

- Demolition or salvage of structures where lead or materials containing lead are present
- Removal or encapsulation of materials containing lead
- New construction, alteration, repair or renovation of structures, substrates or portions or materials containing lead
- Installation of products containing lead
- Lead contamination from emergency cleanup
- Transportation, disposal, storage or containment of lead or materials containing lead where construction activities are performed
- Maintenance operations associated with these construction activities

## 6 EMPLOYER RESPONSIBILITIES

### WORKERS' PROTECTIONS

Employers of construction workers are responsible for developing and implementing a worker protection program. At a minimum, the employer's worker protection program for employees exposed to lead above the PEL should include:

- Hazard determination, including exposure assessment;
- Medical surveillance and provisions for medical removal;
- Job-specific compliance programs;
- Engineering and work practice controls;
- Respiratory protection;
- Protective clothing and equipment;
- Housekeeping;
- Hygiene facilities and practices;
- Signs;
- Employee information and training; and
- Recordkeeping.

Because lead is a cumulative and persistent toxic substance and health effects may result from exposure over prolonged periods, employers must use these precautions where feasible to minimize employee exposure to lead.

The employer should, as needed, consult a qualified safety and health professional to develop and implement an effective, site-specific worker protection program. These professionals may work independently or may be associated with an insurance carrier, trade organization, or onsite consultation program.

See Consultation: Free On-site Safety and Health Services in the Appendix/Additional Resources section on page 5.15.

### ELEMENTS OF A COMPLIANCE PROGRAM

For each job where employee exposure exceeds the PEL, the employer must establish and implement a written compliance program to reduce employee exposure to the PEL or below. The compliance program must provide for frequent and regular inspections of job sites, materials and equipment by a competent person. Written programs, which must be reviewed and updated at least every six months, must include:

- A description of each activity in which lead is emitted (such as equipment used, material involved, controls in place, crew size, employee job responsibilities, operating procedures and maintenance practices);
- The means to be used to achieve compliance and engineering plans and studies used to determine the engineering controls selected where they are required;
- Information on the technology considered to meet the PEL;
- Air monitoring data that document the source of lead emissions;
- A detailed schedule for implementing the program, including copies of documentation (such as purchase orders for equipment, construction contracts);
- A work practice program;
- An administrative control schedule if applicable; and
- Arrangements made among contractors on multi-contractor sites to inform employees of potential lead exposure.

## 7 HAZARD ASSESSMENT

**A**n employer is required to conduct an initial employee exposure assessment of whether employees are exposed to lead at or above the AL based on:

- Any information, observation or calculation that indicates employee exposure to lead
- Any previous measurements of airborne lead
- Any employee complaints of symptoms attributable to lead exposure.

Objective data and historical measurements of lead may be used to satisfy the standard's initial monitoring requirements.

### INITIAL EMPLOYEE EXPOSURE ASSESSMENT

Initial monitoring may be limited to a representative sample of those employees exposed to the greatest concentrations of airborne lead. Representative exposure sampling is permitted when there are a number of employees performing the same job, with lead exposure of similar duration and level, under essentially the same conditions. For employees engaged in similar work, the standard requires that the members of the group reasonably expected to have the highest exposure levels be monitored. This result is then attributed to the other employees of the group. The employer must establish and maintain an accurate record documenting the nature and relevancy of previous exposure data. Instead of performing initial monitoring, the employer may in some cases rely on objective data that demonstrate that a particular lead containing material or product cannot result in employee exposure at or above the action level when it is processed, used or handled.

### BIOLOGICAL MONITORING TESTS

Analysis of blood lead samples must be conducted by an OSHA-approved lab and be accurate (to a confidence level of 95 percent) within plus or minus 15 percent or 6 µg/dl, whichever is greater. If an employee's airborne lead level is at or above the AL for more than 30 days in any consecutive 12 months, the employer must make biological monitoring available on the following schedule:

- At least every two months for the first six months and every six months thereafter for employees exposed at or above the action level for more than 30 days annually
- At least every two months for employees whose last blood sampling and analysis indicated a blood lead level at or above 40 µg/dl
- At least monthly while an employee is removed from exposure due to an elevated blood lead level.

### PENDING EMPLOYEE EXPOSURE ASSESSMENT

Until the employer performs an exposure assessment and documents that employees are not exposed above the PEL, OSHA requires some degree of interim protection for employees. This means providing respiratory protection, protective work clothing and equipment, hygiene facilities, biological monitoring and training — as specified by the standards — for certain tasks prone to produce high exposure. These include:

- Manual demolition of structures such as dry wall, manual scraping, manual sanding, and use of a heat gun where lead containing coatings or paints are present
- Power tool cleaning with or without local exhaust ventilation
- Spray painting with lead-containing paint
- Lead burning
- Use of lead-containing mortar
- Abrasive blasting, rivet busting, welding, cutting, or torch burning on any structure where lead-containing coatings or paint are present
- Abrasive blasting enclosure movement and removal
- Cleanup of activities where dry expendable abrasives are used
- Any other task the employer believes may cause exposures in excess of the PEL

### TEST RESULTS SHOWING

#### NO OVEREXPOSURES

If the initial assessment indicates that no employee is exposed above the AL, the employer may discontinue monitoring. Further exposure testing is not required unless there is a change in processes or controls that may result in additional employees being exposed to lead at or above the AL, or may result in employees already exposed at or above the AL being exposed above the PEL. The employer must keep a written record of the determination, including the date, location within the work site, and the name and social security number of each monitored employee.

### EMPLOYEE NOTIFICATION OF MONITORING RESULTS

The employer must notify each employee in writing of employee exposure assessment results within five working days of receiving them. Whenever the results indicate that the representative employee exposure without the use of respirators is above the PEL, the employer must include a written notice stating that the employee's exposure exceeded the PEL and describing corrective action taken or to be taken to reduce exposure to or below the PEL.

## 8 MEDICAL SURVEILLANCE

When an employee's airborne exposure is at or above the AL for more than 30 days in any consecutive 12 months, an immediate medical consultation is required when the employee notifies the employer that he or she:

- Has developed signs or symptoms commonly associated with lead-related disease.
- Has demonstrated difficulty in breathing during respirator use or a fit test.
- Desires medical advice concerning the effects of past or current lead exposure on the employee's ability to have a healthy child.
- Is under medical removal and has a medically appropriate need.

### MEDICAL EXAMS

The best indicator of personal lead exposure is through a blood test to indicate elevated blood lead levels. A medical exam must also include:

- Detailed work and medical histories, with particular attention to past lead exposure (occupational and non occupational), personal habits (smoking and hygiene), and past gastrointestinal, hematologic, renal, cardiovascular, reproductive, and neurological problems.
- A thorough physical exam, with particular attention to gums, teeth, hematologic, gastrointestinal, renal, cardiovascular, and neurological systems; evaluation of lung function if respirators are used.
- A blood pressure measurement.
- A blood sample and analysis to determine blood lead level.
  - 1 Hemoglobin and hematocrit determinations, red cell indices, and an exam of peripheral smear morphology
  - 2 Zinc protoporphyrin; blood urea nitrogen; and serum creatinine
- A routine urinalysis with microscopic exam.
- Any lab or other test the examining physician deems necessary.

### INFORMATION FOR THE EXAMINING PHYSICIAN

The employer must provide all examining physicians with a copy of the lead in construction standard, including all appendices, a description of the affected employee's duties as they relate to the employee's exposure, the employee's lead exposure level or anticipated exposure level, a description of personal protective equipment used or to be used, prior blood lead determinations, and all prior written medical opinions for the employee.

### WHEN MONITORING SHOWS NO EMPLOYEE EXPOSURES ABOVE THE ACTION LEVEL

Employers must make available, at no cost to the employee, initial medical surveillance for employees exposed to lead on the job at or above the action level on any one day per year. This initial medical surveillance consists of biological monitoring in the form of blood sampling and analysis for lead and zinc protoporphyrin (ZPP) levels. In addition, a medical surveillance program with biological monitoring must be made available to any employee exposed at or above the action level for more than 30 days in any consecutive 12 months.

### AFTER THE MEDICAL EXAMINATION

Employers must obtain and provide the employee a copy of a written opinion from each examining or consulting physician that contains only information related to occupational exposure to lead and must include:

- Whether the employee has any detected medical condition that would increase the health risk from lead exposure.
- Any special protective measures or limitations on the worker's exposure to lead.
- Any limitation on respirator use.
- Results of the blood lead determinations.

In addition, the written statement may include a statement that the physician has informed the employee of the results of the consultation or medical examination and any medical condition that may require further examination or treatment.

The employer must instruct the physician that findings, including lab results or diagnoses unrelated to the worker's lead exposure, must not be revealed to the employer or included in the written opinion to the employer. The employer must also instruct the physician to advise employees of any medical condition, occupational or non-occupational that necessitates further evaluation or treatment. In addition, some states also require laboratories and health care providers to report cases of elevated blood lead concentrations to their state health departments.

## 9 MEDICAL REMOVAL PROVISIONS

**T**emporary medical removal can result from an elevated blood level or a written medical opinion. More specifically, the employer is required to remove from work an employee with a lead exposure at or above the Action Level (AL) each time periodic and follow-up (within two weeks of the periodic test) blood sampling tests indicate that the employee's blood level is at or above 50 µg /dl. The employer also must remove from work an employee with lead exposure at or above the AL each time a final medical determination indicates that the employee needs reduced lead exposure for medical reasons. If the physician who is implementing the employer's medical program makes a final written opinion recommending the employee's removal or other special protective measures, the employer must implement the physician's recommendation. For an employee removed from exposure to lead at or above the AL due to a blood lead level at or above 50 µg/dl, the employer may return that employee to former job status when two consecutive blood sampling tests indicate that the employee's blood lead level is below 40 µg /dl. For an employee removed from exposure to lead due to a final medical determination, the employee must be returned when a subsequent final medical determination results in a medical finding, determination or opinion that the employee no longer has a detected medical condition that places the employee at increased risk of lead exposure.

The employer must remove any limitations placed on employees or end any special protective measures when a subsequent final medical determination indicates they are no longer necessary. If the former position no longer exists, the employee is returned consistent with whatever job assignment discretion the employer would have had if no removal occurred.

### WORKER PROTECTIONS AND BENEFITS

The employer must provide up to 18 months of medical removal protection (MRP) benefits each time an employee is removed from lead exposure or medically limited. As long as the position/job exists, the employer must maintain the earnings, seniority, and other employment rights and benefits as though the employee had not been removed from the job or otherwise medically limited. The employer may condition medical removal protection benefits on the employee's participation in follow-up medical surveillance. If a

removed employee files a worker's compensation claim or other compensation for lost wages due to a lead-related disability, the employer must continue medical removal protection benefits until the claim is resolved. However, the employer's MRP benefits obligation will be reduced by the amount that the employee receives from these sources. Also, the employer's MRP benefits obligation will be reduced by any income the employee receives from employment with another employer made possible by virtue of the employee's removal.

### RECORDS REQUIREMENTS INVOLVING MEDICAL REMOVAL

In the case of medical removal, the employer's records must include:

- The worker's name and social security number,
- The date of each occasion that the worker was removed from current exposure to lead,
- The date when the worker was returned to the former job status,
- A brief explanation of how each removal was or is being accomplished, and
- A statement indicating whether the reason for the removal was an elevated blood lead level.



## 10 RECORDKEEPING

### EMPLOYER REQUIREMENTS

The employer must maintain any employee exposure and medical records to document ongoing employee exposure, medical monitoring, and medical removal of workers. This data provides a baseline to evaluate the employee's health properly. Employees or former employees, their designated representatives, and OSHA must have access to exposure and medical records in accordance with 29 CFR 1910.1020. Rules of agency practice and procedure governing OSHA access to employee medical records are found in 29 CFR 1913.10.

### EXPOSURE ASSESSMENT RECORDS

The employer must establish and maintain an accurate record of all monitoring and other data used to conduct employee exposure assessments as required by this standard and in accordance with 29 CFR 1910.1020. The exposure assessment records must include:

- The dates, number, duration, location, and results of each sample taken, including a description of the sampling procedure used to determine representative employee exposure;
- A description of the sampling and analytical methods used and evidence of their accuracy;
- The type of respiratory protection worn, if any;
- The name, social security number, and job classification of the monitored employee and all others whose exposure the measurement represents; and
- Environmental variables that could affect the measurement of employee exposure.

### MEDICAL SURVEILLANCE RECORDS

The employer must maintain an accurate record for each employee subject to medical surveillance, including:

- The name, social security number, and description of the employee's duties;
- A copy of the physician's written opinions;
- The results of any airborne exposure monitoring done for the employee and provided to the physician; and
- Any employee medical complaints related to lead exposure. In addition, the employer must keep or ensure that the examining physician keeps the following medical records:
  - ① A copy of the medical examination results including medical and work history.
  - ② A description of the laboratory procedures and a copy of any guidelines used to interpret the test results.
  - ③ A copy of the results of biological monitoring.

The employer or physician or both must maintain medical records in accordance with 29 CFR 1910.1020.

### DOCUMENTS FOR EMPLOYEES SUBJECT TO MEDICAL REMOVAL

The employer must maintain — for at least the duration of employment — an accurate record for each employee subject to medical removal, including:

- The name and social security number of the employee;
- The date on each occasion that the employee was removed from current exposure to lead and the corresponding date which the employee was returned to former job status;
- A brief explanation of how each removal was or is being accomplished; and
- A statement about each removal indicating whether the reason for removal was an elevated blood level.

### EMPLOYER REQUIREMENTS RELATED TO OBJECTIVE DATA

The employer must establish and maintain an accurate record documenting the nature and relevancy of objective data relied on to assess initial employee exposure in lieu of exposure monitoring. The employer must maintain the record of objective data relied on for at least 30 years.

### DOCUMENTS FOR OSHA AND NIOSH REVIEW

The employer must make all records—including exposure monitoring, objective data, medical removal, and medical records available upon request to affected employees, former employees and their designated representatives and to the OSHA Assistant Secretary and the Director of the National Institute for Occupational Safety and Health (NIOSH) for examination and copying in accordance with 29 CFR 1910.1020.

### WHEN CLOSING A BUSINESS

When an employer ceases to do business, the successor employer must receive and retain all required records. If no successor is available, these records must be sent to the Director of NIOSH.

## K EXPOSURE REDUCTION AND EMPLOYEE PROTECTION

The most effective way to protect workers is to minimize their exposure through engineering controls, good work practices and training, and use of personal protective clothing and equipment, including respirators, where required. The employer needs to designate a competent person capable of identifying existing and predictable lead hazards and who is

authorized to take prompt corrective measures to eliminate such problems. The employer should, as needed, consult a qualified safety and health professional to develop and implement an effective worker protection program. These professionals may work independently or may be associated with an insurance carrier, trade organization or onsite consultation program.

## L ENGINEERING CONTROLS

Engineering measures include local and general exhaust ventilation, process and equipment modification, material substitution, component replacement, and isolation or automation. Examples of recommended engineering controls that can help reduce worker exposure to lead are described as follows.

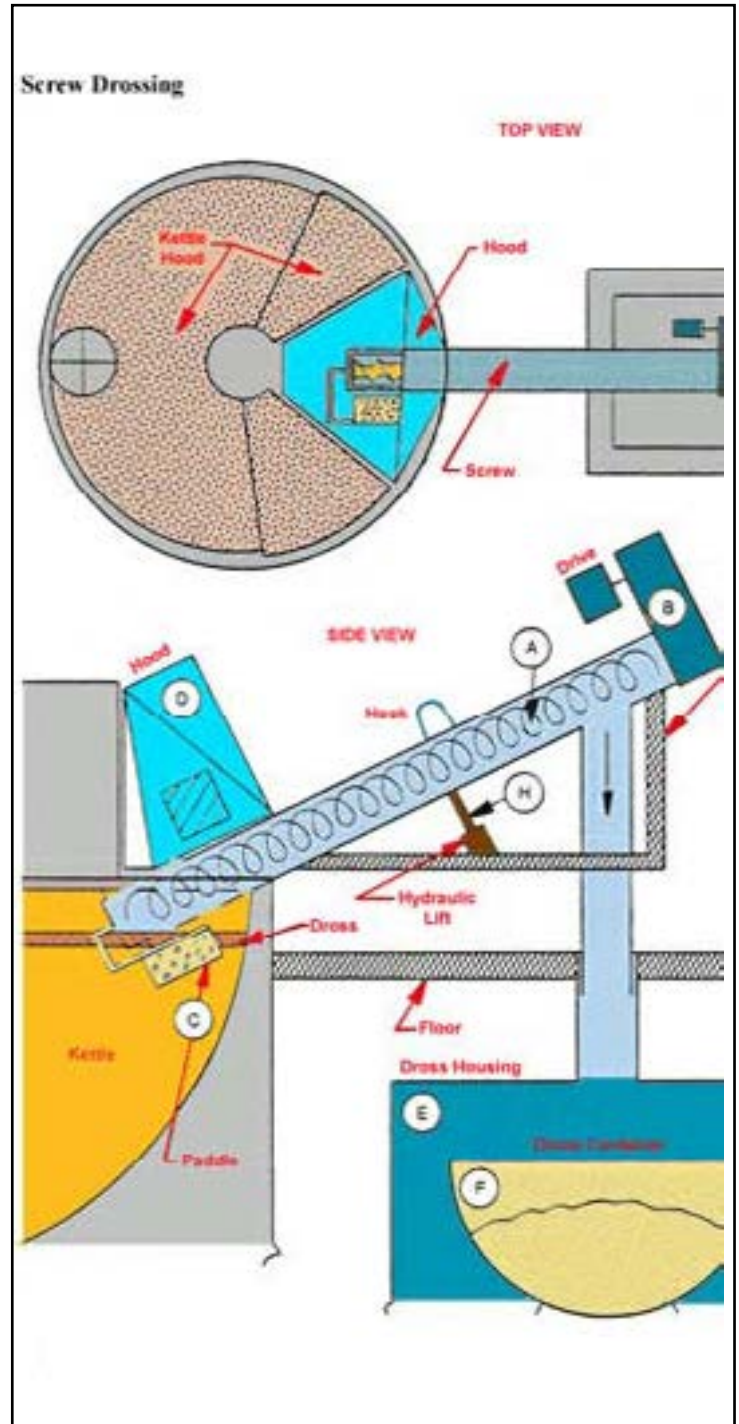
### EXHAUST VENTILATION

Equip power tools used to remove lead-based paint with dust collection shrouds or other attachments so that paint is exhausted through a high-efficiency particulate air (HEPA) vacuum system. For such operations as welding, cutting/burning or heating, use local exhaust ventilation. Use HEPA vacuums during cleanup operations. For abrasive blasting operations, build a containment structure that is designed to optimize the flow of clean ventilated air past the workers' breathing zones. This will help reduce the exposure to airborne lead and increase visibility. Maintain the affected area under negative pressure to reduce the chances that lead dust will contaminate areas outside the enclosure. Equip the containment structure with an adequately sized dust collector to control emissions of particulate matter into the environment.

### ENCLOSURE OR ENCAPSULATION

One way to reduce the lead inhalation or ingestion hazard posed by lead-based paint is to encapsulate it with a material that bonds to the surface, such as acrylic or epoxy coating or flexible wall coverings. Another option is to enclose it using systems such as gypsum wallboard, plywood paneling, and aluminum, vinyl, or wood exterior siding. Floors coated with lead-based paint can be covered using vinyl tile or linoleum.

The building owner or other responsible person should oversee the custodial and maintenance staffs and contractors during all activities involving enclosed or encapsulated lead-based paint. This will minimize the potential for an inadvertent lead release during maintenance, renovation, or demolition.



## L ENGINEERING CONTROLS

### SUBSTITUTION

Choose materials and chemicals that do not contain lead for construction projects. Among the options are:

- Use zinc-containing primers covered by an epoxy intermediate coat and polyurethane topcoat instead of lead-containing coatings.
- Substitute mobile hydraulic shears for torch cutting under certain circumstances.
- Consider surface preparation equipment such as needle guns with multiple reciprocating needles completely enclosed within an adjustable shroud instead of abrasive blasting under certain conditions. The shroud captures dust and debris at the cutting edge and can be equipped with a HEPA vacuum filtration with a self-drumming feature. One such commercial unit can remove lead-based paint from flat steel and concrete surfaces, outside edges, inside corners and pipes.
- Choose chemical strippers in lieu of hand scraping with a heat gun for work on building exteriors, surfaces involving carvings or molding, or intricate ironwork. Chemical removal generates less airborne lead dust. (Be aware, however, that these strippers themselves can be hazardous and that the employer must review the material safety data sheets [MSDSs] for these stripping agents to obtain information on their hazards.)

### COMPONENT REPLACEMENT

Replace lead-based painted building components such as windows, doors, and trim with new components free of lead-containing paint. Another option is to remove the paint offsite and then repaint the components with zinc-based paint before replacing them.

### PROCESS OR EQUIPMENT MODIFICATION

When applying lead paints or other lead-containing coatings, use a brush or roller rather than a sprayer. This application

method introduces little or no paint mist into the air to present a lead inhalation hazard. (Note that there is a ban on the use of lead-based paint in residential housing.)

Use non-silica-containing abrasives such as steel or iron shot/grit sand instead of sand in abrasive blasting operations when practical. The free silica portion of the dust presents a respiratory health hazard. When appropriate for the conditions, choose blasting techniques that are less dusty than open-air abrasive blasting. These include hydro- or wet-blasting using high-pressure water with or without an abrasive or surrounding the blast nozzle with a ring of water, and vacuum blasting where a vacuum hood for material removal is positioned around the exterior of the blasting nozzle.

When using a heat gun to remove lead-based paints in residential housing units, be sure it is of the flameless electrical softener type. Heat guns should have electronically controlled temperature settings to allow usage below 700 degrees. Equip heat guns with various nozzles to cover all common applications and to limit the size of the heated work area.

When using abrasive blasting with a vacuum hood on exterior building surfaces, ensure that the configuration of the heads on the blasting nozzle match the configuration of the substrate so that the vacuum is effective in containing debris.

Ensure that HEPA vacuum cleaners have the appropriate attachments for use on unusual surfaces. Proper use of brushes of various sizes, crevice and angular tools, when needed, will enhance the quality of the HEPA-vacuuming process and help reduce the amount of lead dust released into the air.

### ISOLATION

Although it is not feasible to enclose and ventilate some abrasive blasting operations completely, it is possible to isolate many operations to help reduce the potential for lead exposure. Isolation consists of keeping employees not involved in the blasting operations as far away from the work area as possible, reducing the risk of exposure.

## 13 HOUSEKEEPING AND PERSONAL HYGIENE

Lead is a cumulative and persistent toxic substance that poses a serious health risk. A rigorous housekeeping program and the observance of basic personal hygiene practices will minimize employee exposure to lead. In addition, these two elements of the worker protection program help prevent workers from taking lead contaminated dust out of the worksite and into their homes where it can extend the workers' exposures and potentially affect their families' health.

### HOUSEKEEPING PRACTICES

An effective housekeeping program involves a regular schedule to remove accumulations of lead dust and lead-containing debris. The schedule should be adapted to exposure conditions at a particular worksite. OSHA's Lead Standard for Construction requires employers to maintain all surfaces as free of lead contamination as practicable. Vacuuming lead dust with HEPA-filtered equipment or wetting the dust with water before sweeping are effective control measures. Compressed air may not be used to remove lead from contaminated surfaces unless a ventilation system is in place to capture the dust generated by the compressed air.

In addition, put all lead-containing debris and contaminated items accumulated for disposal into sealed, impermeable bags or other closed impermeable containers. Label bags and containers as lead-containing waste. These measures provide additional help in controlling exposure.

### PERSONAL HYGIENE PRACTICES

Emphasize workers' personal hygiene such as washing their hands and face after work and before eating to minimize their exposure to lead. Provide and ensure that workers use washing facilities. Provide clean change areas and readily accessible eating areas. If possible, provide a parking area where cars will not be contaminated with lead. These measures:

- Reduce workers' exposure to lead and the likelihood that they will ingest lead.
- Ensure that the exposure does not extend beyond the worksite.
- Reduce the movement of lead from the worksite.
- Provide added protection to employees and their families.

### CHANGE AREAS

The employer must provide a clean change area for employees whose airborne exposure to lead is above the PEL. The area must be equipped with storage facilities for street clothes and a separate area with facilities for the removal and storage of lead-contaminated protective work clothing and equipment. This separation prevents cross contamination of the employee's street and work clothing. Employees must use a clean change area for taking off street clothes, suiting up in clean protective work clothing, donning respirators before beginning work, and dressing in street clothes after work. No lead-contaminated items should enter this area.

Work clothing must not be worn away from the jobsite. Under no circumstances should lead-contaminated work clothes be laundered at home or taken from the worksite, except to be laundered professionally or for disposal following applicable federal, state and local regulations.

### SHOWERS AND WASHING FACILITIES

When feasible, showers must be provided for use by employees whose airborne exposure to lead is above the permissible exposure limit so they can shower before leaving the worksite. Where showers are provided, employees must change out of their work clothes and shower before changing into their street clothes and leaving the worksite. If employees do not change into clean clothing before leaving the worksite, they may contaminate their homes and automobiles with lead dust, extending their exposure and exposing other members of their household to lead.

In addition, employers must provide adequate washing facilities for their workers. These facilities must be close to the worksite and furnished with water, soap, and clean towels so employees can remove lead contamination from their skin. Contaminated water from washing facilities and showers must be disposed of in accordance with applicable local, state or federal regulations.

### PERSONAL PRACTICES

The employer must ensure that employees do not enter lunchroom facilities or eating areas with protective work clothing or equipment unless surface lead dust has been removed. HEPA vacuuming and use of a downdraft booth are examples of cleaning methods that limit the dispersion of lead dust from contaminated work clothing.

In all areas where employees are exposed to lead above the PEL, employees must observe the prohibition on the presence and consumption or use of food, beverages, tobacco products and cosmetics. Employees whose airborne exposure to lead is above the PEL must wash their hands and face before eating, drinking, smoking or applying cosmetics.

### END-OF-DAY PROCEDURES

Employers must ensure that workers who are exposed to lead above the permissible exposure limit follow these procedures at the end of their workday:

- Place contaminated clothes, including work shoes and personal protective equipment to be cleaned, laundered or disposed of in a properly labeled closed container.
- Take a shower and wash their hair. Where showers are not provided, employees must wash their hands and face at the end of the work shift.
- Change into street clothes in clean change areas.



## 14 PROTECTIVE CLOTHING AND EQUIPMENT

### EMPLOYER REQUIREMENTS

Employers must provide workers who are exposed to lead above the PEL or for whom the possibility of skin or eye irritation exists with clean, dry protective work clothing and equipment that are appropriate for the hazard. Employers must provide these items at no cost to employees. Appropriate protective work clothing and equipment used on construction sites includes:

- Coveralls or other full-body work clothing;
- Gloves, hats, and shoes or disposable shoe coverlets;
- Vented goggles or face shields with protective spectacles or goggles;
- Welding or abrasive blasting helmets; and
- Respirators.

Clean work clothing must be issued daily for employees whose exposure levels to lead are above 200 µg/m<sup>3</sup>, weekly if exposures are above the PEL but at or below 200 µg/m<sup>3</sup> or where the possibility of skin or eye irritation exists.

### HANDLING CONTAMINATED PROTECTIVE CLOTHING

Workers must not be allowed to leave the worksite wearing lead-contaminated protective clothing or equipment. This is an essential step in reducing the movement of lead contamination from the workplace into the worker's home and provides added protection for employees and their families.

Disposable coveralls and separate shoe covers may be used, if appropriate, to avoid the need for laundering. Workers must remove protective clothing in change rooms provided for that purpose.

Employers must ensure that employees leave the respirator use area to wash their faces and respirator face pieces as necessary. In addition, employers may require their employees to use HEPA vacuuming, damp wiping, or another suitable cleaning method before removing a respirator to clear loose particle contamination on the respirator and at the facemask seal.

Place contaminated clothing that is to be cleaned, laundered or disposed of by the employer in closed containers. Label containers with the warning: "Caution: Clothing contaminated with lead. Do not remove dust by blowing or shaking. Dispose of lead-contaminated wash water in accordance with applicable local, state or federal regulations."

Workers responsible for handling contaminated clothing, including those in laundry services or subcontractors, must be informed in writing of the potential health hazard of lead exposure. At no time shall lead be removed from protective clothing or equipment by brushing, shaking, or blowing. These actions disperse the lead into the work area.

### PREVENTING HEAT STRESS

Workers wearing protective clothing, particularly in hot environments or within containment structures, can face a risk from heat stress if proper control measures are not used.

