

**TR Concrete**

# **Safety Program**

**Includes**

**Workplace Accident and Injury Reduction (AWAIR) Program**

Prepared by:  
TR Concrete  
in association with:  
U.S. Compliance Systems, Inc.

**This AWAIR Program was implemented:**

\_\_\_\_\_  
**(Date)**

**This AWAIR Program was reviewed/revised:**

\_\_\_\_\_  
**(Date)**

Disclaimer: This Safety Program has been prepared exclusively for:

TR Concrete  
9744 226th Ave NW  
Elk River, MN 55330

To the best of our knowledge, the information contained herein is accurate. U.S. Compliance Systems, Inc. accepts no responsibility for errors or omissions.

# **TR Concrete**

## **POLICY STATEMENT**

We have developed a comprehensive safety program that addresses our specific safety concerns and provides guidance for the performance of our individual job tasks within the framework of appropriate MNOSHA as well as federal OSHA standards, policies and procedures.

Safety takes a commitment from all personnel within our organization. Training will be interactive with an opportunity for all to actively participate, ask questions, make suggestions, and refer to our written policies and procedures.

It is our policy to provide a work environment that is inherently safe. The safety and health of our employees is of primary importance as they are our most important resource.

Safety training needs will be identified by continual reassessment of our work methods, equipment and job sites as well as employee and management input. Observation of unsafe acts will be addressed immediately.

Each employee is encouraged to contact their Supervisor immediately should a safety or health risk exist so that corrective action may be taken immediately.

Safety requires not only that each person understand and perform individual tasks in a safe manner, but also that each individual is aware of his surroundings and is actively involved in the safety of others.

This Policy Statement will be conspicuously posted.

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Safety Director

# TR Concrete

## Safety Program Overview

This comprehensive safety & health training program has been developed to address our specific safety concerns and to provide guidance for the performance of individual job tasks within the of appropriate MNOSHA as well as federal OSHA standards, policies and procedures.

Safety demands a commitment from all personnel within our organization. As a contractor, we have an obligation to ensure that all our employees, as well as subcontractors within our area of responsibility, are afforded the protection of an appropriate safety & health program.

This program contains policies and procedures to deal with common workplace hazards, specific job related hazards, and potential hazards that may arise.

This program also addresses issues covered in the AWAIR Act.

Hazard assessment, project pre-planning, and engineering controls, where feasible, will be the preferred method of providing a safe workplace.

Hazards that remain will be minimized or eliminated through training which provides our employees the ability to recognize workplace hazards and understand the proper procedural and/or personal protective equipment requirements.

Each employee is encouraged to contact their supervisor immediately should a safety or health risk exist so that corrective action may be taken to eliminate the hazard entirely or deal with the hazard in a safe manner through modified work procedures, PPE, and/or other appropriate action.

On all job sites, at least one person will be designated a “**competent person**” by virtue of experience or training. This person will have the ability to identify work related hazards, know the corrective procedures, and have the responsibility, ability and authority to stop work if the workplace cannot be made safe.

The Safety Director or a designated competent person will make routine and random job site inspections to both identify new hazards and to monitor the effectiveness of our safety & health program.

In the final analysis, the success of our safety effort depends on all employees from senior management to the newest hire, as well as subcontractors, demonstrating a commitment to safety by working in a safe manner. Safe job performance is how our safety effort is ultimately measured.

For ease of use, this safety program has been divided into three broad categories with one Appendix. Additionally, there is a Project Manual for use on the job site.

## SECTION I

General safety policies and procedures.

## SECTION II

Job Specific - Equipment Specific Safety Procedures.

## SECTION III

Specific compliance programs with appropriate forms.

## APPENDIX A

Training documentation and training information.

## PROJECT MANUAL

This manual highlights important concepts and is designed to be kept on individual job sites with working job site forms.

# SECTION I

## GENERAL SAFETY POLICIES AND PROCEDURES

**TR Concrete**  
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**Standards & Statutes:**

182.653, Minnesota Statutes 207 *Rights and Duties of Employers*

29 CFR 1926.16, *Rules of Construction*

29 CFR 1926.20, *General Safety and Health Provisions*

29 CFR 1926.21, *Safety Training and Education*

PART 1904, *Recording and Reporting Occupational Injuries and Illnesses*

# GENERAL SAFETY POLICIES AND PROCEDURES

## AWAIR COMPLIANCE AND PROGRAM DESIGN

182.653, Minnesota Statutes 207 *Rights and Duties of Employers*

The total thrust of this safety program is in compliance with the objectives of the Minnesota AWAIR Act. It is our desire to establish a work environment for our employees that is safe and free from recognized hazards. This is to be accomplished by management and employee commitment to safety, training and retraining of employees and supervisors, establishment of policies and procedures for various job tasks, hazard assessment, frequent and random job site inspections, interactive safety meetings, and fair, documented, enforcement.

### **Goals and objectives:**

Goal: To achieve and maintain an accident free workplace.

#### Objectives:

1. To involve all personnel, from the newest hire to senior management, in safety.
2. To ensure that new hires understand the safety procedures for the job task they are to perform.
3. To ensure that all employees understand and acknowledge with their signature, before working, that: they will: 1) to the best of their ability, work in a safe manner and follow established work rules and procedures; 2) ask for clarification of safety procedures of which they are not sure **prior** to performing a task; and, 3) report to the job site supervisor or competent person any unsafe acts or procedures and will ensure they are addressed and resolved before continuing work.
4. To the best of our ability encourage interactive training and allow for dialogue so that it is clear that employees understand particular safety policies and procedures.

Goal: To instill in all employees the importance of safety.

1. To have supervisors lead by example and perform all our job site tasks in compliance with federal OSHA standards except as modified by MNOSHA standards and regulations.
2. To commit the resources necessary to provide for training, equipment, and appropriate PPE to accomplish work safely.



3. To provide every employee an employee handbook which outlines our basic safety policies and have each employee acknowledge with their signature they understand the importance of safety.

The specific requirements of our AWAIR are addressed in this Section [Section I] of our safety program.

## **ACCIDENT/INJURY PREVENTION**

Our safety program is designed so that neither our employees or our subcontractors work in conditions that are unsanitary, hazardous, or dangerous to their health or safety.

One lax moment in terms of safety may result in a lifetime of needless pain and suffering. Disregarding safety standards may even be fatal. While an accident may happen in an instant, the consequences may last for years.

Accident prevention requires a commitment from all personnel within our company to actively participate in our safety program. All personnel should be aware of job site hazards and follow procedures to eliminate these hazards by proper work methods, use of personal protective equipment, and proper use of tools and equipment. All persons are encouraged to ask questions and make positive suggestions for safety improvement.

Competent persons will be designated to provide job site expertise as well as regular inspections of equipment, materials, and procedures. Competent persons will have the authority to stop work if a safety hazard is identified and it cannot be corrected immediately.

All machinery, tools, materials and equipment deemed unsafe will be taken out of service by physically removing, tagging, or locking controls to render them inoperable.

Only persons qualified by training or experience will be allowed to operate equipment or machinery.

All tools and items of equipment will be used for the purpose for which they were designed. For example, a wrench is not a hammer; a ladder is not a horizontal plank; a fire extinguisher is not a cooler!

Never take chances or attempt any job without being aware of the proper procedures, the potential safety hazards, and the methods to reduce or eliminate risk.

## **SAFETY DIRECTOR**

Our Safety Director will administer this safety program and have overall responsibility for the implementation of this program. The safety director will ensure each employee has appropriate safety training for the tasks to be performed.

Additionally, duties of this position include:

- a. providing the safety orientation and the training of personnel.
  1. New hires will receive a safety orientation that includes reading this section of our safety program (Section I); reading and signing the employee acknowledgement on our employee handbook; being informed of any chemical or physical hazards that may present themselves on our job sites, and information on those hazards either from the MSDS or, if heat, noise, or biological, information about those hazards and how to protect one's self.
  2. All personnel will receive continual training through safety meetings, classroom instruction, on-line courses, hands-on instruction, posters, etc.. At least annually, all persons will receive, and acknowledge in writing, that they have received training as required by federal and Minnesota regulations.
- b. maintenance of training records.
- c. random inspections to verify adherence to safety rules and policies.
- d. ensuring compliance with specific tasks identified within our compliance programs found in Section III of this safety program such as hazard communication, scaffold & ladders, and personal protective equipment, for example.
- e. ensuring that, at least annually, a review of this accident and injury reduction program is conducted and that the procedures within the program are being met. This review will be documented.

Our Safety Director is:

The duties of this position may be delegated to other personnel who are competent persons by virtue of training or experience.

The responsibilities of this position may not be further delegated.

## **SUPERVISOR INVOLVEMENT**

As part of their duties and as representatives of senior management, supervisors will take an active role in the safety and health of our employees. Through leadership, example, job site inspection, safety enforcement and safety awareness, supervisors will:

1. Assure that all safety and health rules, regulations, policies and procedures are understood and observed.
2. Require the proper care and use of all required personal protective equipment.
3. Identify and eliminate job hazards through administrative controls, engineering controls, or the use of appropriate PPE.
4. Use job site hazard analysis to identify and control new or existing hazards, conditions, and operations. Hazard analysis generally will be performed by observing the performance of employees and their compliance with established procedures. In the event specific hazard analysis procedures are necessary to be documented, job hazard analysis forms are found at the end of our project manual.
5. Supervisors will use the following for a resource:  
OSHA 3071: *Job Hazard Analysis*
6. Conduct safety meetings when appropriate to discuss safety, health matters, and work plans.
7. Conduct walk-around safety inspections at the beginning of each job, and at least weekly thereafter.
8. Assist the safety director, as needed, in training employees (new and experienced) in the safe and efficient methods of accomplishing each job or task as necessary.
9. Attend safety meetings and actively participate in the proceedings.

## **EMPLOYEE INVOLVEMENT**

All employees are encouraged to participate actively in our safety & health program. Do not hesitate to point out perceived safety deficiencies to your supervisor or the competent person -- you may prevent an injury to yourself or a fellow worker. With the goal of providing a safer worksite for all of us, employee suggestions for improving safety management are welcomed and encouraged. Never perform any task on which you are not confident in your understanding of the safety procedures. If in doubt, ask your immediate supervisor for guidance. Employees are required by law to comply with occupational safety and health standards and all rules and orders issued pursuant to 182.654, Minnesota Statutes 2007.

## HOUSEKEEPING

Housekeeping? On a job site? What's that all about? It's about safety! Employees are to maintain a neat and orderly work area *as far as practical*. Housekeeping and general cleanliness have a direct effect on safety and health. Proper housekeeping can prevent slips and falls, allow easy egress in the event of an emergency, prevent falling object injuries, and enhance fire safety. Below listed are general housekeeping rules:

- a. walking/working surfaces shall be kept clean and dry.
- b. do not allow construction debris to accumulate.
- c. stored materials will be neatly stacked at the job site.
- d. containers, when not in use, will be sealed.
- e. no objects will be left unattended on stairways.
- f. entrances and exits will be properly marked and not blocked.
- g. tools shall be properly cleaned and put away after use.

## EMERGENCY ACTION PLAN

An Emergency Action Plan, if appropriate, will be posted at the job sites along with emergency telephone numbers and an escape route diagram.

After a hazard assessment of a job site, the Safety Director may determine that conditions may develop that could possibly warrant an evacuation. In this case, an emergency action plan will be developed to address the threat. Certainly, if work is being done at a hazardous chemical plant, for example, an emergency action plan is required and coordination will be made with the facility operator.

Events may occur which dictate the evacuation of a job site such as a fire, explosion, power failure, etc.. Additionally, events may occur which dictate the need for emergency medical responders. These sets of events fall under our Emergency Action Plan and a multitude of objectives must be met.

The first and foremost objective is the safety of all our personnel. To achieve this level of safety, our plan is designed to get personnel away from danger, treat injury, and provide for a thorough and accurate accounting of all employees.

There may be situations where certain employees, trained in first aid and/or fire fighting procedures, may prevent a small emergency situation from becoming a major disaster. In these types of situations, specifically identified employees will remain to perform the function for which they are

trained, provided they may perform these duties in a safe manner. At no time will any employee put himself/herself at risk.

To the extent possible, job sites will have clear, direct, egress.

The actual implementation of this plan must be direct and carried out without confusion. Employees must know how to alert others, how to call for assistance, the location of fire extinguishers and first aid kits, the escape route, and the rendezvous point (being accounted for so that others do not put themselves at risk looking for a person who has already reached safety).

### **EMERGENCY MEDICAL RESPONSE**

Should an injury occur that requires an emergency medical responder, the below listed actions will be taken in order given:

1. Call 911 or the emergency response number posted on the job site.
2. Provide any medical assistance you are trained and certified to do.  
**DO NOT** provide any medical assistance you are not trained to do.
3. Designate an individual to direct the emergency responders to the injured person and provide Material Safety Data Sheets if applicable.
4. Notify the competent person who, in turn, will notify the office.

### **FIRE PREVENTION PLAN**

Fire Prevention deals not with handling a fire emergency, but rather preventing a fire in the first place.

To reduce the likelihood of a fire, personnel are to adhere to the following rules:

1. Smoking is allowed only in designated areas and smoking materials will be totally extinguished and placed in the appropriate receptacles.
2. All chemical products will be handled and stored in accordance with the procedures noted on their individual MSDS.
3. Heat producing equipment will be properly maintained and operated per the manufacturer's instructions to prevent accidental ignition of combustible materials.
4. Precautions will be taken when working with an open flame (such as welding) and those areas will be made fire safe by removing or protecting combustibles from ignition.
5. Combustible liquids must be stored in approved containers.
6. Chemical spills must be cleaned up immediately. This is particularly important for combustible and reactive liquids. Damaged chemical containers and cleanup materials must be properly disposed.

[Note: Exercise care! Information on appropriate personal protective equipment; proper disposal; proper cleanup procedures; required ventilation, etc. is found on the product's MSDS.]

7. Combustible liquids and trash must be segregated and kept from ignition sources.
8. Keep clear access to fire hydrants as well as portable fire extinguishers.
9. Personnel will be notified by their Supervisor or the competent person of any unusual fire hazard conditions existing on a job site.
10. Good housekeeping, good housekeeping!

## **PORTABLE FIRE EXTINGUISHERS**

All personnel will receive instruction on the proper use of fire extinguishers.

- a. Fire extinguishers will be inspected monthly for general condition and adequate charge. They will be serviced and certified by qualified personnel at least annually.
- b. Portable fire extinguisher locations will be clearly identified and easily accessible.

Portable fire extinguishers will be distributed as indicated below:

<u>CLASS</u>	<u>DISTRIBUTION</u>	<u>NOTES</u>
A "A" on a green triangle	75 feet or less travel distance between the employee and the extinguisher	Use on wood, paper, trash.
B "B" on a red square	50 feet or less travel distance between hazard area and the employee	Use on flammable liquid, gas.
C "C" on a blue circle	Based on the appropriate pattern for the existing Class A or Class B hazards	Use on electrical fires.
D "D" on a yellow star	75 feet or less travel distance between the combustible metal working area and the extinguisher or other containers of Class D extinguishing agent.	Use on combustible metals.

Appropriate portable fire extinguishers will be used, as noted above. Supervisors will ensure that at least one extinguisher is on each floor of a project near the stairway.

Using the wrong fire extinguisher on some fires can actually spread the fire. Using a Type A extinguisher on an electrical fire, for example, could cause serious injury. When a fire occurs, it is imperative to use the proper extinguisher.

## **FIRE PROTECTION**

The phone number of the local fire department shall be posted with other emergency numbers.

If a fire should occur, all personnel and the local fire department will be notified. As in all emergency situations, per the American Trauma Society, people calling the fire department should:

- a. Remain calm.
- b. Speak clearly and slowly.
- c. Give the exact location.
- d. Describe the situation.
- e. Give the phone number from where you are calling.
- f. Do not hang up until told to do so.

## **FIRST AID & FIRST AID KITS**

Should a medical emergency occur, other than minor scrapes and bruises, and it is serious enough to call for professional medical assistance, you should call the Emergency Response Number posted on the job site bulletin board. Before the first aid providers arrive, to the extent possible, clear the way so they can reach the injured employee in the most direct way possible.

Unless trained and licensed in CPR/first aid and a designated first aid provider as an additional job as part of the company bloodborne pathogen program, employees will not expose themselves to blood or other bodily fluids of other employees at any time.

Per OSHA, first aid is limited to:

- a. Using a non-prescription medication, such as aspirin, at non-prescription strength.
- b. Cleaning, flushing or soaking wounds on the surface of the skin;
- c. Using wound coverings such as bandages, Band-Aids™, gauze pads, etc.; or using butterfly bandages or Steri-Strips™.
- d. Using hot or cold therapy.
- e. Using any **non-rigid** means of support, such as elastic bandages, wraps, non-rigid back belts, etc..
- f. Using temporary immobilization devices while transporting an accident victim (e.g., splints, slings, neck collars, back boards, etc.).

- g. Drilling of a fingernail or toenail to relieve pressure, or draining fluid from a blister.
- h. Using eye patches.
- i. Removing foreign bodies from the eye using only irrigation or a cotton swab.
- j. Removing splinters or foreign material from areas other than the eye by irrigation, tweezers, cotton swabs or other simple means.
- k. Using finger guards.
- l. Using massages.
- m. Drinking fluids for relief of heat stress.

If an employee is injured and emergency responders have been called, stay calm and reassure the injured employee that help is coming.

Below is basic first aid for various common job site injuries. Mostly, it is what **not** to do.

#### MINOR BURNS

(Redness or blisters over a small area)

Flush with cold water; apply a sterile dressing.

**Do not** use butter on any burn.

**Do not** break open blisters.

#### MAJOR BURNS

(White or charred skin; blisters and redness over a large area; burns on face, hands, or genital area)

Cover with sterile dressing and seek medical attention promptly.

**Do not** apply salves, ointments or anything else.

**Do not** break blisters.

#### CHEMICAL BURNS

(Spilled liquid or dry chemical on skin)

Liquid - Flush with large amounts of water immediately  
(keep water flow gentle).

Dry - Brush as much off as possible before flushing with water.

After flushing at least 5 minutes, cover with sterile dressing.

Seek medical attention promptly.

**Do not** use anything but water on burned area.

**Do not** break open blisters.



**EYE - FOREIGN OBJECT**  
(Object visible; feeling of something in the eye)

Have patient pull upper eyelid over lower eyelid.

Run plain water over eye.

If object does not wash out, cover both eyes with a gauze dressing.

Seek medical attention promptly.

**Do not** rub the eye.

**EYE - WOUNDS**  
(Wound on eyelid or eyeball; pain;  
history of blow to eye area; discoloration)

Apply loose sterile dressing over both eyes.

Seek medical help immediately.

For bruising, cold compress or ice pack may relieve pain and reduce swelling.

**Do not** try to remove any embedded object.

**Do not** apply pressure to eye.

**EYE - CHEMICAL BURN**  
(Chemical splashed or spilled in eye)

Flush immediately with water over open eye for at least 10 minutes (20 minutes if alkali). It may be necessary to hold patient's eyelid open.

Cover both eyes with sterile dressing.

Seek medical help immediately.

**Do not** put anything but water in eye.

**HEAT EXHAUSTION**  
(Fatigue; weakness; profuse sweating; normal temperature;  
pale clammy skin; headache; cramps; vomiting; fainting)

Remove from hot area.

Have victim lay down and raise feet.

Apply cool wet cloths.

Loosen or remove clothing.

Allow small sips of water if victim is not vomiting.

**HEAT STROKE**  
(Dizziness; nausea; severe headache; hot dry skin;  
confusion; collapse; delirium; coma and death)

Call for immediate medical assistance.

Remove victim from hot area.

Remove clothing.

Have victim lay down.

Cool the body (shower, cool wet cloths)

**Do not** give stimulants.

When dealing with any injury, stay calm and never do anything unless you know what you are doing.

### **First Aid Kits:**

First aid kits are worthless if not readily accessible. Therefore, they will not be locked up on job sites.

First aid kits will be replenished as items are used. Sterile items will be wrapped and sealed and used only once. Other items such as tape or scissors can be reused and should be kept clean. In the absence of plentiful amounts of clean water, eye flush will be available.

The number of first aid kits to be found on the job site should be:

<u>Number of Persons Assigned to Job Site</u>	<u>Minimum First Aid Supplies</u>
1 - 5	10 Package Kit
6 - 15	16 Package Kit
16 - 30	24 Package Kit

Depending on the job site, first aid supplies will generally include: adhesive bandages, bandage compresses, scissors and tweezers, triangular bandages, antiseptic soap or pads, eye dressing, and other items that a consulting physician may recommend. The main purpose of a bandage, the most commonly used item in a first aid kit, is not really to stop the bleeding, but to keep the wound clean.

The three most important things dealing with first aid kits are:

1. They must be readily accessible.
2. They must be appropriate for the job site work involved.
3. Personnel must know how to use the contents of the first aid kits.

First aid kits must be replenished as items are used. Those individual items that must be sterile must be wrapped and sealed and used only once. Other items such as tape or scissors can be reused and should be kept clean.

The supplies consumed in first aid kits can actually be used as a safety tool. For example, if a kit constantly needs replacement of bandages which

have been used for minor cuts, there is an obvious problem that the cuts are happening in the first place. Actual trends can be established and corrective procedures initiated such as protective gloves or handling practices.

Improper medical treatment can be more dangerous than no treatment at all.

## **SANITATION**

### **Sanitation. - 1926.51**

### **Minnesota Rule 5207.0800**

#### **5207.0800 PRIVIES AT CONSTRUCTION AND ENGINEERING PROJECTS.**

Privies shall be provided on all construction and engineering projects. Privies shall be placed inside of heated buildings wherever possible to do so. Where privies are not placed inside of heated buildings, provisions shall be made for heating privies to a minimum of heat that can be emitted from the installation of a 1,300 watt heater or other type equivalent heater.

STAT AUTH: MS s 182.655

HIST: 12 SR 634; 21 SR 1897

*Current as of 10/30/06*

#### **Potable Water:**

From a safety standpoint, you must not neglect your need for potable (drinkable) fluids. Water is not only the most abundant of all compounds found on the earth, it is the most abundant part of you -- actually about 65% of you is water.

On construction sites, exertion and heat dictate the need for plenty of water.

Potable water will be available on job sites. If portable containers are used, they will be clearly marked [Potable Water]; capable of being tightly closed; and equipped with a tap. These containers will be used for no other purpose than supplying drinking water. Non-reusable (single service) cups in a sanitary container will be provided for drinking as well as a receptacle for disposing of used cups. Employees are reminded of their need for adequate amounts of water.

#### **Non-Potable Water:**

Outlets of non-potable water should be clearly identified as such, through appropriate signage, and non-potable water may never be used for drinking, washing, or cooking.

## **Toilets:**

Toilets will be provided at construction sites according to the below table:

<b><u>Number of Employees</u></b>	<b><u>Minimum Number of Facilities</u></b>
<b>20 or less</b>	<b>1</b>
<b>20 or more or more</b>	<b>1 toilet seat and 1 urinal per 40 workers</b>
<b>200 or more</b>	<b>1 toilet seat and 1 urinal per 50 workers</b>

Toilet facilities would include, unless prohibited by local law:

- a. Privies (where their use will not contaminate ground or surface water)
- b. Chemical Toilets
- c. Recirculating toilets
- d. Combustion toilets

## **Washing Facilities:**

Adequate washing facilities will be provided in near proximity to the worksite if employees are working with contaminants that may be harmful to their health such as paint, coatings, or other chemical products. Paper towels and cleansing agents will be provided.

Showers and change rooms will be dictated by specific standards dealing with specific toxic materials (i.e., lead; asbestos).

## **Eating and Drinking Areas:**

No employee will be allowed to consume food or beverages in any area exposed to toxic material.

## **LIFTING, PUSHING & PULLING**

Back injuries are often caused by the obvious -- putting excessive strain on the lower back by lifting an object that is too heavy or awkward, or by bending and/or twisting while lifting.

However, lifting injuries are also caused by less obvious reasons:

- a. poor physical condition
- b. poor posture
- c. poor judgment (lifting, pulling, pushing an object that is obviously too heavy or awkward without seeking assistance or a mechanical lifting device.)
- d. lack of exercise
- e. excessive body weight

Proper lifting techniques are important for employee safety. Below are lifting techniques that will reduce the likelihood of injury:

- a. lift objects comfortably, not necessarily the quickest or easiest way.
- b. lift, push, and pull with your legs, not your arms or back.
- c. when changing direction while moving an object, turn with your feet, not by twisting at the waist.
- d. avoid lifting higher than your shoulder height.
- e. when standing while working, stand straight.
- f. when walking, maintain an erect posture; wear slip-resistant, supportive shoes.
- g. when carrying heavy objects, carry them close to the body and avoid carrying them in one hand.
- h. when heavy or bulky objects need to be moved, obtain help or use a mechanical aid such as a dolly, hand truck, forklift, etc..
- i. when stepping down from a height of more than eight inches, step down backwards, not forward.
- j. handle heavy objects close to the body -- avoid reaching out.
- k. lift gradually and smoothly. Avoid jerky motions.
- l. maintain a clear line of vision.

### **SLIPS, TRIPS & FALLS**

Slips, trips, and falls are among the most common job site accidents and they are easily preventable. Below are some of the causes of slips, trips, and falls:

- a. running on the job site.
- b. engaging in horseplay.
- c. working off a ladder that is not firmly positioned.
- d. carrying an object that blocks line of vision.
- e. work boots not laced or buckled.
- f. working off a scaffold without safety rails.
- g. using ladders that have oil and grease on the rungs.
- h. not using a handrail on steps.
- i. messy work areas with debris strewn about.
- j. not paying attention to what one is doing.

This list can go on and on, but all the above are easily preventable by adherence to common safety procedures, common sense, and awareness of potential hazards on the job site.

## **DRUGS AND ALCOHOL**

With the exception of over the counter drugs such as aspirin or drugs prescribed by a physician, there shall be no drugs or alcohol on any job site. Alcohol and drug abuse cause an unacceptable level of safety hazard not only for the offending employee, but for others in the vicinity. Those found to be under the influence of drugs and/or alcohol will be immediately removed from the job site by the competent person and further disciplinary action will be taken by the Safety Director.

Employees taking prescription medication that reduces motor skills should report this to their supervisor for appropriate work assignment.

Chemical dependency is a devastating problem for not only the employee, but also the employee's family and co-workers. For obvious safety reasons, it cannot be tolerated in the workplace. Those with such a problem should seek professional help. The Safety Director will assist any employee in finding appropriate treatment should they voluntarily come forward.

## **SMOKING**

There shall be no smoking except in designated smoking areas. Under no circumstances will there be smoking during refueling of vehicles or within 50 feet of flammable materials.

## **ACCIDENT INVESTIGATION**

All events that cause injury or property damage as well as near-miss mishaps [events that could have resulted in injury or damage, but didn't] will be investigated as soon as feasible but in no case more than 48 hours after the event.

The accident investigation team will include the safety director as well as other persons he assigns.

The purpose of accident investigation is to prevent the same type of accident from reoccurring. The competent person/supervisor on the job site will complete an Accident Investigation Form as soon as the medical crisis is resolved. The five questions that must be answered are: Who? What? When? Where? and most importantly, Why did the accident happen?

Apparently simple accidents may actually be caused by many complex reasons. Example: a worker is using a claw hammer on a working surface more than six feet above the ground. The hammer head breaks off and

strikes a worker below who is not wearing a hard hat. Why did this accident happen? How can it be prevented? With just the facts presented, the fault would seem to rest with the worker who was struck by the falling object. Accident investigation may reveal other contributing factors by answering questions like:

- a. Were hard hats required on the project, were they available, and was this policy enforced by the supervisors?
- b. Were precautions taken to prevent objects from falling from above, such as a controlled access zone (CAZ)?
- c. Did the worker inspect his hammer before use? Was he driving nails -- the job for which a claw hammer is designed -- or pounding metal beams?

After determining the cause of the accident, steps can be taken to prevent a reoccurrence.

All accidents, injuries, mishaps and near misses will be documented and issues involving these events will be discussed during the next Safety Meeting.

## **POSTINGS**

On every job site there will be a prominently displayed bulletin board or area for postings. Every employee must be aware of this policy. Certain postings are required as a matter of law in all cases and other postings are required depending on circumstances and types of work being done.

In all cases, the following must be posted to meet OSHA requirements:

- a. OSHA Form 3165, *It's the law!*.
- b. During the period from 1 February through to April 30, OSHA Form 300A, *Summary of Work-Related Injuries and Illnesses*, must be posted for work-related injuries and illnesses which have occurred during the previous year.
- c. Emergency phone numbers and site address for emergency response.

If appropriate, the following must be posted:

- a. OSHA citations.
- b. Notice of informal hearing conference.
- c. Names and location of assigned first aid providers.
- d. Air or wipe sampling results.
- e. Emergency action plan.

## RECORDKEEPING: INJURIES & ILLNESSES

### OSHA Forms 300, 300A & 301

As a matter of law, all employers with 11 or more employees **at any one time** in the previous year must maintain OSHA Form 300, *Log of Work-Related Injuries and Illnesses*, OSHA Form 301, *Injury and Illness Incident Report*, and OSHA Form 300A, *Summary of Work-Related Injuries and Illnesses*.

OSHA Forms 300 and 301 are used to record and classify occupational injuries and illnesses. The information on the OSHA Form 300 related to employee health must be used in a manner that protects the confidentiality of the employees to the extent possible. Recordable injuries and illnesses must be entered on OSHA Forms 300 and 301 within seven (7) days of receiving information that a recordable injury or illness has occurred.

#### Retention of Forms:

Old OSHA Forms 101 and 200 as well as OSHA Forms 300 and 301 will be retained for five years following the year to which they relate.

#### Items to be recorded on OSHA Forms 300, 300A and 301:

Work related injuries and illnesses and fatalities are to be recorded using the criteria found in Part 1904, *Recording and Reporting Occupational Injuries and Illnesses*.

Injuries and illnesses must be recorded if they result in death, days away from work, restricted work or transfer to another job, medical treatment beyond first aid, loss of consciousness, or if the injury or illness involves a significant injury diagnosed by a physician or licensed health care professional even if it does not meet the foregoing conditions.

NOTE: First aid (which is not reportable) is defined in 1904.7(b)(5)ii.

#### Employee Involvement:

As a matter of policy, all work-related accidents and injuries are to be immediately reported to the competent person/supervisor on a job site who will complete an accident investigation form. This will be forwarded to the Safety Director who will extrapolate appropriate information for completion of the OSHA Form 300.

#### Catastrophic Reporting Requirements:

Within eight (8) hours after the death of any employee from a work-related incident or the in-patient hospitalization of three (3) or more employees as a result of a work-related incident, either in person or by telephone, the OSHA Area Office nearest to the site of the incident will be notified. OSHA may be contracted for this purpose using a toll free telephone number: 1-800-321-6742.



## Location of OSHA Forms 300 and 301:

As a general rule, the OSHA Forms 300 and 301 will be maintained in our main office. However, in the event that a project is to last more than one year, that job site will be considered a fixed establishment and maintain its own OSHA Forms 300 and 301.

## **INCIDENCE RATE**

One indication of the success of our safety effort is our “incidence rate”. When bidding a job, our incidence rate could be a determining factor in a successful bid. The incidence rate is determined by the following formula:

$$N/EH \times 200,000$$
 where:

N = number of injuries and/or illnesses

EH = total hours worked by all employees during the calendar year.

200,000 = base for 100 full-time equivalent workers  
(working 40 hours per week, 50 weeks per year).

To find the “Lost Workday Injury Rate” (LWDI), the following formula is used:

$$\text{LWDI Rate} = (\# \text{ LWDI's} \times 200,000) / \# \text{ employee hours worked}$$

# LWDI = sum of LWDI's in reference years

# employee hours worked = sum of employee hours in reference years

200,000 = base for 100 full-time equivalent workers  
(working 40 hours per week, 50 weeks per year).

When accidents and injuries occur, they have an immediate detrimental impact on those employees involved. Additionally, they have a potential lingering negative impact on our company and our ability to get work.

## **SAFETY MEETINGS**

Scheduled safety meetings provide an opportunity for reinforcing the importance of general safety as well as specific work related procedures applicable to the work at hand. Properly prepared safety meetings will focus on one or two topics and be direct and to the point. All safety questions will be addressed and interactive participation is encouraged.

## **SAFETY COMMITTEE**

182.676, Minnesota Statutes 2007

Because of the nature of our work and the “scattering” of our employees to various worksites, it is apparent that the best way to focus on safety and to keep employees current on safety matters is holding safety meetings. However, should the size of our company reach more than 25 employees or should we have a lost-workday case incidence rate in the top 10% of all rates for employers in the same industry or have a workers’ compensation pure premium rate as reported by the Worker’s Compensation Rating

Association in the top 25% of premium rates for all classes, we will conduct monthly joint labor-management safety committee meetings. The management representative will be the Safety Director and the employee members will be selected by the employees. Our Safety Committee procedures and minutes are found under separate cover

## **ENFORCEMENT**

It is expected that all employees will abide by our safety rules and guidelines not only to protect themselves, but also to protect their fellow workers from harm. Should a safety violation occur, the following steps will be taken by the employee's immediate supervisor:

- a. **Minor Safety Violations:**      Violations which would **not** reasonably be expected to result in serious injury.
  - 1. The hazardous situation will be corrected.
  - 2. The employee will be informed of the correct procedures to follow and the supervisor will ensure that these procedures are understood.
  - 3. The supervisor will make a written report of the occurrence using our Enforcement Documentation Form and inform the employee that this documentation will be forwarded to the Safety Director for a retention period of one year.
  - 4. A repeat occurrence of the same minor safety violation is considered substantially more serious than the first.
- b. **Major Safety Violations:**      Violations which would reasonably be expected to result in serious injury or death.
  - 1. The hazardous situation will be corrected.
  - 2. The employee will be informed of the correct procedures to follow and will impress upon the individual the severity of the violation and the likely consequences should this type of violation be repeated. The supervisor will ensure that the individual understands the correct procedures and will be cautioned that a reoccurrence could result in disciplinary action up to and including discharge.
  - 3. The supervisor will make a written report of the occurrence using our Enforcement Documentation Form and inform the employee that this documentation will be forwarded to the Safety Director for a retention period of one year.

- c. **Willful Major Safety Violations:** Intentional violation of a safety rule which would reasonably be expected to result in serious injury to the employee or a fellow worker.

1. The hazardous situation will be corrected.
2. The employee will be removed from the job site, the event will be documented and forwarded to the Safety Director, and the employee will be discharged.

Employees are to understand that the primary purpose of documenting safety violations is to ensure that the important business of employee safety is taken seriously and that the potential for injury is reduced to the lowest possible level.

**Schedule of Enforcement Actions for Violations within a 1 Year Period**  
**Minor Violation**

<b>Offense</b>	<b>Action</b>	<b>Repeat of Same Offense</b>	<b>Action</b>
1st	Written Notice	1st	1 Day Off
2nd	Written Notice	2nd	3 Days Off
3rd	1 Day Off	3rd	Dismissal
4th	2 Days Off		
5th	3 Days Off		
6th	Dismissal		

**Major Violation**

<b>Offense</b>	<b>Action</b>	<b>Repeat of Same Offense</b>	<b>Action</b>
1st	Written Notice	1st	4 Days Off
2nd	2 Days Off	2nd	Dismissal
3rd	4 Days Off		
4th	Dismissal		

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# **TR Concrete**

## **SECTION II**

### **JOB SPECIFIC - EQUIPMENT SPECIFIC SAFETY PROCEDURES**

**Following are general safety procedures that apply to individuals operating the equipment or performing the tasks described.**

**TR Concrete**  
**SAFETY PROGRAM**  
**REFERENCE & TRAINING MANUAL**  
**SECTION II**  
**JOB SPECIFIC - EQUIPMENT SPECIFIC SAFETY PROCEDURES**  
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# **JOB SPECIFIC - EQUIPMENT SPECIFIC SAFETY PROCEDURES**

## **ABRASIVE WHEELS**

### **Abrasive wheels and tools. - 1926.303**

An abrasive wheel is defined as a cutting tool consisting of abrasive grains held together by organic (resin, rubber, shellac or similar bonding agent) or inorganic bonds. Hazards that present themselves during abrasive wheel operations include physical contact with the rotating wheel; destruction of the wheel, itself; inhalation of the bonding particles; being struck by flying fragments. All these hazards can be eliminated through adherence to appropriate machine guarding principles, appropriate PPE, and/or respiratory protection.

Immediately before mounting, wheels must be inspected and sounded (ring test) to ensure they have not been damaged. Ensure the spindle speed does not exceed the maximum operating speed noted on the wheel.

**Ring Test:** Wheel to be tested must be dry and free from sawdust. Wheels should be tapped gently with a light nonmetallic implement, such as the handle of a screwdriver, or a wooden mallet for heavier wheels. If they sound cracked (dead), they may not be used. It should be noted that organic bonded wheels do not emit the same clear metallic ring as do vitrified and silicate wheels. Tap the wheels about 45° each side of the vertical centerline and about one or two inches from the periphery. Rotate the wheel about 45° and repeat the test. A sound, undamaged, wheel will give a clear metallic tone.

### **Guarding: Abrasive Blades in Portable Circular Saws:**

It is important to distinguish between a saw and an abrasive blade because they have different guarding requirements. An abrasive wheel, as defined by CFR §1910.211(b)(14) and American National Standards Institute (ANSI) B7.1-1970, as "a cutting tool consisting of abrasive grains held together by organic or inorganic bonds."

If a wheel is, for example, constructed with bonded, steel fragments arranged in intermittent clusters around the periphery of a steel disc, the steel fragments are too large and sharp to be considered abrasive grains. If these fragments remove material primarily by severing rather than by abrasion, then this would be considered a saw blade and the guarding requirements would be found in 29 CFR 1926.300, General Requirements.

If, in fact, cutting is done by the abrasive action of the abrasive grains, guarding requirements are found in 29 CFR 1926.303(b), Abrasive Wheels and Tools.

ANSI B7.1 requires the upper half of the abrasive blade to be guarded when abrasive wheels are installed on portable power driven circular saws.

## **AERIAL LIFTS**

### **Aerial lifts. - 1926.453**

Aerial lifts acquired for use which were manufactured on or after January 22, 1973 will have a placard or label affixed which indicates that the lift is designed and constructed in accordance with ANSI standard A92.2-1969. Aerial lifts acquired for use prior to January 22, 1973 may not be used unless modified to meet this standard. Aerial lifts may be modified to perform other than originally designed tasks provided the modifications are certified by the manufacturer or a nationally recognized testing laboratory that the aerial lift conforms with ANSI standard A92.2-1969 and is as safe as before modifications.

Aerial lifts include the following types of vehicle-mounted aerial devices to elevate personnel to job-sites above the ground:

- a. extensible boom platforms.
- b. aerial ladders.
- c. articulating boom platforms.
- d. vertical towers.
- e. a combination of any of the above.

Only authorized persons may operate an aerial lift.

Lift controls and equipment must be inspected and tested each day prior to use to determine they are in a safe working condition.

When working from an aerial lift, you must stand firmly on the floor of the basket or cage and **use (wear) and an approved fall restraint system**. The fall restraint system must be attached to the boom or basket – it may not be attached to any adjacent pole, structure, or other equipment. You may not sit or climb on the edge of the basket; use planks, ladders, or other devices for a work position.

Load limits set by the manufacturer must never be exceeded.

The brakes must be set and when outriggers are used, they shall be positioned on pads or a solid surface.

Aerial lifts must not be moved with personnel in the basket unless it is designed for this type of operation. Aerial lifts designed as personnel movers must have controls that are clearly marked as to their use and the lower controls must be able to override the upper controls. Except in an emergency, the lower controls shall not be used unless permission has been granted by the persons in the lift.

It is required that the vehicle have a “reverse signal alarm” audible above the surrounding noise level **or** a ground-guide (spotter), using standard hand signals, when backing up. The vehicle will be backed up only when



the spotter signals that it is safe to do so. Using a ground-guide provides a substantially higher level of safety than a “reverse signal alarm” because the vehicle can be guided to an exact location with assurance that there is sufficient clearance from objects, and, most importantly, no person is in harm’s way. Special attention will be given to avoiding contact with electrical lines.

## **COMBUSTIBLE & FLAMMABLE LIQUID HANDLING**

### **Flammable and combustible liquids. - 1926.152**

#### **Minnesota Rule 5207.0060**

Only approved containers and portable tanks will be used for storage and handling of flammable and combustible liquids. Department of Transportation approved containers will be used for handling and use of flammable liquids in quantities of 5 gallons or less **[ASTM standards require that gas cans be red; diesel cans be yellow; and kerosene cans be blue]** .

**Note 1: The above does not apply to flammable liquid materials which are highly viscid (extremely hard to pour) which may be used and handled in their original shipping containers.**

**Note 2: For quantities of one gallon or less, the original container may be used for storage, use and handling.**

Flammable or combustible liquids may not be stored in areas used for exits, stairways, or normally used for the safe passage of people.

Inside a facility, no more than 25 gallons of flammable or combustible liquids may be stored in a room outside of an approved storage cabinet.

### **GASOLINE: General Information**

Because most persons use or indirectly handle gasoline on a regular basis -- from filling up automobiles to lawn mowers -- the hazards presented by this product may have become obscure. Just because you are familiar with gasoline, never lose sight of the lethal hazards that it may contain.

Gasoline is a flammable liquid which means it has a flash point of less than 100°F. The actual flash point -- lowest temperature at which a liquid gives off enough vapor to form a flammable mixture with air -- of gasoline is - 45°F. The autoignition temperature -- the temperature at which, with sufficient oxygen, gasoline will ignite on its own and burn -- is 536°F.

Gasoline has a specific gravity -- the weight of the gasoline compared to the weight of an equal volume of water -- of 0.73. Further, gasoline has a negligible solubility in water. Basically, what the above means is that if water is used to extinguish a gasoline fire, it will only spread it because the gasoline will float on the water and continue to give off a vapor and form a flammable mixture with air. Gasoline fires must be fought with an extinguisher that is rated for Class B Fires such as carbon dioxide, dry

chemical, or foam. It should be noted that water spray may be used to cool containers that may be exposed to the heat of the fire to prevent an explosion.

Conditions to avoid: heat, flame, & sources of ignition. Materials to avoid: strong oxidizers.

Health hazard information: routes of entry: inhalation, skin, ingestion.

Signs & symptoms of overexposure: headache, nausea, drowsiness, breathlessness, fatigue, convulsions, loss of conscience, dermatitis.

If there is a spill, notify emergency response personnel, evacuate area, remove ignition sources, build a dike to contain flow, do not flush to sewer or open water. Pick up with inert absorbent and place in closed container for disposal.

Gasoline is a carcinogen -- a cancer causing agent.

General rules: Post "No Smoking" signs around gasoline storage and ensure that it is enforced. Use only approved plastic or metal red containers for portable gasoline carriers.

## **COMPANY VEHICLES**

Only authorized employees may operate, in the course of their work, any company-owned motor vehicle.

Prior to authorization, the employee must possess a valid and current license to operate the vehicle. The Safety Director, or authorized representative, will ensure that the employee has demonstrated his/her ability to operate the motor vehicle in a safe and competent manner.

Under no circumstances may any motor vehicle be operated under the influence of alcohol, illegal drugs, or prescription or over-the-counter drugs medications that may impair their driving skills.

When driving over the road vehicles, employees will ensure that the vehicle registration and proof of insurance is within the vehicle. In the event of an accident, the Safety Director will be notified **immediately** after all potential injuries are addressed and a police report is filled out. Employees must report all traffic violations to the Safety Director and they are responsible for paying all penalties imposed by law.

Loads in vans and trucks will be properly secured [strapped or blocked] to preclude any shift or movement and care will be taken to not exceed the vehicles weight limits.

All company motor vehicles will be maintained in safe operating condition and in accordance with the manufacturer's recommended maintenance schedule.

A log book will be maintained for each vehicle and receipts will be kept for all maintenance and repairs performed.

Before use, a walk around inspection will be performed by the operator checking tires (tread depth and pressure), glass (chips and cracks), horn and lights, and general vehicle condition. Discrepancies will be noted in the log book. No vehicle will be operated that is not in safe mechanical condition. It is expected that the below safe vehicle operation/driving procedures will be followed at all times:

1. Seat belts will be worn by all occupants at all times while the vehicle is in motion.
2. Safe distance [one vehicle length per 10 MPH] will be maintained.
3. Posted speed limits will not be exceeded.
4. During fuel stops, all fluids will be checked and the windows, headlights and taillights will be cleaned.
5. Constant attention will be maintained by always being aware of road conditions and surrounding vehicles. Unnecessary distractions will not be permitted such as using hands to dial or receive cell phone calls or changing radio stations while the vehicle is in motion. Hands free cell phone use is allowed.
6. Before backing up any vehicle, check behind and blow horn for the safety of others.

## **COMPRESSED GAS CYLINDERS**

**Gas welding and cutting. - 1926.350**

**Minnesota Rule 5207.0700**

### **5207.0700 COMPRESSED GAS CONTAINERS.**

Valves on compressed gas containers shall be protected from damage while in use or storage.

STAT AUTH: MS s 182.655

HIST: 12 SR 634

*Current as of 10/30/06*

Compressed gas cylinders are used on many job sites -- the most common being oxygen and acetylene for welding and propane for heat and forklifts.

Failure to follow basic safety procedures could result in serious injuries such as:

- a. flash burn - due to explosion.
- b. fragment impalement - due to explosion.
- c. compression of the foot - due to mishandling of tanks.
- d. inhalation of hazardous gases - due to leakage.

All employees who use compressed gas cylinders will be trained in their proper storage, handling, and use.

Specific requirements for compressed gas cylinders use include:

1. Compressed gas cylinders will be clearly marked to identify the gas contained therein. Gas identification must be stamped or stenciled on the gas cylinder or a label affixed. No gas cylinder will be accepted for use that does not legibly identify its content by name.
2. Visual or other inspections will be performed by the competent person on site to ensure the compressed gas cylinders are in a safe condition.
3. Compressed gas cylinders will be inspected to ensure they are equipped with the correct regulator. Before use, regulators and cylinder valves will be inspected to ensure they are free from oil, dirt, and solvents.
4. Compressed gas cylinders will have valve protectors in place when not in use or connected for use.
  - a. When a cylinder cap cannot be removed by hand, the cylinder will be tagged “**Do Not Use**” and returned to the designated storage area for return to the vendor.
5. The user of the compressed gas cylinders will use **only the tools supplied by the provider** to open and close cylinder valves.
6. Valves will be closed before the cylinder is moved, when the cylinder is empty, and at the completion of each job.
7. Leaking cylinders will be moved to an isolated, well-ventilated area, away from ignitions sources.

**Note:** Soapy water will be used to detect the exact location of the leak. If the leak is at the junction of the cylinder valve and cylinder, do not attempt to repair it. The supplier will be contacted and asked for proper response instructions.

8. Gasses may never be mixed in a cylinder. **Only professionals may refill gas cylinders.**
9. Hoses and connections will be inspected regularly for damage. Hoses should be stored in cool areas and protected from damage.

### **Compressed Gas Cylinders Storage**

1. Cylinders must be secured at all times in such a way as to avoid them being knocked over or damaged. They must be stored in a vertical position. They must be segregated based on contents. 20 feet should be maintained between oxidizers and flammables or firewalls erected at least 5 feet high with a fire rating of 30 minutes.
2. Cylinders must be protected from damage, corrosion, sunlight.

3. Cylinders must be stored in well protected, well ventilated, dry locations away from sunlight. Cylinders will never be kept in unventilated enclosures such as lockers or cupboards.
4. Cylinders must be stored away from stairs, elevators, and gangways.
5. Clearly designated and labeled **separate storage area** will be provided for **full and empty** cylinders.
6. Empty cylinders that are no longer needed must be marked as "MT" and dated when empty. Empty cylinders must be handled as carefully as full cylinders.
7. Cylinders will be capped when they are not being used

### **Transportation of Compressed Gas Cylinders**

1. Compressed gas cylinders must be transported in a vertical secured position using a cylinder basket or cart.
2. Regulators should be removed and cylinders capped before movement.
3. Cylinders may never be rolled. Cylinders should not be dropped or permitted to strike violently.
4. Protective caps are not to be used to lift cylinders.

### **CRANES**

**Minnesota Rule 5207.0050**

**Minnesota Rule 5207.0400**

**Minnesota Rule 5207.0410**

### **5207.0400 CRANES, HOISTS, AND DERRICKS.**

Subpart 1. **Scope.** This part applies to any crane, hoist, or derrick having a maximum rated capacity of one ton or less; to railway and automobile wrecking cranes; skip hoists; hoistlike units used for horizontal pulling only; mine hoists; conveyors and shovels; drag line excavators; backhoes; and any equipment such as mobile scaffolds, towers, and platforms.

Subp. 2. **General requirements.** Cranes, hoists, or derricks within the scope of this part shall meet the requirements of parts 5205.1200 to 5205.1210.

STAT AUTH: MS s 182.655

HIST: 12 SR 634

*Current as of 10/30/06*

**Note: The below information is applicable to the following crane types and operations:**

1. **Articulating/knuckle-boom truck cranes that deliver material to a construction site when used to transfer materials from the truck crane to the ground, without arranging the materials in a particular sequence for hoisting.**

2. **Articulating/knuckle-boom truck cranes that deliver material to a construction site when the crane is used to transfer building supply sheet goods or building supply packaged materials from the truck crane onto a structure, using a fork/cradle at the end of the boom, but only when the truck crane is equipped with a properly functioning automatic overload prevention device. Such sheet goods or packaged materials include, but are not limited to: sheets of sheet rock, sheets of plywood, bags of cement, sheets or packages of roofing shingles, and rolls of roofing felt.**

**Note:** The above articulating/knuckle-boom crane exclusion does not apply when it is used to 1) hold, support or stabilize the material to facilitate a construction activity, such as holding material in place while it is attached to the structure; 2) when the material being handled is a prefabricated component such as precast concrete members or panels, roof trusses, prefabricated building sections such as, but not limited to: floor panels, wall panels, roof panels, roof structures, or similar items; and, 3) when the material being handled by the crane is a structural steel member (for example, steel joists, beams, columns, steel decking (bundled or unbundled) or a component of a systems-engineered metal building.

All other crane operations fall under Subpart CC—Cranes and Derricks in Construction. **Our program that address Cranes and Derricks in Construction is found in Section III of this safety program.**

Cranes, like all pieces of heavy equipment, if not properly operated, inspected and maintained have a potential for causing major bodily injury or property damage. Care must be taken in all facets of crane operation.

Not only do cranes require a thorough annual inspection (a record of the dates and results of these inspections must be maintained), they require inspection prior to each use and even during use by a competent person.

All rated load capacities, recommended operating speeds, special hazard warnings or instructions must be readily visible to the operator of the crane.

While cranes easily have the lifting ability to hoist employees on a personnel platform, this is absolutely prohibited except in cases when the erection, use, and dismantling of conventional means of reaching the worksite would be more hazardous or is not possible because of structural design or worksite conditions. A conventional means would include: a personnel hoist, ladder, stairway, aerial lift, elevating work platform or scaffold.

It is absolutely imperative that the possibility of electrocution be totally eliminated. This can be accomplished by adhering to the safe distances from various currents noted in *Heavy Equipment and Electrical Power Lines*, below.

Dangers associated with cranes include numerous moving parts. These dangers can be minimized or eliminated by ensuring that all guards are in place and not tampered with.

Care must be taken to ensure that areas within the swing radius of the rear of the rotating superstructure of the crane are barricaded to prevent a person from being struck or crushed.

All employees must keep clear of loads that are about to be lifted as well as suspended loads.

When using slings made from alloy steel chain, wire rope, metal mesh, natural or synthetic fiber rope (conventional three strand construction), and synthetic web (nylon, polyester, and polypropylene), the following safe operating practices will be observed:

- a. Slings shall not be shortened with knots or bolts or other makeshift devices.
- b. Sling legs shall not be kinked.
- c. Slings used in a basket hitch shall have the loads balanced to prevent slippage.
- d. Slings shall be padded or protected from the sharp edges of their loads.
- e. Hands or fingers shall not be placed between the sling and its load while the sling is being tightened around the load.

Hand signals used to guide the crane operator will be consistent with the ANSI standard for the type of crane in use and an illustration of the signals must be posted at the job site.

Care must be taken while actually operating the crane in hoisting applications as well as when relocating the crane superstructure.

The competent person on site will ensure that the flooring on which equipment may be placed is substantial enough to safely hold the weight of the load. If the strength of the floor is unknown and/or cannot be determined, a professional engineer will determine the pounds per square foot required and, if necessary, the appropriate shoring to be installed to sustain the weight.

## **DISPOSABLE RESPIRATORS**

OSHA requires that employees who voluntarily use disposable respirators in situations where respiratory protection is not specifically required by OSHA standard (in atmospheres where exposures are below the permissible exposure limit) essentially for personal comfort or additional, though not required, respiratory protection be informed of 29 CFR 1910.134 Appendix D, printed below.

Employees should sign the tear-off employee handbook acknowledgement form to document they understand the above requirement.

All disposable respirators, such as Moldex, 3M, Wilson, North Safety, etc. must be marked with the manufacturer's name, the part number, the protection provided by the filter, and "NIOSH".

Disposable filters are particulate respirators. They are also known as “air-purifying respirators” because they protect by filtering particles out of the air you breathe.

The below outlines the types of approved disposable respirators and their description.

N95	Filters at least 95% of airborne particles.	Not resistant to oil.
N99	Filters at least 99% of airborne particles.	Not resistant to oil.
N100	Filters at least 99.7% of airborne particles.	Not resistant to oil.
R95	Filters at least 95% of airborne particles.	Somewhat resistant to oil.
P95	Filters at least 95% of airborne particles.	Strongly resistant to oil.
P100	Filters at least 99.7% of airborne particles.	Strongly resistant to oil.

Though disposable filters cannot be fit-tested in the traditional sense, they must be fit-tested in accordance with the manufacturer’s instructions.

Under no circumstances may any respirator other than the above disposable respirators be used without compliance with a respiratory protection program.

**Standard Number: 1910.134 App D**

**Standard Title: (Mandatory) Information for Employees Using  
Respirators When not Required Under Standard.**

Respirators are an effective method of protection against designated hazards when properly selected and worn. Respirator use is encouraged, even when exposures are below the exposure limit, to provide an additional level of comfort and protection for workers. However, if a respirator is used improperly or not kept clean, the respirator itself can become a hazard to the worker. Sometimes, workers may wear respirators to avoid exposures to hazards, even if the amount of hazardous substance does not exceed the limits set by OSHA standards. If your employer provides respirators for your voluntary use, or if you provide your own respirator, you need to take certain precautions to be sure that the respirator itself does not present a hazard. You should do the following: 1. Read and heed all instructions provided by the manufacturer on use, maintenance, cleaning and care, and warnings regarding the respirators limitations. 2. Choose respirators certified for use to protect against the contaminant of concern. NIOSH, the National Institute for Occupational Safety and Health of the U.S. Department of Health and Human Services, certifies respirators. A label or statement of certification should appear on the respirator or respirator packaging. It will tell you what the respirator is designed for and how much it will protect you. 3. Do not wear your respirator into atmospheres containing contaminants for which your respirator is not designed to protect against. For example, a respirator designed to filter dust particles will not protect you against gases, vapors, or very small solid particles of fumes or smoke. 4. Keep track of your respirator so that you do not mistakenly use someone else’s respirator.

[63 FR 1152, Jan. 8, 1998; 63 FR 20098, April 23, 1998]



## **ELECTRICAL WORK - WORKPLACE SAFETY**

**Training. 1910.332**

**Selection and use of work practices. 1910.333**

**Applicability. - 1926.402**

**General requirements. - 1926.403**

**Wiring design and protection. - 1926.404**

**Special systems. - 1926.408**

**General requirements. - 1926.416**

**Definitions applicable to this subpart. - 1926.449**

**NFPA 70E Standard for Electrical Safety in the Workplace**

**No electrical work shall be performed on electric distribution circuits or equipment, except by a qualified person or by a person trained to perform electrical work and to maintain electrical equipment under the direct supervision of a qualified person. Disconnecting devices shall be locked out and suitably tagged by the persons who perform such work, except that in cases where locking out is not possible, such devices shall be opened and suitably tagged by such persons. Locks or tags shall be removed only by the persons who installed them or, if such persons are unavailable, by persons authorized by the operator or his agent.**

**Only qualified or trained personnel may perform electrical work.**

**All electrical work will be done according to the latest adopted National Electrical Code as well as established local codes.**

**Only qualified persons may work on electric circuit parts or equipment that have not been deenergized. These persons must be made familiar with the use of special precautionary techniques, PPE, insulating & shielding materials and insulated tools.**

**Note: When dealing with safety related work practices to prevent electric shock or other injuries resulting from either direct or indirect electrical contacts, a Qualified Person is defined as one who: "is permitted to work on or near exposed energized parts" and who, at a minimum, has been trained in and is familiar with:**

- a. the skills and techniques necessary to distinguish exposed live parts from other parts of electric equipment, and**
- b. the skills and techniques necessary to determine the nominal voltage of exposed live parts, and**
- c. the clearance distances specified in §1910.333(c) and the corresponding voltages to which the qualified person will be exposed.**

APPROACH DISTANCES FOR QUALIFIED  
EMPLOYEES - ALTERNATING CURRENT

Voltage range (phase to phase)	Minimum approach distance
300V and less	Avoid Contact
Over 300V, not over 750V	1 ft. 0 in. (30.5 cm).
Over 750V, not over 2kV	1 ft. 6 in. (46 cm).
Over 2kV, not over 15kV	2 ft. 0 in. (61 cm).
Over 15kV, not over 37kV	3 ft. 0 in. (91 cm).
Over 37kV, not over 87.5kV	3 ft. 6 in. (107 cm).
Over 87.5kV, not over 121kV	4 ft. 0 in. (122 cm).
Over 121kV, not over 140kV	4 ft. 6 in. (137 cm).

**Note: When an unqualified person is working overhead lines, the location shall be such that the person and the longest conductive object he or she may contact cannot come closer to any unguarded, energized overhead line than the following distances:**

For voltages to ground 50kV or below	10 feet
For voltages to ground over 50kV	10 feet plus 4 inches for every 10kV over 50kV.

**Note: When an unqualified person is working on the ground in the vicinity of overhead lines, the person may not bring any conductive object closer to unguarded, energized overhead lines than the distances given above.**

### ELECTRICAL SAFETY MEASURES

- a. Daily, prior to use, all electrical equipment -- including extension cords -- will be inspected and defective items will be tagged out of service and not used.
- b. With the exception of double insulated tools (with UL approval), all electrical tools and equipment will be grounded.
- c. Tools will not be hoisted by their flexible electrical cords.
- d. Except in an emergency, load rated switches and circuit breakers will be used for the opening and closing of circuits under load conditions as opposed to fuses and splice connections.
- e. While working on electrical equipment, unauthorized persons will be kept clear by barriers or other means of guarding.
- f. Temporary wiring and extension cords will be kept off of walking working surfaces and vehicle traffic areas or covered to prevent tripping and vehicle damage.
  1. Electrical cords will not be suspended with staples, hung from nails, or suspended by wire.
  2. Worn or frayed electric cords or cables will not be used.
- g. Hands will be dry when working on electrical equipment including plugging in extension cords.

- h. Areas in which electrical work is to be done must be adequately illuminated and temporary lighting must:
  - 1. have guards in place.
  - 2. not be suspended by its cords unless specifically designed for such installation.
- i. A competent person, before work commences, will inform all employees in the work area of both exposed and concealed electrical hazards. If appropriate, warning tags will be used to prevent accidental contact with electrical energy.
- j. When working around any electrical power circuit, employees will:
  - 1. protect themselves by deenergizing the circuit and grounding it or by establishing insulation between themselves and the current.**
  - 2. ensure that any conductive materials and equipment that are in contact with any part of their body will be handled in a manner that will preclude contact with exposed energized conductors or circuit parts.
  - 3. use portable ladders that have non-conductive siderails.
  - 4. remove or insulate conductive articles of jewelry and clothing that might contact exposed energized parts.
- k. All 15, 20, or 30 amp receptacle outlets that are not part of the permanent wiring of the building or structure and that are used by personnel shall have ground-fault circuit interrupter protection for personnel. GFCI pigtails may be used to meet this requirement if properly sized. Remember, extension cords are considered temporary wiring.
  - 1. Ground fault circuit interrupters will be tested before use.
- l. Only qualified persons may perform testing work on electric circuits or equipment.
- m. Sufficient access and working space must be maintained about all electric equipment to permit ready and safe operation and maintenance. This space must be kept clear, i.e., it cannot be used for storage.
- n. If any work is to take place under overhead lines, the lines must be deenergized and grounded or other protective measures taken such as physically preventing approach such as using a barrier.
- o. Portable ladders must have non-conductive side rails.