Heat stress is caused by several interacting factors, including environmental conditions, type of protective clothing worn, the work activity required and anticipated work rate, and individual employee characteristics such as age, weight, and fitness level. When heat stress is a concern, the employer should choose lighter, less insulating protective clothing over heavier clothing, as long as it provides adequate protection. Other measures the employer can take include: discussing the possibility of heat stress and its signs and symptoms with all workers; using appropriate work/rest regimens; and providing heat stress monitoring that includes measuring employees' heart rates, body temperatures, and weight loss. Employers must provide a source of water or electrolyte drink in a non-contaminated eating and drinking area close to the work area so workers can drink often throughout the day. Workers must wash their hands and face before drinking any fluid if their airborne exposure is above the PEL. See [Safety and Health Topics: Heat Stress – Hazards and Possible Solutions](#).

## 15 PROTECTIVE CLOTHING AND EQUIPMENT

**A**lthough engineering and work practice controls are the primary means of protecting workers from exposure to lead, source control at construction sites sometimes is insufficient to control exposure. In these cases, airborne lead concentrations may be high or may vary widely. Respirators often must be used to supplement engineering controls and work practices to reduce worker lead exposures below the PEL. When respirators are required, employers must provide them at no cost to workers.

The standard requires that respirators be used during periods when an employee's exposure to lead exceeds the PEL, including:

- Periods necessary to install or implement engineering or work practice controls, and
- Work operations for which engineering and work practice controls are insufficient to reduce employee exposures to or below the PEL.

Respirators also must be provided upon employee request. A requested respirator is included as a requirement to provide increased protection for those employees who wish to reduce their lead burden below what is required by the standard, particularly if they intend to have children in the near future. In addition, respirators must be used when performing previously indicated high exposure or "trigger" tasks, before completion of the initial assessment.

### PROVIDING ADEQUATE RESPIRATORY PROTECTION

Before any employee first starts wearing a respirator in the work environment, the employer must perform a fit test. For all employees wearing negative or positive pressure tight-fitting face piece respirators, the employer must perform either qualitative or quantitative fit tests using an OSHA-accepted fit testing protocol.

In addition, employees must be fit tested whenever a different respirator face piece is used, and at least annually thereafter. Where daily airborne exposure to lead exceeds 50 µg/m<sup>3</sup>, affected workers must don respirators before entering the work area and should not remove them until they leave the high exposure area or have completed a decontamination procedure.

Employers must ensure that the respirator issued to the employee is selected and fitted properly to ensure minimum leakage through the face piece to face seal.

### RESPIRATORY PROTECTION PROGRAMS

When respirators are required at a worksite, the employer must establish a respiratory protection program in accordance with the OSHA standard on respiratory protection, 29 CFR 1910.134. At a minimum, an acceptable respirator program for lead must include:

- Procedures for selecting respirators appropriate to the hazard;
- Fit-testing procedures;

- Procedures for proper use of respirators in routine and reasonably foreseeable emergency situations, including cartridge change schedules;
- Procedures and schedules for cleaning, disinfecting, storing, inspecting, repairing, discarding and otherwise maintaining respirators;
- Training of employees in the respiratory hazard to which they are potentially exposed during routine and emergency situations;
- Training of employees in the proper use of respirators, including putting on and removing them, any limitations of their use, and their maintenance;
- Procedures for regularly evaluating the effectiveness of the program;
- Procedures to ensure air quality when supplied air is used;
- A written program and designation of a program administrator; and
- Recordkeeping procedures.

In addition, the construction industry lead standard stipulates medical evaluations of employees required to use respirators. If an employee has difficulty in breathing during a fit-test or while using a respirator, the employer must make a medical examination available to that employee to determine whether he or she can wear a respirator safely.

### SELECTING A RESPIRATOR

The employer must select the appropriate respirator from Table 1 of the lead standard, 29 CFR 1926.62(f)(3)(i). The employer must provide a powered air-purifying respirator when an employee chooses to use this respirator and it will provide the employee adequate protection. A NIOSH-certified respirator must be selected and used in compliance with the conditions of its certification. In addition, if exposure monitoring or experience indicates airborne exposures to contaminants other than lead such as silica, solvents, or polyurethane coatings, these exposures must be considered when selecting respiratory protection.

Select type CE respirators approved by NIOSH for abrasive blasting operations. Currently, there are two kinds of CE respirators with the following assigned protection factors (APFs): a continuous flow respirator with a loose-fitting hood, APF 25; and a full face piece supplied-air respirator operated in a positive-pressure mode, APF 2,000.

*Note:* OSHA recognizes Bullard Helmets, Models 77 and 88 (1995); Clemco Appollo, Models 20 and 60 (1997); and 3M Model 8100 (1998) as having APFs of 1,000.) For any airline respirator, it is important to follow the manufacturer's instructions regarding air quality, air pressure, and inside diameter and length of hoses. Be aware that using longer hoses or smaller inside diameter hoses than the manufacturer specifies or hoses with bends or kinks may reduce or restrict the airflow to a respirator.

## 16 EMPLOYEE INFORMATION AND TRAINING

The employer must inform employees about lead hazards according to the requirement of OSHA's Hazard Communication standard for the construction industry, 29 CFR 1926.59, including — but not limited to — the requirements for warning signs and labels, material safety data sheets (MSDSs), and employee information and training. (Refer to 29 CFR 1910.1200.)

### PROGRAM REQUIREMENTS

Employers must institute an information and training program and ensure that all employees subject to exposure to lead or lead compounds at or above the action level on any day participate. Also covered under information and training are employees who may suffer skin or eye irritation from lead compounds. Initial training must be provided before the initial job assignment. Training must be repeated at least annually and, in brief summary, must include:

- The content of the OSHA lead standard and its appendices;
- The specific nature of operations that could lead to lead exposure above the action level;
- The purpose, proper selection, fit, use and limitations of respirators;
- The purpose and a description of the medical surveillance program, and the medical removal protection program;
- Information concerning the adverse health effects associated with excessive lead exposure;
- The engineering and work practice controls associated with employees' job assignments;
- The contents of any lead-related compliance plan in effect;
- Instructions to employees that chelating agents must not be used routinely to remove lead from their bodies and when necessary only under medical supervision and at the direction of a licensed physician; and
- The right to access records under "Access to Employee Exposure and Medical Records," 29 CFR 1910.1020.

All materials relating to the training program and a copy of the standard and its appendices must be made readily available to all affected employees.

### WARNING SIGNS

Employers are required to post these warning signs in each work area where employee exposure to lead is above the PEL:

- WARNING
- LEAD WORK AREA
- POISON
- NO SMOKING OR EATING

All signs must be well lit and kept clean so that they are easily visible. Statements that contradict or detract from the signs' meaning are prohibited. Signs required by other statutes, regulations, or ordinances, however, may be posted in addition to, or in combination with, this sign.

**17 APPENDIX / ADDITIONAL RESOURCES****OSHA Lead in Construction Advisor**

<http://www.dol.gov/elaws/oshalead.htm>

**OSHA Content Document**

[http://www.osha.gov/OshDoc/toc\\_fact.html](http://www.osha.gov/OshDoc/toc_fact.html)

**Safety and Health Topics: Lead**

<http://www.osha.gov/SLTC/lead/index.html>

**Blood Lead Laboratories**

<http://www.osha.gov/SLTC/bloodlead/>

**Safety and Health Topics: Heat Stress – Hazards and Possible Solutions**

<http://www.osha.gov/SLTC/heatstress/recognition.html>

**Cancer Prevention and Control Consultation**

<http://www.cdc.gov/cancer/>

**Free On-Site Safety and Health Services**

<http://www.osha.gov/dcsp/smallbusiness/consult.html>





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SAFETY & HEALTH MANUAL — RECORD KEEPING STANDARD — SECTION SIX

SEALANT, WATERPROOFING & RESTORATION INSTITUTE

# SAFETY & HEALTH MANUAL

## RECORD KEEPING STANDARD • OSHA 29 CFR 1904



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# 1 INTRODUCTION

This portion of the SWR Institute’s Safety & Health Manual describes the Occupational Safety & Health Administration (OSHA) Record Keeping Standard, and outlines policies and procedures required to maintain compliance with this standard. The complete Record Keeping Manual (RKM) for the new record keeping rule that was published in the Federal Register on Jan. 19, 2001, and can be viewed in its entirety in 29 CFR 1904. The updated standard contains clarifications and additional requirements, as well as new forms. The current regulations include requirements for forms, including the OSHA 300 log, the OSHA 300A summary form and the OSHA 301 report. These forms replace the previously mandated OSHA 200 log and ancillary documents.

The purpose of the OSHA Record Keeping Standard is to create uniformity in workplace accident and illness data. The requirements for determining which injuries and illnesses are recordable and how they are recorded must be identical to those in 29 CFR 1904, so that national statistics are uniform.

The requirements of this standard include the participation in the Bureau of Labor Statistics (BLS) survey of work-related injuries and illnesses or to provide equivalent data under an alternative system approved by OSHA and BLS.

This portion of the SWR Institute safety manual contains only a portion of the actual OSHA regulation. For the complete standard please refer to the most current publication of 29 CFR 1904.

# 2 POLICIES AND PROCEDURES

## OSHA CENTRAL REQUIREMENTS RECORD KEEPING RULES COVERAGE

The rule requires employers to keep records of occupational deaths, injuries and illnesses, and to make certain reports to OSHA and the BLS. Smaller employers (with 10 or fewer workers) and employers who have establishments in certain retail, service, finance, real estate or insurance industries are not required to keep these records. However, they must report any occupational fatalities or catastrophes that occur in their establishments to OSHA, and they must participate in government surveys if they are asked to do so.

## FORMS

Employers who operate establishments that are required by the rule to keep injury and illness records are required to complete three forms: the OSHA 300 Log of Work-Related Injuries and Illnesses, the annual OSHA 300A Summary of Work-Related Injuries and Illnesses and the OSHA 301 Injury and Illness Incident Report. Employers are required to keep separate 300 Logs for each establishment that they operate that is expected to be in operation for one year or longer. The Log must include injuries and illnesses to employees on the employer’s payroll, as well as injuries and illnesses of other employees the employer supervises on a day-to-day basis, such as temporary workers or contractor employees who are subject to daily supervision by the employer. Within seven calendar days of the time the fatality, injury or illness occurred, the employer must enter any case that is work-related and meets one or more of the recording criteria in the rule on the Log and Form 301.

## WORK-RELATIONSHIP

Section 29 CFR 1904.5(a) states that “[the employer] must consider an injury or illness to be work-related if an event or exposure in the work environment either caused or contributed to the resulting condition. Work-relatedness is presumed for injuries and illnesses resulting from events or exposures occurring in the work environment...” Under this language, a case is presumed work-related if, and only if, an event or

Case	Employee's name	Job title	Date of injury	Date the event occurred	Date the injury or illness, parts of body affected, and circumstances that directly led to or aggravated the injury or illness	Category of the case	Lost work days	Job transfer or restriction	Medical treatment beyond first aid	Loss of consciousness	Other loss of consciousness
0001	Chavez, George J.	Quality Assurance Mgr.	02/28/01	02/28/01	Laceration to index finger	Hand					
0002	Spuchville, Mark	Machine Operator	1/3/2001	1/3/2001	Carpenter's Pallet - Carpal tunnel to hand, strain to left hand	Hand					
0003	Spuchville, Mark	Machine Operator	1/3/2001	1/3/2001	Carpenter's Pallet - Carpal tunnel to hand, strain to left hand	Hand					
0004	Stuhlfund, Dan	Operator	1/3/2001	1/3/2001	Gun Slingshot 1	Hand					
0005	Stuhlfund, Dan	Operator	1/3/2001	1/3/2001	Gun Slingshot 1	Hand					
0006	Pillipaul, Dan	Operator	01/17/2000	01/17/2000	Impaling/Poking 1	Hand					
0007	Pillipaul, Dan	Operator	01/17/2000	01/17/2000	Impaling/Poking 1	Hand					
0008	Costa, Francisco	Laboratory Technician	02/02/00	02/02/00	Factory GA	Hand					
0009	Costa, Francisco	Laboratory Technician	01/03/2000	01/03/2000	Factory GA	Hand					
0010	Stuhlfund, Dan	Operator	01/03/2000	01/03/2000	Shooting Squares 1	Hand					
0011	Stuhlfund, Dan	Operator	01/03/2000	01/03/2000	Shooting Squares 1	Hand					

exposure in the work environment is a discernable cause of the injury or illness or of a significant aggravation to a pre-existing condition. The work event or exposure need only be one of the discernable causes; it need not be the sole or predominant cause.

Section 29 CFR 1904.5(b)(2)(ii) states that a case is not recordable if it “involves signs or symptoms that surface at work but result solely from a non-work-related event or exposure that occurs outside of the work environment.” This language is intended as a restatement of the principle expressed in section 29 CFR 1904.5(a), described above. Regardless of where signs or symptoms surface, a case is recordable only if a work event or exposure is a discernable cause of the injury or illness or of a significant aggravation to a pre-existing condition.

Section 29 CFR 1904.5(b)(3) states that if it is not obvious whether the precipitating event or exposure occurred in the work environment or elsewhere, the employer “must evaluate the employee’s work duties and environment to decide whether or not one or more events or exposures in the work environment caused or contributed to the resulting condition or significantly aggravated a pre-existing condition.” This means that the employer must make a determination whether it is more likely than not that work events or exposures were a cause of the injury or illness, or of a significant aggravation to a pre-existing condition. If the

## 2 POLICIES AND PROCEDURES CONTINUED

employer decides the case is not work-related, and OSHA subsequently issues a citation for failure to record, the government would have the burden of proving that the injury or illness was work-related.

### NEW CASE

Only new cases are recordable. Work-related injuries and illnesses are considered to be new cases when the employee has never reported similar signs or symptoms before, or when the employee has recovered completely from a previous injury or illness and workplace events or exposures have caused the signs or symptoms to reappear.

### GENERAL RECORDING CRITERIA

Employers must record new work-related injuries and illnesses that meet one or more of the general recording criteria or meet the recording criteria for specific types of conditions. Recordable work-related injuries and illnesses are those that result in one or more of the following:

- Death, days away from work, restricted work, transfer to another job, medical treatment beyond first aid, loss of consciousness or diagnosis of a significant injury or illness.
- Employers must classify each case on the 300 Log in accordance with the most serious outcome associated with the case. The outcomes listed on the form are: death, days away, restricted work/transfer, and “other recordable.” For cases resulting in days away or in a work restriction or transfer of the employee, the employer must count the number of calendar days involved and enter that total on the form. The employer may stop counting when the total number of days away, restricted or transferred reaches 180.

### RESTRICTED WORK

An employee’s work is considered restricted when, as a result of a work-related injury or illness:

- The employer keeps the employee from performing one or more of the routine functions of his or her job (job functions that the employee regularly performs at least once per week), or from working the full workday that he or she would otherwise have been scheduled to work, or
- A physician or other licensed health care professional recommends that the employee not perform one or more of the routine functions of his or her job, or not work the full workday that he or she would otherwise have been scheduled to work. The new rule continues the policy established under the old rule that a case is not recordable under section 29 CFR 1904.7(b)(4) as a restricted work case if the employee experiences minor musculoskeletal discomfort, a health care professional determines that the employee is fully able to perform all of his or her routine job functions, and the employer assigns a work restriction to that employee for the purpose of preventing a more serious condition from developing.

### MEDICAL TREATMENT

Medical treatment means any treatment not contained in the list of first aid treatments. Medical treatment does not include visits to a health care professional for observation and counseling or diagnostic procedures. First aid means only those treatments specifically listed in 29 CFR 1904.7. Examples of first aid include: the use of non-prescription medications at non-prescription strength, the application of hot or cold therapy, eye patches or finger guards, and others.

### DIAGNOSIS OF A SIGNIFICANT INJURY OR ILLNESS

A work-related cancer, chronic irreversible disease such as silicosis or byssinosis, punctured eardrum, or fractured or cracked bone is a significant injury or illness that must be recorded when diagnosed by a physician or a licensed health care professional.

### RECORDING INJURIES AND ILLNESSES TO SOFT TISSUES

Work-related injuries and illnesses involving muscles, nerves, tendons, ligaments, joints, cartilage and spinal discs are recordable under the same requirements applicable to any other type of injury or illness. There are no special rules for recording these cases: If the case is work-related and involves medical treatment, days away, job transfer or restricted work, it is recordable.

### EMPLOYEE PRIVACY

The employer must protect the privacy of injured or ill employees when recording cases. In certain types of cases, such as those involving mental illness or sexual assault, the employer may not enter the injured or ill employee’s name on the Log. Instead, the employer simply enters “privacy case,” and keeps a separate, confidential list containing the identifying information. If the employer provides the OSHA records to anyone who is not entitled to access to the records under the rule, the names of all injured and ill employees generally must be removed before the records are turned over.

### CERTIFICATION, SUMMARIZATION AND POSTING

After the end of the year, employers must review the Log to verify its accuracy, summarize the 300 Log information on the 300A summary form, and certify the summary (a company executive must sign the certification). This information must then be posted for three months, from Feb. 1 to April 30. The employer must keep the records for five years following the calendar year covered by them, and if the employer sells the business, he or she must transfer the records to the new owner.



## 2 POLICIES AND PROCEDURES CONTINUED

### EMPLOYEE INVOLVEMENT

Each employer must set up a way for employees to report work-related injuries and illnesses, and each employee must be informed about how he or she is to report an injury or illness. Employees, former employees, and employee representatives also have a right to access the records, and an employer must provide copies of certain records upon request.

### REPORTING

The employer must orally report within eight hours work-related fatalities and incidents involving the hospitalization of three or more employees to the nearest OSHA office, or the OSHA Hotline at 1-800-321-OSHA. There is an exception for certain motor vehicle or public transportation accidents. An employer also must participate in an OSHA or BLS injury and illness survey if he or she receives a survey form from OSHA or the BLS.

## 3 SUMMARY

Proper recording and reporting of workplace injuries and illnesses is a requirement enforced by federal regulations. Improper record keeping and/or reporting can result in citations, penalties and fines.



## 4 EXCLUSIONS / QUALIFICATIONS

### EMPLOYERS EXEMPT AND PARTIALLY EXEMPT FEDERAL AGENCIES

Except for the United States Postal Service, federal agencies do not have to maintain OSHA injury and illness records under 29 CFR 1904. Federal Agencies have separate record keeping requirements under 29 CFR 1960.

### OSHA AND BLS SURVEYS

All employers who receive the OSHA annual survey form, or the BLS Survey of Occupational Injuries and Illnesses Form, are required to complete and return the survey forms in accordance with 29 CFR 1904.41 and 29 CFR 1904.42. This requirement also applies to those establishments under the small establishment exemption and the low hazard industry exemption.

### SMALL EMPLOYER EXEMPTION

Since 1977 the regulations have exempted employers with 10 or fewer employees at all times during the last calendar year from the regular record keeping requirements. The new rule at 29 CFR 1904.1 continues this small employer exemption.

### LOW-HAZARD INDUSTRY EXEMPTION

Since 1982, OSHA has exempted some low-hazard industries from maintaining injury and illness records on a regular basis. The new rule updates the old rule's listing of partially exempted low-hazard industries, which are those Standard Industrial Classification (SIC) code industries within SICs 52-89 that have an average Days Away, Restricted, or Transferred (DART) rate at or below 75 percent of the national average DART rate. The new rule at 29 CFR 1904.2 continues this low-hazard industry exemption.



## 5 GLOSSARY

**Days Away, Restricted, or Transferred (DART) Rate:** This includes cases involving days away from work, restricted work activity, and transfers to another job and is calculated based on  $(N/EH) \times (200,000)$  where N is the number of cases involving days away and/or job transfer or restriction, EH is the total number of hours worked by all employees during the calendar year, and 200,000 is the base for 100 full-time equivalent employees. For example:

**Employees of an establishment (XYZ Company), including temporary and leased workers, worked 645,089 hours at XYZ company. There were 22 injury and illness cases involving days away and/or restricted work activity and/or job transfer from the OSHA 300 Log (total of column H plus column I). The DART rate would be  $(22/645,089) \times (200,000) = 6.8$ .**

*Note:* The DART rate will replace the Lost Workday Injury and Illness (LWDII) rate. See the form at the end of this chapter.

**Establishment:** An establishment is a single physical location where business is conducted or where services or industrial operations are performed. For activities where employees do not work at a single physical location, such as construction; transportation; communications, electric, gas and sanitary services; and similar operations, the establishment is represented by main or branch offices, terminals, stations, etc., that either supervise such activities or are the base from which personnel carry out these activities.

- Normally, one business location has only one establishment. Under limited conditions, the employer may consider two or more separate businesses that share a single location to be separate establishments. An employer may divide one location into two or more establishments when:
  - ❶ Each of the establishments represents a distinctly separate business;
  - ❷ Each business is engaged in a different economic activity;
  - ❸ No one industry description in the Standard Industrial Classification Manual (1987) applies to the joint activities of the establishments; and
  - ❹ Separate reports are routinely prepared for each establishment on the number of employees, their wages and salaries, sales or receipts, and other business information.

### EXAMPLE:

If an employer operates a construction company at the same location as a lumberyard, the employer may consider each business to be a separate establishment.

- An establishment can include more than one physical location, but only under certain conditions. An employer may combine two or more physical locations into a single establishment only when:
  - ❶ The employer operates the locations as a single business operation under common management;
  - ❷ The locations are all located in close proximity to each other; and
  - ❸ The employer keeps one set of business records for the locations, such as records on the number of employees, their wages and salaries, sales or receipts, and other kinds of business information.

### EXAMPLE:

One manufacturing establishment might include the main plant, a warehouse a few blocks away, and an administrative services building across the street.

For employees who telecommute from home, the employee's home is not a business establishment and a separate 300 Log is not required. Employees who telecommute shall be linked to one of the employer's establishments under 29 CFR 1904.30(b)(3).

- Construction work sites that are:
  - ❶ Scheduled to continue for a year or more:
    - (a) A separate OSHA 300 Log must be maintained for each establishment.
    - (b) The log may be maintained either
      - At the construction site, or
      - At an established central location provided the employer can:
        - Transmit information about the injuries and illnesses from the establishment to the central location within seven (7) calendar days of receiving information that a recordable injury or illness has occurred, and
        - Produce and send records from the central location to the establishment within four business hours when the employer is required to provide to a government representative or by the end of the next business day when providing records to an employee, former employee or employee representative.

## 5 GLOSSARY CONTINUED

- ② Scheduled to continue for less than a year:
- A Separate OSHA 300 Log need not be maintained for each establishment.
  - One OSHA 300 Log may be maintained to cover:
    - All such short-term establishments or
    - All such short-term establishments within company divisions or geographic regions.
  - The Log may be maintained at the establishment or at a central location under the given in 3.a. (2), above.

**First Aid:** As stated in 29 CFR 1904.7(b)(5)(ii), first aid means only the following treatments (any treatment not included in this list is not considered first aid for record keeping purposes): (a) Using a nonprescription medication at nonprescription strength; (b) Administering tetanus immunizations; (c) Cleaning, flushing or soaking wounds on the surface of the skin; (d) Using wound coverings such as bandages, Band-Aids, gauze pads, etc.; or using butterfly bandages or Steri-Strips; (e) Using hot or cold therapy; (f) Using any non-rigid means of support, such as elastic bandages, wraps, non-rigid back belts, etc.; (g) Using temporary immobilization devices while transporting an accident victim; (h) Drilling of a fingernail or toenail to relieve pressure, or draining fluid from a blister; (i) Using eye patches; (j) Removing foreign bodies from the eye using only irrigation or a cotton swab; (k) Removing splinters or foreign material from areas other than the eye by irrigation, tweezers, cotton swabs or other simple means; (l) Using finger guards; (m) Using massages; or (n) Drinking fluids for relief of heat stress.

**Injuries and Illnesses:** An injury or illness is an abnormal condition or disorder. Injuries include cases such as, but not limited to, a cut, fracture, sprain, or amputation. Illnesses include both acute and chronic illnesses, such as, but not limited to, a skin disease, respiratory disorder, or poisoning. (Injuries and illnesses are recordable only if they are new, work-related cases that meet one or more of the Part 1904 recording criteria.)

**Note:** Injuries and illnesses are recordable only if they are new, work-related cases that meet one or more of the Part 1904 recording criteria.)

**Medical Treatment:** Medical treatment means the management and care of a patient to combat disease or disorder. For record keeping purposes, it does not include (a) visits to a physician or other licensed health care professional solely for observation or counseling; (b) diagnostic procedures such as x-rays and blood tests, including the administration of prescription medications used solely for diagnostic purposes (e.g., eye drops to dilate pupils); or (c) any treatment contained on the list of first-aid treatments.

**Other Potentially Infectious Material (OPIM):** For purposes of 29 CFR 1904, this term has the same meaning as in OSHA's blood borne pathogens standard at 29 CFR 1910.1030, which defines OPIM as: (1) The following human body fluids: semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid, pericardial fluid, peritoneal fluid, amniotic fluid, saliva in dental procedures, any body fluid that is visibly contaminated with blood, and all body

fluids in situations where it is difficult or impossible to differentiate between body fluids; (2) Any unfixed tissue or organ (other than intact skin) from a human (living or dead); and (3) HIV-containing cell or tissue cultures, organ cultures, and HIV- or HBV-containing culture medium or other solutions; and blood, organ, or other tissues from experimental animals infected with HIV or HBV.

**Physician or Other Licensed Health Care Professional:** A physician or other licensed health care professional is an individual whose legally permitted scope of practice (i.e., license registration, or certification) allows him or her to independently perform, or be delegated the responsibility to perform, the activities described by this regulation.

**Establishment:** An establishment is a single physical location where business is conducted or where services or industrial operations are performed. For activities where employees do not work at a single physical location, such as construction; transportation; communications, electric, gas and sanitary services; and similar operations, the establishment is represented by main or branch offices, terminals, stations, etc. that either supervise such activities or are the base from which personnel carry out these activities.

**Days Away, Restricted, or Transferred (DART) Rate:** This includes cases involving days away from work, restricted work activity, and transfers to another job and is calculated based on  $(N/EH) \times (200,000)$  where N is the number of cases involving days away and/or job transfer or restriction, EH is the total number of hours worked by all employees during the calendar year, and 200,000 is the base for 100 full-time equivalent employees. For example:

**Employees of an establishment (XYZ Company), including temporary and leased workers, worked 645,089 hours at XYZ Company. There were 22 injury and illness cases involving days away and/or restricted work activity and/or job transfer from the OSHA 300 Log (total of column H plus column I). The DART rate would be  $(22/645,089) \times (200,000) = 6.8$ .**

## 6 APPENDIX / ADDITIONAL RESOURCES

### RECORD KEEPING

[HTTP://WWW.OSHA.GOV/RECORDKEEPING/INDEX.HTML](http://www.osha.gov/recordkeeping/index.html)

OSHA Form 300 - Log of Work Related Injuries and Illnesses  
[www.osha.gov/recordkeeping/new-osha300form1-1-04.pdf](http://www.osha.gov/recordkeeping/new-osha300form1-1-04.pdf)

OSHA Form 300A – Summary of Work Related Injuries and Illnesses  
[www.osha.gov/recordkeeping/new-osha300form1-1-04.pdf](http://www.osha.gov/recordkeeping/new-osha300form1-1-04.pdf)

OSHA Form 301 - Injury and Illness Incident Report  
[www.osha.gov/recordkeeping/new-osha300form1-1-04.pdf](http://www.osha.gov/recordkeeping/new-osha300form1-1-04.pdf)

Consultation: Free On-Site Safety and Health Services  
<http://www.osha.gov/dcsp/smallbusiness/consult.html>

OSHA Respiratory Protection - Directive on Inspection Procedures  
[http://www.ehso.com/RespProtection\\_Insp.htm](http://www.ehso.com/RespProtection_Insp.htm)

For direct link to OSHA forms go to:

<http://www.osha.gov/recordkeeping/RKforms.html>



SEALANT, WATERPROOFING & RESTORATION INSTITUTE

# SAFETY & HEALTH MANUAL

## PERSONAL PROTECTIVE EQUIPMENT • OSHA 29 CFR 1910



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## 1 INTRODUCTION

This section of the SWR Institute Safety & Health Manual describes the OSHA Personal Protective Equipment Standard. Included in this section are elements of hazard assessment, training on usage of equipment and selection of proper equipment. This section contains only a portion of the OSHA standard 29 CFR 1910. For a complete standard, please refer to the most current publication of 29 CFR 1910.