- p. Conductive items of jewelry or clothing must not be worn around electricity unless rendered non-conductive by covering, wrapping, or other insulating means.
- q. The dimension of the working space in the direction of access to live parts likely to required examination, adjustment, service, or maintenance must not be less that noted below:

### Working Clearances

Minimum clear distance for conditions<sup>1</sup>

<u>Nominal voltage to ground</u>	(a) <u>Feet<sup>2</sup></u>	(b) <u>Feet<sup>2</sup></u>	(c) <u>Feet<sup>2</sup></u>
0-150	3	3	3
151-600	3	3 ½	4

**Footnote<sup>1</sup> Conditions (a), (b), and (c) are as follows:**

- {a} Exposed live parts on one side and no live or grounded parts on the other side of the working space, or exposed live parts on both sides effectively guarded by insulating material. Insulated wire or insulated busbars operating at not over 300 volts are not considered live parts.**
- {b} Exposed live parts on one side and grounded parts on the other side.**
- {c} Exposed live parts on both sides of the workplace [not guarded as provided in Condition (a)] with the operator between.**

### Minimum Depth of Clear Working Space in Front of Electric Equipment

Conditions<sup>1</sup>

<u>Nominal voltage to ground</u>	(a) <u>Feet<sup>2</sup></u>	(b) <u>Feet<sup>2</sup></u>	(c) <u>Feet<sup>2</sup></u>
601 to 2,500	3	4	5
2,501 to 9,000	4	5	6
9,001 to 25,000	5	6	9
25,001 to 75 kV	6	8	10
Above 75kV	8	10	12

**Footnote<sup>1</sup> Conditions (a), (b), and (c) are as follows:**

- {a} Exposed live parts on one side and no live or grounded parts on the other side of the working space, or exposed live parts on both sides effectively guarded by insulating materials. Insulated wire or insulated busbars operating at not over 300 volts are not considered live parts.**
- {b} Exposed live parts on one side and grounded parts on the other side. Walls constructed of concrete, brick, or tile are considered to be grounded surfaces.**
- {c} Exposed live parts on both sides of the workspace [not guarded as provided in Condition (a)] with the operator between.**

1. The importance of working clearances cannot be overstated. At any time, when working with live electrical systems, there is the possibility of an arcing fault causing an arc flash where the

current explosively flows through ionized air at 35,000°F causing incurable burns, hearing loss, collapsed lungs, or even death from the electricity of flying metal shrapnel.

2. As an electrical contractor working in a facility where the possibility of arc flash exists, check to see if an arc flash assessment has been performed on electrical equipment on which you will be working. If it has, follow that specific guidance. If it has not, perform (or have a qualified vendor perform) the arc flash assessment. Refer to NFPA 70E for specific guidance appropriate to the facility's specific electrical equipment.

**Note:** NFPA 70E is a National Consensus Standard which is incorporated by reference within the OSHA standards; specifically, Appendix A to Subpart S, 29 CFR 1910. Failure to comply with NFPA 70E is citable under the general duty clause.

See: Heavy equipment and electrical power lines, below.

### **Electrical Shock/Electrocution**

When working near or on deenergized parts, they will be considered energized **unless** they are locked out or tagged out in accordance with our control of hazardous energy program found in Section III of this safety program.

Electrical equipment and lines must be assumed to be energized until proved to be deenergized. Operating voltages of equipment and lines must be determined before working on or near energized parts. One can avoid the hazards of electricity by determining, prior to starting work, the voltages one will be working with and the condition of equipment; deenergizing the line or equipment; wearing the appropriate PPE; maintaining the prescribed distance; and using the appropriate tools.

No employee is permitted to approach or take any conductive object without an approved insulating handle closer to exposed energized parts than shown below unless:

- a. the employee is insulated or guarded from the energized part (gloves or gloves with sleeves rated for the voltage involved shall be considered insulation of the employee from the energized part), **or**
- b. the energized part is insulated or guarded from the employee and any other conductive object at a different potential, **or**
- c. the employee is isolated, insulated, or guarded from any other conductive object(s), as during live-line bare-hand work.

## Alternating Current -- Minimum Distances

<i>Voltage range (phase to phase) (kilovolt)</i>	<i><sup>1</sup>Minimum working and clear hot stick distance</i>
2.1 to 15	2 ft. 0 in.
15.1 to 35	2 ft. 4 in.
35.1 to 46	2 ft. 6 in.
46.1 to 72.5	3 ft. 0 in.
72.6 to 121	3 ft. 4 in.
138 to 145	3 ft. 6 in.
161 to 169	3 ft. 8 in.
230 to 242	5 ft. 0 in.
345 to 362	<sup>2</sup> 7 ft. 0 in.
500 to 552	<sup>2</sup> 11 ft. 0 in.
700 to 765	<sup>2</sup> 15 ft. 0 in.

**Note<sup>1</sup>:** The minimum clear hot stick distance is that for the use of live-line tools held by linemen when performing live-line work.

**Note<sup>2</sup>:** For 345-362 kv., 500-552 kv., and 700-765 kv., minimum clear hot stick distance may be reduced provided that such distances are not less than the shortest distance between the energized part and the grounded surface.

When deenergizing lines and equipment operated in excess of 600 volts, and the means of disconnecting from electric energy is not visibly open or visibly locked out, essentially the provisions of our control of hazardous energy program will be implemented which includes:

- a. clearly identifying and isolating all sources of voltage (hazardous energy).
- b. notification and assurance from the designated employee will be obtained assuring that:
  1. all switches and disconnectors through which electric energy may be supplied to the particular section of line or equipment to be worked have been deenergized;
  2. all switches and disconnectors are plainly tagged indicating that men are at work and, if design allows, they are rendered inoperable.
  3. after all designated switches and disconnectors have been opened, rendered inoperable, and tagged, visual inspection or tests shall be conducted to insure that equipment or lines have been deenergized.
  4. protective grounds shall be applied on the disconnected lines or equipment to be worked on.

5. guards or barriers will be erected as necessary to adjacent energized lines.
6. when more than one independent crew requires the same line or equipment to be deenergized, a prominent tag for each such independent crew shall be placed on the line or equipment by the designated employee in charge.
7. upon completion of work on deenergized lines or equipment, each designated employee in charge shall determine that all employees in his crew are clear, that protective grounds installed by his crew have been removed, and he shall report to the designated authority that all tags protecting his crew may be removed.

When a crew working on a line or equipment can clearly see that the means of disconnecting from electric energy are visibly open or visibly locked-out, then:

- a. guards or barriers will be erected as necessary to adjacent energized lines.
- b. upon completion of work on deenergized lines or equipment, each designated employee in charge of a crew will determine that all employees in the crew are clear, the protective grounds installed by the crew have been removed, and he/she will report to the designated authority that all tags protecting his crew may be removed.

All live-line tools shall be visually inspected before use each day. Prior to use, tools must be wiped clean. Tools with apparent hazardous defects must be tagged and removed from service until tested with portable or laboratory testing equipment.

All rubber insulating equipment will be visually inspected prior to use and an "air test" will be performed on rubber gloves prior to use.

Hard hats for those who have possible exposure to electrical shock or burns must be manufactured in accordance with the provisions of ANSI Z89.2-1971 Industrial Protective Helmets for Electrical Workers, Class B.

Tools, tape, straps, life lines, belts, hoses, and ladders must be non-conductive.

Only live-line tool poles having a manufacturer's certification to withstand the following minimum tests shall be used:

- a. 100,000 volts per foot of length for 5 minutes when the tool is made of fiberglass.
- b. 75,000 volts per foot of length for 3 minutes when the tool is made of wood.

When working on energized lines with live-line tools, insulating high voltage gloves must be worn (and other insulating protective equipment, as required) during the operating of switching, fusing, or disconnecting devices and energizing or deenergizing oil filled electrical equipment that is being worked on. Proper cross-arm extensions or ropes will be used to hold an energized conductor clear.

When ropes or blocks and ropes are used under strain, they must be securely tied off. When tied off to a vehicle, the vehicle must be chocked with the brakes set.

Portable electric hand tools will be:

- a. equipped with a three-wire cord having the ground wire permanently connected to the tool frame and means for grounding the other end; **or**
- b. of the double insulated type and permanently labeled as "Double Insulated"; **or**
- c. connected to the power supply by means of an isolating transformer, or other isolated power supply.

Pneumatic tools which are used on or around energized lines or equipment will have an accumulator on the compressor to collect moisture.

Provided the "on-off" switch may be activated by a single motion of the finger that turned it on, hydraulic tools may, as drills and similar equipment, have a switch that has a lock-on control.

Chain saws and circular saws and similar equipment will have switches that turn off when released.

Aerial lift trucks, when working near energized lines or equipment, must be grounded or barricaded and considered as energized equipment, or the aerial lift truck shall be insulated for the work being performed.

Equipment or material shall not be passed between a pole or structure and an aerial lift while an employee working from the basket is within reaching distance of energized conductors or equipment that are not covered with insulating protective equipment.

Mechanical equipment including derrick trucks, cranes and other lifting equipment, unless certified for work on the proper voltage, must not operate any closer to energized line or equipment as stated in "Alternating Current - Minimum Distances" on the previous pages unless:

- a. an insulated barrier is installed between the energized part and the mechanical equipment, **or**
- b. the mechanical equipment is grounded, **or**
- c. the mechanical equipment is insulated, **or**
- d. the mechanical equipment is considered as energized.



In all cases, conductors and equipment shall be treated as energized until tested or otherwise determined to be deenergized or until grounded. Ensure there is no possibility of induce voltages or contact with energized lines.

When attaching grounds, the ground end shall be attached first, and the other end shall be attached and removed by means of insulated tools or other suitable devices. When removing grounds, the grounding device shall first be removed from the line or equipment using insulating tools or other suitable devices. Grounds shall be placed between the work location and all sources of energy and as close as practicable to the work location. Grounds may be temporarily removed only when necessary for test purposes and extreme caution shall be exercised during the test procedures.

When grounding electrodes are utilized, such electrodes shall have a resistance to ground low enough to remove the danger of harm to personnel or permit prompt operation of protective devices.

Grounding to tower shall be made with a tower clamp capable of conducting the anticipated fault current.

A ground lead, to be attached to either a tower ground or driven ground, shall be capable of conducting the anticipated fault current and shall have a minimum conductance of No. 2 AWG copper.

### **Confined and Enclosed Spaces**

When working in confined and/or enclosed spaces containing exposed energized parts, adequate illumination will be provided to ensure that work may be performed safely.

When working in confined and/or enclosed spaces containing exposed energized parts, employees will be protected from inadvertent contact with these parts with company provided protective shields, barriers, or other insulating materials.

### **Training:**

See NFPA 70E, Below.

## **EXCAVATING, TRENCHING & SHORING**

**Scope, application, and definitions applicable to this subpart. - 1926.650**

**Specific Excavation Requirements. - 1926.651**

**Requirements for protective systems. - 1926.652**

**Soil Classification - 1926 Subpart P App A**

**Sloping and Benching - 1926 Subpart P App B**

**Timber Shoring for Trenches - 1926 Subpart P App C**

**Aluminum Hydraulic Shoring for Trenches - 1926 Subpart P App D**

**Alternatives to Timber Shoring - 1926 Subpart P App E**

**Selection of Protective Systems - 1926 Subpart P App F**

Excavating involves any earth removal which creates a cut, cavity, trench, or depression in the earth's surface. A trench is a narrow excavation (in relation to its length) made below the surface of the ground. In general, the depth is greater than the width, but the width of a trench (measured at the bottom) is not greater than 15 feet. If forms or other structures are installed or constructed in an excavation so as to reduce the dimension measured from the forms or structure to the side of the excavation to 15 feet or less (measured at the bottom of the excavation), the excavation is also considered to be a trench. Prior to excavating, obstructions that may create a hazard to employees will be removed or supported and utility companies will be contacted, advised of the proposed work, and asked to establish the location of underground installations.

If the utility company cannot respond to this request within 24 hours and/or the exact location of the underground installations cannot be determined, actual work may begin provided that:

- a. extreme caution is observed.
- b. detection equipment or other acceptable means are used to locate the approximate location of the utility installation.
- c. as the approximate location is approached, the exact location will be determined by safe and acceptable means before proceeding.

In open excavations, underground installations will be protected, supported or removed as necessary to protect employees.

To ensure employee safety, the competent person will ensure that during excavating work in trenches there is:

- a. appropriate access and egress for personnel and/or equipment such as stairs, ramps and ladders so as to require no more than 25 feet of lateral travel for employees in trenches four (4) feet or more deep.
- b. employee protection for head injury. All employees must wear hard hats.
- c. no spoil pile or equipment within two (2) feet of the edge of the excavation.

- d. employee protection from vehicular traffic such as barricades, ground guides for operators of equipment with a limited view, away sloping grades, etc..
- e. no exposure to falling loads.
- f. no danger to employees from water accumulation.
- g. no danger from cave-in. Shoring, a structure such as a metal hydraulic, mechanical or timber shoring system that supports the sides of an excavation, will prevent cave-ins.
  - 1. Shoring is not required for trenches less than five (5) feet deep if an examination by a competent person determines the soil has no potential for a cave-in. In this situation, vertical sides are allowed.
  - 2. Once a trench is over 20 feet deep, protective systems, which may include shoring, must be designed by a registered professional engineer.
  - 3. There are other methods of protection from cave-ins such as sloping or benching the adjacent ground according to specific criteria dependent on the soil conditions, weather, and adjacent structures.
  - 4. The total number of cave-in accidents is relatively small, however, the accidents which do occur are generally very serious and are much more likely to be fatal than other types of accidents in the construction industry.
- h. a method to prevent mobile equipment from falling into the excavation such as barricades. Ground guides will be used if the equipment operator does not have a clear view of the edge. If possible, the grade should slope away from the excavation.

If the atmosphere is dangerous or likely to be dangerous, testing will be done as often as needed and emergency rescue equipment -- such as breathing apparatus, safety harness and line, or a basket stretcher -- must be available.

When a hazardous atmosphere does exist, appropriate respiratory protection will be used and a rescue plan developed which includes having an attendant outside the hazardous area with appropriate equipment and training.

## **PROTECTIVE SYSTEMS**

Except when an excavation is made entirely in stable rock or it is less than 5 feet in depth and a competent person finds no indication of potential cave-in, employees in an excavation will be protected from cave-in by protective systems designed in accordance with paragraphs (b) or (c) of 26 CFR 1926.652.

All employees involved with excavating are to review these standards and understand, in general terms:

- a. The extensive degree of basic data, design, and knowledge that goes into employee protection during excavating projects.
- b. The types of soils and how to identify them on the job site.
- c. The soil condition -- specifically moisture content -- and how that impacts on stability during excavations.
- d. The absolute need for a competent person to be on site at all times during excavating work to visually and manually test soil conditions as work progresses and to maintain a safe site.

### **DAILY INSPECTIONS**

Prior to work and as needed throughout the shift, a competent person will conduct daily inspections of excavations, adjacent areas and protective systems to find evidence of a developing cave-in situation; failure of protective systems; hazardous atmosphere; or other hazardous conditions.

After every rainstorm or event which would affect the safety of employees within an excavation, an inspection will be made by a competent person.

### **FALL PROTECTION**

Walkways must be provided where employees or equipment are required or permitted to cross over excavations. If these walkways are 6 feet or more above a lower level, guardrails must be used. Specific criteria for guardrails are found in our Fall Protection Program in Section III of this program.

### **EXTENSION CORDS**

**Wiring methods, components, and equipment for general use. - 1926.405**

**General requirements. - 1926.416**

Extension cords shall not replace permanent wiring and the following safety precautions will be adhered to:

- a. Inspect the cord for cracks and cuts.
- b. Cord must have a three prong plug for grounding.
- c. Use the shortest continuous length of cord possible. Cords may not be spliced together.
- d. Make certain the cord does not lay in water.
- e. Ensure cord is properly rated for the job.
- f. Secure and route cords out of the traffic flow to prevent tripping.
- g. Defective cords will be tagged and removed from service.
- h. Most importantly, an extension cord used on a job site MUST be used with a ground fault circuit interrupter (GFCI).

## GROUND FAULT CIRCUIT INTERRUPTERS

### Wiring design and protection. - 1926.404

A ground fault circuit interrupter (GFCI) provides protection for all 120-volt, 15-, 20-, and 30-ampere receptacle outlets that are not a part of the permanent wiring by detecting lost current resulting from a short, overheating, and/or ground fault. It should be noted that an extension cord into which electrical devices are plugged are not part of the permanent wiring; therefore, GFCI's are required.

A GFCI will "trip" when the amount of current amperes going to an electrical device in the hot conductor and the amount of current returning from an electrical device differs by approximately 5 milliamps. The GFCI can interrupt the current within as little as 1/40th of a second.

The current that is missing is being lost through a ground fault, whether it is in the actual grounding, a short in the equipment or electricity going through the employee to the ground.

A GFCI will not protect an employee who comes in contact with two hot wires or a hot wire and a neutral wire. A GFCI will provide protection against fires, overheating, damage to insulation, and, the most common form of electrical shock hazard -- the ground fault. GFCI's must be tested before use.

## HEAVY EQUIPMENT AND ELECTRICAL POWER LINES

Except where electrical distribution and transmissions lines have been deenergized and visibly grounded at point of work or where insulating barriers (not attached to the vehicle) have been erected to prevent physical contact with the lines, the following clearance -- between any part of the equipment, load line, or load **and** the power line -- will be observed:

**Table A—Minimum Clearance Distances Per 29 CFR 1926. 1408 & 1409**

Voltage (nominal, kV, alternating current)	Minimum clearance distance(feet)
up to 50	10
over 50 to 200	15
over 200 to 350	20
over 350 to 500	25
over 500 to 750	35
over 750 to 1,000	45
over 1,000	(As established by the utility owner/operator or registered professional engineer who is a qualified person with respect to electrical power transmission and distribution).

**Note:** The value that follows "to" is up to and includes that value. For example, over 50 to 200 means up to and including 200kV.

A ground guide will be designated to observe clearance of the equipment and give warning to the equipment operator in situations where it is difficult for the equipment operator to maintain the desired clearances by visual means.

An overhead wire will be considered energized unless the owner of the line or the electrical utility authorities indicate that it is not energized and it has been visibly grounded.

## **HOISTS**

### **Material hoists, personnel hoists, and elevators. - 1926.552**

A hoist is a useful mechanical device which gives one the ability to lift and move heavy objects -- not people. No person is to ride on a hoist. As with all mechanical devices, improper use may lead to injury. You must know what you are doing and you must be careful.

Before use, hoists must be inspected for bent or damaged components. Particular attention should be paid to guarding. Fingers and loose clothing could be snagged in exposed mechanisms. Chains, cables, or rope slings must not be kinked, twisted, or frayed.

Loads must be properly rigged with hooks or slings and they must never exceed the hoist's rated capacity.

Ensure that the area around the hoist is free from debris and, most importantly, people. Do not allow yourself or others to be under a hoisted load.

## **LIGHTING**

### **Illumination. - 1926.56**

A competent person will ensure that all work areas have adequate lighting. Adequate lighting serves a two-fold purpose -- allowing tasks to be more readily performed as well as providing the additional safety factor of being seen by persons not involved with the work -- especially vehicular traffic.

If generators are used for auxiliary lighting, they will be operated and maintained by authorized persons who are competent by training or experience.

## **LP-GAS STORAGE**

### **Liquefied petroleum gas (LP-Gas). - 1926.153**

Liquefied petroleum gas (LP-Gas) is sometimes used on job sites to provide fuel for temporary heating devices.

LP-Gas systems must have containers, valves, connectors, manifold valve assemblies, and regulators of an approved type. All cylinders must be DOT approved.

Rules for inside storage (under construction standards) are simple -- **it is not allowed!**

**Note: Under industry standards, up to 300 pounds of LP-Gas may be stored, with adherence to specific safety procedures, is allowed**

Rules for outside storage require that containers be in a suitable ventilated enclosure or otherwise protected against tampering. At least one approved portable fire extinguisher having a rating of not less than 20-B:C must be readily available.

The distance from buildings or groups of buildings that containers must be stored are as follows:

<u>Quantity of LP-Gas Stored</u>	<u>Distance in Feet</u>
500 lbs or less	0
501 to 6,000 lbs	10
6,001 to 10,000 lbs	20
over 10,000 lbs	25

Storage must not be near building openings or vehicular traffic.

### **LP-GAS TEMPORARY HEATING**

#### **Liquefied petroleum gas (LP-Gas). - 1926.153**

When LP-Gas is used for temporary heating on units that provide over 7,500 BTU per hour or use containers greater than 2.5 pounds maximum water capacity [nominal 1 pound LP-Gas capacity], the following will apply:

- a. Container valves, connectors, regulators, manifolds, piping and tubing must not be used as structural supports for the heaters.
- b. The LP-Gas containers and all associated equipment including hoses must be located so as to minimize exposure to high temperatures or physical damage.
- c. The maximum water capacity of individual containers must be 245 pounds [nominal 100 pound LP-Gas capacity].

Heaters that are not integral heater-container units, which connected by hose to the LP-Gas, must be at least 6' from the container. Blower and radiation type heaters must not be directed toward the container or any other unit within 20 feet. Heaters specifically designed for attachment to the container are permitted as long as the heat is not directed to the LP-Gas container.

### **MACHINE GUARDING**

#### **Mechanical power-transmission apparatus. - 1926.307**

Most injuries that occur when operating a machine happen at the point of operation -- the point on a machine where the actual work (cutting, bending, spinning) occurs. This is also the point where guards can protect fingers and hands exposed to that danger. Machine guarding also protects employees from other dangers such as flying pieces of metal, sparks, gears, belts, and rotating parts.

The most common types of machines on job sites are power tools which often have guards to prevent injury.

Accident prevention in this area is a function of machine design -- engineering controls -- and operator training. Types of machine guarding are almost as numerous as types of machines -- the most common being a physical barrier to prevent accidental insertion of body parts. Guards are vital for safety reasons and machine guards designed into a machine should never be altered or removed. The speed and tremendous forces involved in modern machines are such that severe injury or even death could occur without warning and without even slowing the machine down.

Training and proper work methods go a long way toward reducing machine accidents. Like all safeguards, there is generally a way to bypass safety features that are engineered into machines. This is sometimes done to increase speed or just to make one's job easier. This could result in a tragic, avoidable accident. The few seconds saved could cause a lifetime of grief. Do not bypass safety systems.

Operate all machines according to the instructor's manual and follow all safety procedures.

## **MACHINERY**

Spinning, pounding, moving -- gears, pulleys, levers -- electricity, fuel, hydraulics -- action, reaction, force: danger! Machinery takes energy and performs a task or a multitude of tasks. Machinery, from a safety standpoint, is a collection of individual simple machines (pulleys, gears, etc.) combined to work in harmony to accomplish a specific job.

The danger is obvious: the power, speed, movement, and momentum of machinery is not going to be altered by something as insignificant as an employee's finger, hand, or even body.

Only authorized employees may operate machinery

Secondly, ensure the guarding systems are in place, functioning properly, and have not been altered or removed.

Thirdly, if a hazard assessment of the machinery operation dictates specific personal protective equipment (PPE), wear it!

Lastly, again from purely a safety standpoint, think of any power operated item with moving parts as machinery. This would include items as diverse as a small electric drill to an 80,000 pound tractor-trailer.

## **NFPA 70E**

### **Standard for Electrical Safety in the Workplace**

OSHA has adopted by reference NFPA 70E-2000, *Standard for Electrical Safety Requirements for Employee Workplaces*.

A national consensus standard, such as NFPA 70E-2009, however, can sometimes be relevant to a general duty clause citation in the sense that



the consensus standard may be used as evidence of hazard recognition and the availability of feasible means of abatement. The general duty clause, Section 5(a)(1) of the OSH Act, is violated if an employer has failed to furnish a workplace that is free from recognized hazards causing or likely to cause death or serious physical harm. The general duty clause is used where there is no standard that applies to the particular hazards involved.

All electrical work will be done in compliance with the National Electric Code (NEC), OSHA standards, and NFPA 70E. OSHA standards and NFPA 70E deal with worker safety. The NEC deals with the design, installation, and inspection of electrical installations.

A copy of NFPA 70E will be readily available for reference, training, and employee use. This document may be purchased from the NFPA website at: [www.nfpa.org](http://www.nfpa.org).

### **Training:**

All employees who face electrical hazards that are not reduced to a safe level by the applicable electrical installation requirements will be trained in safety-related work practices and procedural requirements as necessary to provide protection from the electrical hazards associated with the job assignments. Employees will be trained to identify and understand the relationship between electrical hazards and possible injury.

Training will be in a classroom and/or on-the-job and the degree of training will be determined by the risk to the employee.

Employees will receive training in emergency procedures including methods of release from contact with exposed energized electrical conductors or circuit parts; methods of first aid; and CPR if the duties warrant such training. If required, the Safety Director will certify that employees have been trained in approved methods of resuscitation annually.

### **Training for Qualified Persons:**

**Note:** A qualified person has skills and knowledge related to the construction and operation of the electrical equipment and installations and has received safety training to recognize and avoid the hazards involved.

1. Qualified persons must be trained and knowledgeable of the construction and operation of equipment or a specific work method and to recognize and avoid the electrical hazards with respect to the equipment or work methods.
  - a. Qualified persons will be familiar with the proper use of special precautionary techniques, PPE, including arc-flash, insulating and shielding materials, and insulated tools and test equipment.

**Note: A person can be qualified with respect to certain equipment and methods but still be unqualified for others.**

- b. Qualified persons will be permitted to work with the Limited Approach Boundary of exposed energized electrical conductors and circuit parts operating at 50 volts or more and will be trained in the following:
  - 1) The skills and techniques necessary to distinguish exposed energized electrical conductors and circuits parts from other parts of electrical equipment
  - 2) The skills and techniques necessary to determine the nominal voltage of exposed energized electrical conductors and circuit parts.
  - 3) The approach distances specified in Table 130.2(c) and the corresponding voltages to which the qualified person will be exposed.
  - 4) The decision-making process necessary to determine the degree and extent of the hazard and the PPE and job planning necessary of perform the task safely.
- c. If undergoing OJT and, in the course of the OJT has demonstrated an ability to perform duties safely under the direct supervision of a qualified person, this person will be considered qualified for the performance of these duties.
- d. Tasks performed less often than once per year will require retraining before performance of the work practices involved.
- e. Qualified persons will be trained to select an appropriate voltage detector and demonstrate how to use a device to verify the absence of voltage, including interpreting indications provided by the device. Will be trained to understand all limitations of each specific voltage detector that may be used.

### **Training for Unqualified Persons:**

Unqualified persons will be trained in and be familiar with any of the electrical safety related practices that are necessary for their safety.

**NOTE: Unqualified persons will not be permitted to enter spaces that are required to be accessible to qualified employees only unless the electric conductors and equipment involved are in an electrically safe work condition.**

## **Retraining:**

Retraining will be given when.

- a. Supervisors or annual inspections indicate that the employee is not complying with the safety-related work practices.
- b. New technology, new types of equipment, or changes in procedures necessitate the use of safety-related work practices that are different than those the employee would normally use.
- c. If the employee must employ safety-related work practices that are not normally used during regular job duties.

## **Training Documentation:**

The company will document that each employee has received the training above **after** the employee demonstrates proficiency in the work practices involved and will be maintained for the duration of the employee's employment. Training documentation will contain the employee's name and dates of training.

## **Host Employer Responsibilities:**

The host employer will inform contract employers of:

- a. Known electrical hazards that are related to the contract employer's work that might not be recognized by the contract employer or its employees.
- b. Information about the employer's installation that the contract employer needs to make assessments.

The host employer will report observed contract employer related violations (dealing with electrical work) to the contract employer.

## **Contract Employer Responsibilities:**

- a. The contract employer will ensure that each of its employees is instructed in the hazards communicated to the contractor employer by the host employer. This instruction is in addition to the basic instruction required by NFPA 70E.
- b. The contract employer will ensure that each of its employees follow the work practices required by NFPA 70E and safety-related work rules required by the host employer.
- c. The contractor employer will advise the host employer of:
  - 1) Any unique hazards presented by the contract employer's work.

- 2) Any unanticipated hazards found during the contract employer's work that the host employer did not mention.
- 3) The measure the contractor took to correct any violations reported by the host employer and prevent such violations from recurring in the future.

### **Electrical Safety Program:**

The employer will implement and document an overall safety program that directs activity appropriate for the voltage, energy level, and circuit conditions.

Safety related work practices are only one component of an overall an electrical safety program.

### **Electrical Safety Program Procedures:**

The program will address safety related work practices for working within the Limited Approach Boundary. Program elements found in Annex E to NFPA 70E would be included such as evaluations, anticipating unexpected events, electrical flash arc hazard analysis, and the fact that all electrical parts are considered live until proven otherwise.

### **Risk/Hazard Evaluation Procedures:**

Risk/hazard evaluation procedures are to be used before work is started within the Limited Approach Boundary of energized electrical conductors and circuit parts operating at 50 volts or more or where an electrical hazard exists. An example of Hazard/Risk Evaluation Procedures as well an example of a Hazard Risk Analysis Evaluation Flow Chart is found in Annex F to NFPA 70E. It would contain event severity, frequency, probability and avoidance to determine the level of safe practices to be employed.

### **Pre-Job Briefings for Routine Work:**

**Prior** to performing routine work [routine work is not complicated or particularly hazardous and the employee should be able to recognize and avoid hazards presented], a job briefing will be held before each job and include all employees involved. Topics would include hazards associated with the job, work procedures involved, special precautions, energy source controls, and PPE requirements.

### **Test Instruments and Equipment:**

All test instruments, equipment, and their accessories will be rated for the circuits and equipment to which they will be connected. Further they will meet the requirements of ANSI/ISA-66010-1, *Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use - Part 1: General Requirements*, for rating and design requirements for voltage measure-

ment and test instruments intended for use on electrical systems 1000 volts and below.

### **Operations Verification:**

When test instruments are used for the testing for the absence of voltage on conductors or circuit parts operating at 50 volts or more, the operation of the test instrument will be verified before and after an absence of voltage test is performed.

### **Insulating PPE Maintenance and Use:**

Electrical protective equipment will be maintained in a safe, reliable condition. Insulating equipment will be inspected for damage before each day's use and immediately following any incident that can reasonably be suspected of having caused damage. Insulating gloves will be given an air test along with the inspection.

Maximum test intervals for rubber insulating equipment will be in accordance with NFPA 70E Table 130(c)(6)(c). Time frames for testing would include: 1) Blankets-before first issue/every 12 months, thereafter, 2) Gloves-before first issue and every 6 months, and, 3) Sleeves-before first issue and every 12 months. Covers and line hose will be tested if insulating value is suspect.

### **Energized Electrical Work Permit:**

Reference Annex J to NFPA 70E. Energized Electrical Work Permits **are not** part of NFPA 70E. Within Annex J, however, are both an example of an Energized Electrical Work Permit and a Flow Chart to illustrate items to consider when determining the need for the permit.

In every case, if the voltage level is  $\geq 50$  volts **AND** there are exposed live parts, an Energized Electrical Work Permit is required.

Part I [to be completed by the Requester] of the Energized Electrical Work Permit will include:

1. Job/Work Order Number.
2. Description of the work to be done.
3. Justification of why the circuit/equipment cannot be de-energized or the work deferred until the next scheduled outage.
4. Requester Name, Title, and Date.

Part II [to be completed by the Electrically Qualified persons **doing** the work] of the Energized Electrical Work Permit will include:

1. Detailed job description procedure to be used in performing the above detailed work.
2. Description of the Safe Work Practices to be employed.

3. Results of the Shock Hazard Analysis.
4. Determination of the Shock Protection Boundaries.
5. Results of the Arc Flash Hazard Analysis.
6. Determination of the Arc Flash Protection Boundary.
7. Necessary personal protective equipment to safely perform the assigned task.
8. Means employed to restrict the access of unqualified persons from the work area.
9. Evidence of completion of a Job Briefing including discussion of any job-related hazards.
10. A signed and dated agreement by each Electrical Qualified Person that the above work can be done safely.

Part III of the Energized Electrical Work Permit will include:

Signed and dated approval(s) by persons such as:

1. Manufacturer Manager
2. Safety Manager
3. General Manager
4. Maintenance/Engineering Manager
5. Electrically Knowledgeable Person

### **Illumination of Work Areas:**

Employees will not enter spaces containing electrical hazards unless illumination is provided that enables the employees to perform the work safely. Where lack of illumination or an obstruction precludes observation of the work to be performed, employees will not perform any task with the Limited Approach Boundary of energized electrical conductors or circuit parts operating at 50 volts or more or where an electrical hazard exists.

### **RIGGING FOR MATERIAL HANDLING**

#### **Rigging equipment for material handling. – 1926.251**

**Note:** The below information is applicable to the following crane types and operations:

1. **Articulating/knuckle-boom truck cranes that deliver material to a construction site when used to transfer materials from the truck crane to the ground, without arranging the materials in a particular sequence for hoisting.**
2. **Articulating/knuckle-boom truck cranes that deliver material to a construction site when the crane is used to transfer building supply sheet goods or building supply packaged materials from the truck crane onto a**

structure, using a fork/cradle at the end of the boom, but only when the truck crane is equipped with a properly functioning automatic overload prevention device. Such sheet goods or packaged materials include, but are not limited to: sheets of sheet rock, sheets of plywood, bags of cement, sheets or packages of roofing shingles, and rolls of roofing felt.

Note: The above articulating/knuckle-boom crane exclusion does not apply when it is used to 1) hold, support or stabilize the material to facilitate a construction activity, such as holding material in place while it is attached to the structure; 2) when the material being handled is a prefabricated component such as precast concrete members or panels, roof trusses, prefabricated building sections such as, but not limited to: floor panels, wall panels, roof panels, roof structures, or similar items; and, 3) when the material being handled by the crane is a structural steel member (for example, steel joists, beams, columns, steel decking (bundled or unbundled) or a component of a systems-engineered metal building.

3. Other rigging requirements are found in the applicable provisions of **Cranes and Derricks in Construction**, found in Section III of this program, specifically, 1926.1401, 03, 04, 07, 08, 23, 27, 31, & 33.

Prior to use on each shift, rigging equipment including slings and all fastenings and attachments will be inspected for damage or defects by a qualified person. Additional inspections will be performed during sling use and where service conditions warrant to ensure that it is safe.

Defective/damaged equipment including slings and rigging will not be used and will be immediately removed from service.

Per 1926.251(a)(3), rigging equipment, when not in use, will be removed from the immediate work area and stored properly so as not to present a hazard to employees.

Under no circumstances may any employee be under a suspended load.

29 CFR 1926.251, *Rigging Equipment for Material Handling*, contains Tables H-1 to H-20 which indicate rated capacities for various types of slings and grommets, safe working loads for shackles, number and spacing of U-Bolt Wire Rope Clips, and maximum allowable wear at any point of link.

Welded alloy steel chain slings must have permanently affixed durable identification stating size, grade, rated capacity, and sling manufacturer. Of course, hooks, rings, oblong links, pear-shaped links, welded or mechanical coupling links, or other attachments, when used with alloy steel chains, will have a rated capacity at least equal to that of the chain.

Rigging equipment will **not be loaded in excess** of its recommended safe working load and load identification will be attached to the rigging.

Specific requirements for use and inspection of alloy steel chains; wire rope; natural rope and synthetic fiber; synthetic webbing; and shackles are found in the above standards.

## SCISSOR-LIFT FALL PROTECTION

What type of fall protection is required for scissor-lifts? This apparently simple question has a relatively simple answer. However, how it is derived is somewhat complicated because OSHA does not have a standard to deal with this issue.

Clearly, there is a hazard -- falling from height -- however, fall protection while using a scissor-lift is not covered in the fall protection, scaffold and ladder fall protection, nor aerial lift fall protection standards.

Section 5(a)(1) of the Occupational Safety and Health Act, commonly referred to as the General Duty Clause is a "catch all clause" which states: "Each employer shall furnish to each of its employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees."

In the absence of a specific standard relating to a safety or health risk, the above is the reference OSHA will cite.

When assessing compliance efforts, OSHA considers the requirements of pertinent national consensus standards. In the case of scissor-lifts, ANSI/SIA A92.6-1990, *Self-propelled Elevated Work Platforms*, and ANSI/SIA A92.3, *Manually Propelled Elevating Aerial Platforms*, are used.

Fall protection is provided by employees maintaining firm footing on the lift and using guardrails. Under no circumstances are employees to place ladders or other items on the lift to extend their reach. Per ANSI/SIA standards, with which OSHA concurs, "Use of planks, ladders, or any other device on the aerial platform for achieving additional height or reach shall be prohibited." Use of these items negates the value of the guardrail system and may possibly exceed the scissor-lift's design limits for stability.

Further, personnel are not to tie off to items adjacent to the lift -- the most obvious reasons are: the anchorage point may not be sufficient and movement of the lift would pull the employee out of and off of the lift.

If, for some reason, guardrails are not being provided for a specific operational reason, then a personal fall protection system may be used which would include an anchorage point, lanyard and safety harness. However, this option is severely limited because its design would have to be approved by a registered engineer or the scissor-lift manufacturer would have to approve the use of the lift as an anchorage.

Under ideal conditions, rarely found on a construction site, scissor-lifts may be moved with the lift extended. However, should obstacles, debris, drop-offs, holes, depressions, ramps or other hazards be present, the lift must be lowered prior to movement.



Finally, if the employee leaves the safety of the scissor-lift platform while working at height, some sort of approved fall protection system must be employed.

## **SIGNS & TAGS**

**Accident prevention signs and tags. - 1926.200**

**Minnesota Rules 5207.0520**

### **5207.0520 WARNING SIGNS AT CONSTRUCTION OR ENGINEERING PROJECTS.**

Warning signs, or warning signs and red lights shall be conspicuously placed and maintained at all dangerous places on the job.

STAT AUTH: MS s 182.655

HIST: 12 SR 634

*Current as of 10/30/06*

When appropriate, signs and tags will be used to warn of specific hazards. Types of signs are classified according to their use, and their design is regulated by OSHA standard. All personnel will be instructed in the meaning of the various types of signs. Sign usage includes:

- a. Danger Signs (Red, Black & White): indicates immediate danger and denotes that special precautions are necessary.
- b. Caution Signs (Yellow Background): warns of a potential hazard or cautions against an unsafe practice.
- c. Safety Instruction Signs (White Background): used to provide general instructions and suggestions relative to safety measures.

The wording on signs must be positive, clear, concise, and easy to understand or the sign loses its value.

Accident prevention tags are to warn of hazardous or potentially hazardous conditions that are out of the ordinary, unexpected, or not readily apparent. They are not used where signs, guarding or other positive means of protection are used.

All tags must have:

- a. a signal word: "Danger"; "Caution"; "Warning"; BIOHAZARD (or its symbol) and a major message, and
- b. a major message such as: "High Voltage" or "Do not start".  
[Major messages indicate the specific hazardous condition.]

The color scheme is basically the same as for signs:

red = danger  
yellow = caution  
orange = warning  
fluorescent orange = biological hazard.

- a. Danger Tags: indicate an immediate hazard that presents a threat of death or serious injury.
- b. Caution Tags: indicate a non-immediate hazard or unsafe practice that presents a lesser threat of injury.
- c. Warning Tags: indicate a hazard between “Danger” and “Caution”.
- d. BIOHAZARD Tags: indicate the actual or potential presence of a biological hazard and identify equipment, rooms, containers, etc., that may be contaminated.

Pay attention to signs and tags and realize that they are in place for only one reason -- your safety.

## **STAIRS**

### **Stairways. - 1926.1052**

Stairways that are not a permanent part of the structure on which construction work is being performed must have landings of at least 30 inches in the direction of travel and extend at least 22 inches in width at every 12 feet or less of vertical rise. Additionally,

- a. riser height and tread depth must be uniform within each flight of stairs.
- b. where doors or gates open directly on a stairway, a platform will be provided, and the swing of the door must not reduce the effective width of the platform to less than 20 inches.
- c. metal pan landings and metal pan treads, when used, must be secured in place before filling with concrete or other material.
- d. all parts of stairways will be free of hazardous projections, such as protruding nails.
- e. slippery conditions on stairways will be eliminated before use.
- f. except during stairway construction:
  - 1. foot traffic is prohibited on stairways with pan stairs where the treads and/or landings are to be filled at a later date, unless the stairs are temporarily fitted with solid material at least to the top edge of each pan. Temporary treads and landings will be replaced when worn below the level of the top edge of the pan.

2. foot traffic is prohibited on skeleton metal stairs where permanent treads and/or landings are to be installed at a later date unless the stairs are fitted with secured temporary treads and landings long enough to cover the entire tread and/or landing area.

Treads for temporary service will be made of wood or other solid material and installed the full width and depth of the stair.

Stairways having four or more risers or rising more than 30 inches will be equipped with:

- a. at least one handrail; and
- b. one stairrail system along each unprotected side or edge.

### **TOOLS: HAND**

#### **General requirements. - 1926.300**

#### **Hand tools. - 1926.301**

#### **Minnesota Rule 5207.0720**

### **5207.0720 ALTERATION OF TOOLS AND EQUIPMENT.**

All tools and equipment, whether powered or manually operated, shall be used only for their intended purpose. Tools and equipment shall not be altered, modified, or used for other than their intended purpose without the manufacturer's written approval, or unless under the direction of a competent person in accordance with accepted engineering requirements to prevent creating an additional hazard.

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*Current as of 10/30/06*

Hand tools shall be used only for the purpose for which they are designed.

Hand tools will be kept clean and, where appropriate, oiled.

Hand tools which are damaged will not be used.

Hand held cutting tools will be kept sharp and will be sheathed or retracted when not in use.

When using a striking tool such as a hammer or chisel, safety glasses or safety goggles will be used.

Do not force tools.

If you are unfamiliar with the proper procedure for using a tool, ask your Supervisor for instruction.

Power tools may be operated only by those persons who are qualified by training or experience.

Do not alter guards on power tools; wear appropriate PPE.

Electrical tools must be grounded and, in the absence of permanent wiring, a Ground Fault Circuit Interrupter must be used.

Electric tools will not be lifted by their cords and pneumatic tools will not be lifted by their hoses.

### **TOOLS: PNEUMATIC POWERED**

**Eye and face protection. - 1926.102**

**General requirements. - 1926.300**

**Power-operated hand tools. - 1926.302**

Pneumatic powered tools must be safeguarded whenever there are hazardous employee exposures. This is especially important for point of operation guarding.

Three specific hazards associated with pneumatic powered tools which are unique to their use are noise levels, tool retention, and air hose pressure.

Care must be taken to assure that noise levels are within acceptable limits (noise monitoring may be necessary) and, if required, engineering controls and/or ear protection will be employed.

If there is a possibility of tool ejection during use, a tool retainer must be installed.

Safety will dictate that hose and hose connections be designed for the pressure and service to which they are subjected.

Eye protection will be worn when using pneumatic powered tools in accordance with the owner/operator's manual.

Compressed air will not be used for cleaning purposes except where pressure is reduced to less than 30 p.s.i. **and** effective chip guarding is in place **and** appropriate personal protective equipment is being worn. OSHA has determined that effective chip guarding means "any method or equipment which will prevent a chip or particle (of whatever size) from being blown into the eyes or skin of the operator or other workers in the area."

Care must be taken to ensure that employees are not exposed to unsafe levels of respirable dust or crystalline silica.

The PEL for particles not otherwise regulated is 5.0 mg/m<sup>3</sup>. The PEL for respirable dust containing crystalline silica is determined by the below formula:

PEL = 10 mg/m<sup>3</sup> ÷ (%SiO<sub>2</sub>+2), where %SiO<sub>2</sub>+2 refers to the amount of crystalline silica measured in the sample.

Our operations would not exceed these PEL's and respiratory protection is not required.

**TOOLS: POWDER-ACTUATED**  
**Eye and face protection. - 1926.102**  
**General requirements. - 1926.300**  
**Power-operated hand tools. - 1926.302**

A powder-actuated fastening tool propels a nail, pin, or fastener through an object to fasten it to another object. These tools, if misused, are extremely dangerous because essentially, they are similar to a pistol or rifle.

The speed of the projectile may range from 300 ft/second to 1290 ft/second.

Only trained and authorized persons may operate a powder actuated tool and, for safety, these tools should be kept secured when not in use.

Prior to use, the tool must be inspected and tested according to the manufacturer's instruction manual which should be kept with the tool.

Defective tools must not be used and they must be taken out of service.

Use of appropriate personal protective equipment - including, at least, eye/face and ear protection -- is required not only for the operator, but also those employees in the vicinity. PPE will be in accordance with the owner/operator's manual.

On the job site, each tool should be accompanied by: 1) its container; 2.) the operator's instruction & service manuals; 3) the tool inspection record; and 4) service tools & accessories.

Tools must not be loaded until just before firing and, under no circumstances, are they to be pointed at any person. Hands must be kept clear of the open barrel end. A powder activated tool must never be left unattended -- loaded or empty -- for safety and security reasons.

Fasteners must not be driven into very hard or brittle materials such as cast iron, glazed tile, surface-hardened steel, glass block, live rock, face brick or hollow tile; easily penetrated materials unless these materials are backed by a substance; nor a damaged area caused by an unsatisfactory fastening. Of course, these tools must never be used in an explosive or flammable atmosphere.

Before fastening questionable material, the operator can determine its suitability by using a fastener as a center punch. If the fastener point does not easily penetrate, is not blunted, and does not fracture the material, initial test fastenings will be made in accordance with the manufacturer's instructions.

The tool must be held perpendicular to the work surface and in the event of a misfire, the operator must hold the tool firmly against the work surface and follow, exactly, the manufacturer's instructions.

Tools must be used with the correct shield, guard, or attachments recommended by the manufacturer.

Because the case and load are color coded, it is imperative that the operator can distinguish the colors of brass and nickel as well as gray, brown, green, yellow and red and purple.

## **WELDING, CUTTING AND BRAZING**

General requirements. – 1910.252

Oxygen-fuel gas welding and cutting. 1910.253

Arc welding and cutting. – 1910.254

Gas welding and cutting. - 1926.350

Arc welding and cutting. - 1926.351

Fire prevention. - 1926.352

Ventilation and protection in welding, cutting, and heating. - 1926.353

Welding, cutting, and heating in way of preservative coatings. - 1926.354

Table Z-1. – Limits for Air Contaminants

Chromium (VI). – 1926-1126

Employees assigned to operate both arc welding and cutting and oxygen-fuel welding and/or brazing equipment, **and their supervisors**, must be properly trained and instructed in the operation of such equipment. Proper PPE will be worn by all welders.

Before welding or cutting, the supervisor or competent person will inspect the area with emphasis on fire prevention and authorize welding or cutting using our Hot Work Permit noting special precautions that must be taken.

An appropriate fire extinguisher and first aid equipment will be readily available for immediate use.

Compressed gas cylinders will:

- a. have valve protectors in place when not in use or connected for use.
- b. be legibly marked to identify the gas contained therein.
- c. have the valves closed before the cylinder is moved, when the cylinder is empty, and at the completion of each job.
- d. be stored in areas away from intense heat, electric arcs, and high temperature lines.
- e. be secured upright (chained in portable dolly), in storage or transportation, to prevent tipping, falling, rolling, and damage from passing or falling objects. Oxygen cylinders must be kept 20 feet from any flammable gases or petroleum products.
- f. be marked "EMPTY" when appropriate.
- g. be removed from service if the regulators or gauges are defective.
- h. be used only for the purpose for which they are designed -- for example, cylinders will not be used as rollers or supports.
- i. be kept away from stairs.

- j. Workers in charge of oxygen or fuel-gas supply equipment (including distribution piping systems and generators) must be instructed and judged competent for such work.

Regulators and gauges will be inspected daily.

All cylinders, cylinder valves, couplings, regulators, hoses and apparatus will be kept free of oily or greasy substances.

Operators of welding equipment will report any equipment defect or safety hazards and discontinue use of equipment until its safety has been assured. Repairs will be made only by qualified personnel.

Persons performing arc welding and cutting must be properly instructed and qualified to operate such equipment and, if performing gas shielded arc welding, must be familiar with Recommended Safe Practices for Gas-Shielded Arc Welding, A6.1-1966, American Welding Society, as well as 29 CFR 1910.252.

Electric welders will be inspected daily before use with emphasis on the cables. All splicing of cables must maintain the insulated protection with no exposed metal parts. Cables in need of repair will not be used.

The competent person will ensure that ventilation within a confined space is adequate to negate the possibility of a respiratory or explosion hazard.

A fire watch will be assigned when there is potential a fire might develop. Of course, any person assigned to fire watch must have received training in the specific fire extinguishing equipment being used. When welding, cutting, or brazing an object near a fire hazard that is not readily movable, the fire hazard will be removed. If any fire hazards remain, shields will be used to confine the sparks, heat, and slag. If the provisions of this paragraph cannot be met, welding and/or cutting **may not** take place. In fact, as a company policy, if welding cannot be conducted safely, it may not be conducted.

Fire watchers are required in all locations where other than a minor fire might develop and any of the below conditions exist:

- a. appreciable amounts of combustible materials closer than 35 feet to point of operation.
- b. appreciable combustibles are 35 feet or more away but are easily ignited by sparks.
- c. wall or floor openings within a 35 foot radius expose combustible material in adjacent areas including concealed spaces in walls or floors..
- e. Combustible materials are adjacent to the opposite side of metal partitions, ceilings, or roofs that are likely to be ignited by conduction or radiation.

The fire watch must be maintained at least one half hour after welding or cutting operations have ceased to detect, and extinguish, possible smoldering fires.

When performing operations capable of producing heat at chemical plants, refineries, or other facilities which have a higher degree of hazard than normal work sites, a hot work permit is generally required. Included in these types of operations are burning, cutting, heating, and welding.

With our Hot Work Permit are found fire safety instructions [(29 CFR 1910 252(a)] which must be read and understood by the persons identified on the permit

Welding, cutting, heating of metals of toxic significance (lead, zinc, cadmium, mercury, beryllium, or exotic metals or paints) in enclosed spaces will require either general mechanical ventilation of sufficient capacity and so arranged as to produce the number of air changes necessary to maintain welding fumes and smoke within safe limits **or** local exhaust ventilation consisting of freely movable hoods intended to be placed by the welder or burner as close as practicable to the work. This system shall be of sufficient capacity and so arranged as to remove fumes and smoke at the source and keep the concentration of them in the breathing zone within safe limits.

This would include inert-gas metal-arc welding performed on stainless steel to protect against dangerous concentrations of nitrogen dioxide.

When performing welding operations on stainless steel and there is exposure to airborne chromium (VI) above its action level of 2.5 micrograms per cubic meter of air ( $2.5 \mu\text{g}/\text{m}^3$ ) calculated as an 8-hour time-weighted average (TWA), the provisions of 29 CFR 1926.1126 must be adhered to. The PEL is  $5 \mu\text{g}/\text{m}^3$ . If air monitoring, as described in 29 CFR 1926.1126 is below  $.5 \mu\text{g}/\text{m}^3$ , the provisions of this standard do not apply.

## **IDENTIFICATION OF HAZARDOUS JOB SITE MATERIALS**

The presence of asbestos, crystalline silica, and lead is possible on many job sites. Before work begins, the appropriate PPE and respiratory protection requirements will be discussed with employees.

Because of the chronic (long term) nature of these hazards, detrimental health effects due to exposure would not be immediately noticed.

The competent person on site will prevent exposures to these materials.

Areas that contain the below materials will be cordoned off or protected with appropriate warning signs. Do not enter any restricted area unless dictated by job assignment and only after specific training for dealing with these hazards. The training would include PPE, respiratory protection, work procedures, medical surveillance, containment, hygiene, handling, testing, and labeling.



These materials may be “discovered” as work progresses and employees will be protected from these hazards by:

- a. identification of these items by the competent person.
- b. informing the owner, project designer, or engineer of the hazards.
- c. securing the area in question until testing proves samples to be negative.

Subcontractors who deal with these hazards will have specific programs that address the above issues.

## **ASBESTOS**

### **Substance Technical Information for Asbestos - Non-Mandatory - 1926.1101 App H**

Asbestos can be found in pipe, wall, and boiler insulation; exterior sheeting; and flooring. Friable or crumbling asbestos presents the most hazard as it can float in the air and be inhaled into the respiratory system. Without respiratory protection, the microscopic asbestos fibers can enter the deepest portion of the lung, causing scar tissue to develop and stiffen the lung. The net result is a reduction of gas exchange -- a condition called asbestosis. High levels of exposure to asbestos greatly increase one's chance of lung cancer.

## **CRYSTALLINE SILICA**

### **Silica, Crystalline (Respirable Size), National Institute of Health**

Crystalline Silica can be readily found on many job sites in rocks as well as many concrete and masonry products. Crystalline Silica can be released in the air when employees are performing such tasks as:

- a. chipping, hammering, drilling, crushing, or hauling rock.
- b. abrasive blasting.
- c. sawing, hammering, drilling, or sweeping concrete or masonry.

Unprotected respiratory exposure to crystalline silica may cause a lung disease called silicosis as well as cancer and death.

## **LEAD**

### **Substance Data Sheet for Occupational Exposure to Lead - 1926.62 App A**

Lead can be found in water pipes, soldering, and paint. Lead is a heavy, toxic metal which can be absorbed into your body by ingestion and/or inhalation. It is a cumulative poison which can stay in your body for decades.

While massive doses of lead can kill in a matter of days, the more likely scenario on a job site is moderate exposure to asbestos or lead which probably would not create any health problems for years -- if at all.

# TR Concrete

## Safety Program [Minnesota]

### SECTION III

#### SPECIFIC COMPLIANCE PROGRAMS

Control of Hazardous Energy - Lockout/Tagout

Employee Right-to-Know

Exposure Control Plan for Bloodborne Pathogens & Other Infectious Materials

Fall Protection

Forklifts

Permit-Required Confined Space

Personal Protective Equipment

General

Hearing Conservation Overview

Scaffolds

#### **Environmental Program**

Prevention of Cold and Heat Stress

#### **Special Emphasis Program**

Cranes and Derricks in Construction

**TR Concrete**

**CONTROL OF HAZARDOUS ENERGY**

**Lockout/Tagout**

**TR Concrete**  
**Safety Program**

**SECTION III**

**CONTROL OF HAZARDOUS ENERGY - LOCKOUT/TAGOUT**

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**OSHA Standards:**

29 CFR 1910.147, *The Control of Hazardous Energy (Lockout/Tagout)*

29 CFR 1910.333, *Selection and Use of Work Practices*

**Forms:**

[Found immediately following this program]

Energy Source Evaluation

Control Procedures

Group Leader Documentation

Periodic Inspection

## OVERVIEW

As a contractor, we would not be involved in normal production operations. We could, however, be involved in the constructing, installing, setting up, adjusting, inspecting, modifying, maintaining or servicing with the possibility of injury due to the unexpected energization, start up or release of stored energy. During these situations, we will comply with the provisions of 29 CFR 1910.147, *The Control of Hazardous Energy (Lockout/Tagout)* and 29 CFR 1910.333, *Selection and Use of Work Practices*, the standards on which this program is based.

Coordination will be established between the client and, if appropriate, subcontractors to clearly indicate who is responsible for what function of the program as well as the identifying characteristics of the lockout/tagout devices -- shape, color, color codes for locks and tags, if used.

Coordination is required because -- for example: our employee may complete lockout/tagout procedures and perform maintenance on a fixed piece of equipment while a client's employee is affected by that work.

All our employees affected by this program will be "authorized employees" by virtue of their work (see "Definitions" below.)

## DEFINITIONS

There are a number of terms and phrases which must be understood by all employees to grasp the general thrust of this Program. For those employees directly involved with this Program or affected by it, there are specific requirements and procedures which would be meaningless without an understanding of the "language" of Control of Hazardous Energy.

**AFFECTED EMPLOYEE:** an employee whose job requires him/her to operate or use a machine or equipment on which servicing or maintenance is being performed under lockout or tagout, or whose job requires him/her to work in an area in which such servicing or maintenance is being performed.

**AUTHORIZED EMPLOYEE:** a person who locks out or tags out machines or equipment in order to perform servicing or maintenance on that machine or equipment. An affected employee becomes an authorized employee when that employee's duties include performing service or maintenance covered under 29 CFR 1910.147, *The Control of Hazardous Energy (Lockout/Tagout)*.

[NOTE: An authorized employee is authorized to service only machines and equipment with which he/she is familiar by training and/or experience.]

**CAPABLE OF BEING LOCKED OUT:** an energy isolating device is capable of being locked out if it has a hasp or other means of attachment to which, or through which, a lock can be affixed, or it has a locking mechanism built into it. Other energy isolating devices are capable of being locked out if lockout can be achieved without the need to dismantle, rebuild, or replace the energy isolating device or permanently alter its energy control capability.

**ENERGIZED:** connected to an energy source or containing residual or stored energy.

**ENERGY ISOLATING DEVICE:** a mechanical device that physically prevents the transmission or release of energy, including but not limited to the following: a manually operated electrical circuit breaker; a disconnect switch; a manually operated switch by which the conductors of a circuit can be disconnected from all ungrounded supply conductors, and, in addition, no pole can be operated independently; a line valve; a block; and any similar device used to block or isolate energy. Push buttons, selector switches and other control circuit type devices are not energy isolating devices.

**ENERGY SOURCE:** any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy.

**FIXED EQUIPMENT:** equipment fastened in place or connected by permanent wiring methods.

**HOT TAP:** a procedure used in the repair, maintenance and service activities which involves welding on a piece of equipment (pipelines, vessels, or tanks) under pressure in order to install connections or appurtenances. It is commonly used to replace or add sections of pipeline without the interruption of service for air, gas, water, steam, and petrochemical distribution systems.

**LOCKOUT:** the placement of a lockout device on an energy isolating device, in accordance with an established procedure, ensuring that the energy isolating device and the equipment being controlled cannot be operated until the lockout device is removed.

**LOCKOUT DEVICE:** a device that utilizes a positive means such as a lock, either key or combination type, to hold an energy isolating device in a safe position and prevent the energizing of a machine or equipment. Included are blank flanges and bolted slip blinds.

**NORMAL PRODUCTION OPERATIONS:** the utilization of a machine or equipment to perform its intended production function.

**OTHER EMPLOYEES:** those employees whose work operations are or may be in an area where energy control procedures may be utilized.

**SERVICING AND/OR MAINTENANCE:** workplace activities such as constructing, installing, setting up, adjusting, inspecting, modifying, and maintaining and/or servicing machines or equipment. These activities include lubrication, cleaning or unjamming of machines or equipment, and making adjustments or tool changes where the employee may be exposed to the unexpected energization or start up of equipment or release of hazardous energy.

**SETTING UP:** any work performed to prepare a machine or equipment to perform its normal production operation.

**TAGOUT:** the placement of a tagout device on an energy isolating device, in accordance with an established procedure, to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed.

**TAGOUT DEVICE:** a prominent warning device, such as a tag and a means of attachment, which can be securely fastened to an energy isolating device in accordance with an established procedure, to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed.

## **APPLICABILITY**

The provisions of this program apply when there is a possibility of injury due to the unexpected energization, start up or release of stored energy while constructing, installing, setting up, adjusting, inspecting, modifying, maintaining or servicing fixed machinery. Stored energy in an electro/mechanical system can be found in rotating flywheels, weights and counter-weights, hydraulic and pneumatic pressure, thermal and chemical energy, springs and unbalanced loads.

This program does not apply to:

- a. work on cord and plug connected electric equipment for which exposure to the hazards of unexpected energization or start up of the equipment is controlled by unplugging the equipment from the energy source and by the plug being under the exclusive control of the employee performing the servicing or maintenance.
- b. hot tap operations provided:
  1. continuity of service is essential.
  2. shut down of the system is impractical.
  3. documented procedures are followed and special equipment is used which will provide proven effective protection for employees.

## PROCEDURES FOR CONTROL OF HAZARDOUS ENERGY

The general procedures for lockout, tagout, or lockout and tagout are quite similar. Below are instructions which apply to all control of hazardous energy procedures. Exceptions and specific requirements for lockout without tagout; tagout without lockout; and lockout used in conjunction with tagout are noted in their own subchapters.

### GENERAL PROCEDURES

[NOTE: Throughout this section, lockout/tagout refers to lockout without tagout; tagout without lockout; and lockout used in conjunction with tagout.]

**PURPOSE AND SCOPE:** effective hazardous energy control procedures will protect employees during machine and equipment servicing and maintenance where the unexpected energization, start up or release of stored energy could occur and cause injury. Further, effective hazardous energy control procedures will protect employees when working near or on exposed deenergized electrical conductors and parts of electrical equipment. Hazards being guarded against include, but are not limited to, being cut, struck, caught, crushed, thrown, mangled, and/or shocked by live electrical circuits caused by the unexpected release of hazardous energy. One (1) piece of machinery can have more than one (1) real or potential source of hazardous energy that must be guarded against.

These procedures for the control of hazardous energy will ensure that machines and equipment are isolated properly from hazardous or potentially hazardous energy sources during servicing and maintenance and properly protected from reenergization as required by 29 CFR 1910.147.

While any employee is exposed to contact with parts of fixed electrical equipment or circuits which have been deenergized, the circuits energizing the parts will be locked out and/or tagged in accordance with the requirements of 29 CFR 1910.333 (b)(2).

**PREPARATION FOR SHUTDOWN:** prior to lockout/tagout, all energy isolating devices must be located which apply to the specific machine in question. **There may be more than one energy source.** While electrical is most common, other sources could be: hydraulic, pneumatic, chemical, thermal, rotational, spring, etc.. All must be isolated. The Energy Source Evaluation Form and the Control Procedures Form must be completed prior to isolation. These forms must be completed by an authorized employee. Once completed, it is recommended that these evaluations remain on file for future use. Any changes in design or energy hazard will require an update of these forms. Not only the energy source hazard, but its magnitude must be recorded on the Energy Source Evaluation Form. Example: Energy Source: Pneumatic. Magnitude: 125 p.s.i..



Before an authorized or affected employee turns off the piece of equipment, the authorized employee must have knowledge of the type and magnitude of the energy to be controlled and the methods or means to control the energy. Refer to the Control Procedures Form for specific energy control procedures.

**MACHINE OR EQUIPMENT SHUTDOWN:** before lockout/tagout controls are applied, all affected employees will be notified and given the reasons for the lockout/tagout.