Personal protective equipment should not be used as a substitute for engineering, work practice and/or administrative controls. Personal protective equipment should be used in conjunction with these controls to provide for employee safety and health in the work place. Personal protective equipment includes all clothing and other work accessories designed to create a barrier against workplace hazards. The basic element of any management program for personal protective equipment should be an in-depth evaluation of the equipment needed to protect against the hazards at the work place.

Using personal protective equipment requires hazard awareness and training on the part of the user. Employees must be aware that the equipment does not eliminate the hazard. If the equipment fails, exposure will occur. To



reduce the possibility of failure, equipment must be properly fitted and maintained in a clean and serviceable condition.

Selection of the proper personal protective equipment for a job is important. Employers and employees must understand the equipment's purpose and its limitations. The equipment must not be altered or removed even though an employee may find it uncomfortable. (Sometimes equipment may be uncomfortable simply because it does not fit properly.)

## 2 HAZARD ASSESSMENT

Employers are required to assess the workplace to determine if hazards that require the use of personal protective equipment are present or are likely to be present. If hazards or the likelihood of hazards are found, employers must select and have affected employees use properly fitted personal protective equipment suitable for protection from these hazards.

Employers must certify in writing that a work place hazard assessment has been performed. Defective or damaged personal protective equipment shall not be used.



## 3 TRAINING

Before doing work that requires use of personal protective equipment, employees must be trained to know when personal protective equipment is necessary, what type is necessary, how it is to be worn, and what its limitations are, as well as know its proper care, maintenance, useful life, and disposal.

Employers must certify in writing that training has been carried out and that employees understand it. Each written certification shall contain the name of each employee trained, the date(s) of training, and identify the subject certified.

### HEAD PROTECTION

Head injuries are caused by falling or flying objects, or by bumping the head against a fixed object. Head protection, in the form of protective hats, must do two things — resist penetration and absorb the shock of the blow. This is accomplished by making the shell of the hat of a material hard enough to resist the blow, and by utilizing a shock-absorbing lining composed of headband and crown straps to keep the shell away from the wearer's skull. Protective hats are also used to protect against electric shock.

## 3 TRAINING CONTINUED

### SELECTION

Each type and class of head protector is intended to provide protection against specific hazardous conditions. An understanding of these conditions will help in selecting the right hat for the particular situation.

Protective hats are made in the following types and classes:

Type 1 - helmets with full brim, not less than 1 and 1/4 inches wide

Type 2 - brimless helmets with a peak extending forward from the crown

For industrial purposes, three classes of helmets are recognized:

Class A - general service, limited voltage protection

Class B - utility service, high-voltage helmets

Class C - special service, no voltage protection

Hats and caps under Class A are intended for protection against impact hazards. They are used in mining, construction, shipbuilding, tunneling, lumbering and manufacturing.

Class B are utility service hats and caps protect the wearer's head from impact and penetration by falling or flying objects and from high-voltage shock and burns. Electrical workers use them extensively.

The safety hat or cap in Class C is designed specifically for lightweight comfort and impact protection. This class is usually manufactured from aluminum and offers no dielectric protection. Class C helmets are used in certain construction and manufacturing occupations, oil fields, refineries and chemical plants where there is no danger from electrical hazards or corrosion. They also are used on occasions where there is a possibility of bumping the head against a fixed object.

Materials used in helmets should be water-resistant and slow burning. Each helmet consists essentially of a shell and suspension. Ventilation is provided by a space between the headband and the shell. Each helmet should be accompanied by the instructions explaining the proper method of adjusting and replacing the suspension and headband.

The wearer should be able to identify the type of helmet by looking inside the shell for the manufacturer, ANSI designation and class.

Helmets are date stamped by the manufacturer and should be replaced no later than the date recommended by the manufacturer, e.g., five years. For example: Manufacturer's Name, ANSI Z89.1-1969 (or later year), Class A.

### FIT

Headbands are adjustable in 1/8-size increments. When the headband is adjusted to the right size, it provides sufficient clearance between the shell and the headband. The removable or replaceable-type sweatband should cover at least the forehead portion of the headband. The shell should be of one-piece seamless construction and designed to resist the impact of a blow from falling material. The internal cradle of the headband and sweatband forms the suspension. Any part of that comes into contact with the wearer's head must not be irritating to normal skin.

### INSPECTION AND MAINTENANCE

Manufacturers should be consulted with regard to paint or cleaning materials for their helmets because some paints and thinners may damage the shell and reduce protection by physically weakening it or negating electrical resistance.

All components, shells, suspensions, headbands, sweatbands, and any accessories should be visually inspected daily for signs of dents, cracks, penetration, or any other damage that might reduce the degree of safety originally provided.

Users are cautioned that if unusual conditions occur (such as higher or lower extreme temperatures than described in the standards), or if there are signs of abuse or mutilation of the helmet or any component, the margin of safety may be reduced. If damage is suspected, helmets should be replaced or representative samples tested in accordance with procedures contained in ANSI Z89, 1-1986.

Helmets should not be stored or carried on the rear-window shelf of an automobile, since sunlight and extreme heat may adversely affect the degree of protection.

OSHA requires eye and face protective equipment where there is a reasonable probability of preventing injury when such equipment is used. Employers must provide a type of protector suitable for work to be performed and employees must use the protectors. These stipulations also apply to supervisors and management personnel, and should apply to visitors while they are in hazardous areas.

### EYE AND FACE PROTECTION

Suitable eye protectors must be provided where there is a potential for injury to the eyes or face from flying particles, molten metal, liquid chemicals, acids or caustic liquids, chemical gases or vapors, potentially injurious light radiation or a combination of these. Protectors must meet the following minimum requirements:

- Provide adequate protection against the particular hazards for which they are designed;
- Be reasonably comfortable when worn under the designated conditions;
- Fit snugly without interfering with the movements or vision of the wearer;
- Be durable;
- Be capable of being disinfected;
- Be easily cleanable; and
- Be kept clean and in good repair.

Every protector shall be distinctly marked to facilitate identification of the manufacturer.

Each affected employee shall use equipment with filter lenses that have a shade number appropriate for the work being performed for protection from injurious light radiation. The following table lists the appropriate shade numbers for various work operations.

### 3 TRAINING CONTINUED

Operation	Electrode Size (1/32 inch diameter standard)	Arc Current (Amps)	Minimum* Protective Shade
Shielded metal arc welding	< 3/32	<60	7
	3/32-5/32	60-160	8
	5/32-8/32	160-250	10
	>8/32	250-500	11
Gas metal arc welding and flux cored arc welding		<60	7
		60-160	10
		160-250	10
		250-500	10
Gas Tungsten arc welding		<50	8
		50-150	8
		150-500	10
Air carbon arc cutting	(Light) (Heavy)	<500	10
		500-1000	10
Plasma arc welding		<20	6
		20-100	8
		100-400	10
		400-800	11
Plasma arc cutting	(Light)** (Medium)** (Heavy)**	<300	8
		300-400	9
		400-800	10
Torch brazing		—	3
Torch soldering		—	2
Carbon arc welding		—	14

\* As a rule of thumb, start with a shade that is too dark to see the weld zone (the darkest lens carries a value of 10). Then go to a lighter shade, which gives sufficient view of the weld zone without going below the minimum. In oxyfuel gas welding or cutting where the torch produces a high yellow light, it is desirable to use a filter lens that absorbs the yellow or sodium line in the visible light of the (spectrum) operation.

\*\* These values apply where the actual arc is clearly seen. Experience has shown that lighter filters may be used when the arc is hidden by the workpiece.

Operation	Plate Thickness		Minimum Protective Shade
	inches	millimeters	
Gas Welding:	<1/8	<3.2	4
	1/8-1/2	3.2-12.5	5
	>1/2	>12.7	6
Oxygen cutting:	<1	<25	3
	1-62	5-150	4
	>6	>150	5

OSHA and the National Society to Prevent Blindness recommend that emergency eyewashes be placed in all hazardous locations. First-aid instructions should be posted close to potential danger spots since any delay to immediate aid or an early mistake in dealing with an injury can result in lasting damage.

#### SELECTION

Each eye, face or face-and-eye protector is designed for a particular hazard. In selecting the protector, consideration should be given to the kind and degree of hazard, and the protector should be selected on that basis. Where a choice of protectors is given, and the degree of protection required is not an important issue, worker comfort may be a deciding factor.

Persons using corrective spectacles and those who are required by OSHA to wear eye protection must wear face shields, goggles or spectacles of one of the following types:

- Spectacles with protective lenses providing optical correction with side shields
- Goggles worn over corrective spectacles without disturbing the adjustment of the spectacles
- Goggles that incorporate corrective lenses mounted behind the protective lenses

When the manufacturer indicates limitations or precautions, they should be transmitted to the user and strictly observed.

#### FIT

Someone skilled in the procedure should do fitting of goggles and safety spectacles. Only qualified optical personnel should fit prescription safety spectacles.

#### INSPECTION AND MAINTENANCE

It is essential that the lenses of eye protectors be kept clean. Continuous vision through dirty lenses can cause eyestrain — often an excuse for not wearing the eye protectors. Daily inspection and cleaning of the eye protector with soap and hot water or with a cleaning solution and tissue, is recommended.

Pitted lenses, like dirty lenses, can be a source of reduced vision. They should be replaced. Deeply scratched or excessively pitted lenses are apt to break more readily.

Slack, worn-out, sweat-soaked or twisted headbands do not hold the eye protector in proper position. Visual inspection can determine when the headband elasticity is reduced to a point beyond proper function.

Goggles should be kept in a case when not in use. Spectacles, in particular, should be given the same care as one's own glasses, since the frame, nose pads and temples can be damaged by rough usage.

Personal protective equipment that has been previously used should be disinfected before being issued to another employee.

Also, when each employee is assigned protective equipment for extended periods, it is recommended that such equipment be cleaned and disinfected regularly.

## 3 TRAINING CONTINUED

### EAR PROTECTION

Exposure to high noise levels can cause hearing loss or impairment. It can create physical and psychological stress. There is no cure for noise-induced hearing loss, so the prevention of excessive noise exposure is the only way to avoid hearing damage. Specifically designed protection is required, depending on the type of noise encountered and the auditory condition of the employee.

A professional should individually fit preformed or molded earplugs. Waxed cotton, foam, or fiberglass wool earplugs are self-forming. When properly inserted, they work as well as most molded earplugs.

Some earplugs are disposable, to be used one time and then thrown away. The non-disposable type should be cleaned after each use for proper protection. Plain cotton is ineffective as protection against hazardous noise.

Earmuffs need to make a perfect seal around the ear to be effective. Glasses, long sideburns, long hair and facial movements, such as chewing, can reduce protection. Special equipment is available for use with glasses or beards.

### RESPIRATORY PROTECTION

Respirators shall be used in the following circumstances:

- Where exposure levels exceed the permissible exposure limit (PEL), during the time period necessary to install or implement feasible engineering and work practice controls;
- In those maintenance and repair activities and during those brief or intermittent operations where exposures exceed the PEL and engineering and work practice controls are not feasible or are not required;
- In regulated areas;
- Where the employer has implemented all feasible engineering and work practice controls and such controls are not sufficient to reduce exposures to or below the PEL; and
- In emergencies.

### TORSO PROTECTION

Many hazards can threaten the torso: heat, splashes from hot metals and liquids, impacts, cuts, acids and radiation. A variety of protective clothing is available: vests, jackets, aprons, coveralls, and full body suits.

Wool and specially treated cotton are two natural fibers that are fire-resistant and comfortable since they adapt well to changing workplace temperatures.

Duck, a closely woven cotton fabric, is good for light-duty protective clothing. It can protect against cuts and bruises on jobs where employees handle heavy, sharp, or rough material.

Heat-resistant material, such as leather, is often used in protective clothing to guard against dry heat and flame. Rubber and rubberized fabrics, neoprene, and plastics give protection against some acids and chemicals.

It is important to refer to the manufacturers' selection guides for the effectiveness of specific materials against specific chemicals.

Disposable suits of plastic like or other similar synthetic materials are particularly important for protection from dusty materials or materials that can splash. If the substance is extremely toxic, a completely enclosed chemical suit may be necessary. The clothing should be inspected to ensure proper fit and function for continued protection.

### ARM AND HAND PROTECTION

Examples of injuries to arms and hands are burns, cuts, electrical shock, amputation and absorption of chemicals.

There is a wide assortment of gloves, hand pads, sleeves and wristlets for protection against various hazardous situations.

Employers need to determine what hand protection their employees need. The work activities of the employees should be studied to determine the degree of dexterity required, the duration, frequency, and degree of exposure to hazards and the physical stresses that will be applied.

Also, it is important to know the performance characteristics of gloves relative to the specific hazard anticipated; e.g., exposure to chemicals, heat or flames. The performance characteristics of gloves should be assessed by using standard test procedures.

Before purchasing gloves, the employer should request documentation from the manufacturer that the gloves meet the appropriate test standard(s) for the hazard(s) anticipated. For example, for protection against chemical hazards, the toxic properties of the chemical(s) must be determined — particularly, the ability of the chemical(s) to pass through the skin and cause systemic effects.

The protective device should be selected to fit the job. For example, some gloves are designed to protect against specific chemical hazards. Employees may need to use gloves — such as wire mesh, leather, and canvas — that have been tested and provide insulation from burns and cuts. The employee should become acquainted with the limitations of the clothing used.

### FOOT AND LEG PROTECTION

For protection of feet and legs from falling or rolling objects, sharp objects, molten metal, hot surfaces, and wet slippery surfaces, workers should use appropriate foot guards, safety shoes or boots and leggings. Leggings protect the lower leg and feet from molten metal or welding sparks. Safety snaps permit their rapid removal.

Aluminum alloy, fiberglass, or galvanized steel foot guards can be worn over usual work shoes, although they may present the possibility of catching on something and causing workers to trip. Heat-resistant soled shoes protect against hot surfaces like those found in the roofing, paving and hot metal industries.

Safety shoes should be sturdy and have an impact-resistant toe. In some shoes, metal insoles protect against puncture



### 3 TRAINING CONTINUED

wounds. Additional protection, such as metatarsal guards, may be found in some types of footwear. Safety shoes come in a variety of styles and materials, such as leather and rubber boots and oxfords.

Safety footwear is classified according to its ability to meet minimum requirements for both compression and impact tests. These requirements and testing procedures may be found in American National Standards Institute standards.

#### PROTECTIVE VESTS

A Coast Guard-approved life jacket or buoyant work vest should be used if there is danger of falling into water while working. For emergency rescue operations, boats and ring buoys with at least 90 feet (27 meters) of line must be provided.

Night workers and flagmen who might be struck by moving vehicles need suits or vests designed to reflect light.

OSHA'S 29 CFR 1910.132 establishes the employer's general obligation to provide personal protective equipment to employees as follows:

"Protective equipment, including personal protective equipment for eyes, face, head and extremities, protective clothing, respiratory devices and protective shields and barriers, shall be provided, used, and maintained in a sanitary and reliable condition wherever it is necessary by reason of hazards of processes or environment, chemical hazards, radiological hazards or mechanical irritants encountered in a manner capable of causing injury or impairment in the function of any part of the body through absorption, inhalation, or physical contact."

Sections 29 CFR 1910.133 and 29 CFR 1910.138 contain additional requirements for specific types of personal protective equipment. To accommodate work situations in which it is customary, as an exception, for workers in a particular trade to provide their own personal protective equipment. OSHA acknowledges that employees may provide their own equipment, but does not specify that practice as the norm. Instead, the agency underscores the employer's obligation to ensure that such equipment is adequate and that it is properly maintained.

### 4 CONCLUSION



To have an effective safety program, one manager must be responsible for its coordination. First-line supervisors must be convinced of the hazard and must be held accountable for their employees' use of personal protective equipment. A safety program for new employees is a necessary part of any orientation program. An ongoing safety program should be used to motivate employees to continue to use protective gear.

Teaming the correct personal protective equipment with a good training program can give the worker a large measure of safety where other controls are inadequate or impossible.

Personal protective equipment can be effective only if the equipment is selected based on its intended use, employees are trained in its use, and the equipment is properly tested and maintained and worn.

In the final analysis, the best protection comes from an interested management and work force committed to sound work practices.

The guidelines identify four general elements that are critical to the development of a successful safety and health management program:

- Management commitment and employee involvement;
- Worksite analysis;
- Hazard prevention and control; and
- Safety and health training.

## 6 PERSONAL PROTECTIVE EQUIPMENT CHECKLIST

- |  |  |
|--|--|
| <input type="radio"/> Are employers assessing the workplace to determine if hazards that require the use of personal protective equipment (for example, head, eye, face, hand, or foot protection) are present or are likely to be present?  | <input type="radio"/> Are hard hats inspected periodically for damage to the shell and suspension system?  |
| <input type="radio"/> If hazards or the likelihood of hazards are found, are employers selecting and having affected employees use properly fitted personal protective equipment suitable for protection from these hazards?   | <input type="radio"/> Is appropriate foot protection required where there is the risk of foot injuries from hot, corrosive, or poisonous substances, falling objects, and crushing or penetrating actions?   |
| <input type="radio"/> Has the employee been trained on ppe procedures — what ppe is necessary for a job task, when they need it, and how to properly adjust it?  | <input type="radio"/> Are approved respirators provided for regular or emergency use where needed?   |
| <input type="radio"/> Are protective goggles or face shields provided and worn where there is any danger of flying particles or corrosive materials?   | <input type="radio"/> Is all protective equipment maintained in a sanitary condition and ready for use?  |
| <input type="radio"/> 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?   | <input type="radio"/> 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?            |
| <input type="radio"/> 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?  | <input type="radio"/> 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?   |
| <input type="radio"/> 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.” | <input type="radio"/> Is protection against the effects of occupational noise exposure provided when sound levels exceed those of the OSHA noise standard?   |
| <input type="radio"/> Are hard hats provided and worn where danger of falling objects exists?  | <input type="radio"/> Are adequate work procedures, protective clothing and equipment provided and used when cleaning up spilled toxic or otherwise hazardous materials or liquids?  |
|  | <input type="radio"/> 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? |

## 7 APPENDIX / ADDITIONAL RESOURCES

**OSHA Publication 3166 - Protecting Yourself Against Harmful Sunlight - PDF**

<http://www.osha.gov/Publications/osha3166.pdf>

**OSHA Publication 3154 - Heat Stress Card [English] - PDF**

<http://www.osha.gov/Publications/osha3154.pdf>

**OSHA Publication 3155 - Heat Stress Card [Spanish] - PDF**

<http://www.osha.gov/Publications/osha3155.pdf>

**Working Outdoors**

[www.osha.gov/OshDoc/data\\_General\\_Facts/working-outdoors-factsheet.pdf](http://www.osha.gov/OshDoc/data_General_Facts/working-outdoors-factsheet.pdf)

**Consultation: Free On-Site Safety and Health Services**

<http://www.osha.gov/dcsp/smallbusiness/consult.html>

**General Requirements – OSHA 29 CFR 1910.132**

General Requirements – 29 CFR 1910.132

**Eye and Face Protection – OSHA 29 CFR 1910.133**

[http://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_table=STANDARDS&p\\_id=9778](http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9778)

**Respiratory Protection – OSHA 29 CFR 1910.134**

[http://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_table=STANDARDS&p\\_id=12716](http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=12716)

**Head Protection – OSHA 29 CFR 1910.135**

[http://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_table=STANDARDS&p\\_id=9785](http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9785)

**Occupational Foot Protection – OSHA 29 CFR 1910.136**

[http://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_table=STANDARDS&p\\_id=9786](http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9786)

**Electrical Protective Devices – OSHA 29 CFR 1910.137**

[http://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_table=STANDARDS&p\\_id=9787](http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9787)

**Hand Protection – OSHA 29 CFR 1910.138**

[http://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_table=STANDARDS&p\\_id=9788](http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9788)



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# SAFETY & HEALTH MANUAL

## RESPIRATORY PROTECTION CONTROL PROGRAM

### OSHA 29 CFR 1910.134



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3	Responsibilities	7	Record Keeping	10	Appendix/ Additional Resources
4	OSHA's Requirements for a Respiratory Protection Program				



## 1 INTRODUCTION

This portion of the SWR Institute Safety & Health Manual describes the Respiratory Protection Program and outlines policies and procedures required to maintain compliance with this program.

This sample program is provided only as a guide to assist in complying with OSHA 29 CFR 1910.134, Occupational Safety & Health Administration's (OSHA) Respiratory Protection standard. It is not intended to supersede the requirements detailed in the standard. Employers should review the standard for particular requirements that are applicable to their companies and specific situation.



## 2 POLICY

It is the policy of this company to provide its employees with a safe and healthful work environment. The guidelines in this program are designed to help reduce employee exposure to occupational air contaminants and oxygen deficiency. The primary objective is to prevent excessive exposure to these contaminants. This is accomplished as far as feasible by

accepted engineering and work practice control measures. When effective engineering controls are not feasible or while they are being implemented or evaluated, respiratory protection may be required to achieve this goal. In these situations, respiratory protection is provided at no cost to employees.

## 3 RESPONSIBILITIES

### MANAGEMENT

It is management's responsibility to determine what specific applications require the use of respiratory protective equipment. Management must also provide proper respiratory protective equipment to meet the needs of each specific application. Employees must be provided with adequate training and instructions on all equipment prior to use.

### MANAGEMENT / SUPERVISORY

Superintendents of each area are responsible for ensuring that all personnel under their control are completely knowledgeable of the respiratory protection requirements for the areas in which they work. They are also responsible for

ensuring that their subordinates comply with all facets of this respiratory protection program, including respirator inspection and maintenance. They are responsible for implementing disciplinary procedures for employees who do not comply with respirator requirements.

### EMPLOYEES

It is the responsibility of the employee to have an awareness of the respiratory protection requirements for their work areas (as explained by management). Employees are also responsible for wearing the appropriate respiratory protective equipment according to proper instructions and for maintaining the equipment in a clean, operable condition.

## 4 OSHA'S REQUIREMENTS FOR A RESPIRATORY PROTECTION PROGRAM

In any work place 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 work place conditions that affect respirator use.

The employer shall include in the program the following provisions of OSHA 29 CFR 1910.134:

- Procedures for selecting respirators for use in the work place;
- Medical evaluations of employees required to use respirators;
- Fit-testing procedures for tight-fitting respirators;

## 4 OSHA'S REQUIREMENTS FOR A RESPIRATORY PROTECTION PROGRAM CONTINUED

- Procedures for proper use of respirators in routine and reasonably foreseeable emergency situations;
- Procedures and schedules for cleaning, disinfecting, storing, inspecting, repairing, discarding and otherwise maintaining respirators;
- Procedures to ensure adequate air quality, quantity and flow of breathing air for atmosphere-supplying respirators;
- Training of employees in the respiratory hazards to which they are potentially exposed during routine and emergency situations;
- Training of employees in the proper use of respirators, including putting on and removing them, any limitations on their use and maintenance; and
- Program Evaluation — procedures for regularly evaluating the effectiveness of the program.

## 5 PROCEDURES FOR THE RESPIRATORY PROTECTION PROGRAM

### SELECTION OF RESPIRATORS

OSHA 29 CFR 1910.134(c) requires the employer to evaluate respiratory hazard(s) in the work place, identify relevant work place and user factors, and base respirator selection on these factors. It also specifies appropriately protective respirators for use in Immediately Dangerous to Life or Health (IDLH) atmospheres, and limits the selection and use of air-purifying respirators.



### GENERAL REQUIREMENTS

The employer shall select and provide an appropriate respirator based on the respiratory hazard(s) to which workers are exposed and the work place and user factors that affect respirator performance and reliability.

The employer shall select a National Institute for Occupational Safety and Health (NIOSH)-certified respirator. The respirator shall be used in compliance with the conditions of its certification.

The employer shall identify and evaluate the respiratory hazard(s) in the work place; 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 employee exposure, the employer shall consider the atmosphere to be IDLH.

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.



- Respirators provided only for escape from IDLH atmospheres shall be NIOSH-certified for escape from the atmosphere in which they will be used.
- 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.

### RESPIRATORS FOR IDLH ATMOSPHERES

The employer shall provide the following respirators for employee use in IDLH atmospheres:

- A full face piece pressure demand SCBA-certified by NIOSH for a minimum service life of 30 minutes, or
- A combination full face piece pressure demand supplied-air respirator (SAR) with auxiliary self-contained air supply.

### RESPIRATORS FOR ATMOSPHERES THAT ARE NOT IDLH

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.

The respirator selected shall be appropriate for the chemical state and physical form of the contaminant.

## 5 PROCEDURES FOR THE RESPIRATORY PROTECTION PROGRAM CONTINUED

For protection against gases and vapors, the employer shall provide:

- An atmosphere-supplying respirator, or
- An air-purifying respirator, provided that:  
The respirator is equipped with an end-of-service-life indicator (ESLI) certified by NIOSH for the contaminant; or, if there is no ESLI appropriate for conditions in the employer's work place, the employer implements a change schedule for canisters and cartridges 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.

For protection against particulates, the employer shall provide:

- An atmosphere-supplying respirator; or
- An air-purifying respirator equipped with a filter certified by NIOSH under OSHA 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 OSHA 42 CFR, part 84;
- 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

Altitude (ft.)	Oxygen deficient Atmospheres (percent of carbon dioxide) 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
• 7,001-8,0001	19.3-19.5

<sup>1</sup>Above 8,000 feet, the exception does not apply. Oxygen-enriched breathing air must be supplied above 14,000 feet.

### MEDICAL EVALUATION

Using a respirator may place on employees a physiological burden that varies with the type of respirator worn, the job and work place 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.

### 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 work place. The employer may discontinue an employee's medical evaluations when the employee is no longer required to use a respirator.

### MEDICAL EVALUATION PROCEDURES

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.

The medical evaluation shall obtain the information requested by the questionnaire in Sections 1 and 2, Part A of Appendix C of section OSHA 29 CFR 1910.134(e)(2)(ii). See the link provided at the end of this chapter under Appendix / Additional Resources.

### FOLLOW-UP MEDICAL EXAMINATION

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 of OSHA 29 CFR 1910.134 or whose initial medical examination demonstrates the need for a follow-up medical examination.

The follow-up medical examination shall include any medical tests, consultations, or diagnostic procedures that the PLHCP deems necessary to make a final determination.

### ADMINISTRATION OF THE MEDICAL QUESTIONNAIRE AND EXAMINATIONS

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.

The employer shall provide the employee with an opportunity to discuss the questionnaire and examination results with the PLHCP.

## 5 PROCEDURES FOR THE RESPIRATORY PROTECTION PROGRAM CONTINUED

### SUPPLEMENTAL INFORMATION FOR THE PLHCP

The following information must be provided to the PLHCP before the PLHCP makes a recommendation concerning an employee's ability to use a respirator:

- The type and weight of the respirator to be used by the employee;
- The duration and frequency of respirator use (including use for rescue and escape);
- The expected physical work effort;
- Additional protective clothing and equipment to be worn; and
- Temperature and humidity extremes that may be encountered.

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.

The employer shall provide the PLHCP with a copy of the written respiratory protection program and a copy of this section:

*Note to OSHA 29 CFR 1910.134(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 re-evaluated solely because a new PLHCP has been selected.

### MEDICAL DETERMINATION

In determining the employee's ability to use a respirator, the employer shall obtain a written recommendation regarding the employee's ability to use the respirator from the PLHCP. The recommendation shall provide only the following information:

- Any limitations on respirator use related to the medical condition of the employee, or relating to the work place conditions in which the respirator will be used, including whether or not the employee is medically able to use the respirator;
- The need, if any, for follow-up medical evaluations; and
- A statement that the PLHCP has provided the employee with a copy of the PLHCP's written recommendation.

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 Powered Air-purifying Respirator (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.

### ADDITIONAL MEDICAL EVALUATIONS

At a minimum, the employer shall provide additional medical evaluations that comply with the requirements of this section if:

- An employee reports medical signs or symptoms that are related to ability to use a respirator;
- A PLHCP, supervisor or the respirator program administrator informs the employer that an employee needs to be reevaluated;
- Information from the respiratory protection program, including observations made during fit testing and program evaluation, indicates a need for employee reevaluation; or
- A change occurs in work place conditions (e.g., physical work effort, protective clothing, and temperature) that may result in a substantial increase in the physiological burden placed on an employee.

### FIT TESTING

OSHA 29 CFR 1910.134(f) requires that before an employee may be required to use any respirator with a negative or positive pressure tight-fitting face piece; the employee must be fit tested with the same make, model, style, and size of respirator that will be used. It also specifies the kinds of fit tests allowed, the procedures for conducting them, and how the results of the fit tests must be used.