If a machine or equipment is operating, it will be shut down by normal stopping procedures by either the affected or authorized employee.

**LOCKOUT/TAGOUT DEVICE APPLICATION:** authorized employees will lockout/tagout the energy isolating devices with assigned individual locks. Locks or other lockout/tagout devices will be color coded and shall be used for no other purpose. Lockout/tagout devices will indicate the identity of the authorized employee applying the device.

Lockout/tagout devices will be durable and capable of withstanding the environment to which they are exposed for the maximum period of time that exposure is expected. They shall be standardized in color and be substantial enough to prevent their removal without the use of excessive force or unusual techniques such as bolt cutters or other metal cutting tools. Key or combination locks are acceptable. Tagout device attachments shall be non-reusable, attachable by hand, self-locking, and non-releasable with a minimum unlocking strength of no less than 50 pounds. The tagout attachment will have the general design and basic characteristics of, at a minimum, a one-piece, all environmental tolerant nylon cable tie.

Lockout/tagout devices will be applied so that they will hold the energy isolating devices in a "Neutral" or "Off" position. Protective materials and hardware shall be provided for isolating, securing or blocking of machines or equipment from energy sources. These protective materials and hardware include, but are not limited to, locks, tag chains, wedges, key blocks, adapter pins, self-locking fasteners, etc..

**RELEASE OF STORED ENERGY:** all stored energy will be blocked or dissipated. Types of stored energy include flywheels, springs, hydraulic or pneumatic systems, etc.. Should there be a possibility of reaccumulation of stored energy, verification of isolation must be continued until servicing is complete.

**VERIFICATION OF ISOLATION:** prior to starting work on machines or equipment that have been locked out and after ensuring that no personnel are exposed to the release of hazardous energy, the authorized employee shall operate the normal operating controls to verify that the machine or equipment has been deenergized and that it will not operate.

After the above test, the operating controls will be returned to the "NEUTRAL" or "OFF" position.

At this point, the machine/equipment is now locked out. The work may proceed.

**RELEASE FROM LOCKOUT/TAGOUT:** Before the lockout/tagout devices are removed and energy is restored to the machine or equipment, the following procedures will be implemented to ensure the following:

- a. the work area will be inspected to ensure that nonessential items have been removed and to ensure that the machine or equipment components are operationally intact.
- b. the work area will be checked to ensure that all employees have been safely positioned or removed.

After the lockout/tagout devices have been removed and before the machine or equipment is started, affected employees will be notified that the lockout/tagout devices have been removed.

Each lockout/tagout device must be removed by the authorized employee who applied it.

NOTE: The one exception to the above is when the authorized employee who applied the lockout/tagout device is not available to remove it. That device may be removed under the direction of the competent person provided that the below specific procedures are followed:

- a. verification by the competent person that the authorized employee who applied the lockout/tagout device is not within the facility.
- b. all reasonable efforts will be made to contact the authorized employee to inform him/her that his/her lockout/tagout device has been removed.
- c. ensuring that the Authorized employee has been informed of the above before resuming work.

The person who removes the device must be an authorized employee.

Each type of control of hazardous energy procedure shall be documented using the Energy Source Evaluation Form and the Control Procedures Form **except** when all the below listed conditions exist:

- a. The machine or equipment has no potential for stored or residual energy or reaccumulation of stored energy after shut down which could endanger employees; and
- b. The machine or equipment has a single energy source which can be readily identified and isolated; and
- c. The isolation and locking out of that energy source will completely deenergize and deactivate the machine or equipment; and

- d. The machine or equipment is isolated from that energy source and locked out during servicing and maintenance; and
- e. A single lockout device is under the exclusive control of the authorized employee performing the servicing and maintenance; and
- f. The servicing and maintenance does not create hazards for other employees; and
- g. No accidents have occurred involving the unexpected activation or re-energization of the machine or equipment during servicing or maintenance.

The above exceptions apply to documentation only. Whether using lockout, tagout, or lockout and tagout, the general procedures are the same.

### **DEVICE SELECTION CRITERIA FOR NON-ELECTRICAL HAZARDOUS ENERGY**

A lock, color coded with either paint or tape and identifiable with the name of the employee who applied it, shall be placed on each energy isolating device where feasible. Lockout is the primary means of non-electrical hazardous energy isolation and, where possible, will always be used in lieu of tagout. In the event a machine or piece of equipment will not accept a lock on its energy isolating device(s), it will be modified to do so whenever it is replaced, renovated, or undergoes a major repair.

There are occasions where lockout cannot be accomplished and in those instances, tagout alone may be used as long as it provides full employee protection as explained below:

- a. A tag may be used without a lock if a lock cannot be physically applied. This procedure must be supplemented with at least one additional safety measure providing a level of safety equivalent to that obtained by the use of a lock. Examples of additional safety measures include, but are not limited to the:
  - 1. removal of an isolating circuit element.
  - 2. blocking of a controlling switch.
  - 3. opening of an extra disconnecting device.

**Note:** A tag may be used without a lock if it can be demonstrated that tagging procedures will provide a level of safety equivalent to that obtained by the use of a lock. This demonstration must be documented. This is an allowable, but not preferred, option.

All affected persons must be fully aware of the fact that tags used in tagout procedures are essentially a warning device affixed to energy isolating devices. Unlike locks, tags do not physically restrain. Tags will:

- a. be capable of withstanding the environment to which they have been exposed for the maximum period of time that exposure is expected.
- b. be constructed and printed so that exposure to weather conditions or wet and damp locations will not cause the tag to deteriorate or the message on the tag to become illegible.
- c. be standardized in at least one (1) of the following:
  1. color.
  2. shape.
  3. size.
- d. be standardized in print and format.
- e. in their method of attachment, be substantial enough to prevent inadvertent or accidental removal. Tagout device attachment methods and means shall be of a non-reusable type, attachable by hand, self-locking, and non-releasable with a minimum strength of no less than 50 pounds and have the general design and basic characteristics of being at least equivalent to a one-piece, all-environment-tolerant nylon cable tie.
- f. indicate the identity of the employee applying the tag.
- g. warn against the hazardous conditions if the machine or equipment is energized and shall include a legend such as the following: *Do Not Start; Do Not Open; Do Not Close; Do Not Operate, etc..*

## **CONTROL OF ELECTRICAL HAZARDOUS ENERGY ON FIXED EQUIPMENT**

Electrical hazards associated with fixed equipment present a special hazard class and, in each case, a determination must be made whether lockout, tagout, or lockout used in conjunction with tagout is to be utilized.

The guidelines for this determination are found in 29 CFR 1910.333. 29 CFR 1910.333 makes no mention of maintenance or servicing. Its provisions apply to any possible exposure to contact with fixed electrical equipment or circuits which have been deenergized. Live parts that operate at less than 50 volts to ground need not be deenergized if there will be no increased exposure to electrical burns or to explosion due to electric arcs. Fixed equipment is defined as: "equipment fastened in place or connected by permanent wiring methods."

Before circuits and/or equipment are deenergized, safe procedures will be determined before the fact. At a minimum:

- a. the circuits and equipment to be deenergized will be disconnected from all electric energy sources. Control circuit devices, such as push buttons, selector switches, and interlocks, may not be used as the sole means for deenergizing circuits or equipment. Interlocks for electric equipment may not be used as a substitute for lockout and tagging procedures.
- b. stored electric energy which might endanger personnel shall be released. Capacitors shall be discharged and high capacitance elements shall be short-circuited and grounded if the stored electric energy might endanger personnel. Be aware of the shock potential of capacitors and associated equipment. If they are handled in meeting this requirement (discharging), they shall be treated as energized until they have been totally discharged.
- c. stored non-electrical energy in devices that could reenergize electric circuit parts shall be blocked or relieved to the extent that the circuit parts could not be accidentally energized by the device.

### **DEVICE SELECTION CRITERIA FOR ELECTRICAL HAZARDOUS ENERGY**

NOTE: When dealing with safety related work practices to prevent electric shock or other injuries resulting from either direct or indirect electrical contacts, a Qualified Person is defined as one who: "is permitted to work on or near exposed energized parts" and who, at a minimum, has been trained in and is familiar with:

- a. the skills and techniques necessary to distinguish exposed live parts from other parts of electric equipment, and
- b. the skills and techniques necessary to determine the nominal voltage of exposed live parts, and
- c. the clearance distances specified in §1910.333(c) and the corresponding voltages to which the qualified person will be exposed.

A lock and tag shall be placed on each disconnecting means used to de-energize circuits and equipment on which work is to be performed except:

- a. a tag may be used without a lock if it can demonstrate that tagging procedures will provide a level of safety equivalent to that obtained by the use of a lock. This demonstration must be documented. This is an allowable, but not preferred, option. A tag may also be used without a lock if a lock cannot be physically applied. Under either of the above two circumstances that a tag is used without a lock, the procedures must be supplemented with at least one additional safety

measure that provides a level of safety equivalent to that obtained by the use of a lock. Examples of additional safety measures include:

1. the removal of an isolating circuit element.
  2. the blocking of a controlling switch.
  3. the opening of an extra disconnecting device.
- b. A lock may be used without a tag if, and only if:
1. only one circuit or piece of equipment is being deenergized, and
  2. the lockout period does not extend beyond the work shift, and
  3. employees exposed to the hazards associated with reenergizing the circuit are familiar with this procedure -- utilizing a lock without a tag.

After electrical hazards are locked out, tagged out, or locked and tagged out, a Qualified Person must verify deenergization before work can proceed on deenergized equipment. Verification by the Qualified Person will include:

- a. operation of the equipment operating controls or otherwise verify that the equipment cannot be restarted.
- b. using test equipment to test the circuit elements and electrical parts of equipment to which employees will be exposed and verifying that the circuit elements and equipment parts are deenergized.
- c. using test equipment to determine if any energized condition exists as a result of inadvertently induced voltage or unrelated voltage backfeed even though specific parts of the circuit have been deenergized and presumed to be safe.

NOTE: If the circuit to be tested is over 600 volts, the test equipment shall be checked for proper operation immediately before and immediately after this test.

## **REENERGIZING ELECTRICAL EQUIPMENT**

The process of reenergizing electrical equipment, even temporarily, must be accomplished as noted below in the order listed:

- a. A Qualified Person shall conduct tests and visual inspections, as necessary, to verify that all tools, electrical jumpers, shorts, grounds, and other such devices have been removed, so that the circuit and equipment can be safely energized.
- b. Employees exposed to the hazards associated with reenergizing the circuit or equipment shall be warned to stay clear of circuits and equipment.
- c. Each lock and tag will be removed by the authorized employee (who must also be a Qualified Person when dealing with electrical hazards).

- d. If the person who applied the lock or tag is absent from the workplace, the competent person may designate another Qualified Person to remove the lock and/or tag provided that:
  - 1. it is assured that the Authorized Person who applied the lock or tag is not available at the workplace, and
  - 2. it is assured that the Authorized Person who applied the lock and/or tag is aware that the lock and/or tag has been removed before he/she resumes work at the workplace.
- e. A visual determination shall be accomplished to ensure all employees are clear of the circuits energized.

### **SPECIAL CONSIDERATIONS**

Whether using lockout, tagout, or lockout and tagout procedures, the below special considerations apply.

There may be special circumstances where, during a lockout procedure, a machine or equipment must be temporarily removed from the energy isolating device and the machine or equipment energized to test or position the machine or equipment or components thereof. The below procedures will be followed to accomplish this task:

- a. The machine or equipment will be cleared of tools and nonessential items and, if it is to be operated, all components will be operationally intact.
- b. The work area will be checked to ensure that all employees have been safely positioned or removed.
- c. The standard release from lockout procedures will be implemented.
- d. The machine or equipment will be energized and testing or positioning will proceed.
- e. After testing or positioning, deenergize all systems and reapply the energy control device following standard procedures.

### **GROUP LOCKOUT AND/OR TAGOUT PROCEDURES**

In the event that servicing or maintenance is performed by more than one individual, the following shall be implemented:

- a. One person will be designated as Group Leader and that person will have overall responsibility for a set number of employees working under his/her control.
- b. The Group Leader will have exclusive control of a Master Group Lockout and/or Group Tagout device.

- c. The Group Leader will ascertain the exposure status of individual group members with regard to the lockout and/or tagout of the machine or equipment.
- d. Each authorized employee within the group shall affix his personal lockout/tagout device to a group lockout box or comparable device before beginning work and shall remove his/her personal lockout/tagout device upon completion of work.

If there is more than one group of personnel working a machine or piece of equipment, an employee shall be designated to coordinate and take responsibility for all the individual groups.

### **SHIFT AND/OR PERSONNEL CHANGES**

In the event that Energy Control Procedures must extend into the next shift or if there are individual or group personnel changes, the procedures listed below will be implemented in the order listed:

- a. If the energy isolation device **will** accept two lockout/tagout devices:
  - 1. The authorized employee coming on duty will place his personalized lockout/tagout device in place, and
  - 2. After the above step has been completed, the employee going off duty will remove his lockout/tagout device.
- b. If the energy isolation device **will not** accept two lockout/tagout devices, both the incoming and outgoing authorized employees will:
  - 1. ensure that all affected employees are aware that a lockout/tagout change is about to take place, then
  - 2. ensure that the area is clear of tools and affected employees, then
  - 3. the outgoing authorized employee will remove his lockout/tagout devices and immediately the incoming authorized employee will install his lockout/tagout devices, and
  - 4. the incoming authorized employee will inform the affected employees that the change has been completed.

Following the above procedure will ensure the energy isolating device was never disturbed and that complete control of hazardous energy was maintained. The above procedure provides for continuing protection for both incoming and outgoing employees from the potential hazards of the unexpected release of hazardous energy and an orderly transfer of lockout/tagout responsibilities.



## PERIODIC INSPECTIONS

The Safety Director will conduct periodic inspections of this Control of Hazardous Energy Program at least annually to ensure that the procedures and requirements of 29 CFR 1910.147 are being followed. The information gleaned from the periodic inspection will be used to correct any deviations or inadequacies identified. These inspections will be documented and certification will be prepared to identify the machine or equipment on which an energy control procedure was utilized, the date of the inspection, the employees included in the inspection, and the name of the person performing the inspection. It should be noted that all periodic inspections shall be conducted by a competent person designated by the Safety Director **other** than the person who actually used the energy control procedure being inspected.

## TRAINING

Control of Hazardous Energy training will be documented giving the name of the trainer, the name of the trainee, and the date. Authorized employees must be familiar with this program and will be trained in the following areas: recognition of all applicable hazardous energy sources, types and magnitude of energy sources, methods and means necessary for energy isolation and control, and changes to our program.

Retraining will be conducted when a periodic inspection reveals inadequacy in an authorized employee's knowledge; there has been a deviation from established policy or procedure; or our procedures are changed.

All training will be interactive with applicable standards readily accessible.

## MINNESOTA RULES

This program is enhanced or modified by the below copyrighted MNOSHA Rules. If there is a conflict between the federal standards and the MNOSHA Rules, the MNOSHA Rules take precedence. These Rules are printed in their entirety.

### **5207.0600 LOCKOUT DEVICES.**

Subpart 1. **Electrical power disconnect.** Any main electrical power disconnect means which controls a source of power or material flow shall be locked out with a lockout device whenever employees are maintaining, cleaning, adjusting, or servicing machinery or equipment, if the disconnect is not in clear sight of the employee. A "Do Not Start" tag as described in Code of Federal Regulations, title 29, section 1910.145(f)(4), shall be affixed to all operating controls.

Subp. 2. **Pneumatic and hydraulic lines.** The pressure shall be eliminated from any pneumatic and hydraulic lines that activate a mechanism or machine, and the valve holding back the activating substance shall be locked out before an employee works on that mechanism or machine.

Subp. 3. **Spring tension mechanisms.** Mechanisms under spring tension or compression shall be blocked, clamped, secured in position, or the compression or tension totally relieved before being worked on by an employee.

Subp. 4. **Suspended mechanisms.** Suspended mechanisms or parts that normally cycle through a lower position shall be lowered to the lowest position, and shall be clamped, blocked, or otherwise secured in position before being worked on by an employee.

Subp. 5. **Individual lockouts.** Where more than one employee is engaged in working on machinery or equipment, each employee shall affix the employee's individual lockout device or lock to the disconnect switch or power supply.

Subp. 6. **Exemption.** Utility companies, when working on lines and equipment, will be exempt from this standard but must comply with the requirements of Code of Federal Regulations, title 29, section 1926.950(d).

STAT AUTH: MS s 182.655

HIST: 12 SR 634; 21 SR 1897  
*Current as of 10/30/06*

#### **5207.0610 MOTOR START BUTTON.**

The motor start button on machines with exposed points of operation, pinch points, or nip points shall be physically protected against unintended operation.

STAT AUTH: MS s 182.655

HIST: 12 SR 1754  
*Current as of 10/30/06*

#### **5207.0620 MACHINE CONTROLS AND EQUIPMENT.**

On machines with points of operation, pinch points, or nip points, each machine shall be equipped so it is possible for the operator to cut off the power to each machine without leaving the position at the point of operation.

STAT AUTH: MS s 182.655

HIST: 12 SR 1754  
*Current as of 10/30/06*

## **5207.0630 FOOT ACTUATED MACHINES.**

The treadle or pedal of foot actuated machines, tools, or equipment shall be physically protected to prevent unintended operation.

STAT AUTH: MS s 182.655

HIST: 12 SR 634

*Current as of 10/30/06*

**Machine/Equipment Identification:** \_\_\_\_\_

**Date:** \_\_\_\_\_

**Location of Machine Equipment:** \_\_\_\_\_

**Authorized Person Name:** \_\_\_\_\_

### ENERGY SOURCE EVALUATION FORM

**MACHINE OR EQUIPMENT NAME:** \_\_\_\_\_ **LOCATION:** \_\_\_\_\_

**MODEL:** \_\_\_\_\_ **SERIAL NUMBER:** \_\_\_\_\_ **PROCEDURE NUMBER:** \_\_\_\_\_

ENERGY SOURCE	MAGNITUDE (Volts; Amps; Phase; HP; Lbs; RPM; Ft-Lbs; p.s.i.; °F/°C; Highly Reactive)	LOCATION OF ISOLATING DEVICE	MEANS OF ISOLATION	COMMENTS
CAPACITOR				
CHEMICAL				
COUNTER WEIGHT				
ELECTRICAL				
ENGINE				
FLYWHEEL				
HYDRAULIC				
PNEUMATIC				
SPRING				
THERMAL				
OTHER				
OTHER				

[NOTE: This form must be completed by an Authorized Employee.]

**EVALUATION CONDUCTED BY:**

**NAME:** \_\_\_\_\_

**DATE:** \_\_\_\_\_

(MUST BE AN AUTHORIZED EMPLOYEE)

**Machine/Equipment Identification:** \_\_\_\_\_

**Date:** \_\_\_\_\_

**Location of Machine Equipment:** \_\_\_\_\_

**Authorized Person Name:** \_\_\_\_\_

## CONTROL PROCEDURES FORM

These Procedures must be accomplished in the order listed.

**1. PREPARATION FOR SHUTDOWN:** The Authorized Employee will be totally familiar with the first page of this form. The Affected Employees will be notified that the piece of equipment is about to be shutdown and locked out.

Specific Instructions: \_\_\_\_\_

**2. SHUTDOWN:** Affected Employees will be given the reason(s) for the lockout/tagout procedures. If the machine is running, it will be turned off using normal procedures. It may be shutdown by either the Authorized Employee or the Affected Employee.

Specific Instructions: \_\_\_\_\_

**3. MACHINE ISOLATION:** All real or potential hazardous energy listed on the first page of this form will be isolated from their source. The location of the isolation devices and the methods used are also found on the first page of the form.

Specific Instructions: \_\_\_\_\_

**4. LOCKOUT/TAGOUT DEVICE APPLICATION:** Authorized Employees will (circle appropriate procedure): [lockout] [tagout] [lockout and tagout] the energy isolating devices. Lock and tag devices will be color coded and they will contain the identity of the Authorized Employee actually performing this procedure. The lockout/tagout devices will be applied so that they hold the energy isolating device in a "Neutral" or "Off" position.

Specific Instructions: \_\_\_\_\_

4a. If a tag is used in lieu of a lock because the energy isolating device will not accept a lock, the following additional safety precautions will be taken [29 CFR 1910.147 c(3)(ii) & 29 CFR 1910.333(2)(b)(iii)((D))]:

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Specific Instructions: \_\_\_\_\_

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**5. RELEASE OF STORED ENERGY:** All stored energy will be blocked or dissipated. Reference page one (1) of this form to ensure real or potential stored energy in a system is identified and controlled.

Specific Instructions: \_\_\_\_\_

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**6. VERIFICATION OF ISOLATION:** Prior to starting work on the piece of equipment and after ensuring that no personnel are exposed to the release of hazardous energy, the Authorized Employee shall operate the controls to verify that there has been deenergization and that the equipment will not operate. After this verification, the operating controls will be returned to the "Neutral" or "Off" position.

Specific Instructions: \_\_\_\_\_

---

**7. RELEASE FROM LOCKOUT/TAGOUT:** The Authorized Employee shall 1.) ensure that all Employees have been safely positioned or removed and the work area will be cleared of non-essential items, 2.) ensure the equipment or equipment components are operationally intact; 3.) ensure machine guards have been replaced; 4.) inform the Affected Employees that lockout and or tagout devices are going to be removed; 5.) remove the lockout and or tagout devices including all energy restraints such as blocks; and 6.) inform the Affected Employees that the equipment is ready for operation.

Specific Instructions: \_\_\_\_\_

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# TR Concrete

## GROUP LEADER DOCUMENTATION

One (1) person shall be designated as Group Leader. The Group Leader will have overall responsibility for a set number of employees.

The Group Leader shall have exclusive control of a Master (Group) Lockout and/or Group Tagout device.

The Group Leader will ascertain the exposure status of individual group members with regard to the lockout and/or tagout of the machine or equipment.

Each individual authorized employee within the group shall affix his personal lockout/tagout device to a group lockout box or comparable device before beginning work and shall remove his/her personal lockout/tagout device upon completion of work.

If there is more than one group of personnel working on a machine or piece of equipment, an employee shall be designated to coordinate and take responsibility for all the individual groups.

NAME OF DESIGNATED GROUP LEADER: \_\_\_\_\_

### EQUIPMENT REQUIRING CONTROL OF HAZARDOUS ENERGY

NAME: \_\_\_\_\_ SERIAL NUMBER: \_\_\_\_\_

DATE: \_\_\_\_\_ MODEL NUMBER: \_\_\_\_\_

### AUTHORIZED (QUALIFIED) EMPLOYEES OF THE GROUP

\_\_\_\_\_  
(Name) (Signature)

\_\_\_\_\_  
(Name) (Signature)

\_\_\_\_\_  
(Name) (Signature)

\_\_\_\_\_  
(Name) (Signature)

\_\_\_\_\_

Program Administrator

SIGNATURE OF GROUP LEADER: \_\_\_\_\_

## TR Concrete

## PERIODIC INSPECTION DOCUMENTATION

### EQUIPMENT ON WHICH CONTROL OF HAZARDOUS ENERGY PROCEDURES WERE UTILIZED

NAME: \_\_\_\_\_ SERIAL NUMBER: \_\_\_\_\_

DATE: \_\_\_\_\_ MODEL NUMBER: \_\_\_\_\_

WERE ALL THE CORRECT PROCEDURES CORRECTLY APPLIED?      YES      NO

[If yes, sign the form and return to the Safety Director.]

[If no, complete the below section, sign the form and return to the Safety Director.]

## EMPLOYEES PERFORMING THE PROCEDURE

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

(Signature)

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

(Signature)

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

(Signature)

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

(Signature)

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

(Signature)

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

(Signature)

### IMPROPER PROCEDURES NOTED

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(SIGNATURE OF INSPECTOR)

(Date) \_\_\_\_\_

[NOTE: If improper procedures are noted, the above employees must have retraining or the Program must be modified.]



**TR Concrete**  
**EMPLOYEE RIGHT-TO-KNOW**

# TR Concrete

## Safety Program

### SECTION III

#### EMPLOYEE RIGHT-TO-KNOW

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#### MNOSHA Rules:

Minnesota Rules, Chapter 5206

#### Forms:

[Found immediately following this program]

MSDS (Listed by Common Name) or SDS (Listed by Product Identifier)

## OVERVIEW

In compliance with the Employee Right-to-Know Act of 1983, we have developed this program to evaluate our workplace for the existence of hazardous substances, harmful physical agents, and infectious agents to which our employees may be potentially routinely exposed in the performance of the work.

This program will provide information and training to our employees so they may protect themselves from harm.

This program is designed to make all employees aware that most, if not all, job site chemicals have a downside if improperly used, spilled, transferred or stored. Additionally, harmful physical agents and infectious agents may also cause harm if unknown or if protective measures are not used.

Exempt from our right-to-know program are “articles”. Articles include, but are not limited to, any item of equipment or hardware which contains a hazardous substance if the substance is present in a solid form which does not create a health hazard as a result of being handled by the employees.

Also exempt from this program are chemicals which are regulated by other government agencies such as hazardous waste, food, tobacco products, and normal consumer products that are used in the workplace in the same manner, frequency and duration as normal consumer use; and any hazardous substance that is bound and not released under normal conditions of work or in a reasonably foreseeable occurrence resulting from workplace operations.

## HAZARDOUS SUBSTANCE

For the purpose of this program, a hazardous substance means a chemical or substance, or mixture of chemicals of substances, which fall into the below categories:

Hazardous Chemical:	any chemical which is a physical or a health hazard.
Physical Hazard:	a chemical for which there is scientifically valid evidence that it is a combustible liquid, a compressed gas, explosive, flammable, an organic peroxide, an oxidizer, pyrophoric (will ignite spontaneously in air at a temperature of 130°F or below), unstable (reactive) or water-reactive.
Health Hazard:	a chemical for which there is statistically significant evidence based on at least one study conducted in accordance with established

scientific principals that acute or chronic health effects may occur in exposed employees.

To clarify the difference between acute and chronic, acute effects occur rapidly as a result of short term exposure and are of short duration. Chronic effects occur as a result of long term exposure and are of a long duration. These terms can overlap. For example, a mild heart attack, with no pain severity, would be termed acute within the first two hours, yet if there were long term effects, it would be termed chronic.

## **CHEMICAL TYPES AS THEY RELATE TO HEALTH**

Below is a list of categories of hazardous chemical types as they relate to health:

- a. Carcinogen or potential carcinogen as determined by the International Agency for Research on Cancer (IARC) or a carcinogen or potential carcinogen as listed in the Annual Report on Carcinogens published by the National Toxicology Program (NTP), latest edition, or as regulated by OSHA as a carcinogen.
- b. Corrosive: A chemical that causes visible destruction of, or irreversible alterations in, living tissue by chemical action at the site of contact. This is not to be confused with, and does not refer to, action on inanimate surfaces.
- c. Highly Toxic: A chemical which is lethal to test animals under specific doses and time limits. Some tests require ingestion, some inhalation, some skin exposure, and some implantation.
- d. Irritant: A chemical which is not a corrosive, but which causes a reversible inflammatory effect on living tissue by chemical action at the site of contact.
- e. Sensitizer: A chemical that causes a substantial proportion of exposed people or animals to develop an allergic reaction in normal tissue after repeated exposure.
- f. Toxic: A chemical which is lethal to test animals under specific doses and time limits. A toxic chemical has a greater dose per weight than a Highly Toxic chemical.

g. Target Organ Effects:

Hepatotoxins: Chemicals which produce liver damage

Signs & Symptoms: Jaundice; liver enlargement

Chemicals: Carbon tetrachloride; nitrosamines

Nephrotoxins: Chemicals which produce kidney damage

Signs & Symptoms: Edema; proteinuria

Chemicals: Halogenated hydrocarbons; uranium

Neurotoxins: Chemicals which produce their primary toxic effects on the nervous system

Signs & Symptoms: Narcosis; behavioral changes; decreased motor function

Chemicals: Mercury; carbon disulfide

Agents which act on the blood or hemopoietic system: decrease hemoglobin function; deprive the body tissue of oxygen

Signs & Symptoms: Cyanosis; loss of consciousness

Chemicals: Carbon monoxide; cyanides

Agents which damage the lungs: chemicals which irritate or damage the pulmonary tissue

Signs & Symptoms: Cough; tightness in the chest; shortness of breath

Chemicals: Silica; asbestos

Reproductive toxins: Chemicals which affect the reproductive capabilities including chromosomal damage (mutations) and effects on fetuses (teratogenesis)

Signs & Symptoms: Birth defects; sterility

Chemicals: Lead; DBCP

Cutaneous hazards: Chemicals which affect the dermal (skin) layer of the body

Signs & symptoms: Defatting of the skin; rashes; irritation

Chemicals: Ketones; chlorinated compounds

Eye hazards: Chemicals which affect the eye or visual capacity

Signs & Symptoms: Conjunctivitis; corneal damage

Chemicals: Organic solvents; acids

The above is to illustrate the broad scope of health hazards.

## **HAZARD DETERMINATION**

The determination of chemical hazards is primarily the responsibility of the manufacturer and/or importer. It is performance-oriented and, surprisingly, there is no specific method required to determine if a chemical or chemical mixture is hazardous. Personal judgment of the evaluator is relied upon and it takes but one scientifically acceptable study to force a chemical onto the hazardous chemical list.

## **LABELS**

A label is any written, printed, or graphic material displayed on or affixed to containers of hazardous chemicals.

All chemicals used in or on the job site will be properly labeled using the manufacturer's labeling system. Labels will not be removed or defaced. If

a chemical is not labeled, it will not be used with the following exception which is quite common with contractors:

*portable [immediate use] containers into which hazardous chemicals are transferred from labeled containers need not be labeled if they are for immediate use of the employee who makes the transfer.*

To simplify the above, one may take a hazardous chemical (*example*: paint) out of a labeled container and put it into a smaller, unlabeled container (*example*: paint tray), for immediate use. Immediate use containers are under the control of and used only by the person who transfers it from a labeled container and only within the work shift in which it is transferred.

The label must clearly state:

- a. the identity of the hazardous chemical(s).
- b. the appropriate hazard warning.
- c. the name and address of the manufacturer.

Appropriate hazard warnings would contain:

- a. instruction for proper and safe use. This would include obvious information such as, "do not ingest" or "do not spray in eyes" as well as less obvious information such as, "caustic, wear rubber gloves"
- b. first aid instructions
- c. fire containment instructions
- d. storage
- e. disposal instructions

Treat empty containers of hazardous materials as if they were full. Proper disposal is a must!

### **MATERIAL SAFETY DATA SHEETS (MSDS)**

It is required that material safety data sheets (MSDS) be maintained for all hazardous chemicals in our inventory. The information contained on MSDS must be readily accessible to the individual(s) using the products and we will share that information with whom we may work.

Chemicals come in all forms of matter: liquid, solid, and gas; they can be found as sludge, vapor, mist, dust, etc..

How would one know what a chemical smelled or looked like? How would one be able to administer first aid quickly? Where would you find the

proper procedure for cleaning up a spill? Where would you find a listing of symptoms caused by inadvertent exposure to a chemical or chemical mixture? Where would you find fire fighting procedures? These questions and many others are answered on the MSDS.

An MSDS will be readily available on the job site for all chemical products we use.

Personnel utilizing a new chemical product will review the MSDS before initial use. New chemical products will be added to our List of Hazardous Substances.

While there is no specific format, the following information will be found on an MSDS:

- a. identity (chemical or common name) which will be the same as on the label and on the required list of hazardous chemicals.
- b. hazardous chemical ingredients -- both the chemical and common name(s).
- c. physical and chemical characteristics such as boiling point, flash point, solubility in water, etc.. Two of the most important items to be found in this category are appearance and odor. It is important to be able to identify chemicals rapidly and appearance and odor are of great value in initial determination.
- d. physical hazards which would include the potential for explosion, fire, and reactivity. Also included in this section are the flash point and auto ignition temperature. Special fire fighting procedures are also noted and should be carefully studied by potential users.
- e. health hazards which include first aid procedures, signs and symptoms of exposure, medical dangers, exposure limits, routes of entry, precautions for safe handling, potential carcinogen information, and whether professional medical response is required after a mishap.
- f. chemical reactivity which includes stability, incompatibility with other chemicals, hazardous decomposition products and hazardous polymerization. Special conditions to avoid may also be included.
- g. spill and/or leak procedures which include approved waste disposal methods.
- h. special handling information which includes appropriate hygienic practices, protective equipment requirements, and needed ventilation.

- i. special precautions which would include applicable control measures known to the manufacturer and/or importer. Should it be determined there are special advisories that pertain to our company, the advisories will be placed in this section of the MSDS.
- j. the name, address and telephone number as well as the date of preparation or revision must be included.

Of course, you are not required to memorize nor are you expected to know all the information contained therein; however, you are expected to know where to find information when it is needed and you are expected to ask any questions to clear up any uncertainties that you may have concerning chemicals in the workplace.

Particular attention should be paid to:

- a. Identification/detection of a hazardous chemical. This would include odor and color as well as container labeling.
- b. Physical hazards of the hazardous chemical. This information would include the potential for fire, explosion, and reactivity. Reactivity, in chemistry, is defined as "the reciprocal action of chemical agents upon each other; chemical change." The MSDS will indicate proper procedures for fire extinguishing, including special precautions, if needed.
- c. The health hazards of the chemical. Routes of entry are noted. A chemical may enter the body through ingestion, inhalation, absorption, or injection. Signs and symptoms are indicated such as irritation of the skin, redness of the eyes, nausea, etc.. Health hazards are defined as acute, chronic or both. Carcinogenicity is indicated. First Aid procedures are explained as well as notes to a treating physician, if appropriate.

Methods to lessen or prevent exposure are explained. The need for protective equipment such as rubber gloves, disposable suits, respirators, goggles, etc. is explained. Hygienic work practices are re-enforced such as keeping the product away from food and washing hands after use.

The MSDS has a wealth of information which is to be made available to all employees and to anyone who wants to review them. There is nothing secret about an MSDS; its whole purpose is the dissemination of information. It provides awareness.

Should an employee not be able to read English, the information contained on MSDS and labels (and any other warning sign) will be given orally or written in that employee's language. The actual labels, MSDS, and all warning signs must be written in English.



## **LIST OF HAZARDOUS SUBSTANCES**

A list will be maintained of all hazardous substances our employees will potentially be exposed to in the routine performance of the job. Chemical products will be arranged alphabetically by trade or common name and their MSDS will be readily available to our employees.

This list, which would include pesticides commonly found in Minnesota as well as physical and infectious agents. Information on physical agents and infectious agents can be obtained from the manufacturer or the Center for Disease Control.

The list of Hazardous substances used on every job site must include the chemical name, where it was used, and when it was used. This record, because it is considered a medical record, must be kept for 30 years.

On multi-contractor job sites, the general contractor or controlling contractor will conduct a survey of all hazardous substances and harmful physical agents and determine whose employees may be affected by these substances. See Sharing of Information, below.

## **CHEMICALS IN UNLABELED PIPES**

Should work activities be performed in areas where chemicals are transferred through unlabeled pipes, the employee shall be informed by the competent person or supervisor of:

- a. The chemical in the pipes.
- b. Potential Hazards.
- c. Safety precautions to be taken.

## **NON-ROUTINE TASKS**

Prior to performing a non-routine task, an employee will be given information by a competent person or supervisor concerning the hazardous chemicals to which he may be exposed. This information will include:

- a. Specific hazardous substances, harmful physical agents, and infectious agents
- b. Protective/safety measures the employee may take.
- c. Measures taken to lessen the hazards including ventilation, respirators, presence of another employee and emergency procedures.

## SHARING OF INFORMATION

On all job sites, the Safety Director or a competent person of each contractor will inform those with whom they work of any hazardous substances being used and will provide them with the appropriate MSDS and other information for their review. MSDS for all chemical products used on the job site will be readily available.

Should a new chemical product or hazard be introduced to the job site that contains a physical or health safety hazard, the product's MSDS will accompany that product and, before use, employees will be given instruction on the products hazards. This information will be shared with other contractors with whom we may be working. Employees are to be kept informed of the chemical products being used by other contractors if they pose a safety hazard.

On multi-contractor job sites, the general or controlling contractor will ensure that all subcontractors are informed of all substance hazards.

## INFECTIOUS AGENTS

We will evaluate all job sites for potential infectious agents to which our employees may be exposed. A list of infectious agents, including those most common infectious agents that may be encountered in Minnesota are found in Minnesota Rules 5206.0600, subpart 4.

Information, including hazards and recommended cautions to protect one's self from a particular infectious agent, can be accessed from the following Sections of the *Biosafety in Microbiological and Biomedical Laboratories (BMBL) 4th Edition*:

VII-A: Bacterial Agents

VII-B: Fungal Agents

VII-C: Parasitic Agents

## LABELING FOR INFECTIOUS AGENTS

Labeling for infectious agents would only apply to infectious waste and these requirements are found in our Exposure Control Plan for Bloodborne Pathogens and Other Infectious Materials.

## PHYSICAL AGENTS

### Noise:

We will conduct initial evaluations to determine if employees are exposed to noise at or above 85db averaged during eight working hours.

If employees are exposed to noise above the PEL, we will implement the provisions of our Hearing Conservation Program and the training contained therein.

If noise is generated by a particular piece of machinery, every effort will be made to reduce the noise level to an acceptable level.

**Heat:**

Due to the nature of our work, we will be cognizant of the temperatures and the work activities going on. Employees will be advised of the importance of drinking plenty of fluids and to be aware of the symptoms of heat stroke and heat exhaustion found in Section I of this safety program.

**Ionizing Radiation:**

A list of all potential sources of X-rays and radioactive materials will be provided to our employees as well as those with whom we work.

**Non-ionizing Radiation:**

A list of all sources of non-ionizing radiation will be prepared and provided to our employees as well as those with whom we work.

## **LABELING FOR PHYSICAL AGENTS**

Labeling requirements for physical agents would include signage such as:

**HIGH NOISE AREA – HEARING PROTECTION REQUIRED**

**POTENTIAL HEAT STRESS AREA – TRAINING REQUIRED**

## **TRAINING AND DOCUMENTATION**

The Safety Director is responsible for employee training and will ensure that all new employees attend training on our Employee Right-To-Know program prior to initial work assignment and, at least yearly, thereafter.

Training records will be maintained for three years.

Hazardous substance training will include a review of this program, review of Minnesota Rules, Chapter 5206, and all detailed information found on MSDS including:

- a. Methods and observations that may be used to detect the presence or release of a hazardous chemical in the work area. The primary method to detect the presence of a release is sight and smell. As

mentioned above, the appearance and odor of a hazardous chemical can be found on the MSDS for that chemical.

- b. Physical and health hazards of the chemicals in the workplace. Again, this information is found on the appropriate MSDS.
- c. Measures to take to protect the employee from chemical hazards. This program, the specific MSDS, as well as oral and hands on training and instruction provide the basis for measures to protect one's self. Where required protective equipment will be provided. Never minimize the value of protective safety equipment. For example, the use of relatively inexpensive eye protection could easily save your eyesight.
- d. Where MSDS can be found on the job site.

Infectious agent training will include a review of items contained in this program and of our Exposure Control Plan for Bloodborne Pathogens & Other Infectious Materials with emphasis on Universal Precautions and fulfillment of training requirements.

Physical agent training will include a review of items contained in this program as well as in our Hearing Conservation Program.

Training will be given in English and for those employees who do not understand English, the provisions of this program will be explained to them in their native tongue.

Each employee will sign a form indicating that they have received training and understand the above.

Annually, all employees will receive refresher training to ensure that awareness is maintained. Furthermore, with the introduction of each new chemical hazard, not necessarily each new chemical, training will be given with specific emphasis on emergency procedures as noted on the MSDS.

The introduction of any new infectious agent or physical agent will also require immediate training prior to employee exposure.

This training will include procedures for handling leaks and spills, personal protection equipment if required, decontamination procedures, etc..

## GLOBALLY HARMONIZED SYSTEM (GHS)

OSHA revised its Hazard Communication Standard (HCS) to align with the United Nations' Globally Harmonized System of Classification and Labeling of Chemicals (GHS). Two significant changes contained in the revised standard require the use of new labeling elements and a standardized format for Safety Data Sheets (SDSs), formerly known as, Material Safety Data Sheets (MSDSs). The new label elements and SDS requirements will improve worker understanding of the hazards associated with the chemicals in their workplace. To help companies comply with the revised standard, OSHA is phasing in the specific requirements over several years **(December 1, 2013 to June 1, 2016)**.

The table below summarizes the phase-in dates required under the revised Hazard Communication Standard (HCS):

Effective Completion Date	Requirement(s)	Who
December 1, 2013	Train employees on the new label elements and safety data sheet (SDS) format.	Employers
June 1, 2015  December 1, 2015	Compliance with all modified provisions of this final rule, except:  The Distributor shall not ship containers labeled by the chemical manufacturer or importer unless it is a GHS label	Chemical manufacturers, importers, distributors and employers
June 1, 2016	Update alternative workplace labeling and hazard communication program as necessary, and provide additional employee training for newly identified physical or health hazards.	Employers
Transition Period to the effective completion dates noted above	May comply with either 29 CFR 1910.1200 (the final standard), or the current standard, or both	Chemical manufacturers, importers, distributors, and employers

Training Requirements under the revised Hazard Communication Standard (HCS):

Prior to December 1, 2013, all our employees will have been trained on the new label elements and the SDS format.

### **Specific employee information and training:**

Each employee will be provided effective information and training on hazardous chemicals in their work area at the time of their initial assignment, and whenever a new chemical hazard the employee has not previously been trained about is introduced into his/her work area. Information and training may be designed to cover categories of hazards

(e.g., flammability, carcinogenicity) or specific chemicals. Chemical-specific information must always be available through labels and safety data sheets.

Additionally, employees shall be informed of the requirements of the Hazard Communication Standard; any operations in their work area where hazardous chemicals are present; and, the location and availability of the written hazard communication program, including the required list(s) of hazardous chemicals, and safety data sheets.

**Note: Per 1910.1200(g)(8), “The employer shall maintain in the workplace copies of the required safety data sheets for each hazardous chemical, and shall ensure that they are readily accessible during each work shift to employees when they are in their work area(s). (Electronic access and other alternatives to maintaining paper copies of the safety data sheets are permitted as long as no barriers to immediate employee access in each workplace are created by such options.)”**

**Note: Per 1910.1200(g)(9), “Where employees must travel between workplaces during a workshift, *i.e.*, their work is carried out at more than one geographical location, the material safety data sheets may be kept at the primary workplace facility. In this situation, the employer shall ensure that employees can immediately obtain the required information in an emergency.”**

**Note: Per 1910.1200(g)(10), “Safety data sheets may be kept in any form, including operating procedures, and may be designed to cover groups of hazardous chemicals in a work area where it may be more appropriate to address the hazards of a process rather than individual hazardous chemicals. However, the employer shall ensure that in all cases the required information is provided for each hazardous chemical, and is readily accessible during each work shift to employees when they are in their work area(s).”**

Employee training shall include at least:

1. Methods and observations that may be used to detect the presence or release of a hazardous chemical in the work area (such as monitoring conducted by the employer, continuous monitoring devices, visual appearance or odor of hazardous chemicals when being released, etc.);
2. The physical, health, simple asphyxiation, combustible dust, and pyrophoric gas hazards, as well as hazards not otherwise classified, of the chemicals in the work area;
3. The measures employees can take to protect themselves from these hazards, including specific procedures the employer has implemented to protect employees from exposure to hazardous chemicals, such as appropriate work practices, emergency procedures, and personal protective equipment to be used; and,

4. The details of the hazard communication program developed by the employer, including an explanation of the labels received on shipped containers and the workplace labeling system used by their employer; the safety data sheet, including the order of information and how employees can obtain and use the appropriate hazard information.

Interactive training will be provided by a competent person so that a determination can be made that the new material is actually understood.

The trainer will use an OSHA Brief that provides a general overview of the label requirements in the Hazard Communication Standard (see 29 CFR 1910.1200(f) and Appendix C of 29 CFR 1910.1200) as well an OSHA Brief that provides a general overview of the safety data sheet requirements in the Hazard Communication Standard (see 29 CFR 1910.1200(g) and Appendix D of 29 CFR 1910.1200).

Additional training items provided by OSHA and other sources may be used.

On the following pages are the referenced OSHA Briefs.

Training and retraining will be documented in Appendix A of our Training Program.

# OSHA<sup>®</sup> BRIEF

## Hazard Communication Standard: Labels and Pictograms

OSHA has adopted new hazardous chemical labeling requirements as a part of its recent revision of the Hazard Communication Standard, 29 CFR 1910.1200 (HCS), bringing it into alignment with the United Nations' Globally Harmonized System of Classification and Labelling of Chemicals (GHS). These changes will help ensure improved quality and consistency in the classification and labeling of all chemicals, and will also enhance worker comprehension. As a result, workers will have better information available on the safe handling and use of hazardous chemicals, thereby allowing them to avoid injuries and illnesses related to exposures to hazardous chemicals.

The revised HCS changes the existing Hazard Communication Standard (HCS/HazCom 1994<sup>1</sup>) from a performance-based standard to one that has more structured requirements for the labeling of chemicals. The revised standard requires that information about chemical hazards be conveyed on labels using quick visual notations to alert the user, providing immediate recognition of the hazards. Labels must also provide instructions on how to handle the chemical so that chemical users are informed about how to protect themselves.

The label provides information to the workers on the specific hazardous chemical. While labels provide important information for anyone who handles, uses, stores, and transports hazardous chemicals, they are limited by design in the amount of information they can provide. Safety Data Sheets (SDSs), which must accompany hazardous chemicals, are the more complete resource for details regarding hazardous chemicals. The revised

standard also requires the use of a 16-section safety data sheet format, which provides detailed information regarding the chemical. There is a separate [OSHA Brief on SDSs](#) that provides information on the new SDS requirements.

All hazardous chemicals shipped after June 1, 2015, must be labeled with specified elements including pictograms, signal words and hazard and precautionary statements. However, manufacturers, importers, and distributors may start using the new labeling system in the revised HCS before the June 1, 2015 effective date if they so choose. Until the June 1, 2015 effective date, manufacturers, importers and distributors may maintain compliance with the requirements of HazCom 1994 or the revised standard. Distributors may continue to ship containers labeled by manufacturers or importers (but not by the distributor themselves) in compliance with the HazCom 1994 until December 1, 2015.

This document is designed to inform chemical receivers, chemical purchasers, and trainers about the label requirements. It explains the new labeling elements, identifies what goes on a label, and describes what pictograms are and how to use them.

### Label Requirements

Labels, as defined in the HCS, are an appropriate group of written, printed or graphic informational elements concerning a hazardous chemical that are affixed to, printed on, or attached to the immediate container of a hazardous chemical, or to the outside packaging.

The HCS requires chemical manufacturers, importers, or distributors to ensure that each container of hazardous chemicals leaving the workplace is labeled, tagged or marked with the following information: product identifier; signal word; hazard statement(s); precautionary

<sup>1</sup> Prior to the 2012 update, the Hazard Communication Standard had last been amended in 1994. 'HazCom 1994' refers to the version of the Hazard Communication Standard in effect directly prior to the 2012 revision, printed in the 1995 through 2011 versions of the Code of Federal Regulations. It is also available on OSHA's webpage.



statement(s); and pictogram(s); and name, address and telephone number of the chemical manufacturer, importer, or other responsible party.

#### Labels for a hazardous chemical must contain:

- Name, Address and Telephone Number
- Product Identifier
- Signal Word
- Hazard Statement(s)
- Precautionary Statement(s)
- Pictogram(s)

To develop labels under the revised HCS, manufacturers, importers and distributors must first identify and classify the chemical hazard(s). Appendices A, B, and C are all mandatory. The classification criteria for health hazards are in Appendix A and the criteria for physical hazards are presented in Appendix B of the revised Hazard Communication Standard. After classifying the hazardous chemicals, the manufacturer, importer or distributor then consults Appendix C to determine the appropriate pictograms, signal words, and hazard and precautionary statement(s), for the chemical label. Once this information has been identified and gathered, then a label may be created.

#### Label Elements

The HCS now requires the following elements on labels of hazardous chemicals:

- **Name, Address and Telephone Number** of the chemical manufacturer, importer or other responsible party.
- **Product Identifier** is how the hazardous chemical is identified. This can be (but is not limited to) the chemical name, code number or batch number. The manufacturer, importer or distributor can decide the appropriate product identifier. The same product identifier must be both on the label and in section 1 of the SDS.
- **Signal Words** are used to indicate the relative level of severity of the hazard and

alert the reader to a potential hazard on the label. There are only two words used as signal words, "Danger" and "Warning." Within a specific hazard class, "Danger" is used for the more severe hazards and "Warning" is used for the less severe hazards. There will only be one signal word on the label no matter how many hazards a chemical may have. If one of the hazards warrants a "Danger" signal word and another warrants the signal word "Warning," then only "Danger" should appear on the label.

- **Hazard Statements** describe the nature of the hazard(s) of a chemical, including, where appropriate, the degree of hazard. For example: "Causes damage to kidneys through prolonged or repeated exposure when absorbed through the skin." All of the applicable hazard statements must appear on the label. Hazard statements may be combined where appropriate to reduce redundancies and improve readability. The hazard statements are specific to the hazard classification categories, and chemical users should always see the same statement for the same hazards no matter what the chemical is or who produces it.
- **Precautionary Statements** describe recommended measures that should be taken to minimize or prevent adverse effects resulting from exposure to the hazardous chemical or improper storage or handling. There are four types of precautionary statements: prevention (to minimize exposure); response (in case of accidental spillage or exposure emergency response, and first-aid); storage; and disposal. For example, a chemical presenting a specific target organ toxicity (repeated exposure) hazard would include the following on the label: "Do not breathe dust/fume/gas/mist/vapors/spray. Get medical advice/attention if you feel unwell. Dispose of contents/container in accordance with local/regional/national and international regulations."

A forward slash (/) designates that the classifier can choose one of the precautionary statements. In the example

above, the label could state, "Do not breathe vapors or spray. Get medical attention if you feel unwell. Dispose of contents in accordance with local/regional/national/international regulations." See Examples 1 and 2A of this document as an example.

In most cases, the precautionary statements are independent. However, OSHA does allow flexibility for applying precautionary statements to the label, such as combining statements, using an order of precedence or eliminating an inappropriate statement.

Precautionary statements may be combined on the label to save on space and improve readability. For example, "Keep away from heat, spark and open flames," "Store in a well-ventilated place," and "Keep cool" may be combined to read: "Keep away from heat, sparks and open flames and store in a cool, well-ventilated place." Where a chemical is classified for a number of hazards and the precautionary statements are similar, the most stringent statements must be included on the label. In this case, the chemical manufacturer, importer, or distributor may impose an order of precedence where phrases concerning response require rapid action to ensure the health and safety of the exposed person. In the self-reactive hazard category Types C, D, E or F, three of the four precautionary statements for prevention are:

- "Keep away from heat/sparks/open flame/hot surfaces. - No Smoking.";
- "Keep/Store away from clothing/.../combustible materials";
- "Keep only in original container."

These three precautionary statements could be combined to read: "Keep in original container and away from heat, open flames, combustible materials and hot surfaces. - No Smoking."

Finally, a manufacturer or importer may eliminate a precautionary statement if

it can demonstrate that the statement is inappropriate.

- **Supplementary Information.** The label producer may provide additional instructions or information that it deems helpful. It may also list any hazards not otherwise classified under this portion of the label. This section must also identify the percentage of ingredient(s) of unknown acute toxicity when it is present in a concentration of  $\geq 1\%$  (and the classification is not based on testing the mixture as a whole). If an employer decides to include additional information regarding the chemical that is above and beyond what the standard requires, it may list this information under what is considered "supplementary information." There is also no required format for how a workplace label must look and no particular format an employer has to use; however, it cannot contradict or detract from the required information.










An example of an item that may be considered supplementary is the personal protective equipment (PPE) pictogram indicating what workers handling the chemical may need to wear to protect themselves. For example, the Hazardous Materials Information System (HMIS) pictogram of a person wearing goggles may be listed. Other supplementary information may include directions of use, expiration date, or fill date, all of which may provide additional information specific to the process in which the chemical is used.

- Pictograms are graphic symbols used to communicate specific information about the hazards of a chemical. On hazardous chemicals being shipped or transported from a manufacturer, importer or distributor, the required pictograms consist of a red square frame set at a point with a black hazard symbol on a white background, sufficiently wide to be clearly visible. A square red frame set at a point without a hazard symbol is not a pictogram and is not permitted on the label.

The pictograms OSHA has adopted improve worker safety and health, conform with the GHS, and are used worldwide.

While the GHS uses a total of nine pictograms, OSHA will only enforce the use of eight. The environmental pictogram is not mandatory but may be used to provide additional information. Workers may see the ninth symbol on a label because label preparers may choose to add the environment pictogram as supplementary information. Figure 1 shows the symbol for each pictogram, the written name for each pictogram, and the hazards associated with each of the pictograms. Most of the symbols are already used for transportation and many chemical users may be familiar with them.

**Figure 1: Pictograms and Hazards**

<b>Health Hazard</b>  <ul style="list-style-type: none"> <li>• Carcinogen</li> <li>• Mutagenicity</li> <li>• Reproductive Toxicity</li> <li>• Respiratory Sensitizer</li> <li>• Target Organ Toxicity</li> <li>• Aspiration Toxicity</li> </ul>	<b>Flame</b>  <ul style="list-style-type: none"> <li>• Flammables</li> <li>• Pyrophorics</li> <li>• Self-Heating</li> <li>• Emits Flammable Gas</li> <li>• Self-Reactives</li> <li>• Organic Peroxides</li> </ul>	<b>Exclamation Mark</b>  <ul style="list-style-type: none"> <li>• Irritant (skin and eye)</li> <li>• Skin Sensitizer</li> <li>• Acute Toxicity (harmful)</li> <li>• Narcotic Effects</li> <li>• Respiratory Tract Irritant</li> <li>• Hazardous to Ozone Layer (Non-Mandatory)</li> </ul>
<b>Gas Cylinder</b>  <ul style="list-style-type: none"> <li>• Gases Under Pressure</li> </ul>	<b>Corrosion</b>  <ul style="list-style-type: none"> <li>• Skin Corrosion/ Burns</li> <li>• Eye Damage</li> <li>• Corrosive to Metals</li> </ul>	<b>Exploding Bomb</b>  <ul style="list-style-type: none"> <li>• Explosives</li> <li>• Self-Reactives</li> <li>• Organic Peroxides</li> </ul>
<b>Flame Over Circle</b>  <ul style="list-style-type: none"> <li>• Oxidizers</li> </ul>	<b>Environment (Non-Mandatory)</b>  <ul style="list-style-type: none"> <li>• Aquatic Toxicity</li> </ul>	<b>Skull and Crossbones</b>  <ul style="list-style-type: none"> <li>• Acute Toxicity (fatal or toxic)</li> </ul>

It is important to note that the OSHA pictograms do not replace the diamond-shaped labels that the U.S. Department of Transportation (DOT) requires for the transport of chemicals, including chemical drums, chemical totes, tanks or other containers. Those labels must be on the external part of a shipped container and must meet the

DOT requirements set forth in 49 CFR 172, Subpart E. If a label has a DOT transport pictogram, Appendix C.2.3.3 states that the corresponding HCS pictogram shall not appear. However, DOT does not view the HCS pictogram as a conflict and for some international trade both pictograms may need to be present on the label. Therefore, OSHA intends to revise C.2.3.3. In the meantime, the agency will allow both DOT and HCS pictograms for the same hazard on a label. While the DOT diamond label is required for all hazardous chemicals on the outside shipping containers, chemicals in smaller containers inside the larger shipped container do not require the DOT diamond but do require the OSHA pictograms. (See Example 2.)

Labels must be legible, in English, and prominently displayed. Other languages may be displayed in addition to English. Chemical manufacturers, importers, and distributors who become newly aware of any significant information regarding the hazards of a chemical must revise the label within six months.

### Employer Responsibilities

Employers are responsible for maintaining the labels on the containers, including, but not limited to, tanks, totes, and drums. This means that labels must be maintained on chemicals in a manner which continues to be legible and the pertinent information (such as the hazards and directions for use) does not get defaced (i.e., fade, get washed off) or removed in any way.

The employer is not responsible for updating labels on shipped containers, even if the shipped containers are labeled under HazCom 1994. The employer must relabel items if the labels are removed or defaced. However, if the employer is aware of newly-identified hazards that are not disclosed on the label, the employer must ensure that the workers are aware of the hazards as discussed below under workplace labels.

### Workplace Labels

OSHA has not changed the general requirements for workplace labeling. Employers have the option to create their own workplace labels. They can either provide all of the required information that is on the

label from the chemical manufacturer or, the product identifier and words, pictures, symbols or a combination thereof, which in combination with other information immediately available to employees, provide specific information regarding the hazards of the chemicals.

If an employer has an in-plant or workplace system of labeling that meets the requirements of HazCom 1994, the employer may continue to use this system in the workplace as long as this system, in conjunction with other information immediately available to the employees, provides the employees with the information on all of the health and physical hazards of the hazardous chemical. This workplace labeling system may include signs, placards, process sheets, batch tickets, operating procedures, or other such written materials to identify hazardous chemicals. Any of these labeling methods or a combination thereof may be used instead of a label from the manufacturer, importer or distributor as long as the employees have immediate access to all of the information about the hazards of the chemical. Workplace labels must be in English. Other languages may be added to the label if applicable.

If the employer chooses to use the pictograms that appear in Appendix C on the workplace (or in-plant) labels, these pictograms may have a black border, rather than a red border.

Employers may use additional instructional symbols that are not included in OSHA's HCS pictograms on the workplace labels. An example of an instructional pictogram is a person with goggles, denoting that goggles must be worn while handling the given chemical. Including both types of pictograms on workplace labels is acceptable. The same is true if the employer wants to list environmental pictograms or PPE pictograms from the HMIS to identify protective measures for those handling the chemical.

Employers may continue to use rating systems such as National Fire Protection Association (NFPA) diamonds or HMIS requirements for workplace labels as long as they are consistent with the requirements of the Hazard Communication Standard and the employees have immediate access to the specific hazard

information as discussed above. An employer using NFPA or HMIS labeling must, through training, ensure that its employees are fully aware of the hazards of the chemicals used.

If an employer transfers hazardous chemicals from a labeled container to a portable container that is only intended for immediate use by the employee who performs the transfer, no labels are required for the portable container.

### **Sample Labels**

The following examples demonstrate how a manufacturer or importer may display the appropriate information on the label. As mentioned above, once the manufacturer determines the classification of the chemical (class and category of each hazard) using Appendices A and B, it would determine the required pictograms, signal words, hazard statements, and precautionary statements using Appendix C. The final step is to put the information on the label.

The examples below show what a sample label might look like under the revised HCS requirements. The examples break the labeling out into "steps" to show the order of information gathering and how label creation occurs. Step 1 is performing classification; step 2 is gathering full label information; and step 3 is creating the label.

These examples are for informational purposes only and are not meant to represent the only labels manufacturers, importers and distributors may create for these hazards.

## Example 1: This example demonstrates a simple label.

### The Substance:

HS85

Batch Number: 85L6543

### Step 1: Perform Classification

Class: Acute Oral Toxicity; Category 4

### Step 2: Gather Labeling Information

Pictograms:



### Signal Word:

WARNING

### Hazard Statements:

Harmful if Swallowed

### Precautionary Statements:

Prevention:

- Wash hands and face thoroughly after handling.
- Do not eat, drink or smoke when using this product.

Response:

- If swallowed: Call a doctor if you feel unwell.<sup>2</sup>
- Rinse mouth

Storage:

None specified


Disposal:

- Dispose of contents/container in accordance with local/regional/national/international regulations.<sup>3</sup>

### Step 3: Create the Label

Putting together the above information on HS85, a label might list the following information:

## Example 1: HS85 Label

<p><b>HS85</b> Batch number: 85L6543</p>  <p><b>Warning</b> Harmful if swallowed</p> <p>Wash hands and face thoroughly after handling. Do not eat, drink or smoke when using this product. Dispose of contents/container in accordance with local, state and federal regulations.</p> <p><b>First aid:</b> If swallowed: Call a doctor if you feel unwell. Rinse mouth.</p> <p>GHS Example Company, 123 Global Circle, Anyville, NY 130XX</p> <p>Telephone (888) 888-8888</p>
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<sup>2</sup> The manufacturer of this chemical determined that calling a doctor was the most appropriate emergency medical advice; therefore, it is listed as part of the first-aid procedures.

<sup>3</sup> The downstream users must familiarize themselves with the proper disposal methods in accordance with local, regional, state and federal regulations. It is impractical to expect the label preparer to list all potential regulations that exist.



## Example 2: This example demonstrates a more complex label.

Example 2 is for a substance that is a severe physical and health hazard. For shipping packages of chemicals that will be transported in the United States (i.e., drums, totes, tanks, etc.), the U.S. DOT requires a DOT label(s) on the outside container(s) for hazardous chemicals. Two versions of this label are presented below to demonstrate the difference between an OSHA label with pictograms from the HCS and a DOT label required for transport of a shipping container.

### The Substance:

OXI252 (disodiumflammy)

CAS number: 111-11-11xx

### Step 1: Perform Classification

Class: Oxidizing Solid, Category 1

Class: Skin Corrosive, Category 1A

### Step 2: Gather Labeling Information

#### Pictograms:



#### Signal Word:

DANGER

#### Hazard Statements:

- May cause fire or explosion; strong oxidizer
- Causes severe skin burns and eye damage

#### Precautionary Statements:

##### Prevention:

- Keep away from heat.
- Keep away from clothing and other combustible materials.
- Take any precaution to avoid mixing with combustibles.
- Wear protective neoprene gloves, safety goggles and face shield with chin guard.
- Wear fire/flame resistant clothing.
- Do not breathe dust or mists.
- Wash arms, hands and face thoroughly after handling.