The employer shall ensure that employees using a tight-fitting face piece respirator pass an appropriate qualitative fit test (QLFT) or quantitative fit test (QNFT) as stated in this paragraph.

The employer shall ensure that an employee using a tight-fitting face piece respirator is fit tested prior to initial use of the respirator, whenever a different respirator face piece (size, style, model or make) is used, and at least annually thereafter.

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.

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 face piece and to be re-tested.

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.

QLFT may only be used to fit test negative pressure air-purifying respirators that must achieve a fit factor of 100 or less.

If the fit factor, as determined through an OSHA-accepted QNFT protocol, is equal to or greater than 100 for tight-fitting



## 5 PROCEDURES FOR THE RESPIRATORY PROTECTION PROGRAM CONTINUED

half face pieces, or equal to or greater than 500 for tight-fitting full face pieces, the QNFT has been passed with that respirator.

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.

Qualitative fit testing of these respirators shall be accomplished by temporarily converting the respirator user's actual face piece into a negative pressure respirator with appropriate filters, or by using an identical negative pressure air-purifying respirator face piece with the same sealing surfaces as a surrogate for the atmosphere-supplying or powered air-purifying respirator face piece.

Quantitative fit testing of these respirators shall be accomplished by modifying the face piece to allow sampling inside the face piece 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 face piece, or by using a sampling adapter designed to temporarily provide a means of sampling air from inside the face piece.

Any modifications to the respirator face piece for fit testing shall be completely removed, and the face piece restored to NIOSH-approved configuration, before that face piece can be used in the work place.

### PROPER USE OF RESPIRATORS

OSHA 29 CFR 1910.134(g) requires employers to establish and implement procedures for the proper use of respirators. These requirements include prohibiting conditions that may result in face piece 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.

### FACE PIECE SEAL PROTECTION

The employer shall not permit respirators with tight-fitting face pieces to be worn by employees who have:

- Facial hair that comes between the sealing surface of the face piece and the face or that interferes with valve function.
- Any condition that interferes with the face-to-face piece seal or valve function.
- 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 face piece to the face of the user.
- 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 the links provided at the end of this chapter under Appendix / Additional Resources.

### CONTINUING RESPIRATOR EFFECTIVENESS

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 re-evaluate the continued effectiveness of the respirator.

The employer shall ensure that employees leave the respirator use area:

- To wash their faces and respirator face pieces as necessary to prevent eye or skin irritation associated with respirator use; or
- If they detect vapor or gas breakthrough, changes in breathing resistance, or leakage of the face piece; or
- To replace the respirator or the filter, cartridge, or canister elements.

If the employee detects vapor or gas breakthrough, changes in breathing resistance, or leakage of the face piece, the employer must replace or repair the respirator before allowing the employee to return to the work area.

### PROCEDURES FOR IDLH ATMOSPHERES

#### OSHA 29 CFR 1910.134(G)(3)

For all IDLH atmospheres, the employer shall ensure that:

- One employee or, when needed, more than one employee is located outside the IDLH atmosphere;
- 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;
- The employee(s) located outside the IDLH atmosphere are trained and equipped to provide effective emergency rescue;
- The employer or designee is notified before the employee(s) located outside the IDLH atmosphere enter the IDLH atmosphere to provide emergency rescue;
- The employer or designee authorized to do so by the employer, once notified, provides necessary assistance appropriate to the situation; and
- Employee(s) located outside the IDLH atmospheres are equipped with:
  - Pressure demand or other positive pressure Self-contained Breathing Apparatus (SCBA), or a pressure demand or other positive pressure supplied-air respirator with auxiliary SCBA; and either

## 5 PROCEDURES FOR THE RESPIRATORY PROTECTION PROGRAM CONTINUED

- OSHA 29 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
- Equivalent means for rescue where retrieval equipment is not required under OSHA 29 CFR 1910.134 (g)(3)(vi) (B).

### PROCEDURES FOR INTERIOR STRUCTURAL FIREFIGHTING OSHA 29 CFR 1910.134(G)(4)

In addition to the requirements set forth under OSHA 29 CFR 1910.134 (g)(3), in interior structural fires, the employer shall ensure that:

- At least two employees enter the IDLH atmosphere and remain in visual or voice contact with one another at all times;
- At least two employees are located outside the IDLH atmosphere; and
- All employees engaged in interior structural firefighting use SCBAs.

#### Note 1 To OSHA 29 CFR 1910.134 (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 OSHA 29 CFR 1910.134(g):

Nothing in this section is meant to preclude firefighters from performing emergency rescue activities before an entire team has assembled.

### MAINTENANCE AND CARE OF RESPIRATORS OSHA 29 CFR 1910.134(H)

OSHA 29 CFR 1910.134 Appendix B-2 requires the employer to provide for the cleaning and disinfecting, storage, inspection, and repair of respirators used by employees.

#### CLEANING AND DISINFECTING

##### OSHA 29 CFR 1910.134(H)(1)

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 the link to 29 CFR 1910.134, Appendix B-2, provided at the end of this chapter under

Appendix / Additional Resources 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:

- 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;
- Respirators issued to more than one employee shall be cleaned and disinfected before being worn by different individuals;
- Respirators maintained for emergency use shall be cleaned and disinfected after each use; and
- Respirators used in fit testing and training shall be cleaned and disinfected after each use.

#### STORAGE OSHA 29 CFR 1910.134(H)(2)

The employer shall ensure that respirators are stored as follows:

- OSHA 29 CFR 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 face piece and exhalation valve.
- In addition to the requirements of OSHA 29 CFR 1910.134 (h)(2)(i), emergency respirators shall be:
  - Kept accessible to the work area; and
  - Stored in compartments or in covers that are clearly marked as containing emergency respirators; and stored in accordance with any applicable manufacturer instructions.

#### INSPECTION OSHA 29 CFR 1910.134(H)(3)

The employer shall ensure that respirators are inspected as follows:

- 1910.134(h)(3)(i) All respirators used in routine situations shall be inspected before each use and during cleaning;
- 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
- Emergency escape-only respirators shall be inspected before being carried into the work place for use.
- The employer shall ensure that respirator inspections include the following OSHA 29 CFR 1910.134(h)(3)(ii):
  - A check of respirator function, tightness of connections, and the condition of the various parts including, but not limited to, the face piece, head straps, valves, connecting tube, and cartridges, canisters or filters; and
  - A check of elastomeric parts for pliability and signs of deterioration.

## 5 PROCEDURES FOR THE RESPIRATORY PROTECTION PROGRAM CONTINUED

In addition to the requirements of paragraphs 29 CFR diamond 1 1910.134(h)(3)(i) and diamond 29 CFR 1910.134 (h) (3)(ii), 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 percent of the manufacturer's recommended pressure level. The employer shall determine that the regulator and warning devices function properly.

For respirators maintained for emergency use, the employer shall:

- 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
- 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.

### REPAIRS OSHA 29 CFR 1910.134(H)(4)

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:

- 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;
- Repairs shall be made according to the manufacturer's recommendations and specifications for the type and extent of repairs to be performed; and
- Reducing and admission valves, regulators, and alarms shall be adjusted or repaired only by the manufacturer or a technician trained by the manufacturer.

### BREATHING AIR QUALITY AND USE

#### OSHA 29 CFR 1910.134(I)

OSHA 29 CFR 1910.134(i) requires the employer to provide employees using atmosphere-supplying respirators (supplied-air and SCBA) with breathing gases of high purity.

The employer shall ensure that compressed air, compressed oxygen, liquid air, and liquid oxygen used for respiration accords with the following specifications:

- Compressed and liquid oxygen shall meet the United States Pharmacopoeia requirements for medical or breathing oxygen; and
- Compressed breathing air shall meet at least the requirements for Grade D breathing air described in

American National Standards Institute (ANSI)/Compressed Gas Association Commodity Specification for Air, G-7.1-1989, to include:

- Oxygen content (v/v) of 19.5-23.5 percent;
- Hydrocarbon (condensed) content of 5 milligrams per cubic meter of air or less;
- Carbon monoxide (CO) content of 10 ppm or less;
- Carbon dioxide content of 1,000 ppm or less; and
- Lack of noticeable odor.

The employer shall ensure that compressed oxygen is not used in atmosphere-supplying respirators that have previously used compressed air.

The employer shall ensure that oxygen concentrations greater than 23.5 percent are used only in equipment designed for oxygen service or distribution.

The employer shall ensure that cylinders used to supply breathing air to respirators meet the following requirements:

- Cylinders are tested and maintained as prescribed in the Shipping Container Specification Regulations of the Department of Transportation (OSHA 49 CFR part 173 and part 178).
- 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.
- The moisture content in the cylinder does not exceed a dew point of -50 deg. F (-45.6 deg. C) at 1 atmosphere pressure.

The employer shall ensure that compressors used to supply breathing air to respirators are constructed and situated so as to:

- Prevent entry of contaminated air into the air-supply system.
- Minimize moisture content so that the dew point at 1 atmosphere pressure is 10 degrees F (5.56 deg. C) below the ambient temperature.
- 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.
- 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.
- For compressors that are not oil-lubricated, the employer shall ensure that carbon monoxide levels in the breathing air do not exceed 10 ppm.
- 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.

## 5 PROCEDURES FOR THE RESPIRATORY PROTECTION PROGRAM CONTINUED

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 airlines.

The employer shall use breathing gas containers marked in accordance with the NIOSH respirator certification standard, OSHA 42 CFR part 84.

### IDENTIFICATION OF FILTERS, CARTRIDGES, AND CANISTERS

The employer shall ensure that all filters, cartridges and canisters used in the work place are labeled and color-coded with the NIOSH-approval label and that the label is not removed and remains legible.

### TRAINING AND INFORMATION

#### OSHA 29 CFR 1910.134(K)

OSHA 29 CFR 1910.134(k) requires the employer to provide effective training to employees who are required to use respirators. The training must be comprehensive, understandable and re-occur annually and more often if necessary. It also requires the employer to provide basic information about respirators to employees who wear respirators but are not required to do so. Refer to the link to OSHA 29 CFR 1910.134 - Respiratory Protection, which is provided at the end of this chapter under Appendix / Additional Resources and click on the link to Appendix D.

The employer shall ensure that each employee can demonstrate knowledge of at least the following OSHA 29 CFR 1910.134(k)(2):

- Why the respirator is necessary and how improper fit, usage or maintenance can compromise the protective effect of the respirator OSHA 29 CFR 1910.134(k)(1)(i);
- What the limitations and capabilities of the respirator are;
- How to use the respirator effectively in emergency situations, including situations in which the respirator malfunctions;
- How to inspect, put on and remove, use and check the seals of the respirator;
- What the procedures are for maintenance and storage of the respirator;
- How to recognize medical signs and symptoms that may limit or prevent the effective use of respirators; and

The general requirements of this section.

- The training shall be conducted in a manner that is understandable to the employee.
- The employer shall provide the training prior to requiring the employee to use a respirator in the work place.

An employer who is able to demonstrate that a new employee has received training within the past 12 months that addresses the elements specified in OSHA 29 CFR 1910.134(k)(1)(i) through OSHA 29 CFR 1910.134(k)(1)(vii) is not required to repeat such training provided that, as required by OSHA 29 CFR 1910.134(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.

Retraining shall be administered annually, and when the following situations occur:

- Changes in the work place or the type of respirator render previous training obsolete;
- Inadequacies in the employee's knowledge or use of the respirator indicate that the employee has not retained the requisite understanding or skill; or
- Any other situation arises in which retraining appears necessary to ensure safe respirator use.

The basic advisory information on respirators, as presented in OSHA 29 CFR 1910.134, Appendix D, 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.

### PROGRAM EVALUATION

OSHA 29 CFR 1910.134(l) requires the employer to conduct evaluations of the work place 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.

The employer shall conduct evaluations of the work place as necessary to ensure that the provisions of the current written program are being effectively implemented and that it continues to be effective.

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:

- Respirator fit (including the ability to use the respirator without interfering with effective work place performance);
- Appropriate respirator selection for the hazards to which the employee is exposed;
- Proper respirator use under the work place conditions the employee encounters; and
- Proper respirator maintenance.



## 6 GENERAL INFORMATION

### WHERE RESPIRATOR USE IS NOT REQUIRED

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”).

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 face pieces (dust masks).

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.

The employer shall provide respirators, training, and medical evaluations at no cost to the employee.

## 7 RECORD KEEPING

OSHA 29 CFR 1910.134(m) 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.

### MEDICAL EVALUATION

Records of medical evaluations required by this section must be retained and made available in accordance with OSHA 29 CFR 1910.1020.

### FIT TESTING

The employer shall establish a record of the qualitative and quantitative fit tests administered to an employee including:

- The name or identification of the employee tested;
- Type of fit test performed;
- Specific make, model, style, and size of respirator tested;
- Date of test; and
- The pass/fail results for QLFTs or the fit factor and strip chart recording or other recording of the test results for QNFTs.

Fit test records shall be retained for respirator users until the next fit test is administered.

The employer shall retain a written copy of the current respirator program.

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.

### DATES

#### EFFECTIVE DATE

The obligations imposed by OSHA 29 CFR 1910.134 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.

#### COMPLIANCE DATES

All obligations of this section commence on the effective date except as follows:

The determination that respirator use is required (paragraph a) shall be completed no later than Sept. 8, 1998. Compliance with provisions of this section for all other provisions shall be completed no later than Oct. 5, 1998. The provisions of OSHA 29 CFR 1910.134 and OSHA 29 CFR 1926.103, contained in the OSHA 29 CFR 1900 to 1910.99 and the OSHA 29 CFR 1926 editions, revised as of July 1, 1997, are in effect and enforceable until Oct. 5, 1998, or during any administrative or judicial stay of the provisions of this section.

## 8 SUMMARY

The information contained within this section of the SWR Institute Safety & Health Manual represents the key elements of a written respiratory protection program. It is in accordance with OSHA's general industry standard for Respiratory Protection (29 CFR 1910.134).

Improper use of respirators can result in citations, penalties and fines.



## 9 GLOSSARY

**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.

**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 (SARs) 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:** An atmosphere-supplying respirator that admits breathing air to the face piece only when a negative pressure is created inside the face piece 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:** 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 face piece (dust mask):** A negative pressure particulate respirator with a filter as an integral part of the face piece or with the entire face piece 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:** A rigid respiratory inlet covering that also provides head protection against impact and penetration.

**High efficiency particulate air (HEPA) filter:** A filter that is at least 99.97 percent 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 face piece:** 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 face piece 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 percent 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 paragraph (e) of this section.

**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.

## 9 GLOSSARY CONTINUED

**Pressure demand respirator:** A positive pressure atmosphere-supplying respirator that admits breathing air to the face piece when the positive pressure is reduced inside the face piece 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 face piece, 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.

**This section:** This respiratory protection standard.

**Tight-fitting face piece:** 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.

## 10 APPENDIX / ADDITIONAL RESOURCES

### US Department of Labor

<http://www.osha.gov/>

#### OSHA 29 CFR 1910.134 - Respiratory Protection

[http://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_table=STANDARDS&p\\_id=12716](http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=12716)

#### OSHA 29 CFR 1910.134 App A - Fit Testing Procedures (Mandatory)

[http://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_table=STANDARDS&p\\_id=9780](http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9780)

#### OSHA 29 CFR 1910.134 App B-2 - Respirator Cleaning Procedures (Mandatory)

[http://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_table=STANDARDS&p\\_id=9782](http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9782)

#### OSHA 29 CFR 1910.134 App C - OSHA Respirator Medical Evaluation Questionnaire (Mandatory)

[http://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_table=STANDARDS&p\\_id=9783](http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9783)

#### View Slides of Respiratory Protection Standard

<http://www.osha.gov/dcsp/ote/trng-materials/respirators/presentation/>

### Safety and Health Topics: Respiratory Protection

<http://www.osha.gov/SLTC/respiratoryprotection/index.html>

### Safety and Health Topics: Respirator Change-out Schedules

<http://www.osha.gov/SLTC/respiratoryprotection/changeout.html>

### Respiratory Protection eTool

<http://www.osha.gov/SLTC/etools/respiratory/>

### Most Frequently Cited Serious Violations

<http://www.4-safety.com/OSHA%20MFC/FY2003-MFC%20Construction.ppt>

### OSHA Respiratory Protection – Training Guides, Manuals and Powerpoint Slides – Free How to Select the Proper Equipment

<http://www.osha.gov/dcsp/ote/trng-materials/respirators/respirators.html>

### Small Entity Compliance Guide

[http://www.osha.gov/Publications/SECG\\_RPS/secg\\_rps.html](http://www.osha.gov/Publications/SECG_RPS/secg_rps.html)

### Consultation: Free On-Site Safety and Health Services

<http://www.osha.gov/dcsp/smallbusiness/consult.html>





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SAFETY & HEALTH MANUAL — SCAFFOLD STANDARD — SECTION NINE

SEALANT, WATERPROOFING & RESTORATION INSTITUTE

# SAFETY & HEALTH MANUAL

## SCAFFOLD STANDARD • OSHA 29 CFR 1926.450



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## 1 INTRODUCTION

This portion of the SWR Institute Safety Manual describes the Occupational Safety & Health Association (OSHA) Scaffold Standard, and outlines Policies and Procedures required to maintain compliance with this standard. The complete Scaffold standard was published in the Federal Register and can be viewed in its entirety in 29 CFR 1926.450 through 454 and appendix A through E.

OSHA 29 CFR 1926.450 - Scope, application and definitions applicable to this subpart. The definitions are covered in the glossary of this document

OSHA 29 CFR 1926.451 - General requirements

OSHA 29 CFR 1926.452 - Additional requirements applicable to specific types of scaffolds

OSHA 29 CFR 1926.453 - Aerial lifts (This section is not covered in this document)

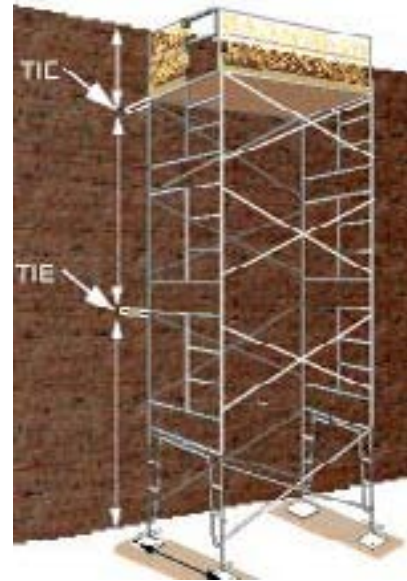
OSHA 29 CFR 1926.454 - Training requirements

Appendix A covers OSHA 29 CFR 1926, Subpart L, App A - Scaffold Specifications

Appendix B covers OSHA 29 CFR 1926, Subpart L, App B - Criteria for Determining the Feasibility of Providing Safe Access and Fall Protection for Scaffold Erectors and Dismantlers

Appendix C includes OSHA 29 CFR 1926, Subpart L, App C - List of National Consensus Standards

Appendix D covers OSHA 29 CFR 1926, Subpart L, App D - List of Training Topics for Scaffold Erectors and Dismantlers



Appendix E covers OSHA 29 CFR 1926, Subpart L, App E - Drawings and Illustrations

This portion of the SWR Institute safety manual contains only a portion of the actual OSHA regulation. For the complete standard please refer to the most current publication of OSHA 29 CFR 1926.450.

## 2 POLICIES AND PROCEDURES

The central requirements in OSHA's Scaffold Standard, Subpart L, 29 CFR 1926.451, are summarized below.

OSHA 29 CFR 1926.451(a) does not apply to aerial lifts, the criteria for which are set out exclusively in OSHA 29 CFR 1926.453.

### CAPACITY OSHA 29 CFR 1926.451(A)(1)

Except as provided in paragraphs OSHA 29 CFR 1926.451(a)(2), (a)(3), (a)(4), (a)(5) and (g), each scaffold and scaffold component shall be capable of supporting, without failure, its own weight and at least 4 times the maximum intended load applied or transmitted to it.

OSHA 29 CFR 1926.451(a)(2) Direct connections to roofs and floors, and counterweights used to balance adjustable suspension scaffolds, shall be capable of resisting at least four times the tipping moment imposed by the scaffold operating at the rated load of the hoist, or 1.5 (minimum) times the tipping moment imposed by the scaffold operating at the stall load of the hoist, whichever is greater.

OSHA 29 CFR 1926.451(a)(3) Each suspension rope, including connecting hardware, used on non-adjustable suspension scaffolds shall be capable of supporting, without failure, at least six times the maximum intended load applied or transmitted to that rope.

OSHA 29 CFR 1926.451(a)(4) Each suspension rope, including connecting hardware, used on adjustable suspension scaffolds shall be capable of supporting, without failure, at least six times the maximum intended load applied or transmitted to that rope with the scaffold operating at either the rated load of the hoist, or two (minimum) times the stall load of the hoist, whichever is greater.

The stall load of any scaffold hoist shall not exceed three times its rated load.

Scaffolds shall be designed by a qualified person and shall be constructed and loaded in accordance with that design. Non-mandatory Appendix A to this subpart contains examples of criteria that will enable an employer to comply with paragraph OSHA 29 CFR 1926.451(a) of this section.

### SCAFFOLD PLATFORM CONSTRUCTION

#### OSHA 29 CFR 1926.451(B)

OSHA 29 CFR 1926.451(b)(1) Each platform on all working levels of scaffolds shall be fully planked or decked between the front uprights and the guardrail supports as follows:

OSHA 29 CFR 1926.451(b)(1)(i) Each platform unit (e.g., scaffold plank, fabricated plank, fabricated deck, or fabricated platform) shall be installed so that the space between adjacent units and the

## 2 POLICIES AND PROCEDURES CONTINUED

space between the platform and the uprights is no more than 1 inch (2.5 cm) wide, except where the employer can demonstrate that a wider space is necessary (for example, to fit around uprights when side brackets are used to extend the width of the platform).

Where the employer makes the demonstration provided for in OSHA 29 CFR 1926.451(b)(1)(i), the platform shall be planked or decked as fully as possible and the remaining open space between the platform and the uprights shall not exceed 9 1/2 inches (24.1 cm).

Exception to OSHA 29 CFR 1926.451(b)(1): The requirement in OSHA 29 CFR 1926.451(b)(1) to provide full planking or decking does not apply to platforms used solely as walkways or solely by employees performing scaffold erection or dismantling. In these situations, only the planking that the employer establishes is necessary to provide safe working conditions is required.

Except as provided in OSHA 29 CFR 1926.451(b)(2)(i) and OSHA 29 CFR 1926.451(b)(2)(ii), each scaffold platform and walkway shall be at least 18 inches (46 cm) wide.

OSHA 29 CFR 1926.451(b)(2)(i) Each ladder jack scaffold, top plate bracket scaffold, roof bracket scaffold, and pump jack scaffold shall be at least 12 inches (30 cm) wide. There is no minimum width requirement for boatswains' chairs.

### **NOTE to OSHA 29 CFR 1926.451 (b) (2) (i):**

Pursuant to an administrative stay effective Nov. 29, 1996 and published in the Federal Register on Nov. 25, 1996, the requirement in paragraph (b)(2)(i) in OSHA 29 CFR 1926.451, that roof bracket scaffolds be at least 12 inches wide is stayed until Nov. 25, 1997, or until rulemaking regarding the minimum width of roof bracket scaffolds has been completed, whichever is later.

OSHA 29 CFR 1926.451(b)(2)(ii) Where scaffolds must be used in areas that the employer can demonstrate are so narrow that platforms and walkways cannot be at least 18 inches (46 cm) wide, such platforms and walkways shall be as wide as feasible, and employees on those platforms and walkways shall be protected from fall hazards by the use of guardrails and/or personal fall arrest systems.

Except as provided in OSHA 29 CFR 1926.451(b)(3)(i) and OSHA 29 CFR 1926.451(ii), the front edge of all platforms shall not be more than 14 inches (36 cm) from the face of the work, unless guardrail systems are erected along the front edge and/or personal fall arrest systems are used in accordance with paragraph (g) of this section to protect employees from falling.

OSHA 29 CFR 1926.451(b)(3)(i) The maximum distance from the face for outrigger scaffolds shall be 3 inches (8 cm).

OSHA 29 CFR 1926.451(b)(3)(ii) The maximum distance from the face for plastering and lathing operations shall be 18 inches (46 cm).

Each end of a platform, unless cleated or otherwise restrained by hooks or equivalent means, shall extend over the centerline of its support at least 6 inches (15 cm).

Each end of a platform 10 feet or less in length shall not extend over its support more than 12 inches (30 cm) unless the platform is designed and installed so that the cantilevered portion of the platform is able to support employees and/or materials without tipping, or has guardrails which block employee access to the cantilevered end.

Each platform greater than 10 feet in length shall not extend over its support more than 18 inches (46 cm), unless it is designed and installed so that the cantilevered portion of the platform is able to support employees without tipping, or has guardrails which block employee access to the cantilevered end.

On scaffolds where scaffold planks are abutted to create a long platform, each abutted end shall rest on a separate support surface. This provision does not preclude the use of common support members, such as "T" sections, to support abutting planks, or hook on platforms designed to rest on common supports.

On scaffolds where platforms are overlapped to create a long platform, the overlap shall occur only over supports, and shall not be less than 12 inches (30 cm) unless the platforms are nailed together or otherwise restrained to prevent movement.

At all points of a scaffold where the platform changes direction, such as turning a corner, any platform that rests on a bearer at an angle other than a right angle shall be laid first, and platforms which rest at right angles over the same bearer shall be laid second, on top of the first platform.

Wood platforms shall not be covered with opaque finishes, except that platform edges may be covered or marked for identification. Platforms may be coated periodically with wood preservatives, fire-retardant finishes, and slip-resistant finishes; however, the coating may not obscure the top or bottom wood surfaces.

Scaffold components manufactured by different manufacturers shall not be intermixed unless the components fit together without force and the user maintains the scaffold's structural integrity. Scaffold components manufactured by different manufacturers shall not be modified in order to intermix them unless a competent person determines the resulting scaffold is structurally sound.

Scaffold components made of dissimilar metals shall not be used together unless a competent person has determined that galvanic action will not reduce the strength of any component to a level below that required by OSHA 29 CFR 1926.451(a)(1).

### **CRITERIA FOR SUPPORTED SCAFFOLDS**

Supported scaffolds with a height to base width (including outrigger supports, if used) ratio of more than four to one (4:1) shall be restrained from tipping by guying, tying, bracing, or equivalent means, as follows:

Guys, ties, and braces shall be installed at locations where horizontal members support both inner and outer legs.

## 2 POLICIES AND PROCEDURES CONTINUED

Guys, ties, and braces shall be installed according to the scaffold manufacturer's recommendations or at the closest horizontal member to the 4:1 height and be repeated vertically at locations of horizontal members every 20 feet (6.1 m) or less thereafter for scaffolds 3 feet (0.91 m) wide or less, and every 26 feet (7.9 m) or less thereafter for scaffolds greater than 3 feet (0.91 m) wide. The top guy, tie or brace of completed scaffolds shall be placed no further than the 4:1 height from the top. Such guys, ties and braces shall be installed at each end of the scaffold and at horizontal intervals not to exceed 30 feet (9.1 m) (measured from one end [not both] towards the other).

Ties, guys, braces, or outriggers shall be used to prevent the tipping of supported scaffolds in all circumstances where an eccentric load, such as a cantilevered work platform, is applied or is transmitted to the scaffold.

Supported scaffold poles, legs, posts, frames, and uprights shall bear on base plates and mudsills or other adequate firm foundation.

Footings shall be level, sound, rigid, and capable of supporting the loaded scaffold without settling or displacement.

Unstable objects shall not be used to support scaffolds or platform units.

Unstable objects shall not be used as working platforms.

Front-end loaders and similar pieces of equipment shall not be used to support scaffold platforms unless they have been specifically designed by the manufacturer for such use.

Forklifts shall not be used to support scaffold platforms unless the entire platform is attached to the fork and the forklift is not moved horizontally while the platform is occupied.

Supported scaffold poles, legs, posts, frames, and uprights shall be plumb and braced to prevent swaying and displacement.

### CRITERIA FOR SUSPENSION SCAFFOLDS

All suspension scaffold support devices, such as outrigger beams, cornice hooks, parapet clamps, and similar devices, shall rest on surfaces capable of supporting at least 4 times the load imposed on them by the scaffold operating at the rated load of the hoist (or at least 1.5 times the load imposed on them by the scaffold at the stall capacity of the hoist, whichever is greater).