#### Response:

- IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
- IF ON CLOTHING: Rinse immediately contaminated clothing and skin with plenty of water before removing clothes. Wash contaminated clothing before reuse.
- IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- IF INHALED: Remove person to fresh air and keep comfortable for breathing.
- IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
- Immediately call poison center.<sup>4</sup>

#### Specific Treatment:

Treat with doctor-prescribed burn cream.<sup>5</sup>

#### In case of fire:

Use water spray. In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion.

#### Storage:

Store locked up.

#### Disposal:

- Dispose of contents/container in accordance with local/regional/national/international regulations.<sup>3</sup>

### Step 3: Create the Label



Putting together the above information on OXI252, a label might list the following information:

<sup>4</sup> In this example, the manufacturer determined that calling a poison control center is the most appropriate emergency medical advice.

<sup>5</sup> Not all SDSs will have direction for "specific treatment" on the label. This is only if the manufacturer specifically notes a certain treatment that needs to be used to treat a worker who has been exposed to this chemical.

## Example 2A: OXI252 Label inner package label with OSHA pictograms

**OXI252**  
(disodiumflammy)  
CAS #: 111-11-11xx



**Danger**  
May cause fire or explosion; strong oxidizer  
Causes severe skin burns and eye damage

Keep away from heat. Keep away from clothing and other combustible materials. Take any precaution to avoid mixing with combustibles. Wear protective neoprene gloves, safety goggles and face shield with chin guard. Wear fire/flame resistant clothing. Do not breathe dust or mists. Wash arms, hands and face thoroughly after handling. Store locked up. Dispose of contents and container in accordance with local, state and federal regulations.



**First aid:**  
IF ON SKIN (or hair) or clothing<sup>6</sup>: Rinse immediately contaminated clothing and skin with plenty of water before removing clothes. Wash contaminated clothing before reuse.  
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
IF INHALED: Remove person to fresh air and keep comfortable for breathing.  
IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.  
Immediately call poison center.  
Specific Treatment: Treat with doctor-prescribed burn cream.

**Fire:**  
In case of fire: Use water spray. In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion.

Great Chemical Company, 55 Main Street, Anywhere, CT 064XX Telephone (888) 777-8888

## Example 2B: OXI252 Label meeting DOT requirements for shipping<sup>7</sup>

**OXI252**  
(disodiumflammy)  
CAS #: 111-11-11xx



**Danger**  
May cause fire or explosion; strong oxidizer  
Causes severe skin burns and eye damage

Keep away from heat. Keep away from clothing and other combustible materials. Take any precaution to avoid mixing with combustibles. Wear protective neoprene gloves, safety goggles and face shield with chin guard. Wear fire/flame resistant clothing. Do not breathe dust or mists. Wash arms, hands and face thoroughly after handling. Store locked up. Dispose of contents and container in accordance with local, state and federal regulations.

**First aid:**  
IF ON SKIN (or hair) or clothing: Rinse immediately contaminated clothing and skin with plenty of water before removing clothes. Wash contaminated clothing before reuse.  
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a doctor.  
IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.  
Immediately call poison center.  
Specific Treatment: Treat with doctor-prescribed burn cream.

**Fire:**  
In case of fire: Use water spray. In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion.

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<sup>6</sup> There are occasions where label preparers may combine statements on the label. In this case the similar statements were combined and the most stringent were listed. For example, the first-aid pre-

cautionary statements were combined for exposure to skin, hair and clothing.

<sup>7</sup> DOT Labels must comply with the size requirements presented in 49 CFR 172.

For more detailed information about labels and Safety Data Sheets (SDSs) under the revised Hazard Communication Standard, please refer to 29 CFR 1910.1200 - paragraphs (f) and (g), and Appendix C.

The revised Hazard Communication Standard and additional guidance materials are available on OSHA's Hazard Communication page, located at: [www.osha.gov/dsg/hazcom/index.html](http://www.osha.gov/dsg/hazcom/index.html).

Disclaimer: This OSHA Brief provides a general overview of the label requirements in the Hazard Communication Standard (see 29 CFR 1910.1200(f) and Appendix C of 29 CFR 1910.1200). It does not alter or determine compliance responsibilities in the standard or the Occupational Safety and Health Act of 1970. Since interpretations and enforcement policy may change over time, the reader should consult current OSHA interpretations and decisions by the Occupational Safety and Health Review Commission and the courts for additional guidance on OSHA compliance requirements.

**This is one in a series of informational briefs highlighting OSHA programs, policies or standards. It does not impose any new compliance requirements. For a comprehensive list of compliance requirements of OSHA standards or regulations, refer to Title 29 of the Code of Federal Regulations. This information will be made available to sensory-impaired individuals upon request. The voice phone is (202) 693-1999; teletypewriter (TTY) number: (877) 889-5627.**

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# OSHA<sup>®</sup> BRIEF

## Hazard Communication Standard: Safety Data Sheets

The Hazard Communication Standard (HCS) (29 CFR 1910.1200(g)), revised in 2012, requires that the chemical manufacturer, distributor, or importer provide Safety Data Sheets (SDSs) (formerly MSDSs or Material Safety Data Sheets) for each hazardous chemical to downstream users to communicate information on these hazards. The information contained in the SDS is largely the same as the MSDS, except now the SDSs are required to be presented in a consistent user-friendly, 16-section format. This brief provides guidance to help workers who handle hazardous chemicals to become familiar with the format and understand the contents of the SDSs.

The SDS includes information such as the properties of each chemical; the physical, health, and environmental health hazards; protective measures; and safety precautions for handling, storing, and transporting the chemical. The information contained in the SDS must be in English (although it may be in other languages as well). In addition, OSHA requires that SDS preparers provide specific minimum information as detailed in Appendix D of 29 CFR 1910.1200. The SDS preparers may also include additional information in various section(s).

Sections 1 through 8 contain general information about the chemical, identification, hazards, composition, safe handling practices, and emergency control measures (e.g., fire fighting). This information should be helpful to those that need to get the information quickly. Sections 9 through 11 and 16 contain other technical and scientific information, such as physical and chemical properties, stability and reactivity information, toxicological information, exposure control information, and other information including the date of preparation or last revision. The SDS must also state that no applicable information was found when the preparer does not find relevant information for any required element.

The SDS must also contain Sections 12 through 15, to be consistent with the UN Globally Harmonized System of Classification and Labeling of Chemicals (GHS), but OSHA will not enforce the content of these sections because they concern matters handled by other agencies.

A description of all 16 sections of the SDS, along with their contents, is presented below:

### Section 1: Identification

This section identifies the chemical on the SDS as well as the recommended uses. It also provides the essential contact information of the supplier. The required information consists of:

- Product identifier used on the label and any other common names or synonyms by which the substance is known.
- Name, address, phone number of the manufacturer, importer, or other responsible party, and emergency phone number.
- Recommended use of the chemical (e.g., a brief description of what it actually does, such as flame retardant) and any restrictions on use (including recommendations given by the supplier).

## Section 2: Hazard(s) Identification

This section identifies the hazards of the chemical presented on the SDS and the appropriate warning information associated with those hazards. The required information consists of:

- The hazard classification of the chemical (e.g., flammable liquid, category<sup>1</sup>).
- Signal word.
- Hazard statement(s).
- Pictograms (the pictograms or hazard symbols may be presented as graphical reproductions of the symbols in black and white or be a description of the name of the symbol (e.g., skull and crossbones, flame).
- Precautionary statement(s).
- Description of any hazards not otherwise classified.
- For a mixture that contains an ingredient(s) with unknown toxicity, a statement describing how much (percentage) of the mixture consists of ingredient(s) with unknown acute toxicity. Please note that this is a total percentage of the mixture and not tied to the individual ingredient(s).

## Section 3: Composition/Information on Ingredients

This section identifies the ingredient(s) contained in the product indicated on the SDS, including impurities and stabilizing additives. This section includes information on substances, mixtures, and all chemicals where a trade secret is claimed. The required information consists of:

### Substances

- Chemical name.
- Common name and synonyms.
- Chemical Abstracts Service (CAS) number and other unique identifiers.
- Impurities and stabilizing additives, which are themselves classified and which contribute to the classification of the chemical.

### Mixtures

- Same information required for substances.
- The chemical name and concentration (i.e., exact percentage) of all ingredients which are classified as health hazards and are:
  - Present above their cut-off/concentration limits or
  - Present a health risk below the cut-off/concentration limits.
- The concentration (exact percentages) of each ingredient must be specified except concentration ranges may be used in the following situations:
  - A trade secret claim is made,
  - There is batch-to-batch variation, or
  - The SDS is used for a group of substantially similar mixtures.

### Chemicals where a trade secret is claimed

- A statement that the specific chemical identity and/or exact percentage (concentration) of composition has been withheld as a trade secret is required.

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<sup>1</sup> Chemical, as defined in the HCS, is any substance, or mixture of substances.

#### **Section 4: First-Aid Measures**

This section describes the initial care that should be given by untrained responders to an individual who has been exposed to the chemical. The required information consists of:

- Necessary first-aid instructions by relevant routes of exposure (inhalation, skin and eye contact, and ingestion).
- Description of the most important symptoms or effects, and any symptoms that are acute or delayed.
- Recommendations for immediate medical care and special treatment needed, when necessary.

#### **Section 5: Fire-Fighting Measures**

This section provides recommendations for fighting a fire caused by the chemical. The required information consists of:

- Recommendations of suitable extinguishing equipment, and information about extinguishing equipment that is not appropriate for a particular situation.
- Advice on specific hazards that develop from the chemical during the fire, such as any hazardous combustion products created when the chemical burns.
- Recommendations on special protective equipment or precautions for firefighters.

#### **Section 6: Accidental Release Measures**

This section provides recommendations on the appropriate response to spills, leaks, or releases, including containment and cleanup practices to prevent or minimize exposure to people, properties, or the environment. It may also include recommendations distinguishing between responses for large and small spills where the spill volume has a significant impact on the hazard. The required information may consist of recommendations for:

- Use of personal precautions (such as removal of ignition sources or providing sufficient ventilation) and protective equipment to prevent the contamination of skin, eyes, and clothing.
- Emergency procedures, including instructions for evacuations, consulting experts when needed, and appropriate protective clothing.
- Methods and materials used for containment (e.g., covering the drains and capping procedures).
- Cleanup procedures (e.g., appropriate techniques for neutralization, decontamination, cleaning or vacuuming; adsorbent materials; and/or equipment required for containment/clean up).

#### **Section 7: Handling and Storage**

This section provides guidance on the safe handling practices and conditions for safe storage of chemicals. The required information consists of:

- Precautions for safe handling, including recommendations for handling incompatible chemicals, minimizing the release of the chemical into the environment, and providing advice on general hygiene practices (e.g., eating, drinking, and smoking in work areas is prohibited).
- Recommendations on the conditions for safe storage, including any incompatibilities. Provide advice on specific storage requirements (e.g., ventilation requirements).

## Section 8: Exposure Controls/Personal Protection

This section indicates the exposure limits, engineering controls, and personal protective measures that can be used to minimize worker exposure. The required information consists of:

- OSHA Permissible Exposure Limits (PELs), American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs), and any other exposure limit used or recommended by the chemical manufacturer, importer, or employer preparing the safety data sheet, where available.
- Appropriate engineering controls (e.g., use local exhaust ventilation, or use only in an enclosed system).
- Recommendations for personal protective measures to prevent illness or injury from exposure to chemicals, such as personal protective equipment (PPE) (e.g., appropriate types of eye, face, skin or respiratory protection needed based on hazards and potential exposure).
- Any special requirements for PPE, protective clothing or respirators (e.g., type of glove material, such as PVC or nitrile rubber gloves; and breakthrough time of the glove material).

## Section 9: Physical and Chemical Properties

This section identifies physical and chemical properties associated with the substance or mixture. The minimum required information consists of:

- |   |   |
|---|---|
| • Appearance (physical state, color, etc.); | • Upper/lower flammability or explosive limits; |
| • Odor;                                     | • Vapor pressure;                               |
| • Odor threshold;                           | • Vapor density;                                |
| • pH;                                       | • Relative density;                             |
| • Melting point/freezing point;             | • Solubility(ies);                              |
| • Initial boiling point and boiling range;  | • Partition coefficient: n-octanol/water;       |
| • Flash point;                              | • Auto-ignition temperature;                    |
| • Evaporation rate;                         | • Decomposition temperature; and                |
| • Flammability (solid, gas);                | • Viscosity.                                    |

The SDS may not contain every item on the above list because information may not be relevant or is not available. When this occurs, a notation to that effect must be made for that chemical property. Manufacturers may also add other relevant properties, such as the dust deflagration index (Kst) for combustible dust, used to evaluate a dust's explosive potential.

## Section 10: Stability and Reactivity

This section describes the reactivity hazards of the chemical and the chemical stability information. This section is broken into three parts: reactivity, chemical stability, and other. The required information consists of:

### Reactivity

- Description of the specific test data for the chemical(s). This data can be for a class or family of the chemical if such data adequately represent the anticipated hazard of the chemical(s), where available.

### Chemical stability

- Indication of whether the chemical is stable or unstable under normal ambient temperature and conditions while in storage and being handled.
- Description of any stabilizers that may be needed to maintain chemical stability.
- Indication of any safety issues that may arise should the product change in physical appearance.

### Other

- Indication of the possibility of hazardous reactions, including a statement whether the chemical will react or polymerize, which could release excess pressure or heat, or create other hazardous conditions. Also, a description of the conditions under which hazardous reactions may occur.
- List of all conditions that should be avoided (e.g., static discharge, shock, vibrations, or environmental conditions that may lead to hazardous conditions).
- List of all classes of incompatible materials (e.g., classes of chemicals or specific substances) with which the chemical could react to produce a hazardous situation.
- List of any known or anticipated hazardous decomposition products that could be produced because of use, storage, or heating. (Hazardous combustion products should also be included in Section 5 (Fire-Fighting Measures) of the SDS.)

## Section 11: Toxicological Information

This section identifies toxicological and health effects information or indicates that such data are not available. The required information consists of:

- Information on the likely routes of exposure (inhalation, ingestion, skin and eye contact). The SDS should indicate if the information is unknown.
- Description of the delayed, immediate, or chronic effects from short- and long-term exposure.
- The numerical measures of toxicity (e.g., acute toxicity estimates such as the LD50 (median lethal dose)) - the estimated amount [of a substance] expected to kill 50% of test animals in a single dose.
- Description of the symptoms. This description includes the symptoms associated with exposure to the chemical including symptoms from the lowest to the most severe exposure.
- Indication of whether the chemical is listed in the National Toxicology Program (NTP) 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 found to be a potential carcinogen by OSHA.

### Section 12: Ecological Information (non-mandatory)

This section provides information to evaluate the environmental impact of the chemical(s) if it were released to the environment. The information may include:

- Data from toxicity tests performed on aquatic and/or terrestrial organisms, where available (e.g., acute or chronic aquatic toxicity data for fish, algae, crustaceans, and other plants; toxicity data on birds, bees, plants).
- Whether there is a potential for the chemical to persist and degrade in the environment either through biodegradation or other processes, such as oxidation or hydrolysis.
- Results of tests of bioaccumulation potential, making reference to the octanol-water partition coefficient ( $K_{ow}$ ) and the bioconcentration factor (BCF), where available.
- The potential for a substance to move from the soil to the groundwater (indicate results from adsorption studies or leaching studies).
- Other adverse effects (e.g., environmental fate, ozone layer depletion potential, photochemical ozone creation potential, endocrine disrupting potential, and/or global warming potential).

### Section 13: Disposal Considerations (non-mandatory)

This section provides guidance on proper disposal practices, recycling or reclamation of the chemical(s) or its container, and safe handling practices. To minimize exposure, this section should also refer the reader to Section 8 (Exposure Controls/Personal Protection) of the SDS. The information may include:

- Description of appropriate disposal containers to use.
- Recommendations of appropriate disposal methods to employ.
- Description of the physical and chemical properties that may affect disposal activities.
- Language discouraging sewage disposal.
- Any special precautions for landfills or incineration activities.

### Section 14: Transport Information (non-mandatory)

This section provides guidance on classification information for shipping and transporting of hazardous chemical(s) by road, air, rail, or sea. The information may include:

- UN number (i.e., four-figure identification number of the substance)<sup>2</sup>.
- UN proper shipping name<sup>2</sup>.
- Transport hazard class(es)<sup>2</sup>.
- Packing group number, if applicable, based on the degree of hazard<sup>2</sup>.
- Environmental hazards (e.g., identify if it is a marine pollutant according to the International Maritime Dangerous Goods Code (IMDG Code)).
- Guidance on transport in bulk (according to Annex II of MARPOL 73/78<sup>3</sup> and the International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (International Bulk Chemical Code (IBC Code))).
- Any special precautions which an employee should be aware of or needs to comply with, in connection with transport or conveyance either within or outside their premises (indicate when information is not available).

<sup>2</sup>Found in the most recent edition of the United Nations Recommendations on the Transport of Dangerous Goods.

<sup>3</sup>MARPOL 73/78 means the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto, as amended.



## Section 15: Regulatory Information (non-mandatory)

This section identifies the safety, health, and environmental regulations specific for the product that is not indicated anywhere else on the SDS. The information may include:

- Any national and/or regional regulatory information of the chemical or mixtures (including any OSHA, Department of Transportation, Environmental Protection Agency, or Consumer Product Safety Commission regulations).

## Section 16: Other Information

This section indicates when the SDS was prepared or when the last known revision was made. The SDS may also state where the changes have been made to the previous version. You may wish to contact the supplier for an explanation of the changes. Other useful information also may be included here.

### Employer Responsibilities

Employers must ensure that the SDSs are readily accessible to employees for all hazardous chemicals in their workplace. This may be done in many ways. For example, employers may keep the SDSs in a binder or on computers as long as the employees have immediate access to the information without leaving their work area when needed and a back-up is available for rapid access to the SDS in the case of a power outage or other emergency. Furthermore, employers may want to designate a person(s) responsible for obtaining and maintaining the SDSs. If the employer does not have an SDS, the employer or designated person(s) should contact the manufacturer to obtain one.

### References

OSHA, 29 CFR 1910.1200(g) and Appendix D.

United Nations Globally Harmonized System of Classification and Labelling of Chemicals (GHS), third revised edition, United Nations, 2009.

These references and other information related to the revised Hazard Communication

Standard can be found on OSHA's Hazard Communication Safety and Health Topics page, located at:  
<http://www.osha.gov/dsg/hazcom/index.html>.

Disclaimer: This brief provides a general overview of the safety data sheet requirements in the Hazard Communication Standard (see 29 CFR 1910.1200(g) and Appendix D of 29 CFR 1910.1200). It does not alter or determine compliance responsibilities in the standard or the Occupational Safety and Health Act of 1970. Since interpretations and enforcement policy may change over time, the reader should consult current OSHA interpretations and decisions by the Occupational Safety and Health Review Commission and the courts for additional guidance on OSHA compliance requirements. Please note that states with OSHA-approved state plans may have additional requirements for chemical safety data sheets, outside of those outlined above. For more information on those standards, please visit:  
<http://www.osha.gov/dcsp/osp/statestandards.html>.

**This is one in a series of informational briefs highlighting OSHA programs, policies or standards. It does not impose any new compliance requirements. For a comprehensive list of compliance requirements of OSHA standards or regulations, refer to Title 29 of the Code of Federal Regulations. This information will be made available to sensory-impaired individuals upon request. The voice phone is (202) 693-1999; teletypewriter (TTY) number: (877) 889-5627.**

**For assistance, contact us. We can help. It's confidential.**



**Occupational  
Safety and Health  
Administration**

U.S. Department of Labor  
**[www.osha.gov](http://www.osha.gov) (800) 321-OSHA (6742)**

## TR Concrete

## LIST OF HAZARDOUS CHEMICALS

The Material Safety Data Sheets or Safety Data Sheets for the below listed Hazardous Chemicals following this list. The Material Safety Data Sheets and/or SDS are arranged in the order listed below:

**MSDS (Listed by Common Name) or SDS (Listed by Product Identifier)**

[illegible]

**This list must be maintained for 30 years.**



**TR Concrete**

**EXPOSURE CONTROL PLAN**

**for**

**BLOODBORNE PATHOGENS & OTHER INFECTIOUS MATERIALS**

## TR Concrete

### NOTE

Per CPL 2-2.69, Enforcement Procedures for the Occupational Exposure to Bloodborne Pathogens, the bloodborne pathogens standard does not apply to the construction industry. OSHA has not, however, stated that the construction industry is free from the hazards of bloodborne pathogens. Exposure to bloodborne pathogens would fall under Section 5(a)(1) of the OSH Act which states that "each employer shall furnish to each of his employees employment and a place of employment which is free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees."

The primary job assignment of our designated first aid providers is not the rendering of first aid or other medical assistance. Any first aid rendered by them is rendered only as a collateral duty, responding solely to injuries resulting from workplace incidents and only at the location where the incident occurred.

Recordkeeping: all work-related injuries from needlesticks and cuts, lacerations, punctures and scratches from sharp objects contaminated with another person's blood or other potentially infectious materials (OPIM) are to be recorded on the OSHA 300 as an injury.

Note: Our first aid kits do not contain sharps or needles. However, a contaminated sharp, such as a broken pair of glasses, may trigger the above.

- a. To protect the employee's privacy, the employee's name may not be entered on the OSHA 300.
- b. If the employee develops a bloodborne disease, the entry must be updated and recorded as an illness.

**TR Concrete**  
**Safety Program**  
**SECTION III**  
**EXPOSURE CONTROL PLAN**  
**for**  
**BLOODBORNE PATHOGENS & OTHER INFECTIOUS MATERIALS**  
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**OSHA Standards:**

29 CFR 1910.1030, Bloodborne Pathogens

**Forms:**

[Found immediately following this program]

Exposure Determination: Lists I, II, & III

Housekeeping Schedule & Checklist

Hepatitis B Vaccination Declination

Sharps Injury Log

Annual Exposure Control Plan Review

Exposure Incident Report

## POLICY STATEMENT

This Exposure Control Plan has been developed to eliminate or minimize the risk of exposure to bloodborne pathogens and other potentially infectious materials. This Plan presents methods and procedures to eliminate and/or minimize the hazards associated with occupational exposure to bloodborne pathogens or other infectious materials.

As a matter of policy, universal precautions will be used.

Additional components of this Plan include exposure determinations by job classification, standard operating procedures to eliminate or reduce the likelihood of disease transmission, the methods of disease transmission, definitions of terms, post exposure procedures and follow-up, training documentation, and recordkeeping.

Compliance with this Plan not only fulfills the requirements of the Occupational Safety and Health Administration, more importantly, it fulfills our desire to maintain a safe working environment and safeguard the health of our employees.

All affected employees should feel free to review this Plan at any time and are encouraged to consult with our Exposure Control Plan Administrator to resolve any issues affecting its implementation. Immediately following our Exposure Control Plan is a copy of 29 CFR 1910.1030, Bloodborne Pathogens. Our Plan is to be made available to the Assistant Secretary of Labor for Occupational Safety and Health or designated representative.

## DEFINITIONS

All employees should know the "language" of this plan. Because some of the words and/or terms are not used in everyday life, each person must be aware of the definitions so that we are all "reading off the same page". Below are OSHA definitions:

**Assistant Secretary:** the Assistant Secretary of Labor for Occupational Safety and Health, or designated representative.

**Blood:** human blood, human blood components, and products made from human blood.

**Bloodborne Pathogens:** pathogenic microorganisms that are present in human blood and can cause disease in humans. These pathogens include, but are not limited to, hepatitis B virus (HBV) and human immunodeficiency virus (HIV).

**Clinical Laboratory:** a workplace where diagnostic or other screening procedures are performed on blood or other potentially infectious materials.

**Contaminated:** the presence or the reasonably anticipated presence of blood or other potentially infectious materials on an item or surface.

**Contaminated Laundry:** laundry which has been soiled with blood or other potentially infectious materials or may contain sharps.

**Contaminated Sharps:** any contaminated object that can penetrate the skin including, but not limited to, needles, scalpels, broken glass, broken capillary tubes, and exposed ends of dental wires.

**Decontamination:** the use of physical or chemical: to remove, inactivate, or destroy bloodborne pathogens on a surface or item to the point where they are no longer capable of transmitting infectious particles and the surface or item is rendered safe for handling, use, or disposal.

**Director:** the Director of the National Institute for Occupational Safety and Health, U.S. Department of Health and Human Services, or designated representative.

**Engineering Controls:** controls (e.g., sharps disposal containers, self-sheathing needles, safer medical devices, such as sharps with engineered sharps injury protections and needleless systems) that isolate or remove the bloodborne pathogens hazard from the workplace.

**Exposure Incident:** a specific eye, mouth, other mucous membrane, non-intact skin, or parenteral contact with blood or other potentially infectious materials that results from the performance of an employee's duties.

**Handwashing Facilities:** a facility providing an adequate supply of running potable water, soap and single use towels or hot air drying machines.

**Licensed Healthcare Professional:** a person whose legally permitted scope of practice allows him or her to independently perform the activities required by paragraph 29 CFR 1910.1030(f), Hepatitis B Vaccination and Post-exposure Evaluation and Follow-up, a copy of which follows this section.

Note: The above activities include actually providing Hepatitis B vaccine, ordering appropriate laboratory test, determining contraindications to vaccination, providing post-exposure prophylaxis and counseling. The legal scope of practice for this professional must allow the independent performance of all the procedures described in paragraph (f), Hepatitis B Vaccination and Post-exposure Evaluation and Follow-up.

**HBV:** hepatitis B virus.

**HIV:** human immunodeficiency virus.

**Needleless systems:** a device that does not use needles for:

- a. The collection of bodily fluids or withdrawal of body fluids after initial venous or arterial access is established;
- b. The administration of medication or fluids; or
- c. Any other procedure involving the potential for occupational exposure to bloodborne pathogens due to percutaneous injuries from contaminated sharps.

**Occupational Exposure:** reasonably anticipated skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious materials that may result from the performance of an employee's duties.

**Other Potentially Infectious Materials:**

- a. 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;
- b. Any unfixed tissue or organ (other than intact skin) from a human (living or dead); and
- c. HIV-containing cell or tissue cultures, organ cultures, and HIV- or HBV-containing culture medium or other solutions; and blood, organs, or other tissues from experimental animals infected with HIV or HBV.

**Parenteral:** piercing mucous membranes or the skin barrier through such events as needlesticks, human bites, cuts, and abrasions.

**Personal Protective Equipment** is specialized clothing or equipment worn by an employee for protection against a hazard. General work clothes (e.g., uniforms, pants, shirts or blouses) not intended to function as protection against a hazard are not considered to be personal protective equipment.

**Production Facility:** a facility engaged in industrial-scale, large-volume or high concentration production of HIV or HBV.

**Regulated Waste:** liquid or semi-liquid blood or other potentially infectious materials; contaminated items that would release blood or other potentially infectious materials in a liquid or semi-liquid state if compressed; items that are caked with dried blood or other potentially infectious materials and are capable of releasing these materials during handling; contaminated sharps; and pathological and microbiological wastes containing blood or other potentially infectious materials.

**Research Laboratory:** a laboratory producing or using research-laboratory-scale amounts of HIV or HBV. Research laboratories may produce high concentrations of HIV or HBV but not in the volume found in production facilities.

**Sharps with engineered sharps injury protections:** a non-needle sharp or a needle device used for withdrawing body fluids, accessing a vein or artery, or administering medications or other fluids, with a built-in safety feature or mechanism that effectively reduces the risk of an exposure incident.

**Source Individual:** any individual, living or dead, whose blood or other potentially infectious materials may be a source of occupational exposure to the employee. Examples include, but are not limited to, hospital and clinic patients; clients in institutions for the developmentally disabled; trauma victims; clients of drug and alcohol treatment facilities; residents of hospices and nursing homes; human remains; and individuals who donate or sell blood or blood components.

**Sterilize:** the use of a physical or chemical procedure to destroy all microbial life including highly resistant bacterial endospores.

**Universal Precautions** is an approach to infection control. According to the concept of Universal Precautions, all human blood and certain human body fluids are treated as if known to be infectious for HIV, HBV, and other bloodborne pathogens.

**Work Practice Controls:** controls that reduce the likelihood of exposure by altering the manner in which a task is performed (e.g., prohibiting recapping of needles by a two-handed technique).

## **EXPOSURE CONTROL PLAN**

### **[29 CFR 1910.1030(c)]**

This Exposure Control Plan is provided for all personnel who, as a result of the performance of their duties, would have reasonably anticipated skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious materials.

This Plan will be reviewed and updated annually and whenever necessary as new or modified tasks and procedures are introduced which affect occupational exposure to bloodborne pathogens or other potentially infectious materials. The review and update of this plan will:

- a. reflect changes in technology that eliminate or reduce exposure to bloodborne pathogens.
- b. document, annually, consideration and implementation of appropriate commercially available and effective safer medical devices designed to eliminate or minimize occupational exposure.

First aid providers employees responsible for direct trauma victim care who are potentially exposed to injuries for contaminated sharps will be asked for input in the identification, evaluation, and selection of effective engineering and work practice controls.

This Exposure Control Plan, with a copy of 29 CFR 1910.1030, Bloodborne Pathogens, will be made accessible to all employees as well as the Assistant Secretary and the Director (see definitions) who may examine and copy this plan.

## **EXPOSURE DETERMINATION**

Three (3) lists will be prepared and they will be maintained in Section II of this plan.

- List I:** A list of all job classifications in which all employees have occupational exposure.
- List II:** A list of job classifications in which some employees have occupational exposure.
- List III:** A list of all tasks and procedures or groups of closely related tasks and procedures in which occupation exposure occurs and are performed by employees in job classifications noted in List II.

Note: The above exposure determinations are to be made without regard to the use of personal protective equipment.

## **METHODS OF COMPLIANCE**

Universal precautions will be used. We will treat all trauma victims' blood, bodily fluids, and other potentially infectious materials as if they are known to be infectious. Unfortunately, there is no immediate, practical way to determine if HIV, HBV, and other bloodborne pathogens are present so, to be safe, we will assume they are. Traditionally, isolation of infectious materials has been diagnosis-driven. This meant that if a person were diagnosed to have HIV or HBV infection, for example, then isolation precautions would be taken. Because the infection status of each trauma victim cannot be immediately known, it makes sense to treat all trauma victims and their body fluids as if they were infected. The precautions to take depend on the procedures being performed. For example, if one's hands will be in contact with body substances, disposable gloves will be worn. If there is risk of one's eyes being splashed with body fluids, eye protection will be worn. An impermeable barrier must be placed between yourself and the potentially infectious bodily fluids. Overkill is not necessary. Cleaning up a minor spill on a counter top does not require a



mask, eye protection, and plastic apron. It does, however, require disposable gloves.