Suspension scaffold outrigger beams, when used, shall be made of structural metal or equivalent strength material, and shall be restrained to prevent movement.

The inboard ends of suspension scaffold outrigger beams shall be stabilized by bolts or other direct connections to the floor or roof deck, or they shall have their inboard ends stabilized by counterweights, except masons' multi-point adjustable suspension scaffold outrigger beams shall not be stabilized by counterweights.

Before the scaffold is used, direct connections shall be evaluated by a competent person who shall confirm, based on the

evaluation, that the supporting surfaces are capable of supporting the loads to be imposed. In addition, an engineer experienced in such scaffold design shall design masons' multi-point adjustable suspension scaffold connections.

Counterweights shall be made of non-flow able material. Sand, gravel and similar materials that can be easily dislocated shall not be used as counterweights.

Only those items specifically designed as counterweights shall be used to counterweight scaffold systems. Construction materials such as, but not limited to, masonry units and rolls of roofing felt, shall not be used as counterweights.

Counterweights shall be secured by mechanical means to the outrigger beams to prevent accidental displacement.

Counterweights shall not be removed from an outrigger beam until the scaffold is disassembled.

Outrigger beams which are not stabilized by bolts or other direct connections to the floor or roof deck shall be secured by tiebacks.

Tiebacks shall be equivalent in strength to the suspension ropes.

Outrigger beams shall be placed perpendicular to its bearing support (usually the face of the building or structure). However, where the employer can demonstrate that it is not possible to place an outrigger beam perpendicular to the face of the building or structure because of obstructions that cannot be moved, the outrigger beam may be placed at some other angle, provided opposing angle tiebacks are used.

Tiebacks shall be secured to a structurally sound anchorage on the building or structure. Sound anchorages include structural members, but do not include standpipes, vents, other piping systems, or electrical conduit.

Tiebacks shall be installed perpendicular to the face of the building or structure, or opposing angle tiebacks shall be installed. Single tiebacks installed at an angle are prohibited.

Suspension scaffold outrigger beams shall be:

- Provided with stop bolts or shackles at both ends;
- Securely fastened together with the flanges turned out when channel iron beams are used in place of I-beams;
- Installed with all bearing supports perpendicular to the beam center line;
- Set and maintained with the web in a vertical position; and
- When an outrigger beam is used, the shackle or clevis with which the rope is attached to the outrigger beam shall be placed directly over the centerline of the stirrup.

Suspension scaffold support devices such as cornice hooks, roof hooks, roof irons, parapet clamps, or similar devices shall be:

- Made of steel, wrought iron, or materials of equivalent strength;
- Supported by bearing blocks;

## 2 POLICIES AND PROCEDURES CONTINUED

- Secured against movement by tiebacks installed at right angles to the face of the building or structure, or opposing angle tiebacks shall be installed and secured to a structurally sound point of anchorage on the building or structure. Sound points of anchorage include structural members, but do not include standpipes, vents, other piping systems, or electrical conduit.
- Tiebacks shall be equivalent in strength to the hoisting rope.
- When winding drum hoists are used on a suspension scaffold, they shall contain not less than four wraps of the suspension rope at the lowest point of scaffold travel. When other types of hoists are used, the suspension ropes shall be long enough to allow the scaffold to be lowered to the level below without the rope end passing through the hoist, or the rope end shall be configured or provided with means to prevent the end from passing through the hoist.
- The use of repaired wire rope as suspension rope is prohibited.
- Wire suspension ropes shall not be joined together except through the use of eye splice thimbles connected with shackles or cover plates and bolts.
- The load end of wire suspension ropes shall be equipped with proper size thimbles and secured by eye splicing or equivalent means.

A competent person prior to each work shift and after every occurrence that could affect a rope's integrity shall inspect ropes for defects. Ropes shall be replaced if any of the following conditions exist:

- Any physical damage that impairs the function and strength of the rope.
- Kinks that might impair the tracking or wrapping of rope around the drum(s) or sheave(s).
- Six randomly distributed broken wires in one rope lay or three broken wires in one strand in one rope lay.
- Abrasion, corrosion, scrubbing, flattening or peening causing loss of more than one-third of the
- Original diameter of the outside wires.
- Heat damage caused by a torch or any damage caused by contact with electrical wires.
- Evidence that the secondary brake has been activated during an over speed condition and has engaged the suspension rope.
- Swaged attachments or spliced eyes on wire suspension ropes shall not be used unless the wire rope manufacturer or a qualified person makes them.

When wire rope clips are used on suspension scaffolds:

- There shall be a minimum of 3 wire rope clips installed, with the clips a minimum of 6 rope diameters apart;
- Clips shall be installed according to the manufacturer's recommendations;
- Clips shall be retightened to the manufacturer's recommendations after the initial loading;
- Clips shall be inspected and retightened to the manufacturer's recommendations at the start of each work shift thereafter;
- U-bolt clips shall not be used at the point of suspension for any scaffold hoist;
- When U-bolt clips are used, the U-bolt shall be placed over the dead end of the rope, and the saddle shall be placed over the live end of the rope.
- A qualified testing laboratory shall test suspension scaffold power-operated hoists and manual hoists.
- Gasoline-powered equipment and hoists shall not be used on suspension scaffolds.
- Gears and brakes of power-operated hoists used on suspension scaffolds shall be enclosed.
- In addition to the normal operating brake, suspension scaffold power-operated hoists and manually operated hoists shall have a braking device or locking pawl which engages automatically when a hoist makes either of the following uncontrolled movements: an instantaneous change in momentum or an accelerated over speed.
- Manually operated hoists shall require a positive crank force to descend.
- Two-point and multi-point suspension scaffolds shall be tied or otherwise secured to prevent them from swaying, as determined to be necessary based on an evaluation by a competent person. Window cleaners' anchors shall not be used for this purpose.
- Devices whose sole function is to provide emergency escape and rescue shall not be used as working platforms. This provision does not preclude the use of systems that are designed to function both as suspension scaffolds and emergency systems.



## 2 POLICIES AND PROCEDURES CONTINUED

### ACCESS

This paragraph applies to scaffold access for all employees. Access requirements for employees erecting or dismantling supported scaffolds are specifically addressed in OSHA 29 CFR 1926.451(e)(9) of this section.

When scaffold platforms are more than 2 feet (0.6 m) above or below a point of access, portable ladders, hook-on ladders, attachable ladders, stair towers (scaffold stairways/towers), stairway-type ladders (such as ladder stands), ramps, walkways, integral prefabricated scaffold access, or direct access from another scaffold, structure, personnel hoist, or similar surface shall be used. Cross braces shall not be used as a means of access.

Portable, hook-on, and attachable ladders (Additional requirements for the proper construction and use of portable ladders are contained in subpart X of this part — Stairways and Ladders):

- Portable, hook-on, and attachable ladders shall be positioned so as not to tip the scaffold;
- Hook-on and attachable ladders shall be positioned so that their bottom rung is not more than 24 inches (61 cm) above the scaffold supporting level;
- When hook-on and attachable ladders are used on a supported scaffold more than 35 feet (10.7 m) high, they shall have rest platforms at 35-foot (10.7 m) maximum vertical intervals.
- Hook-on and attachable ladders shall be specifically designed for use with the type of scaffold used;
- Hook-on and attachable ladders shall have a minimum rung length of 11 1/2 inches (29 cm); and
- Hook-on and attachable ladders shall have uniformly spaced rungs with a maximum spacing between rungs of 16 3/4 inches.

Stairway-type ladders shall:

- Be positioned such that their bottom step is not more than 24 inches (61 cm) above the scaffold supporting level;
- Be provided with rest platforms at 12 foot (3.7 m) maximum vertical intervals;
- Have a minimum step width of 16 inches (41 cm), except that mobile scaffold stairway-type ladders shall have a minimum step width of 11 1/2 inches (30 cm); and
- Have slip-resistant treads on all steps and landings.
- Stair towers (scaffold stairway/towers) shall be positioned such that their bottom step is not more than 24 inches (61 cm.) above the scaffold supporting level.
- A stair rail consisting of a top rail and a mid rail shall be provided on each side of each scaffold stairway.
- The top rail of each stair rail system shall also be capable of serving as a handrail, unless a separate handrail is provided.

- Handrails, and top rails that serve as handrails, shall provide an adequate handhold for employees grasping them to avoid falling.
- Stair rail systems and handrails shall be surfaced to prevent injury to employees from punctures or lacerations, and to prevent snagging of clothing.
- The ends of stair rail systems and handrails shall be constructed so that they do not constitute a projection hazard.
- Handrails, and top rails that are used as handrails, shall be at least 3 inches (7.6 cm) from other objects.
- Stair rails shall be not less than 28 inches (71 cm) nor more than 37 inches (94 cm) from the upper surface of the stair rail to the surface of the tread, in line with the face of the riser at the forward edge of the tread.
- A landing platform at least 18 inches (45.7 cm) wide by at least 18 inches (45.7 cm) long shall be provided at each level.
- Each scaffold stairway shall be at least 18 inches (45.7 cm) wide between stair rails.
- Treads and landings shall have slip-resistant surfaces.
- Stairways shall be installed between 40 degrees and 60 degrees from the horizontal.
- Guardrails meeting the requirements of paragraph (g)(4) of this section shall be provided on the open sides and ends of each landing.
- Riser height shall be uniform, within 1/4 inch, (0.6 cm) for each flight of stairs. Greater variations in riser height are allowed for the top and bottom steps of the entire system, not for each flight of stairs.
- Tread depth shall be uniform, within 1/4 inch, for each flight of stairs.

### RAMPS AND WALKWAYS

- Ramps and walkways 6 feet (1.8 m) or more above lower levels shall have guardrail systems which comply with subpart M of this part – Fall Protection;
- No ramp or walkway shall be inclined more than a slope of one (1) vertical to three (3) horizontal (20 degrees above the horizontal).
- If the slope of a ramp or a walkway is steeper than one (1) vertical in eight (8) horizontal, the ramp or walkway shall have cleats not more than fourteen (14) inches (35 cm) apart which are securely fastened to the planks to provide footing. Integral prefabricated scaffold access frames shall:
- Be specifically designed and constructed for use as ladder rungs;
- Have a rung length of at least 8 inches (20 cm);
- Not be used as work platforms when rungs are less than 11 1/2 inches in length, unless each affected employee uses fall protection, or a positioning device, which complies with
- Be uniformly spaced within each frame section;

## 2 POLICIES AND PROCEDURES CONTINUED



- Be provided with rest platforms at 35-foot (10.7 m) maximum vertical intervals on all supported scaffolds more than 35 feet (10.7 m) high; and
- Have a maximum spacing between rungs of 16 3/4 inches (43 cm). Non-uniform rung spacing caused by joining end frames together is allowed, provided the resulting spacing does not exceed 16 3/4 inches (43 cm).
- Steps and rungs of ladder and stairway type access shall line up vertically with each other between rest platforms.
- Direct access to or from another surface shall be used only when the scaffold is not more than 14 inches (36 cm) horizontally and not more than 24 inches (61 cm) vertically from the other surface.

Effective Sept. 2, 1997, access for employees erecting or dismantling supported scaffolds shall be in accordance with the following:

- The employer shall provide safe means of access for each employee erecting or dismantling a scaffold where the provision of safe access is feasible and does not create a greater hazard. The employer shall have a competent person determine whether it is feasible or would pose a greater hazard to provide, and have employees use a safe means of access. This determination shall be based on site conditions and the type of scaffold being erected or dismantled.
- Hook-on or attachable ladders shall be installed as soon as scaffold erection has progressed to a point that permits safe installation and use.
- When erecting or dismantling tubular welded frame scaffolds, (end) frames, with horizontal members that are parallel, level and are not more than 22 inches apart vertically may be used as climbing devices for access, provided they are erected in a manner that creates a usable ladder and provides good hand hold and foot space.
- Cross-braces on tubular welded frame scaffolds shall not be used as a means of access or egress.

### USE

Scaffolds and scaffold components shall not be loaded in excess of their maximum intended loads or rated capacities, whichever is less.

The use of shore or lean-to scaffolds is prohibited.

A competent person before each work shift, and after any occurrence, which could affect a scaffold's structural integrity, shall inspect scaffolds and scaffold components for visible defects.

Any part of a scaffold damaged or weakened such that its strength is less than that required by paragraph (a) of this section shall be immediately repaired or replaced, braced to meet those provisions, or removed from service until repaired.

Scaffolds shall not be moved horizontally while employees are on them, unless they have been designed by a registered professional engineer specifically for such movement or, for mobile scaffolds, where the provisions of OSHA 29 CFR 1926.452(w) are followed.

The clearance between scaffolds and power lines shall be as follows: Scaffolds shall not be erected, used, dismantled, altered, or moved such that they or any conductive material handled on them might come closer to exposed and energized power lines than as follows:

#### \* Insulated Lines OSHA 29 CFR 1926.451(f)(6)

Voltage	Minimum distance	Alternatives
Less than 300 volts.	3 feet (0.9 m)	
300 volts to 50 kv.	10 feet (3.1 m)	
More than 50 kv.....	10 feet (3.1 m) plus	2 times the length
	0.4 inches (1.0 cm)	of the line
	for each 1 kv over	insulator, but never
	50 kv.	less than 10
		feet (3.1 m).

#### \* Uninsulated Lines

Voltage	Minimum distance	Alternatives
Less than 50 kv.....	10 feet (3.1 m).	
More than 50 kv.....	10 feet (3.1 m) plus	2 times the length of
	0.4 inches (1.0 cm)	the line insulator,
	for each 1 kv over	but never less than
	50 kv.	10 feet (3.1 m).

**Exception to OSHA 29 CFR 1926.452(f)(6)** Scaffolds and materials may be closer to power lines than specified above where such clearance is necessary for performance of work, and only after the utility company, or electrical system operator, has been notified of the need to work closer and the utility company, or electrical system operator, has deenergized the lines,

## 2 POLICIES AND PROCEDURES CONTINUED

relocated the lines, or installed protective coverings to prevent accidental contact with the lines.

Scaffolds shall be erected, moved, dismantled, or altered only under the supervision and direction of a competent person qualified in scaffold erection, moving, dismantling or alteration. Only experienced and trained employees selected for such work by the competent person shall perform such activities.

Employees shall be prohibited from working on scaffolds covered with snow, ice, or other slippery material except as necessary for removal of such materials.

Where swinging loads are being hoisted onto or near scaffolds such that the loads might contact the scaffold, tag lines or equivalent measures to control the loads shall be used.

Suspension ropes supporting adjustable suspension scaffolds shall be of a diameter large enough to provide sufficient surface area for the functioning of brake and hoist mechanisms.

Suspension ropes shall be shielded from heat-producing processes. When acids or other corrosive substances are used on a scaffold, the ropes shall be shielded, treated to protect against the corrosive substances, or shall be of a material that will not be damaged by the substance being used.

Work on or from scaffolds is prohibited during storms or a personal fall arrest system or windscreens unless a competent person has determined that it is safe for employees to be on the scaffold and those employees protect high winds. Windscreens shall not be used unless the scaffold is secured against the anticipated wind forces imposed.

Debris shall not be allowed to accumulate on platforms.

Makeshift devices, such as but not limited to boxes and barrels, shall not be used on top of scaffold platforms to increase the working level height of employees.

Ladders shall not be used on scaffolds to increase the working level height of employees, except on large area scaffolds where employers have satisfied the following criteria:

- When the ladder is placed against a structure which is not a part of the scaffold, the scaffold shall be secured against the sideways thrust exerted by the ladder;
- The platform units shall be secured to the scaffold to prevent their movement;
- The ladder legs shall be on the same platform or other means shall be provided to stabilize the ladder against unequal platform deflection,
- OSHA 29 CFR 1926.451(f)(15)(iv).
- The ladder legs shall be secured to prevent them from slipping or being pushed off the platform.
- Platforms shall not deflect more than 1/60 of the span when loaded.

To reduce the possibility of welding current arcing through the suspension wire rope when performing welding from suspended scaffolds, the following precautions shall be taken, as applicable:

- An insulated thimble shall be used to attach each suspension wire rope to its hanging support (such as cornice hook or outrigger). Excess suspension wire rope and any additional independent lines from grounding shall be insulated;

- The suspension wire rope shall be covered with insulating material extending at least 4 feet (1.2 m) above the hoist. If there is a tail line below the hoist, it shall be insulated to prevent contact with the platform. The portion of the tail line that hangs free below the scaffold shall be guided or retained or both, so that it does not become grounded;
- Each hoist shall be covered with insulated protective covers;
- In addition to a work lead attachment required by the welding process, a grounding conductor shall be connected from the scaffold to the structure. The size of this conductor shall be at least the size of the welding process work lead, and this conductor shall not be in series with the welding process or the work piece;
- If the scaffold grounding lead is disconnected at any time, the welding machine shall be shut off; and
- An active welding rod or uninsulated welding lead shall not be allowed to contact the scaffold or its suspension system.

### FALL PROTECTION OSHA 29 CFR 1926.451(G)

OSHA 29 CFR 1926.451(g) Each employee on a scaffold more than 10 feet (3.1 m) above a lower level shall be protected from falling to that lower level. OSHA 29 CFR 1926.451(g)(1)(i) through OSHA 29 CFR 1926.451(vii) establish the types of fall protection to be provided to the employees on each type of scaffold. OSHA 29 CFR 1926.451(g)(2) addresses fall protection for scaffold erectors and dismantlers.

#### *Note to paragraph OSHA 29 CFR 1926.451(g) (1):*

The fall protection requirements for employees installing suspension scaffold support systems on floors, roofs and other elevated surfaces are set forth in subpart M of this part.

- OSHA 29 CFR 1926.451(g)(1)(i) Each employee on a boatswains' chair, catenary scaffold, float scaffold, needle beam scaffold, or ladder jack scaffold shall be protected by a personal fall arrest system;
- OSHA 29 CFR 1926.451(g)(1)(ii) Each employee on a single-point or two-point adjustable suspension scaffold shall be protected by both a personal fall arrest system and guardrail system;
- OSHA 29 CFR 1926.451(g)(1)(iii) Each employee on a crawling board (chicken ladder) shall be protected by a personal fall arrest system, a guardrail system (with minimum 200 pound toprail capacity), or by a three-fourth inch (1.9 cm) diameter grabline or equivalent handhold securely fastened beside each crawling board;
- OSHA 29 CFR 1926.451(g)(1)(iv) Each employee on a self-contained adjustable scaffold shall be protected by a guardrail system (with minimum 200 pound toprail capacity) when the platform is supported by the frame structure, and by both a personal fall arrest system and a guardrail system (with minimum 200 pound toprail capacity) when ropes support the platform;
- OSHA 29 CFR 1926.451(g)(1)(v) Each employee on a walkway located within a scaffold shall be protected by a



## 2 POLICIES AND PROCEDURES CONTINUED

guardrail system (with minimum 200 pound top rail capacity) installed within 9 1/2 inches (24.1 cm) of and along at least one side of the walkway.

- OSHA 29 CFR 1926.451(g)(1)(vi) Each employee performing overhand bricklaying operations from a supported scaffold shall be protected from falling from all open sides and ends of the scaffold (except at the side next to the wall being laid) by the use of a personal fall arrest system or guardrail system (with minimum 200 pound top rail capacity).

OSHA 29 CFR 1926.451(g)(1)(vii) For all scaffolds not otherwise specified in OSHA 29 CFR 1926.451(g)(1)(i) through OSHA 29 CFR 1926.451(g)(1)(vi), each employee shall be protected by the use of personal fall arrest systems or guardrail systems meeting the requirements of OSHA 29 CFR 1926.451(g)(4).

Effective Sept. 2, 1997, the employer shall have a competent person determine the feasibility and safety of providing fall protection for employees erecting or dismantling supported scaffolds. Employers are required to provide fall protection for employees erecting or dismantling supported scaffolds where the installation and use of such protection is feasible and does not create a greater hazard.

In addition to meeting the requirements of OSHA 29 CFR 1926.502(d), personal fall arrest systems used on scaffolds shall be attached by lanyard to a vertical lifeline, horizontal lifeline, or scaffold structural member. Vertical lifelines shall not be used when overhead components, such as overhead protection or additional platform levels, are part of a single-point or two-point adjustable suspension scaffold.

When vertical lifelines are used, they shall be fastened to a fixed safe point of anchorage, shall be independent of the scaffold, and shall be protected from sharp edges and abrasion. Safe points of anchorage include structural members of buildings, but do not include standpipes, vents, other piping systems, electrical conduit, outrigger beams, or counterweights.

When horizontal lifelines are used, they shall be secured to two or more structural members of the scaffold, or they may be looped around both suspension and independent suspension lines (on scaffolds so equipped) above the hoist and brake attached to the end of the scaffold. Horizontal lifelines shall not be attached only to the suspension ropes.

When lanyards are connected to horizontal lifelines or structural members on a single-point or two-point adjustable suspension scaffold, the scaffold shall be equipped with additional independent support lines and automatic locking devices capable of stopping the fall of the scaffold in the event one or both of the suspension ropes fail. The independent support lines shall be equal in number and strength to the suspension ropes.

Vertical lifelines, independent support lines, and suspension ropes shall not be attached to each other, nor shall they be attached to or use the same point of anchorage, nor shall they be attached to the same point on the scaffold or personal fall arrest system.

OSHA 29 CFR 1926.451(g)(4) Guardrail systems installed to meet the requirements of this section shall comply with the following provisions (guardrail systems built in accordance with Appendix

A to this subpart will be deemed to meet the requirements of paragraphs (g)(4)(vii), (viii), and (ix) of OSHA 29 CFR 1926.451):

- Guardrail systems shall be installed along all open sides and ends of platforms. Guardrail systems shall be installed before the scaffold is released for use by employees other than erection/dismantling crews.
- The top edge height of top rails or equivalent member on supported scaffolds manufactured or placed in service after Jan. 1, 2000, shall be installed between 38 inches (0.97 m) and 45 inches (1.2 m) above the platform surface. The top edge height on supported scaffolds manufactured and placed in service before Jan. 1, 2000, and on all suspended scaffolds where both a guardrail and a personal fall arrest system are required shall be between 36 inches (0.9 m) and 45 inches (1.2 m). When conditions warrant, the height of the top edge may exceed the 45-inch height, provided the guardrail system meets all other criteria of OSHA 29 CFR 1926.451(g)(4).
- When midrails, screens, mesh, intermediate vertical members, solid panels, or equivalent structural members are used, they shall be installed between the top edge of the guardrail system and the scaffold platform.
- When midrails are used, they shall be installed at a height approximately midway between the top edge of the guardrail system and the platform surface.
- When screens and mesh are used, they shall extend from the top edge of the guardrail system to the scaffold platform, and along the entire opening between the supports.
- When intermediate members (such as balusters or additional rails) are used, they shall not be more than 19 inches (48 cm) apart.
- OSHA 29 CFR 1926.451(g)(4)(vii) Each top rail or equivalent member of a guardrail system shall be capable of withstanding, without failure, a force applied in any downward or horizontal direction at any point along its top edge of at least 100 pounds (445 n) for guardrail systems installed on single-point adjustable suspension scaffolds or two-point adjustable suspension scaffolds, and at least 200 pounds (890 n) for guardrail systems installed on all other scaffolds.
- When the loads specified in OSHA 29 CFR 1926.451(g)(4)(vii) are applied in a downward direction, the top edge shall not drop below the height above the platform surface that is prescribed in OSHA 29 CFR 1926.451(g)(4)(ii).
- OSHA 29 CFR 1926.451(g)(4)(iv) Midrails, screens, mesh, intermediate vertical members, solid panels, and equivalent structural members of a guardrail system shall be capable of withstanding, without failure, a force applied in any downward or horizontal direction at any point along the midrail or other member of at least 75 pounds (333 n) for guardrail systems with a minimum 100 pound top rail capacity, and at least 150 pounds (666 n) for guardrail systems with a minimum 200 pound top rail capacity.
- Suspension scaffold hoists and non-walk-through stirrups may be used as end guardrails, if the space between the



## 2 POLICIES AND PROCEDURES CONTINUED

hoist or stirrup and the side guardrail or structure does not allow passage of an employee to the end of the scaffold.

- Guardrails shall be surfaced to prevent injury to an employee from punctures or lacerations, and to prevent snagging of clothing.
- The ends of all rails shall not overhang the terminal posts except when such overhang does not constitute a projection hazard to employees.
- Steel or plastic banding shall not be used as a top rail or mid-rail.
- Manila or plastic (or other synthetic) rope being used for top rails or mid rails shall be inspected by a competent person as frequently as necessary to ensure that it continues to meet the strength requirements of paragraph (g) of this section.
- Cross bracing is acceptable in place of a mid rail when the crossing point of two braces is between 20 inches (0.5 m) and 30 inches (0.8 m) above the work platform or as a top rail when the crossing point of two braces is between 38 inches (0.97 m) and 48 inches (1.3 m) above the work platform. The end points at each upright shall be no more than 48 inches (1.3 m) apart.

### FALLING OBJECT PROTECTION

In addition to wearing hardhats each employee on a scaffold shall be provided with additional protection from falling hand tools, debris, and other small objects through the installation of toe boards, screens, or guardrail systems, or through the erection of debris nets, catch platforms, or canopy structures that contain or deflect the falling objects. When the falling objects are too large, heavy or massive to be contained or deflected by any of the above-listed measures, the employer shall place such potential falling objects away from the edge of the surface from which they could fall and shall secure those materials as necessary to prevent their falling.

Where there is a danger of tools, materials, or equipment falling from a scaffold and striking employees below, the following provisions apply:

- The area below the scaffold to which objects can fall shall be barricaded, and employees shall not be permitted to enter the hazard area; or
- A toe board shall be erected along the edge of platforms more than 10 feet (3.1 m) above lower levels for a distance sufficient to protect employees below, except on float (ship) scaffolds where an edging of 3/4 x 1 1/2 inch (2 x 4 cm) wood or equivalent may be used in lieu of toe boards; or
- Where tools, materials, or equipment are piled to a height higher than the top edge of the toe board, paneling or screening extending from the toe board or platform to the top of the guardrail shall be erected for a distance sufficient to protect employees below; or
- A guardrail system shall be installed with openings small enough to prevent passage of potential falling objects; or
- A canopy structure, debris net, or catch platform strong enough to withstand the impact forces of the potential falling objects shall be erected over the employees below.

Canopies, when used for falling object protection, shall comply with the following criteria:

- Canopies shall be installed between the falling object hazard and the employees.
- When canopies are used on suspension scaffolds for falling object protection, the scaffold shall be equipped with additional independent support lines equal in number to the number of points supported, and equivalent in strength to the strength of the suspension ropes.
- Independent support lines and suspension ropes shall not be attached to the same points of anchorage.

Where used, toe boards shall be:

- Capable of withstanding, without failure, a force of at least 50 pounds (222 n) applied in any downward or horizontal direction at any point along the toe board (toe boards built in accordance with Appendix A to this subpart will be deemed to meet this requirement); and
- At least three and one-half inches (9 cm) high from the top edge of the toe board to the level of the walking/working surface. Toe boards shall be securely fastened in place at the outermost edge of the platform and have not more than 1/4 inch (0.7 cm) clearance above the walking/working surface. Toe boards shall be solid or with openings not over one inch (2.5 cm) in the greatest dimension.

[44 FR 8577, Feb. 9, 1979; 44 FR 20940, Apr. 6, 1979, as amended at 58 FR 35182 and 35310, June 30, 1993; 61 FR 46025, Aug. 30 1996; 61 FR 59831, Nov. 25, 1996]

II. The central requirements in OSHA's Scaffold Standard, Subpart L, 29 CFR 1926.454, are summarized below.

OSHA 29 CFR 1926.454 - Training requirements.

This section supplements and clarifies the requirements of OSHA 29 CFR 1926.21(b)(2) as these relate to the hazards of work on scaffolds.

- The employer shall have each employee who performs work while on a scaffold trained by a person qualified in the subject matter to recognize the hazards associated with the type of scaffold being used and to understand the procedures to control or minimize those hazards. The training shall include the following areas, as applicable:
  - 1 The nature of any electrical hazards, fall hazards and falling object hazards in the work area;
  - 2 The correct procedures for dealing with electrical hazards and for erecting, maintaining, and disassembling the fall protection systems and falling object protection systems being used;
  - 3 The proper use of the scaffold, and the proper handling of materials on the scaffold;
  - 4 The maximum intended load and the load-carrying capacities of the scaffolds used; and
  - 5 Any other pertinent requirements of this subpart.
- The employer shall have each employee who is involved in erecting, disassembling, moving, operating, repairing, maintaining, or inspecting a scaffold trained by a competent person to recognize any hazards associated with the work in question. The training shall include the following topics, as applicable:

## 2 POLICIES AND PROCEDURES CONTINUED

- ① The nature of scaffold hazards;
- ② The correct procedures for erecting, disassembling, moving, operating, repairing, inspecting, and maintaining the type of scaffold in question;
- ③ The design criteria, maximum intended load-carrying capacity and intended use of the scaffold;
- ④ Any other pertinent requirements of this subpart.
- When the employer has reason to believe that an employee lacks the skill or understanding needed for safe work involving the erection, use or dismantling of scaffolds, the employer shall retrain each such employee so that the requisite proficiency is regained. Retraining is required in at least the following situations:
  - ① Where changes at the worksite present a hazard about which an employee has not been previously trained; or
  - ② Where changes in the types of scaffolds, fall protections, falling object protection, or other equipment present a hazard about which an employee has not been previously trained; or
  - ③ Where inadequacies in an affected employee's work involving scaffolds indicate that the employee has not retained the requisite proficiency.

- Step, Platform, and Trestle Ladder Scaffolds
- Single-Point Adjustable Suspension Scaffolds
- Two-Point Adjustable Suspension Scaffolds
- Multi-Point Adjustable Suspension Scaffolds
- Catenary Scaffolds
- Float (Ship) Scaffolds
- Interior Hung Scaffolds
- Needle Beam Scaffolds
- Multi-Level Suspension Scaffolds
- Mobile Scaffolds
- Repair Bracket Scaffolds
- Stilts

### SPECIFIC AREAS TO BE AWARE OF:

- Guardrails must be installed along all open sides and ends of scaffolds that are more than 10-feet above a lower level.
- Guardrails shall be installed between 38 and 45 inches above the platform.
  - ① Mid-rails shall be one-half way between the guardrail and platform.
  - ② Toe boards shall be used in conjunction with all guardrail and mid-rail systems and shall be a minimum of 3-1/2 inches high with no more than 1/4-inch clearance above the walking/working surface.
- When using screens or mesh be aware of the possibility of kiting.
- Do not exceed the load rating of your scaffold. E.g.: Light, medium or heavy (25, 50 or 75 lbs. per square foot or the maximum permissible span of scaffold planks.
- Proper tie-in materials are required above with proper spacing by vertical and horizontal.
- The front edge of a platform shall not exceed 14-inches from the face of the work surface unless guardrails are used along the front edge and/or personal fall arrest systems are used.
- When accepting a delivery the competent person shall check the delivery to verify the entire scaffold system was delivered prior to signing the delivery slip. Any damaged equipment or missing components shall be documented.
- A competent person shall be appointed and responsible for inspecting the scaffold each day prior to use.

### SCAFFOLDING COVERED UNDER OSHA 29 CFR 1926.21 REGULATION ARE AS FOLLOWS:

- Tube and Coupler Scaffolds
- Tubular Welded Frame Scaffolds
- Plasterers; Decorators; and Large Area Scaffolds
- Bricklayers' Square Scaffolds (Squares)
- Horse Scaffolds
- Form Scaffolds & Carpenters Bracket Scaffolds
- Roof Brackets Scaffolds
- Outrigger Scaffolds
- Pole Scaffolds
- Pump Jack Scaffolds
- Ladder Jack Scaffolds
- Window Jack Scaffolds
- Crawling Boards (Chicken Ladders)

### 3 SUMMARY

OSHA's scaffold requirements include some specific criteria that cannot be overlooked. The specific items required for built up scaffold are listed in this document. The requirements of the Scaffold standard are described in OSHA 29 CFR 1926.451. This section describes the components of the scaffold required to maintain compliance with the OSHA standard. The training requirements are described in OSHA 29 CFR 1926.454. These

two portions of the standard contain the most significant portion of the requirements of sub part L, as it relates to built up scaffold. OSHA 29 CFR 1926.452 describes additional scaffold requirements and OSHA 29 CFR 1926.453 covers aerial lifts.

Improper assembly and use of scaffolds can result in injuries, citations, penalties and fines.

### 4 EXCLUSIONS / QUALIFICATIONS

**SCOPE & APPLICATION:** This applies to all scaffolds used in workplaces. It does not apply to crane or derrick suspended personnel platforms that are covered by OSHA 29 CFR 1926.550(g). The criteria for aerial lifts are set out exclusively in OSHA 29 CFR 1926.453.



### 5 GLOSSARY

#### DEFINITIONS (DEPICTED IN OSHA 29 CFR 1926.450)

**Adjustable suspension scaffold:** A suspension scaffold equipped with a hoist(s) that can be operated by an employee(s) on the scaffold.

**Bearer (putlog):** A horizontal transverse scaffold member (which may be supported by ledgers or runners) upon which the scaffold platform rests and which joins scaffold uprights, posts, poles, and similar members.

**Boatswains' chair:** A single-point adjustable suspension scaffold consisting of a seat or sling designed to support one employee in a sitting position.

**Body belt (safety belt):** A strap with means both for securing it about the waist and for attaching it to a lanyard, lifeline, or deceleration device.

**Body harness:** A design of straps which may be secured about the employee in a manner to distribute the fall arrest forces over at least the thighs, pelvis, waist, chest and shoulders, with means for attaching it to other components of a personal fall arrest system.

**Brace:** A rigid connection that holds one scaffold member in a fixed position with respect to another member, or to a building or structure.

**Bricklayers' square scaffold:** A supported scaffold composed of framed squares that support a platform.

**Carpenters' bracket scaffold:** A supported scaffold consisting of a platform supported by brackets attached to building or structural walls.

**Catenary scaffold:** A suspension scaffold consisting of a platform supported by two essentially horizontal and parallel ropes attached to structural members of a building or other structure. Additional support may be provided by vertical pickups.

**Chimney hoist:** A multi-point adjustable suspension scaffold used to provide access to work inside chimneys. (See "Multi-point adjustable suspension scaffold".)

**Cleat:** A structural block used at the end of a platform to prevent the platform from slipping off its supports. Cleats are also used to provide footing on sloped surfaces such as crawling boards.

**Competent person:** One who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

**Continuous run scaffold (Run scaffold):** A two-point or multi-point adjustable suspension scaffold constructed using a series of interconnected braced scaffold members or supporting structures erected to form a continuous scaffold.

**Coupler:** A device for locking together the tubes of a tube and coupler scaffold.

**Crawling board (chicken ladder):** A supported scaffold consisting of a plank with cleats spaced and secured to provide footing, for use on sloped surfaces such as roofs.

## 5 GLOSSARY CONTINUED

**Deceleration device:** Any mechanism, such as a rope grab, rip-stitch lanyard, specially-woven lanyard, tearing or deforming lanyard, or automatic self-retracting lifeline lanyard, which dissipates a substantial amount of energy during a fall arrest or limits the energy imposed on an employee during fall arrest.

**Double pole (independent pole) scaffold:** A supported scaffold consisting of a platform(s) resting on cross beams (bearers) supported by ledgers and a double row of uprights independent of support (except ties, guys, braces) from any structure.

**Equivalent:** Alternative designs, materials or methods to protect against a hazard that the employer can demonstrate will provide an equal or greater degree of safety for employees than the methods, materials or designs specified in the standard.

**Exposed power lines:** Electrical power lines which are accessible to employees and which are not shielded from contact. Such lines do not include extension cords or power tool cords.

**Eye or Eye splice:** A loop with or without a thimble at the end of a wire rope.

**Fabricated decking and planking:** Manufactured platforms made of wood (including laminated wood, and solid sawn wood planks), metal or other materials.

**Fabricated frame scaffold (tubular welded frame scaffold):** A scaffold consisting of a platform(s) supported on fabricated end frames with integral posts, horizontal bearers, and intermediate members.

**Failure:** Load refusal, breakage, or separation of component parts. Load refusal is the point where the ultimate strength is exceeded.

**Float (ship) scaffold:** A suspension scaffold consisting of a braced platform resting on two parallel bearers and hung from overhead supports by ropes of fixed length.

**Form scaffold:** A supported scaffold consisting of a platform supported by brackets attached to formwork.

**Guardrail system:** A vertical barrier, consisting of, but not limited to, top rails, midrails, and posts, erected to prevent employees from falling off a scaffold platform or walkway to lower levels.

**Hoist:** A manual or power-operated mechanical device to raise or lower a suspended scaffold.

**Horse scaffold:** A supported scaffold consisting of a platform supported by construction horses (saw horses). Horse scaffolds constructed of metal are sometimes known as trestle scaffolds.

**Independent pole scaffold:** (see "Double pole scaffold").

**Interior hung scaffold:** A suspension scaffold consisting of a platform suspended from the ceiling or roof structure by fixed length supports.

**Ladder jack scaffold:** A supported scaffold consisting of a platform resting on brackets attached to ladders.

**Ladder stand:** A mobile, fixed-size, self-supporting ladder consisting of a wide flat tread ladder in the form of stairs.

**Landing:** A platform at the end of a flight of stairs.

**Large area scaffold:** A pole scaffold, tube and coupler scaffold, systems scaffold, or fabricated frame scaffold erected over substantially the entire work area. For example: a scaffold erected over the entire floor area of a room.

**Lean-to scaffold:** A supported scaffold that is kept erect by tilting it toward and resting it against a building or structure.

**Lifeline:** A component consisting of a flexible line that connects to an anchorage at one end to hang vertically (vertical lifeline), or that connects to anchorages at both ends to stretch horizontally (horizontal lifeline), and which serves as a means for connecting other components of a personal fall arrest system to the anchorage.

**Lower levels:** Areas below the level where the employee is located and to which an employee can fall. Such areas include, but are not limited to, ground levels, floors, roofs, ramps, runways, excavations, pits, tanks, materials, water, and equipment.

**Masons' adjustable supported scaffold:** (see "Self-contained adjustable scaffold").

**Masons' multi-point adjustable suspension scaffold:** A continuous run suspension scaffold designed and used for masonry operations.

**Maximum intended load:** The total load of all persons, equipment, tools, materials, transmitted loads, and other loads reasonably anticipated to be applied to a scaffold or scaffold component at any one time.

**Mobile scaffold:** A powered or unpowered, portable, caster or wheel-mounted supported scaffold.

**Multi-level suspended scaffold:** A two-point or multi-point adjustable suspension scaffold with a series of platforms at various levels resting on common stirrups.

**Multi-point adjustable suspension scaffold:** A suspension scaffold consisting of a platform(s) that is suspended by more than two ropes from overhead supports and equipped with means to raise and lower the platform to desired work levels. Such scaffolds include chimney hoists.

**Needle beam scaffold:** A platform suspended from needle beams.

**Open sides and ends:** The edges of a platform that are more than 14 inches (36 cm) away horizontally from a sturdy, continuous, vertical surface (such as a building wall) or a sturdy, continuous horizontal surface (such as a floor), or a point of access. Exception: For plastering and lathing operations the horizontal threshold distance is 18 inches (46 cm).



## 5 GLOSSARY CONTINUED

**Outrigger:** The structural member of a supported scaffold used to increase the base width of a scaffold in order to provide support for and increased stability of the scaffold.

**Outrigger beam (Thrustout):** The structural member of a suspension scaffold or outrigger scaffold which provides support for the scaffold by extending the scaffold point of attachment to a point out and away from the structure or building.

**Outrigger scaffold:** A supported scaffold consisting of a platform resting on outrigger beams (thru stouts) projecting beyond the wall or face of the building or structure, the inboard ends of which are secured inside the building or structure.

**Overhand bricklaying:** The process of laying bricks and masonry units such that the surface of the wall to be jointed is on the opposite side of the wall from the mason, requiring the mason to lean over the wall to complete the work. It includes mason tending and electrical installation incorporated into the brick wall during the overhand bricklaying process.

**Personal fall arrest system:** A system used to arrest an employee's fall. It consists of an anchorage, connectors, a body belt or body harness and may include a lanyard, deceleration device, lifeline, or combinations of these.

**Platform:** A work surface elevated above lower levels. Platforms can be constructed using individual wood planks, fabricated planks, fabricated decks, and fabricated platforms.

**Pole scaffold** (*see definitions for "Single-pole scaffold" and "Double (independent) pole scaffold"*).

**Power operated hoist:** A hoist that is powered by other than human energy.

**Pump jack scaffold:** A supported scaffold consisting of a platform supported by vertical poles and movable support brackets.

**Qualified:** One who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated his/her ability to solve or resolve problems related to the subject matter, the work, or the project.

**Rated load:** The manufacturer's specified maximum load to be lifted by a hoist or to be applied to a scaffold or scaffold component.

**Repair bracket scaffold:** A supported scaffold consisting of a platform supported by brackets which are secured in place around the circumference or perimeter of a chimney, stack, tank or other supporting structure by one or more wire ropes placed around the supporting structure.

**Roof bracket scaffold:** A rooftop-supported scaffold consisting of a platform resting on angular-shaped supports.

**Runner (ledger or ribbon):** The lengthwise horizontal spacing or bracing member that may support the bearers.

**Scaffold:** Any temporary elevated platform (supported or suspended) and its supporting structure (including points of anchorage), used for supporting employees or materials or both.

**Self-contained adjustable scaffold:** A combination supported and suspension scaffold consisting of an adjustable platform(s) mounted on an independent supporting frame(s) not a part of the object being worked on, and which is equipped with a means to permit the raising and lowering of the platform(s). Such systems include rolling roof rigs, rolling outrigger systems, and some masons' adjustable supported scaffolds.

**Shore scaffold:** A supported scaffold that is placed against a building or structure and held in place with props.

**Single-point adjustable suspension scaffold:** A suspension scaffold consisting of a platform suspended by one rope from an overhead support and equipped with means to permit the movement of the platform to desired work levels.

**Single-pole scaffold:** A supported scaffold consisting of a platform(s) resting on bearers, the outside ends of which are supported on runners secured to a single row of posts or uprights, and the inner ends of which are supported on or in a structure or building wall.

**Stair tower (Scaffold stairway/tower):** A tower comprised of scaffold components and which contains internal stairway units and rest platforms. These towers are used to provide access to scaffold platforms and other elevated points such as floors and roofs.

**Stall load:** The load at which the prime mover of a power-operated hoist stalls or the power to the prime mover is automatically disconnected.

**Step, platform, and trestle ladder scaffold:** A platform resting directly on the rungs of stepladders or trestle ladders.

**Stilts:** A pair of poles or similar supports with raised footrests, used to permit walking above the ground or working surface.

## 5 GLOSSARY CONTINUED

### **Stonesetters' multi-point adjustable suspension scaffold:**

A continuous run suspension scaffold designed and used for stonemasons' operations.

**Supported scaffold:** One or more platforms supported by outrigger beams, brackets, poles, legs, uprights, posts, frames, or similar rigid support.

**Suspension scaffold:** One or more platforms suspended by ropes or other non-rigid means from an overhead structure(s).

**System scaffold:** A scaffold consisting of posts with fixed connection points that accept runners, bearers, and diagonals that can be interconnected at predetermined levels.

**Tank builders' scaffold:** A supported scaffold consisting of a platform resting on brackets that are either directly attached to a cylindrical tank or attached to devices that are attached to such a tank.

**Top plate bracket scaffold:** A scaffold supported by brackets that hook over or are attached to the top of a wall. This type of scaffold is similar to carpenters' bracket scaffolds and form scaffolds and is used in residential construction for setting trusses.

**Tube and coupler scaffold:** A supported or suspended scaffold consisting of a platform(s) supported by tubing, erected with coupling devices connecting uprights, braces, bearers, and runners.

**Tubular welded frame scaffold:** (see "Fabricated frame scaffold").

**Two-point suspension scaffold (swing stage):** A suspension scaffold consisting of a platform supported by hangers (stirrups) suspended by two ropes from overhead supports and equipped with means to permit the raising and lowering of the platform to desired work levels.

**Unstable objects:** Items whose strength, configuration, or lack of stability may allow them to become dislocated and shift and therefore may not properly support the loads imposed on them. Unstable objects do not constitute a safe base support for scaffolds, platforms, or employees. Examples include, but are not limited to, barrels, boxes, loose brick, and concrete blocks.

**Vertical pickup:** A rope used to support the horizontal rope in catenary scaffolds.

**Walkway:** A portion of a scaffold platform used only for access and not as a work level.

**Window jack scaffold:** A platform resting on a bracket or jack which projects through a window opening.



## 6 APPENDIX/ADDITIONAL RESOURCES

### OSHA 29 CFR 1926.451 – General Requirements

[http://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_table=STANDARDS&p\\_id=10752](http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10752)

### OSHA 29 CFR 1926.452 – Additional requirements applicable to specific types of scaffolds

[http://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_table=STANDARDS&p\\_id=10753](http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10753)

### OSHA 29 CFR 1926.453 – Aerial lifts

**This section is not covered in this document.**

[http://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_table=STANDARDS&p\\_id=10754](http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10754)

### OSHA 29 CFR 1926.454 – Training Requirements

[http://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_table=STANDARDS&p\\_id=10755](http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10755)

### Scaffolding eTool: Suspended Scaffolds: Platform

<http://www.osha.gov/SLTC/etools/scaffolding/suspended/twopoint/platform.html>

### OSHA 29 CFR 1926.450 – Scope, application and definitions applicable to this subpart.

**The definitions are covered in the Glossary of this document.**

[http://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_table=STANDARDS&p\\_id=10751](http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10751)

### Appendix A covers 1926, Subpart L, App A – Scaffold Specifications

[http://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_table=STANDARDS&p\\_id=10917](http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10917)

### Appendix B covers 1926, Subpart L, App B – Criteria for Determining the Feasibility of Providing Safe Access and Fall Protection for Scaffold Erectors and Dismantlers

[http://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_table=STANDARDS&p\\_id=10918](http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10918)

### Appendix C includes 1926, Subpart L, App C – List of National Consensus Standards

[http://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_table=STANDARDS&p\\_id=10919](http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10919)

### Appendix D covers 1926, Subpart L, App D – List of Training Topics for Scaffold Erectors and Dismantlers

[http://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_table=STANDARDS&p\\_id=10920](http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10920)

### Appendix E covers 1926, Subpart L, App E – Drawings and Illustrations

[http://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_table=STANDARDS&p\\_id=10921](http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10921)

### Consultation: Free On-Site Safety and Health Services

<http://www.osha.gov/dcsp/smallbusiness/consult.html>







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SEALANT, WATERPROOFING & RESTORATION INSTITUTE

# SAFETY & HEALTH MANUAL

## SILICA EXPOSURE PROGRAM



### TABLE OF CONTENTS

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2	Policies and Procedures	5	Glossary
3	Summary	6	Appendix / Additional Resources



## 1 INTRODUCTION

The SWR Institute Crystalline Silica Exposure Control Policy is established to inform all employees and help ensure protection from the respiratory and health hazards posed by crystalline silica exposure in the workplace. Through the education, training and the proper use of engineering controls, we can establish safe work practices.

Respirator protection is to be used at all times when exposure to crystalline silica at any concentration is known or suspected, including conditions where positive engineering controls are employed. Refer to the SWR Institute Respiratory Protection program that covers OSHA 29 CFR 1926.103 — Respiratory Protection — and OSHA 1910.134 — Respiratory Protection for compliance requirements of the Respiratory Protection Standard.

While the Occupational Safety & Health Administration (OSHA) has not established a comprehensive substance specific standard for silica exposure, OSHA has established a Permissible Exposure Limit (PEL), which establishes the



maximum amount of airborne crystalline silica that an employee may be exposed to during a work shift. The PEL for crystalline silica is dependent upon the type of silica and the percentage of free silica that is present in the dust generated by the work operation. Given the wide range of work operations and environments that employees may encounter, it is impractical, and in many cases impossible, to determine PEL for crystalline silica exposure. As such, this policy requires respiratory protection for all employees involved in work that may create or expose them to crystalline silica. In such cases, the provisions of this policy will apply.

### VOLUNTARY USE

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.

## 2 POLICIES AND PROCEDURES

Typical activities that may result in such exposure may include but are not limited to:

- Demolition or salvage of structures where crystalline silica or materials containing crystalline silica are present;
- Abrasive blasting using blasting agents that contain crystalline silica, or abrasive blasting on substrates that contain crystalline silica;
- Removal or handling of materials containing free crystalline silica;
- Cutting, sanding, drilling, crushing, grinding, sawing, scraping, jack-hammering, excavating or disturbing materials that contain crystalline silica (such materials include but are not limited to, concrete, brick, block, mortar, rock, and soils); and
- Transportation, disposal, storage, or containment of crystalline silica or materials containing crystalline silica on the site or location at which construction activities are performed.

### INITIAL EXPOSURE ASSESSMENT

Where the presence of crystalline silica is known or suspected on a jobsite, an initial determination will be made as to whether an employee working in that area will be exposed to any levels of crystalline silica through the course of performing assigned work. This assessment may be accomplished by the direct inspection, monitoring, or testing of the affected area, or by obtaining reliable and current, objective or sampling data previously collected on the area.

All new jobsites known or suspected to contain the possibility of an occupational crystalline silica exposure hazard, will be assessed to determine:

- The level of silica exposure expected during the course of the work to be performed;
- The actions necessary to insure the protection of the employees; and
- The extent to which the provisions of this policy apply.

## 2 POLICIES AND PROCEDURES CONTINUED

In many cases workers may be exposed to jobsite hazards for which they have no direct control. Moreover, the many changes in work settings that characterize the construction industry in general and our company's role as a construction contractor in those settings, warrants continued careful evaluation by site supervisors and foremen to ensure that our employees are kept informed of all changing hazardous work conditions that may present themselves.

Company employees are to assume that any area known to contain crystalline silica or crystalline silica composite materials will have concentration level above the permissible exposure limits (PEL) unless certified otherwise by a certified industrial hygienist. If one wants to assume there is an over-exposure, then all of the requirements of the standard must be complied.

Once the area has been evaluated, the employees working on the site will be trained on the specific hazards associated with the crystalline exposure and instructed on what the procedures will be required for entry and the performance of work.

### GENERAL REQUIREMENTS AND PRECAUTIONARY MEASURES

When the work to be performed results in crystalline silica exposure at any concentration, or is required in an area containing free crystalline silica or crystalline silica-containing materials and could result an employee being incidentally exposed to concentrations in excess of the permissible exposure limit, the following precautions will be taken by all employees working in the area.

#### ENGINEERING CONTROLS

Engineering controls shall be employed to limit the concentrations and exposure to crystalline silica whenever feasible. Engineering controls may include but are not limited to: Dust collection/evacuation systems (central or tool specific) area ventilation systems or wet methods. Where dust collection/filtration systems that collect crystalline silica from the air are employed, provisions must be established for the safe handling and disposal of collected crystalline silica dusts and crystalline silica contaminated filters. Documentation or reasoning must be provided while engineering controls are not feasible.

#### RESPIRATORY PROTECTION

Employees must wear, as a minimum, full-face, negative pressure, air-purifying respirators equipped with High Efficiency Particulate (HEPA) type filters or equivalent at all times. The provisions of the written Respiratory Protection Program will apply at all times.

#### FULL BODY PROTECTION

Where the potential exists for the excessive accumulation of crystalline silica on employee's clothes, all employees engaged in these operations will wear disposable coveralls or one-piece, full bodywork suits (Tyvek or equivalent) with head covers, shoe coverlets, and work gloves.

#### OTHER PERSONAL PROTECTIVE EQUIPMENT

Employees working in the affected area may be required to wear other personal protective equipment items as determined by the work being performed or contractual requirements (i.e. hard hat, reflective safety vest, safety glasses, etc.); the wearing of this equipment will not preclude or interfere with need for respiratory or full body protection as required above.

#### CHANGING AREA

Prior to the start of work in any area known to contain high levels of crystalline silica or the work to be performed is likely to generate high levels of crystalline silica, an area will be established for changing into and out of protective clothing and required personal protective equipment. The area must be located outside of the area containing crystalline silica or crystalline silica-containing materials, but close enough to the work area as to limit the travel distance from the work area to the changing area.

The designated changing area must be clean and contain separate storage containers for the employee's street clothes and contaminated protective clothing that prevents cross contamination.

#### CLOTHES CHANGING AND REPLACEMENT

When designated changing areas are employed, upon leaving the work area for extended breaks (i.e. lunch) or at the end of the work day, all protective clothing will be removed in a contained, designated changing area and collected on site for disposal. Soiled protective clothing will be collected in a closed container located in the changing area which prevents dispersion of crystalline silica outside of the container and marked as crystalline silica contaminated waste for disposal.

Employees must not attempt to remove crystalline silica or crystalline silica-contaminated work dirt and debris from protective clothing, equipment, or work surfaces by blowing, shaking, or any other means that may disperse the crystalline silica into the air.

In the event that contaminated clothing or personal protective equipment is to be collected and cleaned/decontaminated, it will be collected in a separate container and marked with the following warning:

#### CAUTION:

Dispose of crystalline silica contaminated wash water in accordance with applicable local, state, or federal regulations

#### HOUSEKEEPING

When cleaning up job sites, floors and other surfaces where excessive amounts of crystalline silica can accumulate, shall wherever possible, be cleaned by vacuuming or other method that minimizes the likelihood of crystalline silica from becoming airborne. Shoveling, dry or wet sweeping, and brushing may be used only where vacuuming or other equally effective methods have been tried and found not to be effective. Where vacuuming methods are employed, the vacuums must be

## 2 POLICIES AND PROCEDURES CONTINUED

equipped with HEPA filters and used and emptied in a manner that minimizes the reentry of crystalline silica into the workplace.

Upon completion of work or upon removal of tools and equipment from areas containing crystalline silica or crystalline silica-containing material, employees must wipe all tools and equipment items off inside the areas before removing them from the work site. Rags and wipers used for cleaning of tools, equipment or other finished work surfaces, must be collected in a separate container and disposed of as crystalline silica-contaminated waste.

### HYGIENE FACILITIES AND PRACTICES

Employees must wash their hands and face at the end of each work shift or upon leaving areas containing crystalline silica or crystalline silica-containing materials for extended breaks or off-site errands. If the jobsite does not contain adequate washing facilities, portable washing stations will be provided in or adjacent to the designated changing area.

Food or drinks will not be taken into, or consumed inside areas containing crystalline silica or crystalline silica-containing materials. A designated break/eating area will be established at the start of the job to insure that employees have a clean area for rest and meal breaks. Smoking on the jobsite will be prohibited at all times. Smoking or the chewing of tobacco or gum will not be permitted in areas containing crystalline silica or crystalline silica-containing materials at any time. Designated smoking areas may be established outside of the crystalline silica exposure areas, changing area, and break area for employees who wish to smoke, provided they are located in areas approved for smoking by the general contractor and/or site owner.

### MEDICAL SURVEILLANCE

It is not expected that any employee will be exposed to concentrations of crystalline silica at or above the Permissible Exposure Limits (PEL) during the course of their work activities. Therefore, mandatory medical surveillance shall not routinely be performed for all employees working in areas known to contain crystalline silica or crystalline silica-containing materials. A medical evaluation in accordance with OSHA 29 CFR 1910.134 APP. E is required for employees using Elastomeric respiratory protection.

If it is found that an employee became exposed to concentrations of crystalline silica above the Permissible Exposure Limit (PEL) without adequate respiratory protection, medical testing will be performed in accordance with the OSHA regulation.

### LOCAL PERMITTING REQUIREMENTS

Several jurisdictions have established pre-inspection and permitting procedures that must be met whenever any type of work is to be performed that could create free crystalline silica exposures in the open environment. The project manager team and job foremen are responsible to determine if any such pre-inspection/permitting is required and insure that the appropriate approval actions are taken, prior to starting any work the could generate free crystalline silica or create a crystalline silica exposure in the environment.

### EMPLOYEE INFORMATION AND TRAINING

Prior to assignment or start up of work in areas known to contain crystalline silica or potential exposure to crystalline silica materials, all affected employees will be provided with information concerning crystalline silica hazards according to the requirements of OSHA's Hazard Communication Standard for the construction industry, 29 CFR 1926.59.

In addition, each employee will receive trained in the following:

- The OSHA Recommended Precautions for Occupational Crystalline Silica Exposure in General Industry;
- The specific nature of the types of work to be performed which could result in exposure to crystalline silica;
- Engineering control options in the work environments and safe work practices to be followed; and
- The provisions of this exposure plan and any site specific job hazard analysis performed.

In general, training and re-training is required at least annually or under the following circumstances:

- Prior to entry into a new area containing crystalline silica or crystalline silica containing materials;
- Prior to a change in assigned duties involving areas containing crystalline silica or crystalline silica-containing materials;
- When a change in areas containing crystalline silica or crystalline silica-containing materials present a new hazard to employees; and
- When it is determined that an employee's knowledge is inadequate.

### 3 SUMMARY

**T**here is potential for danger ONLY when crystalline silica particles are in the air. There may be materials that contain silica but if the operations on those materials do not generate dust, there is little chance of inhaling the silica. Likewise, there may be silica particles in the air even though you don't see any dust.

If the employer suspects that silica is a hazard at the workplace, even though it is not known for sure, he/she is still

required by OSHA to communicate this potential hazard to all employees.

To determine the presence of silica in your workplace you should:

- Identify factors that indicate probable use of silica
- Check product labels
- Check the Material Safety Data Sheets

### 4 EXCLUSIONS / QUALIFICATIONS

Refer to the following OSHA programs for more complete coverage of this subject:

Respiratory Protection Standard- 29 CFR 1926.103 and 1910.134.

Hazard Communication Standard for the Construction Industry, 29 CFR 1926.59.



### 5 GLOSSARY

**Agate:** Cryptocrystalline form of silica. Composed of extremely fine (submicroscopic) crystals of silica.

**Amorphous:** Solid material that is composed of randomly orientated atoms, ions, or molecules that do not form defined patterns or lattice structures (non-crystalline).

**Chalcedony:** Cryptocrystalline silica. Composed of extremely fine (submicroscopic) silica crystals.

**Citation:** Under Section 17 of the Occupational Safety and Health Act, OSHA is authorized to give citations to employees. Citations describe the item or items within the workplace that do not comply with OSHA regulations, date when the items must be corrected, and any associated fine or penalty. Employer and employee rights and responsibilities are also included in the citation.

**Chert:** Cryptocrystalline silica. Composed of extremely fine (submicroscopic) silica crystals.

**Colloidal Silica:** Extremely fine amorphous silica particles dispersed in water. Colloids do not settle out of suspension over time. Colloidal silica is used commercially as binders and stiffeners and as polishing agents.

**Cristobalite:** The form of crystalline silica that is stable at the highest temperature. It occurs naturally in volcanic rock.

**Crystalline:** Solid material composed of regularly repeating atoms, ions, or molecules that form defined patterns or lattice structures.

**Diatomaceous Earth:** See Diatomite.

**Diatomite:** A rock, high in amorphous silica content, formed from the structures of tiny fresh- and salt-water organisms called diatoms. Diatomite has several commercial uses.

**Fumed Silica:** An amorphous form of silica formed by the combustion of silicon tetrachloride in hydrogen-oxygen furnaces.

**Fused Quartz:** The material formed by the rapid melting of quartz crystals. A meteor strike or lightning bolt striking sand can form fused quartz. The term quartz glass is often erroneously used to mean fused quartz, but quartz glass is a misnomer because quartz is crystalline and glass is noncrystalline.

**Fused Silica:** The material formed by heating cristobalite to the melting point (1710° C) and cooling it rapidly.

**Jasper:** Cryptocrystalline silica. Composed of extremely fine (submicroscopic) silica crystals.

**Label:** 29 CFR 1910.1200 (Manufacturer's Responsibility)

(f) "Labels and other forms of warning." (1) The chemical manufacturer, importer, or distributor shall ensure that each container of hazardous chemicals leaving the workplace is labeled, tagged or marked with the following information: (i)



## 5 GLOSSARY CONTINUED

Identity of the hazardous chemical(s); (ii) Appropriate hazard warnings; and (iii) Name and address of the chemical manufacturer, importer, or other responsible party.

29 CFR 1910.1200 (Employer's Responsibility)

(I) Employers shall ensure that labels on incoming containers of hazardous chemicals are not removed or defaced;

**Material Safety Data Sheet:** 29 CFR 1910.1200

**Manufacturer's Responsibility:** (1) Chemical manufacturers and importers shall obtain or develop a material safety data sheet for each hazardous chemical they produce or import. Employers shall have a material safety data sheet in the workplace for each hazardous chemical they use. (2) Each material safety data sheet shall be in English (although the employer may maintain copies in other languages as well), and shall contain at least the following information:

- (I) The identity used on the label, and, except as provided for in paragraph (I) of this section on trade secrets: OSHA 29 CFR 1910.1200(g)(2)(I)(A)
- {2} The chemical and common name(s) of all ingredients which have been determined to be health hazards, and which comprise less than 1% (0.1% for carcinogens) of the mixture, if there is evidence that the ingredient(s) could be released from the mixture in concentrations which would exceed an established OSHA permissible exposure limit or ACGIH Threshold Limit Value, or could present a health risk to employees; and,
- {3} The chemical and common name(s) of all ingredients which have been determined to present a physical hazard when present in the mixture;
- (ii) Physical and chemical characteristics of the hazardous chemical (such as vapor pressure, flash point);
- (iii) The physical hazards of the hazardous chemical, including the potential for fire, explosion, and reactivity;
- (iv) The health hazards of the hazardous chemical, including signs and symptoms of exposure, and any medical conditions which are generally recognized as being aggravated by exposure to the chemical;
- (v) The primary route(s) of entry;
- (vi) The OSHA permissible exposure limit, ACGIH Threshold Limit Value, and any other exposure limit used or recommended by the chemical manufacturer, importer, or employer preparing the material safety data sheet, where available;
- (vii) Whether the hazardous chemical is listed in the National Toxicology Program (NTP) Annual Report on Carcinogens (latest edition) or has been found to be a potential carcinogen in the International Agency for Research on Cancer (IARC) Monographs (latest editions), or by OSHA;
- (viii) Any generally applicable precautions for safe handling and use which are known to the chemical manufacturer, importer or employer preparing the material safety data sheet, including appropriate hygienic practices, protective

measures during repair and maintenance of contaminated equipment, and procedures for clean-up of spills and leaks;

- (ix) Any generally applicable control measures which are known to the chemical manufacturer, importer or employer preparing the material safety data sheet, such as appropriate engineering controls, work practices, or personal protective equipment;
- (x) Emergency and first aid procedures;
- (xi) The date of preparation of the material safety data sheet or the last change to it; and
- (xii) The name, address and telephone number of the chemical manufacturer, importer, employer or other responsible party preparing or distributing the material safety data sheet, who can provide additional information on the hazardous chemical and appropriate emergency procedures, if necessary.

#### Employer's Responsibility

(ii) Employers shall maintain copies of any material safety data sheets that are received with incoming shipments of the sealed containers of hazardous chemicals, shall obtain a material safety data sheet as soon as possible for sealed containers of hazardous chemicals received without a material safety data sheet if an employee requests the material safety data sheet, and shall ensure that the material safety data sheets are readily accessible during each work shift to employees when they are in their work area(s).

**Opal:** An amorphous form of silica.

**PPE:** Personal protective equipment used to prevent worker exposure to silica. This includes respirators, hoods, gloves, goggles, etc.

**29 CFR 1910.1200:** Occupational Safety and Health Administration's Hazard Communications Standard.

**Permissible Exposure Limit (PEL):** This is the airborne concentration of silica above which employees cannot be exposed.

**Precipitated Silica:** Amorphous silica that is precipitated from either a vapor or solution.

**Quartz:** The most common type of crystalline silica. Some publications will use quartz and crystalline silica interchangeably, but the term crystalline silica actually encompasses several forms: quartz, cristobalite, tridymite, and several rarer forms. Also the term sand is used interchangeably.

**Radiolarian Earth:** Soil, high in amorphous silica content, composed predominantly from the remains of radiolaria. Radiolarian earth that has been consolidated (hardened) into rock is called radiolarite.

**Radiolarite:** A rock, high in amorphous silica content, formed from the shells of tiny fresh- and salt-water organisms called radiolaria.

**Silica:** The common name for silicon dioxide. A compound formed from silicon and oxygen. Silica is a polymorph, that is, it exists in more than one state. The states of silica are crystalline and noncrystalline (also called amorphous). Crystalline silica can take several forms: quartz (most common), cristobalite, tridymite, and four rare forms.

## 5 GLOSSARY CONTINUED

**Silica Brick:** Brick composed of silica that is used as a lining in furnaces.

**Silica Gel:** Amorphous silica, prepared in formation with water. Removal of the liquid creates xerogels and further treatment with alcohol creates aerogels. Silica gels are used as drying agents and to alter viscosity of liquids.

**Silica Flour:** Finely ground quartz, typically 98 percent of the particles is below 55 microns in diameter.

**Silica Sand:** A common term in industry. It generally is used to mean sand that has a very high percentage of silica, usually in the

form of quartz. Silica sand is used as a source of pure silicon and as a raw material for glass and other products. Also called quartz sand.

**Silicate:** A common name for compounds that are composed of atoms of silicon, oxygen, one or more metals and possibly hydrogen. Many natural minerals are silicates.

**Tridymite:** A form of crystalline silica. It is found in nature in volcanic rocks and stony meteorites. It is also found in fired silica bricks.

**Tripoli:** (rottenstone) Soft decomposed rock that may contain crystalline (quartz) or amorphous forms of silica.

## 6 APPENDIX / ADDITIONAL RESOURCES

**Determine if Silica exposure is present in your workplace.**

<http://www.osha.gov/SLTC/etools/silica/silicosis/silicosis.html>

**Silica eTool**

<http://www.osha.gov/SLTC/etools/silica/index.html>

**Crystalline Silica Exposure: Health Hazard Information**

[www.osha.gov/Publications/OSHA-3177.pdf](http://www.osha.gov/Publications/OSHA-3177.pdf)

**Crystalline Silica Exposure: Health Hazard Information [Spanish]**

[www.osha.gov/Publications/OSHA-3179.pdf](http://www.osha.gov/Publications/OSHA-3179.pdf)

**Consultation: Free On-Site Safety and Health Services**

<http://www.osha.gov/dcsp/smallbusiness/consult.html>



SEALANT, WATERPROOFING & RESTORATION INSTITUTE

# SAFETY & HEALTH MANUAL

## SITE SPECIFIC SAFETY PLAN



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## 1 INTRODUCTION

This section of SWR Institute's Safety & Health Manual is dedicated to ensuring job site safety as recommended by OSHA. Thorough job site safety preparation requires planning and procedure implementation before onsite work commences. The forms and checklists contained herein are provided to help companies plan and prepare for the various

hazards that are part of all construction and repair work. By utilizing these tools, a company can build a step-by-step action plan to train its employees how to foresee potential dangers and take necessary precautions, as well as the procedures to follow when accidents occur.

## 2 STEPS FOR DEVELOPING A SITE-SPECIFIC SAFETY PLAN

1. **Determine the scope of work.**
  - a. Involve project management
  - b. Determine hazardous materials to be used
2. **Establish all specific tasks involved with the project.**
  - a. Develop a Job Safety Analysis (JSA) for each task
3. **Determine the location of the nearest medical facility.**
  - a. Establish dialogue with medical facility staff to make prior arrangements for:
    - i. Worker's Compensation claims, billing, etc.
    - ii. Direct billing
    - iii. Case management
    - iv. Drug screening
    - v. Pre-employment physicals
    - vi. Etc.
  - b. Determine the fastest, most convenient route to the medical facility, print map with route directions (MapQuest works well) and include in the Site Specific Safety Plan (SSSP).
4. **Survey jobsite** to ascertain existing and potential hazards to workers, as well as building occupants and pedestrians. Keep in mind that the work to be performed may transform a safe area to a highly hazardous one. For example: the removal of balcony railings creates a significant fall hazard where workers must wear Personal Fall Arrest System (PFAS) and measures must be taken to keep occupants from gaining access to the balconies. The person surveying the jobsite must anticipate issues such as this and is why determining the scope of the work is step #1. Determine control and abatement methods/procedures for hazards identified during survey:
  - i. Elimination – controlling the hazard at source
  - ii. Substitution – replacing one substance or activity with a less hazardous one
  - iii. Engineering controls – installing guards on machinery
  - iv. Administrative controls - policies and procedures for safe work practices
  - v. Personal protective equipment (PPE) – PFAS, respirators, earplugs, etc.
5. **Establish an Emergency Action Plan (EAP) specific to the site.** Specify the following and include in the plan:
  - a. Contact info – project and property management
  - b. First aid location(s) – supplied and existing
  - c. Eye-wash station(s) – supplied and existing
  - d. Fire extinguisher location(s) – supplied and existing
  - e. Location of Material Safety Data Sheets
  - f. Flammable storage area(s)
  - g. Smoking/non-smoking areas
  - h. Waste removal plan
  - i. Additional?
6. **Plan must be reviewed/approved by Project Manager, Safety Manager and Property Manager.**
7. **Match workers to task** – ensure workers are trained and capable of performing all tasks safely.
8. **Ensure all workers are familiar with the plan** – an extended, documented toolbox talk is an effective way of accomplishing this.
9. **Use the tools and documents in sections 3 through 8 below in efforts to develop a comprehensive Site Specific Safety Plan.**





### 3 PRE-PROJECT SAFETY & HEALTH CHECKLIST

Contractor \_\_\_\_\_ Date prepared \_\_\_\_\_

Prepared by (Foreman if possible) \_\_\_\_\_ Phone \_\_\_\_\_ Cell \_\_\_\_\_

Foreman/Supervisor for the job \_\_\_\_\_ Phone \_\_\_\_\_ Cell \_\_\_\_\_

Employee responsible for safety inspections \_\_\_\_\_ Phone \_\_\_\_\_ Cell \_\_\_\_\_

List the work crews to be briefed about this analysis \_\_\_\_\_

\_\_\_\_\_ Date of briefing \_\_\_\_\_

Job description \_\_\_\_\_

Job number \_\_\_\_\_ Job location (Bldg.No./Site) \_\_\_\_\_

**Submission of this completed form is a prerequisite for issuance of the Start Work Notice.**

**Instructions:** Complete this form for all construction work. Identify all hazards that could be present in the job to be performed. If a box is checked "Yes", then state the hazard and *describe your hazard control method*. If a hazard is not listed below and is present on the job, then check the box for item 41 "Other" and *describe hazard and hazard control method*.

YES    NO

EXAMPLE            Ladders/Scaffolds/Stairways – for example: Body Harness, Lanyards, Training, Safety Net, Other

Hazard/Hazard Control    Ladder Use - Our employees are only using 6-foot ladders. If a greater height needs to be reached, a man basket will be used.

**Yes    No**

1.            Fall Protection – For example: Fall Protection Plan, Body Harness, Lanyards, Guardrails, Handrails, Training, Other

Hazard/Hazard Control \_\_\_\_\_

2.            Ladders / Scaffolds / Stairways – For example: Body Harness, Lanyards, Safety Net, Aerial Lifts, Guardrails, Training, Other

Hazard/Hazard Control \_\_\_\_\_

3.            Excavation / Trenching / Shoring – For example: Excavation Permit, Selection of Protective Systems, Shoring, Slope Detail, Spoils Pile, Soil Classification, Sloping and Benching, Hydraulic Shoring, Access Ladders, Traffic Plates, Other

Hazard/Hazard Control \_\_\_\_\_

4.            Lockout and Tagout Control of Hazardous Energy – For example: Locks and Tags, Blinds, Safety Meetings, Training, Other

Hazard/Hazard Control \_\_\_\_\_

5.            Electrical Hot Work, Permit Required – For example: Energized Electrical Permit, Rubber Mat, Sleeves, PPE, Other

Hazard/Hazard Control \_\_\_\_\_

6.            Electrical / Power Transmission – For example: Wiring Design, Wiring Protection, Hazardous Location Installation, Other

Hazard/Hazard Control \_\_\_\_\_

7.            Hoisting / Rigging – For example: Operator Permits, Equipment Inspections and Tags, Training, Other

Hazard/Hazard Control \_\_\_\_\_

### 3 PRE-PROJECT SAFETY & HEALTH CHECKLIST CONTINUED

Yes No

8.   Confined Space – For example: ESH Entry Approval/Permit, Training, Air Monitoring, Rescue Plan and Equipment, Other  
Hazard/Hazard Control\_\_\_\_\_
9.   Demolition – For example: Preparatory Operations, Work Practices, Chutes, Mechanical Demolition, Barricades, Other  
Hazard/Hazard Control\_\_\_\_\_
10.   Signs/Signals/Barricades – For example: Caution Tape, Barriers, Barricades, Signs, Traffic Cones, Tags, Traffic Vests, Other  
Hazard/Hazard Control\_\_\_\_\_
11.   Head Protection and Rollover Protective Structure – For example: Hard Hats, Bump Caps, Equipment Inspection, Other  
Hazard/Hazard Control\_\_\_\_\_
12.   Eye Protection – For example: Safety Glasses, Safety Goggles, Face Shields, Portable Eye Wash Unit, Other  
Hazard/Hazard Control\_\_\_\_\_
13.   Ear Protection – For example: Ear Plugs, Ear Muffs, Other  
Hazard/Hazard Control\_\_\_\_\_
14.   Breathing Protection – For example: Engineering Controls, Respirators, Air Filters, Dust Masks, HEPA Filters, Other  
Hazard/Hazard Control\_\_\_\_\_
15.   Hand Protection – For example: Gloves, Gauntlets, Sleeves, Barriers, Cream, Other  
Hazard/Hazard Control\_\_\_\_\_
16.   Torso Protection – For example: Flame Resistant Clothing, Coveralls, Aprons, Bib Overalls, Other  
Hazard/Hazard Control\_\_\_\_\_
17.   Foot Protection – For example: Steel Toed Shoes, Metatarsal Guards, Boots, Other  
Hazard/Hazard Control\_\_\_\_\_
18.   Site Exits / Means of Egress – For example: Emergency Action Plans -- Marked and Clear, Outdoor Job, Other  
Hazard/Hazard Control\_\_\_\_\_
19.   Fire Protection/Prevention – For example: Extinguishers, Fire Watch, 2-Way Radio, Pull Box, Alarms, Other  
Hazard/Hazard Control\_\_\_\_\_
20.   Welding/Cutting/Brazing – For example: Welding/Burn Permit, Fire Watch, Fire Blanket, Site Screen, Gas Bottle Safety, Other  
Hazard/Hazard Control\_\_\_\_\_
21.   Hot Work, Permit Required – For example: Welding, Brazing, Torch Cutting, Temporary Heating, Pressured Air Line, Other  
Hazard/Hazard Control\_\_\_\_\_

### 3 PRE-PROJECT SAFETY & HEALTH CHECKLIST CONTINUED

Yes No

22.   Material Handling, Storage, Use, and Disposal – For example: Flammables, Combustibles, Labeling, Gas Bottle Storage, LP-Gas Safety, Safety Containers/Cans, Waste Materials, Disposal Process, Other  
Hazard/Hazard Control\_\_\_\_\_
23.   Concrete / Masonry – For example: Debris Pile, Chutes, Wet Cuts, Other  
Hazard/Hazard Control\_\_\_\_\_
24.   Crane / Derrick / Hoist / Helicopter / Conveyors – For example: Drum Hoists, Elevators, Cable Inspections, Other  
Hazard/Hazard Control\_\_\_\_\_
25.   Tunnel / Shaft / Caissons / Compressed Air – For example: Underground Construction, Cofferdams, Blasting Safety, Other  
Hazard/Hazard Control\_\_\_\_\_
26.   Steel Erection – For example: Falling Object Protection, Site-Specific Erection Plan, Construction Sequence, Other  
Hazard/Hazard Control\_\_\_\_\_
27.   Vehicle Safety / Mechanized Equipment – For example: Operator Permits, Equipment Inspection, Hydraulic Inspection, Other  
Hazard/Hazard Control\_\_\_\_\_
28.   Construction Power – For example: Extension Cords, GFCI, Generators, Battery Charging, Air Receivers, Other  
Hazard/Hazard Control\_\_\_\_\_
29.   Blasting and Use of Explosives – For example: Blaster Qualifications, Transportation, Storage, Loading, Inspection, Other  
Hazard/Hazard Control\_\_\_\_\_
30.   Powder Actuated Tool Safety – For example: (HILTI) Operator Training, Valid License, Other  
Hazard/Hazard Control\_\_\_\_\_
31.   Power and Hand Tool Safety – For example: Guards, Cords, Ground Prong, GFCI, Jacks, Abrasive Wheels, Other  
Hazard/Hazard Control\_\_\_\_\_
32.   Area Lighting – For example: Flood Lights, Traffic Control Lights, Drop Lights, Flashlights, Other  
Hazard/Hazard Control\_\_\_\_\_
33.   Housekeeping – For example: Debris Pile, Hazardous Waste Disposal Containers, Clear Work Area, Other  
Hazard/Hazard Control\_\_\_\_\_
34.   Traffic Control – For example: Flagman, Signboard, Caution Lights, Traffic Vests, Whistle, Other  
Hazard/Hazard Control\_\_\_\_\_
35.   Hazard Communication / Toxic Substances – For example: Material Safety Data Sheets, Asbestos, Benzene, Other  
Hazard/Hazard Control\_\_\_\_\_

### 3 PRE-PROJECT SAFETY & HEALTH CHECKLIST CONTINUED

Yes No

36.   Ionizing and Non-ionizing Radiation – For example: Radiation Badges, Training, Distance, Shielding, Time, Other

Hazard/Hazard Control\_\_\_\_\_

37.   Environmental – For example: Excavation Permit, Segregated Debris Pile, Asbestos, Run-off Prevention, Other

Hazard/Hazard Control\_\_\_\_\_

38.   Medical Protection – For example: First Aid Kit, C.P.R. Trained Personnel, 2-Way Radio, Telephone 911, Other

Hazard/Hazard Control\_\_\_\_\_

39.   General Health and Safety Provisions – For example: Recordkeeping, Work Practices, Equipment Maintenance, Training, Other

Hazard/Hazard Control\_\_\_\_\_

40.   Sanitation – For example: Drinking Water, Toilets, Eating Areas, Washing Areas, Other

Hazard/Hazard Control\_\_\_\_\_

41.   Other – Identify any other hazard control associated with this job.

Hazard/Hazard Control\_\_\_\_\_



## 4 SITE SPECIFIC SAFETY PLAN (SAMPLE)

Project Name: \_\_\_\_\_ Job #: \_\_\_\_\_ Date: \_\_\_\_\_

Project Manager: \_\_\_\_\_ Site Foreman: \_\_\_\_\_

1st Site Contact: \_\_\_\_\_ 2nd Site Contact: \_\_\_\_\_

3rd Site Contact: \_\_\_\_\_

Site Contact (Safety): \_\_\_\_\_ Site Contact (General): \_\_\_\_\_

### OSHA Required Competent Person or Persons Onsite

- \_\_\_\_\_  
(Primary)
- \_\_\_\_\_  
(Secondary)

### Location of Medical Facility

- Minor Injuries – Name of Facility Here, Phone # Here
- Serious Injuries – Name of Facility Here, Phone # Here
- Directions with Maps Are Enclosed with this Site Specific Safety Plan

### Location of First Aid

- i.e, Truck, Job Box and/or Break Room

### Location of Fire Extinguishers

- 5# - ABC to be kept on swing-stage platform
- Minimum 5# - ABC in vicinity of swing-stage support system
- 10# - ABC in vicinity of gas-powered equipment

### Location of MSDS

- i.e, Truck, Job Box and/or Break Room

### Flammable Storage Area if Required

- Gasoline shall be kept in approved safety cans and will be stored in the job trailer at the end of day.

### Designated Smoking/Non-Smoking Areas

- Smoking is **NOT** permitted on rooftop or within facility.
- Smoking is **NOT** permitted in the outdoor equipment areas enclosed by chain-link fencing.
- Smoking is permitted in designated areas - these designated areas will be reviewed during the Site Orientation.

### Waste Removal Plan

(e.g., All debris to be transported to container located near loading dock.)

### Fall Protection Plan (Example)

- **Rooftop** – The rooftop has a protected edge (42" parapet) except for the peak above the loading dock area. When work needs to be performed in this area (within 10 feet of the roof edge), workers shall be tethered to a safety line using their fall-arrest gear. Name of Company's employees should only enter the roof area for the set-up of the swing-stage and Bosun's chair support system and the accompanying safety system, as well as the required daily pre-start inspection.
- **Swing-Stage Platform** – Complete fall-arrest gear to be used at all times, body-harness, 3-foot shock-absorbing lanyard w/ self-trailing rope grab connected to ½-inch safety line attached to a roof anchor.
- **Bosun's Chair** - Complete fall-arrest gear to be used at all times, body-harness, 18-inch shock-absorbing lanyard with rope grab connected to ½-inch safety line attached to a roof anchor.
- **Mast Climber**
- **High Reach**
- **Pipe Scaffolding**

### Emergency Rescue Plan (Example)

#### Bosun's Chair

- Self rescue by transferring descent device to safety line and descending to lower level.

#### Swing-Stage Platform

- An extension ladder may be used to reach employee if they are close enough to the ground **and** all Name of Company's Safety Policies and Procedures regarding safe ladder use are adhered to.

- Have a qualified RDS/Chair person descend to victim with a spare RDS/Chair setup.
- If any of the prior methods shown cannot be successfully implemented or the suspended employee(s) are unconscious or injured, call 911 for assistance.

**NOTE:** In an effort to avoid "suspension trauma", suspended workers shall create a "foot loop" by tying a knot in the safety line below the rope-grab to stand in while awaiting rescue. If any of the prior methods shown cannot be successfully implemented or the suspended employee(s) are unconscious or injured, call 911 for assistance.

### Facility Emergency Action Plan (EAP)

Workers need to know what to do when they are alerted to an emergency. After notification to evacuate the building, employees should take the following steps:

1. If on the rooftop or within the building, immediately exit the building in an expeditious and calm manner, using the closest and most convenient exit. **Do not use elevators.**
2. If on a scaffold or Bosun's chair, pipe frame ladders etc., immediately descend to the ground level in a safe manner.
3. Assemble in the designated area shown below;  
Insert area here:  
\_\_\_\_\_
4. Await a head count and further instructions.

## 4 SITE SPECIFIC SAFETY PLAN (SAMPLE) CONTINUED

### Work Zone Establishment (Example of the detail)

- **Side #1 (West) – Lawn Area (non-public space)** – a perimeter shall be established in the area under and adjacent to any suspended equipment through the use of cones spaced intermittently.
- **Side #2 (South) – Loading Dock Area (public space)** – a perimeter shall be established in the area under and adjacent to any suspended equipment through the use of cones and caution tape. It is important to use caution tape as a barrier inside the loading dock approximately 3 to 5 feet from face of building to prevent pedestrians from entering. Suspended equipment can only be used above one (1) loading dock area at a time as the other must remain open to provide service to the facility – There are two (2) doorways as well as a pedestrian ramp at the far ends of the loading dock area – as they serve as emergency exits, they cannot be locked, however, two (2) cones should be placed at the inner side of the doorways and a “Warning” sign that states it is for “Emergency Exit Only” should be placed on the inner side of door OR overhead protection should be provided by creating a passageway made of walk-through scaffolding that extends at least 12 feet from the face of the building.
- **Side #2 (South) – Electrical Equipment Area (non-public space)** – This area is accessible through a gate in the chain-link fence. Just beyond the gate is an extensive amount of electrical equipment set on a concrete slab with a concrete curb around the perimeter. Caution tape shall be set parallel and just prior to curb line as a warning line, as well as appropriate signage (Spanish/English) posted to alert workers of the hazards beyond. NOTE: Great care must be taken during the set-up and breakdown of associated equipment and swing-stage platform to keep it from swinging beyond the warning line. Name of Company’s workers shall not loiter in this area.
- **Side #3 (East) – Mechanical Equipment Area (non-public space)** – Caution tape and/or barricades shall be used to guide workers to the work area and also prevent them from coming in proximity with the mechanical and electrical equipment in this area. Workers shall not loiter in this area and will be instructed that the area

opposite the caution tape/barricading is “Off-Limits”. Two (2) cones should be placed at the inner side of the doorway of stairway #9 at the basement level and a “Warning” sign should be put on the inner side of door that states it is for “Emergency Exit Only”.

### Suspended Scaffold System (More examples of the level of detail)

**Suspended System (Platform) – Name of Company** uses the brand name of equipment, a heavy-duty modular platform. A description of all components of this system can be found in the enclosed literature on pages A through Z. The typical platform configuration to be used at the facility is shown on page A of the enclosed literature. Platform lengths will be determined onsite and may vary due to building geometry and/or site conditions as work progresses.

**Support System (Beams w/ Counterweights) – Name of Company** uses a support system manufactured by Name of Vendor – a blueprint of the arrangement to be used at Name of Working Facility.

**Safety System** – A personal fall-arrest system (PFAS) will be utilized by Name of Contractor’s employees at all times when working from and operating the swing-stage platform. Rope-grabs shall be connected to the safety line prior to accessing the platform from any level. Name of Contractor uses a PFAS consisting of the following:

- Class III full-body harness
- 3-foot shock-absorbing lanyard
- Self-trailing rope-grab
- ½-inch safety line

### SPECIAL NOTES

- Scaffolds must be inspected daily and documented on the “Inspection Record” tag attached to each part of the support system.
- All rooftop equipment shall be delivered to the facilities loading dock and taken to the freight elevator’s uppermost floor – it will then be carried to the roof via stairway #6.
- Side #1 (West) – The swing-stage platform will be assembled at ground level.
- Side #2 (South) – The swing-stage platform will be assembled at ground level in all areas; however, at the stair and ramp

area (between column line A and D), procedures similar to those shown below for the pipe rack/tray area must be used.

- Side #2 (South) – At the loading dock areas, the swing-stage platform must have top rails installed on the building side. If needed, the top rail (building side only) may be lowered ONLY when the platform is above the loading dock.
- Side #3 (East) – When practical, the swing-stage platform will be assembled at ground level.
- Side #3 (East) – Swing-stage platform will be assembled atop the canopy above stair #9, taking the following precautions:
  - Safety lines (secured to roof anchors) will be lowered past the canopy to the ground.
  - An extension ladder will be set-up at the edge of the canopy extending a minimum of 36 inches above the edge. The ladder will be secured to the canopy and its feet will be set atop plywood.
  - Employees will access the top of the canopy via the ladder – they will be attached to the safety line at all times with a 3-foot lanyard and a “parking” rope-grab. The rope-grab shall be set and kept above eye level while atop the canopy.
  - The top of the canopy will be covered with rigid foam insulation then plywood – when complete; it will be lashed to the structure with nylon straps. This serves to protect the canopy from damage, as well as to provide a more suitable walking surface.
  - The platform will then be assembled atop the canopy per the previous “Assembly” instructions – with one exception. The hoist motors will be weaved on the ground and powered up the support cable to the top of the canopy then attached to the stirrups. This is done to reduce the risk of lifting (back) injury.
  - Components of the platform will be passed by employees on the ground to employees atop the canopy one (1) piece at a time and when needed. Subsequent components will not be passed up until previous ones have been assembled. This is done to avoid clutter and potential tripping hazards.

## 4 SITE SPECIFIC SAFETY PLAN (SAMPLE) CONTINUED

- Side #3 (East) – Pipe Rack/Tray Area
  - The entire swing-stage assembly will be erected between column lines 9 and 11.
  - The platform will be brought to the roof level and employees will exit the platform to the roof (Personal Fall Arrest Systems connected at all times during the transfer).
  - The casters are to be unlocked and the entire rig will be rolled to the location above the pipe rack/tray area (between column lines 7 and 9). Beam tiebacks should remain during this maneuver, though additional slack will likely be needed and provided beforehand.
  - Casters are to be relocked and the safety line and equipment tiebacks shall be reset to the roof anchors directly behind the support system.
- Side #3 (East) – There is an active steam vent pipe that runs approximately halfway up the building. This will be redirected when work is being performed in the area next to and adjoining the vent pipe – this will be coordinated with Name of Company management. The device used for this redirect will be locked-out by both maintenance and the Name of Company's Site Foreman.
- Side #3 (East) – Small canopy at column line #3 (stair #7).
  - This area will be accessed by Bosun's chair/RDS – no special precautions are needed.

### Assembly/Disassembly

#### Rope Descent System (RDS)

- Route the suspension line by doing the following:
  - Remove the outer control sleeve
  - Pull down and lock the control ring
  - Insert the line through the gate
  - Release the control ring and return to original position
  - Route the line through the groove on the lower end of the shaft
  - Wrap the line around the shaft with the appropriate number of turns and

- have the line exit through a groove at the top of the shaft
  - Replace the outer control sleeve

### Support System

- Connect the front and rear wheel units to the telescoping tubes
- Install the front beam support frame to the front wheel unit
- Assemble beam sections (2)
- Connect the beam to the top of the front beam support frame and rear wheel unit
- Detach the free ends of the left and right struts from the front beam support frame and attach to the middle of the beam
- Install the counterweights on the rear of beam and secure them with the pin and safety clip
- Secure the tieback line to tieback loop at the end of the beam
- Secure the opposite end of the tieback line to roof anchorage
- Secure the suspension to the rigging pin at the front of beam
- Pass the suspension line over the parapet to the ground

### Safety System

- Secure safety line to roof anchor
- Secure the safety line to the rigging pin at the front of beam
- Pass the safety line over the parapet to the ground

### INSPECT THE ENTIRE SYSTEM

Disassembly – reverse order of assembly

### SPECIAL NOTES

- Support system for the Bosun's chair must be inspected daily and documented on the attached "Inspection Record" tag.
- Name of Contractor's Site Manager may opt to perform a "straight drop" where the support and safety lines connect directly to independent roof anchorages, eliminating the need for a transportable counterweighted outrigger. This can be done if the parapet can support the weight and has been adequately protected from damage.
- All rooftop equipment shall be delivered to the facilities loading dock and taken to the freight elevator's uppermost floor –

equipment will then be carried to the roof via stairway #6.

### Job Hazard Analysis

- Tasks
  - Removal of sealant, cleaning and replacement
  - Power washing
  - Wall coating

Task Analysis Forms are enclosed with this Site Specific Safety Plan.

### Inspections (Color Coding)

All tools and equipment must be inspected prior to each use and kept in good order. All electrically powered tools must be inspected, tagged and operated in accordance with manufacturer requirements. Documented color-coding will apply, but is not limited to the following (monthly inspections):

- Swing-Staging
- Electrical Cords
- GFCIs
- Electrical Tools
- Body Harnesses
- Lanyards
- Rope-grabs
- Bosun's Chairs
  - May.....Green and Yellow
  - June.....Green and Blue
  - July.....Red
  - August.....Red and Yellow
  - September.....Red and Blue

### Required Paperwork (Safety related)

- Daily
  - DP-802.306 "Task Safety Awareness"
- Per Occurrence
  - Name of Contractor – "First Report of Incident" to be used in place of both DP-802.401-3 "Accident/Incident Report" and DP-802.401-2 "Employee's Report of Occupational Illness/Injury"
  - Name of Contractor – "Incident Investigation Report"

### Additional

- Eating or drinking is NOT permitted on rooftop or within facility.

### Safety Plan Approval

Authorized Customer Approval

X

Authorized Contractor Approval

X

Date \_\_\_\_\_ Date \_\_\_\_\_

**5 SITE SPECIFIC SAFETY PLAN**

Project Name: \_\_\_\_\_ Job #: \_\_\_\_\_ Date: \_\_\_\_\_

Project Manager: \_\_\_\_\_ Site Foreman: \_\_\_\_\_

1st Site Contact: \_\_\_\_\_ 2nd Site Contact: \_\_\_\_\_

3rd Site Contact: \_\_\_\_\_

Site Contact (Safety): \_\_\_\_\_ Site Contact (General): \_\_\_\_\_

**OSHA Required Competent Person or Persons Onsite**

Primary \_\_\_\_\_ Secondary \_\_\_\_\_



**5 SITE SPECIFIC SAFETY PLAN CONTINUED**

**5 SITE SPECIFIC SAFETY PLAN CONTINUED**

## 5 JOB SAFETY ANALYSIS (JSA) TASK SPECIFIC

<b>Logo Here</b>	Job/Operation:		Job Site/Number: Location:		Page: <b>1</b>
	Analysis By:		Job Title:		Date Prepared:
	Recommended/Required PPE Required: <b>(Example)</b> Leather work gloves, safety glasses or goggles, face shield, half-mask respirator, ear plugs or muffs and rubber work gloves.				
Sequence of Basic Job Steps <small>Step No. 1, 2, 3 etc.</small>		Potential Significant Hazards <small>Step No. 1a, 1b, 1c, 1d, 2a, 2b etc.</small>		Hazard Control Method	
	Sample		Sample		Sample
1	Cut out old caulk with razor	1	Cuts to hands or body		PPE – Hand protection, Leather work gloves
2	Remove old backer rod	2	Particulates in eyes		PPE – Eye protection, safety glasses or goggles
3	Grind surface to prep for new sealant	3a	Particulates in eyes		PPE – Eye protection, goggles and face shield
		3b	Dust inhalation		PPE – Respiratory protection, filtering face piece
		3c	Excessive noise		PPE – Hearing protection, ear plugs or muffs
		3d	Cuts to hands		PPE – Hand protection, leather work gloves
4	Install new backer rod	4a	None established		None
5	Prime surface	5a	Fume inhalation		PPE – Respiratory protection, half-mask respirator w/appropriate cartridge <b>(purple)</b>





## 7 SAFETY & HEALTH INSPECTION FORM (IN DETAIL)

### Safety & Health Inspection Form (In Detail)

1. PERSONAL SAFETY EQUIPMENT AND REQUIRED CLOTHING		OK	Action	Comments
	a. Eye protection: Z-87.1 and rated for Task			
	b. Ear protection: noise levels > 85 Dbs			
	c. Work boots: leather/die electric/steel toe/metatarsal/other			
	d. Long pants			
	e. Sleeved shirts			
	f. Hard hats at all times, on job sites			
	g. Reflective vests (traffic control)			
	h. Floatation devices when on, over or near water			
	i. Chemical protection: tyvec suits/rain suites/1/2 sleeves			
	j. Hand protection: welding/leather/cut proof/chemical/other			
	k. PPE: competent person assessed, inspected and maintained			
2. HOUSEKEEPING		OK	Action	Comments
	a. Rebar caps used to eliminate impalement potential?			
	b. Debris being cleaned up regularly?			
	c. Point loading of debris on elevated decks?			
	d. Proper storage of materials, supplies, equipment?			
	e. Trip hazards removed? (i.e., ice, oil, electrical cords, air lines, etc.)			
	f. Proper means of disposal used? (i.e., dumpsters, trash cans with lids, etc.)			
	g. Combustible debris cleaned up and not creating fire hazard?			
	h. Nails pulled from scrap wood?			
	i. Pedestrian walkways free of trip and slip hazards?			
3. STRUCTURE SAFETY AND PROTECTION		OK	Action	Comments
	a. Loose and delaminated concrete removed prior to working?			
	b. Has engineered shoring plan been developed for this work?			
	c. Has shoring plan been properly implemented, maintained?			
	d. Is shoring left in place until completion of proper cure time? (75% of design strength)			
	e. Is shoring around columns when concrete removed?			
	f. Is structure capable of supporting construction equipment?			
	g. Is structure capable of supporting construction debris?			
	h. Is there point loading of stored materials?			
	i. Have imbedded electric conduits and other electrical systems been located?			

## 7 SAFETY & HEALTH INSPECTION FORM (IN DETAIL) CONTINUED

4. RESPIRATORY/HAZARDOUS COMMUNICATION		OK	Action	Comments
	<b>Respirators Procedures</b>			
	a. Competent person assessing effectiveness of Respirator Program?			
	b. Right respirator for the specific hazard?			
	c. Respirators stored/cleaned/disinfected properly?			
	d. Respirator users trained, given physicals, and fit tested?			
	e. Respirators used properly?			
	<b>Hazard Communication Procedures</b>			
	b. Chemical lists posted?			
	c. Employees trained on hazcom and specific chemicals in use?			
	d. Proper identification labels on cans?			
	e. MSDS onsite and available to employees?			
5. FALL PROTECTION		OK	Action	Comments
	a. Do employees have the proper Fall Protection Training?			
	b. Are daily/weekly/monthly fall equipment inspections done?			
	c. Vertical and horizontal life lines properly rated and inspected?			
	d. Are there any unprotected floors and walkways (6ft or higher)?			
	e. Are floor openings covered, clearly marked or guarded?			
	f. Are handrails properly constructed top/middle/toe board?			
	g. Is fall arrest equipment logged in and dated?			
	h. Are employees tied off at all times when exposed to falls?			
	i. Does Motion Stopping System meet OSHA requirements?			
	J. Tie off points 5000 lbs/man?			
6. EQUIPMENT: SAFE USE, INSPECTION & MAINTENANCE		OK	Action	Comments
	<b>Access Procedures</b>			
	a. 1) Swing stage properly constructed and inspected?			
	2) Roof setup for swings properly constructed and inspected?			
	3) Swing Stage: Employees trained/competent/proper use?			
	4) Men, tools and equipment weight within scaffold rating?			
	b. 1) Frame scaffold properly constructed and inspected?			
	2) Overloaded frame scaffolds/platforms/work decks, etc.?			
	3) Frame scaffold: Employees trained/competent on proper use?			
	4) Landing areas/platforms free of debris/trip hazards?			
	5) Employees not over-reaching limits of scaffolds?			
	c. 1) Ladder at proper angle/tied off at top/3 feet above landing?			
	2) Non-conductive ladders used if working around electricity?			
	3) Ladders with broken/missing/cracked/damaged components tagged out and taken out of service?			
	4) Upper and lower landings free of debris/trip hazards?			

## 7 SAFETY & HEALTH INSPECTION FORM (IN DETAIL) CONTINUED

	5) Ladders: Employees trained/competent on proper use?			
	d. 1) Stair rails provided for stairs with four or more risers?			
	2) Stairs free of debris, sand, oil/ice, electrical cords, air lines?			
	3) Stairs adequately lighted?			
	4) Stairs not used for storage of materials?			
	e. 1) Aerial man lifts: Employees trained on competent/proper use?			
	2) Stable, level drive area?			
	3) Employees tied off at all times to basket?			
	4) Equipment not used as a crane to lift materials?			
	5) Cords/cables/ropes/air lines not hanging from the basket?			
	6) Men and equipment load within manufacturer's specification?			
	f. 1) Scissors lifts: Employees trained on competent/proper use?			
	2) Stable, level drive area?			
	3) Employees tied off, if possible, to platform?			
	4) Equipment not used as a crane to lift materials?			
	5) Cords/cables/ropes/air lines not hanging from the basket?			
	6) Men and equipment load within manufacturer's specification?			
	g. Stairs or ladder provided when breaks in elevation is > 19"?			
	h. 1) Elevated platforms: Landing/form traveler/knee bracket?			
	2) Equipment weight within rated load capacity?			
	3) Hand rails complete?			
	i) 1) Bracket scaffold: Adequate access/hand rails/rigging/use?			
	2) Following proper jumping procedure?			
	<b>Equipment Procedures</b>			
	a. Skid steers: Employees trained on competent/proper use?			
	b. Concrete Buggies: Employee trained on competent/proper use?			
	c. Forklifts: Employees trained on competent/proper use/maintainance?			
	f. Water blasters: Employees trained on competent/proper use?			
	g. Sand pots: Employees trained on competent/proper use?			
	h. Hand tools? (i.e., chipping, guns, drills, scarifier, etc.)			
	i. Grout pumps? (i.e., epoxy, chemical, concrete, cleaning, etc.)			
	j. Air lines and receiver tanks is safe working condition?			
	k. Air compressors properly maintained and used?			
	l. Other equipment: Employees trained on competent/proper use?			

## 7 SAFETY & HEALTH INSPECTION FORM (IN DETAIL) CONTINUED

	Company Vehicle Procedures			
	a. Vehicle inspection checklist done daily with defects corrected?			
	b. Towing equipment properly connected? (i.e., safety chains, etc.)			
	c. Tow hitches and ball hitch connections maintained?			
	d. Load is stable/secured properly, does not overload vehicle?			
	e. Mechanized equipment driven safely?			
	f. Proper protection and warning signs in public/traffic areas?			
	g. Required safety equipment on vehicle?			
	h. Scheduled maintenance up to date?			
	Other Tools and Equipment Procedures			
	a. Grinders used with guards and handles?			
	b. Saws with proper guards and not modified/two hands on saw?			
	c. Running equipment not left unattended?			
	d. Keys removed from equipment when not attended?			
	e. Equipment cleaned and free of debris?			
	f. Proper use of tuggers or pushers?			
	g. 1) Roof cranes/hoists inspected and used properly?			
	2) Load rating marked on basket?			
	3) Properly inspected? (i.e., daily, weekly, monthly, annual)			
	4) Operator at controls while load is suspended?			
	5) Three full wraps on winding drum?			
<b>7. JOB SITE SAFETY</b>		<b>OK</b>	<b>Action</b>	<b>Comments</b>
	Job site Requirements			
	a. OSHA, minimum wage, discrimination, etc...			
	b. Employee required training			
	c. Managers First Aid and Adult CPR training			
	d. First aid kits/eye wash/burn stations			
	e. Bloodborne pathogens kits available			
	f. Worker's Compensation Incident reporting procedures			
	Electrical Safety			
	a. Assured grounding inspection and taping done correctly?			
	b. Adequate lighting for work areas?			
	c. Electrical cords and panels properly constructed and inspected?			
	d. Correct wiring for string lights?			
	e. Electric pannel boxes have proper covers?			
	f. GFCI used if exposed to weather or wet/damp conditions?			
	g. Electric tools unplugged if repairing or changing bits/blade/etc.?			
	Sanitation			
	a. Drinking water with disposable cups and trash receptacle?			
	b. Water containers cleaned and sanitized daily?			



## 7 SAFETY & HEALTH INSPECTION FORM (IN DETAIL) CONTINUED

	c. Proper trash disposal at drinking/eating/work areas?			
	d. Proper number of toilets and wash-up facility provided?			
	<b>Compressed Air &amp; Gas Cylinder Safety</b>			
	a. Air lines tie wired or secured at couplings?			
	b. Compressed air receiver tanks equipped with blow off valve?			
	b. Compressed air not used to blow dust from clothing?			
	c. Compressed cylinders stored and secured vertically?			
	d. Caps on cylinders when not in use?			
	e. 1) O2 and fuel gases stored 20' apart or			
	2) Separated by fireproof wall?			
	f. Flash back arresters on torch handle and at cylinder?			
	g. Compressed gas cylinders handled and moved safely?			
	<b>Fuel Handling and Flammable liquids</b>			
	a. OSHA regulation gas cans with flash arrester			
	b. Equipment turned off while fueling			
	c. Fuel storage area: Signs/Containment/>20lbs Extinguisher			
	d. Proper storage of flammable liquid construction products			
	<b>Fire Protection</b>			
	a. Adequate fire extinguishers: inspection/placement/size			
	b. Welding, burning, cutting: No combustibles in area			
	c. Fire watch provided when necessary			
	d. Oily rags stored in proper container			
	e. Designated smoking area provided and marked			
	f. No smoking signs posted			
	g. Fire extinguishers being maintained			
	h. Employees trained in proper use of fire extinguishers			
	<b>Ventilation</b>			
	a. Confined space requires 20 air changes per hour			
	b. Provide clean, breathable air with constant monitoring			
	c. Air flow sufficient to reduce contaminants to a safe level			
	<b>Other Procedures</b>			
	a. Following demolition procedure: PPE/shoring/compressed air			
	b. Following concrete placement procedure: forms/shoring			
	c. 1) Following confined space procedures			
	2) Employees trained in Confined Space procedures			
	3) Qualified person assessing CS effective procedures			
	d. Following lock-out, tag-out procedures			
	e. Following working on over or near water procedures			
	f. 1) Following trenching procedures			
	2) Employees competent in trenching procedures			
	3) Qualified person assessing effective trench procedures			
	4) Shoring, benching, sloping engineered			

## 7 SAFETY & HEALTH INSPECTION FORM (IN DETAIL) CONTINUED

	5) Proper entry and exits provided			
	g. Lifting: 1) plan 2) bend knees 3) keep close 4) pivot, don't twist			
<b>8. GENERAL SAFETY</b>		<b>OK</b>	<b>Action</b>	<b>Comments</b>
	a. Overhead protection from falling/flying debris/tools/equipment			
	b. Public warning/hazard signs, signals or communication			
	c. Fall potential: open holes covered, fencing, hand rails,			
	d. Traffic control: signs, direction, barrels, barricades			
	e. Dust/Vapor: dust curtains, tape doors/windows, ventilate area			
	f. Noise control: monitoring/noise barriers/distance			
	g. Water hazards: life rings/hand rails/signage			
	h. Public protected from flying/spilled construction chemicals			
	i. Pedestrian walkways protected from trip and slip hazards			
	j. Adequate pedestrian barriers/fences/gates/flagging			
	k. Owner's glass/tile/flooring/vehicles/property protected			
<b>9. SAFETY CULTURE</b>		<b>OK</b>	<b>Action</b>	<b>Comments</b>
	a. Project mgrs dedicate time to safety mtgs/action items			
	b. JSAs are done daily and when new processes or tasks start			
	c. Pre Project Planning (PrePP) done for changed conditions			
	d. Pre Task Planning (PreTP) done prior to starting new tasks			
	e. Site specific safety training from PrePP implemented			
	f. Follow-up on action items from JSAs, MSAs, PrePP, PreTP			
	g. Site Specific Safety Plan from PrePP implemented			
	h. New employees given Standard Orientation prior to starting work			
<b>10. LIST COMPETENT PERSONS FOR:</b>		<b>OK</b>	<b>Action</b>	<b>Comments</b>
	a. Respirator protection:			
	b. Confined space:			
	c. Scaffolds, platforms and ladders:			
	d. Personal Protection Equipment:			
	e. Fall protection:			
	f. Welding:			
	g. Cranes/hoists and rigging:			
	h. Grouting:			
	i. Forming:			
	J. Trenching:			
	k. Motorized access equipment:			
	l. Other specialty equipment (1):			
	m. Other specialty equipment (2):			
<b>JOB SITE INFORMATION</b>				
	Project:		Date:	
	Report By:		Number of Emp.:	
	Project Manager:		Branch:	
	Superintendent:		PE:	
	Foreman 1:		Foreman 2:	

## 8 SUBCONTRACTOR'S SITE SPECIFIC SAFETY AND HEALTH PLAN

To be completed and handed to *(main contractor)* site management prior to commencement of work on site  
**To be read in conjunction with the explanatory notes attached.**

**To:** \_\_\_\_\_ **For:** \_\_\_\_\_  
*(Main contractor)* *(Project)*

**From:** \_\_\_\_\_ **For:** \_\_\_\_\_  
*(Subcontractor)* *(Subcontract Works)*

### We undertake as follows:

#### 1. Site Safety Representative:

Our nominated **on site** Safety Representative for this project is: .....*(name)*

#### 2. Notifiable Works:

We have notifiable works associated with our subcontract and OSH has been advised.  Yes  No

*(If yes, a copy of the notification must be attached. Refer attached notes for supervisory requirements.)*

#### 3. Hazard Management:

An analysis of the significant hazards associated with our subcontract work and the methods to control such hazards are attached.  Yes  No

*(Note: If not attached, then hazard ID and method of control must be submitted prior to starting work on site.)*

We understand that all new hazards identified by our staff will be notified immediately.  Yes  No

Hazardous products are associated with our subcontract work.  Yes  No

*(If yes, the appropriate Material Safety Data Sheets must be attached.)*

#### 4. Communication:

The methods of communicating safety information to our employees are by: *(tick methods used)*

Toolbox talks  Pre-task planning meetings  Notice board  Co-ordination meetings

Other.....

*(State methods)*

#### 5. Emergencies:

Our first aid kit is located:.....  
*(State location)*

We have an emergency plan in place.  Yes  No

We have procedures in place and a trained first aid person on site to render assistance in the event of an accident or emergency.  Yes  No

In the event of an evacuation, our staff reports to: .....  
*(State whom)*

and assemble at the evacuation area nominated by the *(Main Contractor)* Site Management.

#### 6. Accident Reporting:

We have an accident/incident reporting system in place and keep an accident register.  Yes  No

All accidents will be reported to *(Main Contractor)* Site Management along with a copy of our accident report.

#### 7. Safety Inspections and Safety Reviews:

Frequency of our safety inspections is:  Daily  Weekly

#### 8. Training/Induction:

All persons under our control on site are trained to carry out their work safely.  Yes  No

All persons under our control hold a current Site Safe Passport or Gold Card. *(Attach list of employees with card numbers.)*

All persons under our control on site are given a site-specific safety induction.  Yes  No

All persons under our control on site are appropriately qualified, competent or fully supervised.  Yes  No

**Signed:** \_\_\_\_\_ **Date:** \_\_\_\_\_  
*(Subcontractor Representative)*

**Approved:** \_\_\_\_\_ **Date:** \_\_\_\_\_  
*(Main Contractor Site/Project Manager)*

## 8 SUBCONTRACTOR'S SITE SPECIFIC SAFETY AND HEALTH PLAN CONTINUED

### Subcontractors Site Specific Safety & Health Plan Explanatory notes

#### Introduction

Prior to completing the requirements of this Site Specific Health and Safety Plan you will forward to (main contractor) a copy of your Company Safety Program, which details your company's commitment to health and safety, and by doing so have become a preferred subcontractor.

#### Site Safety Representative

This person must actively promote health and safety in the workplace for your company and ensure appropriate safe work practices for your on site personnel. This person may a dedicated health and safety person, your supervisor, or one of your senior workers who is designated to act on behalf of your company with regard to health and safety.

#### Notifiable Works

Where notifiable work, as defined in the Health and Safety Regulations Sections 2 and 26, is to be carried out by your company, you must notify OSHA in writing at least 24 hours prior to commencement of such work. (Main contractor) site management will require confirmation that you have done this and a copy of the notification for their records. If engaged on notifiable work, then you must have a full-time on site supervisor and he/she must be the holder of the Site Safe Gold Card or the BCITO National Certificate in Construction Health and Safety and Injury Prevention.

#### Hazard Management

All hazards to be brought onto site or created during the course of the work must be identified and controlled. The standard Task Analysis Sheet (copy attached) may be used to analyse the various tasks within your trade work, identify the significant safety hazards and detail the method of control. These sheets must be attached and forwarded with your Site Specific Safety Plan.

Hazardous substances that you may use on site must have the appropriate MSD Sheets on site and be addressed on the Task Analysis Sheets.

#### Communication

Appropriate on-site communications must be established with the Site Management team to disseminate all information pertaining to safety requirements on site. This will include the notification of hazards brought onto site or created during the course of the work. This may be done by posting the hazard sheets on notice boards, the main site hazard board, or advised during regular Toolbox Talks. The aim is to ensure that all workers on site are aware of the hazards as they

arise and equally be advised when they no longer exist. If English is the second language of your employees, then you must maintain on site a liaison person who can effectively communicate with our site management team.

#### Emergencies

In the event of a site evacuation the site siren will be sounded and your employees must promptly evacuate the site. The Site Management Team will notify you of your assembly point at the time of your induction onto the site.

Some emergencies that you may need to prepare for and have a procedure to follow include spillage of hazardous substances, serious harm accidents to your staff, and rescue of a fall arrest victim.

You must have a person on site who is trained in First Aid in case of an injury accident to any of your staff.

#### Accident Reporting

All accidents must be reported immediately to (Main contractor) Site Management and serious harm accidents also reported direct to OSHA. Accident and investigation reports are to be copied to the main contractor within 48 hours. Accident scenes will not be disturbed until a full and complete accident investigation has been undertaken.

#### Safety Inspections and Safety Reviews

You are expected to carry out regular documented safety inspections (minimum weekly) of your own work areas while on this site. Copies of the inspection reports must be given to the (main contractor) site team for discussion at safety meetings. Any recommended/completed corrective action will be advised at these meetings.

#### Training/Inductions

All persons starting work on this site must go through a formal induction process. During this process, safety rules and various site-specific issues will be discussed.

To work on a (Main contractor) site you must have either a current Site Safe Passport or Gold Card. You will not be admitted to site without either of these cards. Please supply a list of all your staff working on this site along with their passport/gold card numbers at the time of the induction. All staff will be expected to show their passport/gold card at the time of the induction. Where appropriate (Main contractor) will require you to provide evidence of your employees' skills training. For example: trade qualifications, certificates of competency, etc.

## 9 SUMMARY

This section of the SWR Institute Safety & Health Manual describes the procedures for developing a Site Specific Safety Plan.

The rate of injury for workers in the construction industry is approximately 60 percent higher than the overall average for all workers. Recognition of the hazards is essential to the prevention of job-related injuries. This technique focuses on job tasks as a way to identify hazards before they occur. It is a relationship between the worker, the task, the tools and the work environment.

It is necessary for management to make the commitment to correct identified hazards, so the entire effort is not wasted. Involve employees by training them to recognize potential hazards and unsafe working conditions. Get employees to buy in, empower them to correct hazards and unsafe working conditions. The combination of management commitment and employee buy in will add value to your business, your work place and your life.