All employees will strictly adhere to the below engineering and work practice controls to eliminate or reduce the possibility of occupational exposure to bloodborne pathogens or other potentially infectious materials. Specific controls and procedures, noted below, will be used to eliminate or minimize employee exposure. If occupational exposure is:

HANDWASHING EQUIPMENT AND PROCEDURES: Handwashing facilities are provided which are readily accessible to all employees.

Employees will wash their hands and any other skin area exposed to blood or other potentially infectious materials with soap and water immediately or as soon as feasible:

- a. after removal of gloves or other personal protective equipment.
- b. following contact with blood or other potentially infectious materials.

Particular attention will be given to fingernails and between fingers and rings under which infectious material may lodge. Furthermore, one should be aware that rings and jewelry are a good hiding place for bloodborne pathogens and other potentially infectious materials.

Examples of situations where handwashing is appropriate:

- a. before and after examining any trauma victim.
- b. after handling any soiled waste or other materials.
- c. after handling any chemicals or used equipment.

If for some reason handwashing facilities are not functioning, appropriate antiseptic hand cleaner and clean cloth/paper towels (antiseptic towelettes) will be provided and used. If antiseptic hand cleaner and clean cloth/paper towels are used, hands will be washed with soap and water as soon as feasible.

EATING, DRINKING, SMOKING:

There shall be no eating, drinking, smoking, applying cosmetics or lip balm, or handling contact lenses in areas where there is a likelihood of occupational exposure to bloodborne pathogens or other potentially infectious materials.

Furthermore, food and drink shall not be kept in refrigerators, freezers, shelves, cabinets, or on countertops or benches where blood or other potentially infectious materials are present.

### CONTAMINATED NEEDLES & OTHER CONTAMINATED SHARPS:

Contaminated needles will not be sheared, or broken.

Furthermore, all contaminated needles and other contaminated sharps shall not be bent, recapped, or removed unless:

- a. it can be demonstrated that no alternative is feasible or that it is required by a specific medical procedure.
- b. recapping or needle removal may be accomplished through the use of a mechanical device or a one-handed method.

Contaminated **reusable** sharps will be placed in appropriate containers immediately or as soon as possible after use until properly reprocessed. These containers will:

- a. be puncture resistant.
- b. have warning labels affixed to containers potentially infectious material and contain the following legend:



Note: The above label will be fluorescent orange or orange-red or predominantly so, with lettering and symbols in a contrasting color.

Labels shall be affixed as close as feasible to the container by string, wire, adhesive, or other method that prevents their loss or unintentional removal.

Red bags or red containers may be substituted for labels.

- c. be leakproof on the sides and bottom.

**Reusable** sharps that are contaminated with blood or other potentially infectious materials will not be stored or processed in a manner that requires employees to reach by hand into the containers where these sharps have been placed.

Contaminated **non-reusable** sharps will be discarded immediately or as soon as feasible and placed in containers that:

- a. are closable
- b. are puncture resistant.
- c. are leakproof on sides and bottom.
- b. have warning labels affixed that contain the following legend:



Note: The above label will be fluorescent orange or orange-red or predominantly so, with lettering and symbols in a contrasting color.

Labels shall be affixed as close as feasible to the container by string, wire, adhesive, or other method that prevents their loss or unintentional removal.

Red bags or red containers may be substituted for labels.

Contaminated **reusable** sharps shall not be stored or processed in such a manner that requires employees to reach by hand into the containers where these sharps have been placed.

During use, containers for contaminated sharps must be:

- a. easily accessible to our employees.
- b. located as close as feasible to the immediate area where sharps are used or can be reasonably anticipated to be found.
- c. maintained upright throughout use.
- d. replaced routinely and not be allowed to overfill.

If leakage is possible when removing a container of contaminated sharps, it shall be placed in a second container with the following container requirements:

- a. it will be closable.
- b. it will be constructed to contain all contents and prevent leakage during handling, storage, transport or shipping, and;
- c. colored coded red or labeled as noted above.

Reusable containers shall not be opened, emptied, or cleaned manually or in any other manner which would expose employees to the risk of percutaneous (introduced through the skin such as a cut) injury.

#### OTHER REGULATED WASTE - CONTAINMENT:

The provisions that apply to contaminated sharps, above, apply to other regulated waste.

#### DISPOSAL OF CONTAMINATED SHARPS & OTHER REGULATED WASTE:

The actual disposal of all regulated waste shall be in compliance with applicable state laws.

#### SPECIMENS OF POTENTIALLY INFECTIOUS MATERIALS:

Specimens of blood and potentially infectious materials shall be placed in a container which prevents leakage during collection, handling, processing, storage, transport, or shipping.

#### SPLASHING, SPRAYING OF POTENTIALLY INFECTIOUS MATERIALS:

All procedures involving blood or other potentially infectious materials shall be performed in such a manner as to minimize splashing, spraying, spattering, and the generation of droplets of these substances.

#### MOUTH PIPETTING:

Mouth pipetting and mouth suction of blood or other potentially infectious materials is prohibited.

### **DESIGNATED EXPOSURE CONTROL PLAN ADMINISTRATOR**

Our designated the Exposure Control Plan Administrator will be knowledgeable in all aspects of this Plan as it relates to our operations and be available to answer questions raised by our first aid providers. The Exposure Control Plan Administrator may call upon professionals in the Medical Arts to field questions that are of technical nature outside of the Administrator's area of expertise.

The Exposure Control Plan Administrator will:

- a. ensure this Plan is kept current.
- b. ensure training is provided as required.
- c. maintain all records associated with this plan.

## **DESIGNATED FIRST AID PROVIDERS**

Before one may be designated as a first aid provider, he/she must have a valid certificate in first aid training from the U.S. Bureau of Mines, the Red Cross, or equivalent training that can be verified by documentary evidence. No person is to administer any medical assistance for which they are not appropriately trained. It is noted that the rendering of first aid is not the primary job of our designated first aid providers.

## **PERSONAL PROTECTIVE EQUIPMENT (PPE)**

In spite of work practice and engineering controls, there is a requirement for appropriate personal protective equipment to provide an impermeable barrier between potentially infectious materials and the employees work clothes, street clothes, undergarments, skin, eyes, mouth, or other mucous membranes under normal conditions of use and for the duration of time which the protective equipment will be used.

Employees will use appropriate personal protective equipment when there is a possibility of occupational exposure to bloodborne pathogens or other potential infectious materials.

Personal protective equipment will be provided in appropriate sizes and at no cost to the employees. Further, maintenance and replacement of personal protective equipment will be provided at no cost to the employee.

Personal protective equipment will be discarded immediately if its ability to function as a barrier is compromised.

Most importantly, employees must understand that personal protective equipment is useless unless it provides an impermeable barrier between bloodborne pathogens and other potentially infectious materials and the employee's clothes, skin, eyes, mouth, or other mucous membranes.

Personal Protective Equipment is considered appropriate if it prevents potentially infectious materials from reaching work/street clothing or body surface when used under normal conditions.

### **DISPOSABLE GLOVES:**

Disposable, single use gloves, such as surgical or examination gloves will be worn when it can be reasonably anticipated that the employee may have hand contact with blood or other potentially infectious materials and when handling or touching contaminated items or surfaces. Disposable gloves will always be used when there is a possibility of contact with bloodborne pathogens or other potentially infectious materials.

Disposable gloves shall never be washed, decontaminated, or reused.

Disposable gloves shall be replaced as soon as practical when contaminated or as soon as feasible if they are torn, punctured, or their ability to function as a barrier is compromised.

Should any employee be allergic to the normal gloves provided, an appropriate alternative (such as hypoallergenic and/or powderless gloves) will be provided in the proper size at no cost to the employee.

#### UTILITY GLOVES:

Utility gloves may be used for general cleanup (not for any trauma victim procedure) when there is anticipated exposure to bloodborne pathogens or other potentially infectious materials. Utility gloves may be decontaminated for re-use if the integrity of the gloves is not compromised. They will be discarded if they are cracked, peeling, torn, punctured, or exhibit signs of deterioration or when their ability to function as a barrier is compromised.

#### EYE AND RESPIRATORY PROTECTION:

Eye (goggles, glasses, face shield, etc.) and respiratory (mask, etc.) protection will be used when it can reasonably be expected that bloodborne pathogens or other potentially infectious materials may splash or spray in or around the eyes, nose, mouth, and general head area of the employee.

#### PROTECTIVE BODY CLOTHING:

Protective body clothing such as gowns, aprons, lab coats, etc. will be worn as determined by the professional judgment of the employee in relation to task. The protective body clothing will certainly be worn where there can reasonably be expected exposure to bloodborne pathogens or other potentially infectious materials to the body area.

#### LAUNDRY:

Personal protective equipment will be cleaned, laundered, and disposed of at no cost to the employee.

[Note: In rare and extraordinary circumstances, an employee, in her/his professional judgment, may decline to temporarily and briefly wear personal protective equipment if he/she deems that the equipment would prevent the delivery of health care or would have increased the hazard of occupational exposure to the employee or his/her co-workers. Should this event occur, it will be documented, investigated, and procedures will be developed to prevent a reoccurrence.]

## **HOUSEKEEPING**

Housekeeping is an ongoing, never ending procedure which not only enhances our work environment but also eliminates health risk to our personnel. In the area of bloodborne pathogens and other hazardous materials, to ensure proper cleaning, decontamination, sterilization, and disinfecting of surfaces within our facility, cleaning will be accomplished only by employees who have received training in universal precautions and the provisions of this plan. The written Housekeeping Schedule & Checklist is found in Section II and this Schedule will be adhered to following an incident that results in the potential exposure to bloodborne pathogens or other potentially infectious materials.

Broken, potentially infected glassware, should be picked up and disposed of using mechanical means such as a brush and dust pan or forceps.

All sharps will be stored in a manner that allows easy access and safe handling.

Infectious waste will be placed in containers that are color coded red. These containers will be decontaminated as soon as practical.

Subsequent to rendering any procedures, employees will ensure that all surfaces on which blood, body fluids, bloodborne pathogens, or other infectious materials may be present are cleaned with an appropriate disinfectant.

## **HEPATITIS B EPIDEMIOLOGY**

Hepatitis B (serum hepatitis) routes of infection include parenteral, oral, or direct contact. The virus can also spread by contact with the respiratory tract. Its sources include contaminated needles and surgical instruments as well as contaminated blood products. The virus of hepatitis B has been found in urine. Further, the virus of hepatitis B can live for up to seven (7) days on a dry surface and can be easily be transmitted by a single needle stick. Its incubation period is quite lengthy generally between 45 and 180 days. It affects all age groups. Recovery from hepatitis B does provide immunity. Generally, one can expect a complete recovery from viral hepatitis, however, it is potentially fatal depending on many factors including the virulence (aggressiveness) of the virus, prior hepatic damage, and natural barriers to damage and disease of the liver. It is possible for viral hepatitis to lead to fulminating viral hepatitis and subacute fatal viral hepatitis both of which are fatal. Onset symptoms may include headache, elevated temperature, chills, nausea, dyspepsia, anorexia, general malaise, and tenderness over the liver. These types of symptoms will last

about one (1) week, then subside, and jaundice will occur. Jaundice is caused by damaged liver cells. The convalescent stage begins with the disappearance of the jaundice and may last several months. Recovery is expected in six (6) months.

## **RISK OF EXPOSURE**

Per the Department of Human Services of the Center for Disease Control, below is the risk of infection after occupational exposure:

### **HBV:**

First aid providers who have received hepatitis B vaccine and have developed immunity to the virus are at virtually no risk for infection. For an unvaccinated person, the risk from a single needlestick or cut exposure to HBV-infected blood ranges from 6-30% and depends on the hepatitis B e antigen (HBeAg) status of the source individual. In individuals who are both hepatitis B surface antigen (HBsAG) positive and HBeAg positive have more virus in their blood and are more likely to transmit HBV.

### **HCV:**

Based on limited studies, the risk for infection after a needlestick or cut exposure to HCV-infected blood is approximately 1.8%. The risk following a blood splash is unknown, but is believed to be very small; however, HCV infection from such an exposure has been reported.

### **HIV:**

The average risk of HIV infection after a needle stick or cut exposure to HIV-infected blood is 0.3% (i.e., three-tenths of one percent, or about 1 in 300). Stated another way, 99.7% of needlestick/cut exposures do not lead to infection.

The risk after exposure of the eye, nose, or mouth to HIV-infected blood is estimated to be, on average, 0.1% (1 in 1,000).

The risk after exposure of the skin to HIV-infected blood is estimated to be less than 0.1%. A small amount of blood on intact skin probably poses no risk at all. There have been no documented cases of HIV transmission due to an exposure involving a small amount of blood on intact skin (a few drops of blood on skin for a short period of time). The risk may be higher if the skin is damaged (for example, by a recent cut) or the contact involves a large area of skin or is prolonged (for example, being covered in blood for hours).

All employees with occupation exposure are encouraged to accept the hepatitis B vaccination.



## **HEPATITIS B VACCINATION**

The hepatitis B vaccination series will be provided, at no cost, to all unvaccinated first aid providers as soon as possible (within 24 hours of initial exposure). All exposed first aid providers employees are encouraged to take this vaccination series unless they have previously received the complete hepatitis B vaccination series; antibody testing has revealed that the employee is immune; or the vaccine is contraindicated (not recommended) for medical reasons. Post-exposure evaluation, prophylaxis (prevention of or protection from disease), and follow-up will be provided at no cost to the employee.

The Hepatitis B vaccination will be performed under the supervision of a licensed physician or other licensed healthcare professional.

All laboratory tests will be conducted by an accredited laboratory at no cost to the employee.

Should routine booster dose(s) of hepatitis B vaccine (as recommended by the U.S. Public Health Service at a future date) be required, they will be provided at no cost as long as the employee remains a first aid provider.

An employee may decline the Hepatitis B vaccination and this declination shall not reflect unfavorably upon him/her, however this declination must be in writing. See Section II.

It is important to note that if a first aid provider initially declines the hepatitis B vaccination series, he/she may at a later date decide to accept the vaccination series and it will be provided at no cost assuming he/she is still occupationally exposed to bloodborne pathogens or other potentially infectious materials.

## **SHARPS INJURY LOG**

A Sharps injury log will be maintained for the recording of percutaneous injuries from contaminated sharps.

The information on the log will be recorded and maintained in such manner as to protect the confidentiality of the injured employee.

The sharps injury log will contain:

- a. the type and brand of device involved in the incident.
- b. the department or work area where the exposure incident occurred.
- c. an explanation of how the incident occurred.

The sharps injury log shall be maintained for the period of five years.

## **FIRST AID PROVIDER INPUT**

As a matter of policy, all first aid providers who are responsible for first aid delivery as an additional job are encouraged to suggest methods to improve our engineering and workplace controls. This input may be made verbally to the Plan Administrator at any time. Additionally, during the annual refresher training, suggestions will be solicited.

## **PLAN REVIEW**

This plan will be reviewed, and if necessary, updated annually to reflect new or modified tasks and procedures which affect occupational exposure and to reflect new or revised employee positions with occupational exposure. As new medical devices are developed which reduce employee exposure, they will be introduced into our practice. A review of the "Sharps Log" will help identify problem areas and/or ineffective devices which may need replacement.

## **POST-EXPOSURE EVALUATION AND FOLLOW-UP**

The information that has preceded this Section has dealt with the methods to restrict occupational exposure to bloodborne pathogens and other infectious materials. Post-exposure evaluation and follow-up deals with the steps to take immediately following a potential exposure incident and the steps that will be taken over time to protect our employees from further health risk.

All incidents involving exposure to blood or other potentially infectious materials will be reported to the Exposure Control Plan Administrator, in writing, before the end of the shift in which the incident occurred using the Exposure Incident Report (Section II). This Report will be prepared regardless of whether or not there has been an "Exposure Incident" as defined in this Plan and in 29 CFR 1910.1030. A separate Exposure Incident Report will be completed for each employee who was occupationally exposed.

Information in this Report will include:

- a. the date and time the incident occurred.
- b. a brief description of the events leading up to the exposure (what happened.)
- c. the name of the individual exposed.
- d. the route of exposure.
- e. "source individual" and "exposed individual" information including the acceptance or rejection of hepatitis B vaccination series.

- d. a determination of whether or not an actual "exposure incident" occurred. Refer to Definitions in this Plan or 29 CFR 1910.1030.

The Exposure Control Plan Administrator or his authorized representative will review the Exposure Incident Report and determine if methods or procedures may be altered to prevent a reoccurrence of the incident.

Further, an occupational bloodborne pathogens exposure incident which results in the recommendation for hepatitis B vaccination would be recorded on OSHA Form 300 as an injury. See Recordkeeping.

All unvaccinated employees who have assisted in any situation involving blood will be afforded the opportunity to receive the hepatitis B vaccination series as soon as possible but not later than twenty-four (24) hours after the situation.

A confidential medical evaluation and follow-up will be provided immediately, at not cost, to the employee. The healthcare professional evaluating an employee after an exposure incident will be provided a copy of 29 CFR 1910.1030 (Section II).

Further, the healthcare professional will be provided a description of the exposed employee's duties as they relate to the exposure incident; documentation of the route(s) of exposure; the circumstances under which the exposure occurred; the results of the source individual's blood testing, if available; and all medical records relevant to the appropriate treatment of the employee including vaccination status which is maintained by our office. See Recordkeeping.

The confidential medical evaluation and follow-up will include:

- a. documentation of the route(s) of exposure.
- b. the circumstances under which the exposure incident occurred.
- c. the identification and documentation of the source individual, unless it can be established that the identification is not feasible or prohibited by state or local law.
- d. the exposed employee's blood shall be collected as soon as feasible and tested after consent is obtained.

Note: If the employee consents to baseline blood collection, but does not consent at that time for HIV serologic testing, the sample shall be preserved for at least 90 days. If, within 90 days of the exposure incident, the employee elects to have the baseline sample tested, such testing shall be done as soon as feasible.]

- e. the source individual's blood shall be tested as soon as feasible to determine HBV and HIV infectivity unless it is already known in which case this procedure is not necessary.

If consent to test the source individual's blood cannot be obtained the following will occur:

- a. it will be established and documented that legally required consent cannot be obtained.
- b. when the source individual's consent is not required by law, the source individual's blood shall be tested and the results documented.

The results of the source individual's testing shall be made available to the exposed employee and the employee shall be informed of applicable laws and the identity and infectious status of the source individual.

The employee shall be provided post-exposure prophylaxis, when medically indicated, and counseling.

The employee will be provided with a copy of the healthcare professional's written opinion within 15 days of the completion of the evaluation. The written opinion shall be limited to:

- a. whether Hepatitis B vaccination is indicated and if the employee has received such vaccination.
- b. an indication that the employee has been informed of the results of the evaluation.
- c. an indication that the employee has been told about any medical conditions resulting from exposure to blood or other potentially infectious materials which require further evaluation or treatment.

All other findings or diagnoses will remain confidential and will not be included in the written report.

## **RECORDKEEPING**

Complete and accurate medical records will be maintained for each employee with occupational exposure. These records shall remain confidential and will not be disclosed or reported without the employee's express written consent to any person within or outside the workplace except as required by law.

Medical records will be maintained for at least the duration of employment plus 30 years.

Included in the employee's medical record will be:

- a. the employee's name and social security number.
- b. a copy of the employee's hepatitis B vaccination status including the date of all the hepatitis B vaccinations and any medical records relative to the employee's ability to receive vaccination.
  - 1. if the employee has declined to receive the hepatitis B vaccination series when appropriate, this declination will be included in the person's medical records.
- c. a copy of all results of examinations, medical testing, and follow-up procedures as required following an exposure incident.
- d. the employer's copy of the healthcare professional's written opinion following an exposure incident.
- e. a copy of all information provided to the healthcare professional following an exposure incident.

All work-related injuries from needlesticks and cuts, lacerations, punctures and scratches from sharp objects contaminated with another person's blood or other potentially infectious materials are to be recorded on the OSHA 300 as an injury.

- a. To protect the employee's privacy, the employee's name may not be entered on the OSHA 300.
- b. If the employee develops a bloodborne disease, the entry must be updated and recorded as an illness.

## **TRAINING**

All of our first aid providers must have current certificates of first aid and CPR training on file. These records will be maintained by the Plan Administrator.

Initial training, training at the introduction of a new or altered task affecting exposure to bloodborne pathogens or other potentially hazardous materials, and annual training will be provided by a person knowledgeable in the subject matter contained in this Plan.

Training will be interactive between the instructor and employee. An opportunity to ask questions will be provided. Further, this Plan as well as 29 CFR 1910.1030, Bloodborne Pathogens, will be readily available for review.

All training will be documented using the forms found in Appendix A. Training documentation will be maintained for a period of three (3) years from the date on which the training occurred.

Training will include, but not be limited to, the following topics and materials:

- a. a complete review of our Exposure Control Plan and its accessibility.
- b. an accessible copy of 29 CFR 1910.1030 and an explanation of its contents.
- c. a general explanation of the epidemiology and symptoms of bloodborne diseases.
- d. an explanation of the modes of transmission of bloodborne pathogens.
- e. an explanation of the appropriate methods for recognizing tasks and other activities that may involve exposure to blood and other potentially infectious materials.
- f. an explanation of the use and limitations of methods that will prevent or reduce exposure including appropriate engineering controls, work practices, and personal protective equipment.
- g. information on the types, proper use, location, removal, handling, decontamination and disposal of personal protective equipment.
- h. an explanation of the basis for selections of personal protective equipment.
- i. information on the hepatitis B vaccine, including information on its efficacy, safety, method of administration, benefits of being vaccinated, and that the vaccine and vaccination will be offered free of charge.
- j. information on the appropriate actions to take and persons to contact in an emergency involving blood other potentially infectious materials.
- k. an explanation of the procedure to follow if an exposure incident occurs, including the method of reporting the incident and the medical follow-up that will be made available.
- l. information on the post-exposure evaluation and follow-up that is provided after an exposure incident.
- m. an explanation of the color coding required by paragraph (g)(1), 29 CFR 1910.1030.
- n. a request for input from employees in the identification, evaluation, and selection of effective engineering and work practice controls.

## **WASTE MANAGEMENT**

Waste ,management, if necessary, will comply with State EPA standards regarding handling, storage, and shipping of medical wastes.

### **SUMMARY**

The whole thrust of the Program is to provide an awareness of the dangers of bloodborne pathogens, provide a means of reducing the possibility of occupational exposure, and, should occupational exposure occur, provide a means of reducing health risk.

# TR Concrete

## EXPOSURE DETERMINATION

### LIST I

All job classifications in which all employees have occupational exposure.

Note: The above exposure determinations are to be made without regard to the use of personal protective equipment.

1. First Aid Providers\_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_

**Note: The primary job assignment of our designated first aid providers is not the rendering of first aid or other medical assistance. Any first aid rendered by them is rendered only as a collateral duty, responding solely to injuries resulting from workplace incidents and only at the location where the incident occurred.**



**TR Concrete**  
**EXPOSURE DETERMINATION**  
**LIST II**

Job classifications in which some employees have occupational exposure:

1. None\_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_

Note: The above exposure determinations are to be made without regard to the use of personal protective equipment.

**Note: The primary job assignment of our designated first aid providers is not the rendering of first aid or other medical assistance. Any first aid rendered by them is rendered only as a collateral duty, responding solely to injuries resulting from workplace incidents and only at the location where the incident occurred.**

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## EXPOSURE DETERMINATION

### LIST III

All tasks and procedures or groups of closely related tasks and procedures in which occupation exposure occurs and are performed by employees in job classifications noted in List II.

	<u>Job Classification</u>	<u>Tasks</u>
1.	<u>None</u>	<hr/> <hr/> <hr/> <hr/>
2.	<hr/>	<hr/> <hr/> <hr/> <hr/>
3.	<hr/>	<hr/> <hr/> <hr/> <hr/>
4.	<hr/>	<hr/> <hr/> <hr/> <hr/>

**Note: The primary job assignment of our designated first aid providers is not the rendering of first aid or other medical assistance. Any first aid rendered by them is rendered only as a collateral duty, responding solely to injuries resulting from workplace incidents and only at the location where the incident occurred.**

**Note: The above exposure determinations are to be made without regard to the use of personal protective equipment.**

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## HOUSEKEEPING SCHEDULE & CHECKLIST

### SCHEDULE

Following every incident where there is a possibility of the presence of residual bloodborne pathogens or other potentially infectious materials.

### CHECKLIST

Only personnel who have had training in our Exposure Control will ensure that all surfaces are decontaminated and that cleaning materials are properly disposed of. Areas to consider include, but are not limited to:

	YES	NA
FLOORS	<input type="checkbox"/>	<input type="checkbox"/>
WALLS	<input type="checkbox"/>	<input type="checkbox"/>
EQUIPMENT	<input type="checkbox"/>	<input type="checkbox"/>
PRODUCT	<input type="checkbox"/>	<input type="checkbox"/>
WASTE CONTAINERS	<input type="checkbox"/>	<input type="checkbox"/>
TOOLS	<input type="checkbox"/>	<input type="checkbox"/>

Broken, potentially infected glassware, should be picked up and disposed of using mechanical means such as a brush and dust pan or forceps.

All sharps will be stored in a manner that allows easy access and safe handling.

Infectious waste will be placed in containers that are color coded red. These containers will be decontaminated as soon as practical.

Subsequent to rendering any procedures, employees will ensure that all surfaces on which blood, body fluids, bloodborne pathogens, or other infectious materials may be present are cleaned with an appropriate disinfectant.

## TR Concrete

I understand that due to my occupational exposure to blood or other potentially infectious materials I may be at risk of acquiring hepatitis B virus (HBV) infection. I have been given the opportunity to be vaccinated with hepatitis V vaccine, at no charge to myself. However, I decline hepatitis B vaccination at this time. I understand that by declining this vaccine, I continue to be at risk of acquiring hepatitis B, a serious disease. If in the future I continue to have occupational exposure to blood or other potentially infectious materials and I want to be vaccinated with hepatitis B vaccine, I can receive the vaccination series at no charge to me.

\_\_\_\_\_  
(WITNESS)

\_\_\_\_\_  
(EMPLOYEES SIGNATURE)

\_\_\_\_\_  
(PRINTED NAME)

\_\_\_\_\_  
(DATE)

## TR Concrete

## SHARPS INJURY LOG

Note: A sharps injury log will be maintained for the recording of percutaneous injuries from contaminated sharps.

The information on the log will be recorded and maintained in such manner as to protect the confidentiality of the injured employee.

This sharps injury log shall be maintained for the period of five years.

(Incident Date)

(Employee SSN)

Type and brand of device involved in the incident:

Work area where the exposure incident occurred:

Explanation of how the incident occurred:

## Safety Program Administrator

# TR Concrete

## ANNUAL EXPOSURE CONTROL PLAN REVIEW

This Exposure Control Plan was prepared:

At least annually, this program will be reviewed and, if necessary, updated, to reflect innovations in procedure and technological developments that eliminate or reduce exposure to bloodborne pathogens.

As part of the annual review, the below will be considered:

- a. Employee Input
- b. Sharps Injury Log
- c. Exposure Incident Reports
- d. Professional Journals

<u>Date Reviewed:</u>	<u>Signature</u>	<u>Title</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

# TR Concrete

## EXPOSURE INCIDENT REPORT

**ALL INFORMATION ON THIS FORM IS TO REMAIN CONFIDENTIAL**

**THIS FORM SHALL BE COMPLETED AS SOON AS FEASIBLE AFTER AN EXPOSURE INCIDENT BUT, UNDER NO CIRCUMSTANCES, AFTER THE SHIFT ON WHICH THE INCIDENT OCCURRED.**

DATE: \_\_\_\_\_

TIME: \_\_\_\_\_

NAME OF EMPLOYEE: \_\_\_\_\_

ROUTE OF EXPOSURE: \_\_\_\_\_

SOURCE INDIVIDUAL'S NAME: \_\_\_\_\_

a. Above individual did / did not consent to be tested for HBV or HIV.

b. Testing was done by: \_\_\_\_\_

1. Results: \_\_\_\_\_

EMPLOYEE WAS OFFERED AND ACCEPTED:

**NO YES**

a. Hepatitis Vaccination Series.

☐ ☐

[Date(s)]

1. If "NO", written declination was signed.

☐ ☐

b. Post Exposure Evaluation and follow-up.

☐ ☐

c. Employee consents to baseline blood collection.

☐ ☐

\_\_\_\_\_  
(Signature)

Description of events leading to this exposure incident:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Corrective Measures to Prevent a Reoccurrence:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
(Exposure Control Plan Administrator Signature)

\_\_\_\_\_  
(Employee Signature)

**TR Concrete**

## **FALL PROTECTION**



## TR Concrete Policy Statement

### Compliance with 29 CFR 1926.502(d)(20) & EM 381-1-1 21.M

29 CFR 1926.502(d)(20) states: “The employer shall provide for prompt rescue of employees in the event of a fall or shall assure that employees are able to rescue themselves.”

Per OSHA interpretation letters [J. Nigel Ellis (May 11, 1999) & Charles Hill (August 14, 2000)], the hazard being addressed by 29 CFR 1926.502(d)(20) is being suspended by the fall arrest system after an arrested fall.

Prompt rescue is not defined, but it does imply that rescue be performed quickly – in time to prevent serious injury to the suspended worker.

### **As a matter of policy, under no circumstances will our employees attempt to perform a self-rescue.**

The rationale for this policy is as follows:

1. Expecting a suspended employee to perform self-rescue presupposes that the employee is:
  - a. of clear mind after the fall, and,
  - b. in excellent physical condition, and
  - c. has not sustained any injuries from the fall arrest, and
  - d. did not have a medical event that caused the fall in the first place (fainting, for example).
2. Because our employees are not professional rescue persons, in depth self-rescue training would be required and practice self-rescue exercises performed for each possible combination of fall scenarios.
3. Specialize self-rescue equipment and training on that equipment would be required.
4. Self-rescue is not required by 29 CFR 1926.502(d)(20).

### **Prompt Rescue Procedures:**

As a matter of policy, an employee performing work requiring a personal fall arrest system **will not work alone**. He/she will be in sight of another employee using a personal fall arrest system or be monitored by a safety monitor whose sole job will be to ensure there is not a fall event that goes unnoticed.

Prior to performing work requiring a personal fall arrest system, the Safety Program Administrator, or designated competent person, will:

1. assess the possible fall scenarios, and,
2. take inventory of in-house equipment that is readily available for possible rescue (ladders, forklifts, mobile scaffold, etc.), and,
3. be prepared to implement a plan of action utilizing our in-house equipment should a fall occur, **or**
4. call an emergency rescue service and give them:
  - a. our exact location.
  - b. a quick synopsis of what happened.
  - c. the height of the suspended person.
  - d. known or suspected injuries.

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Fall Protection Program Administrator

# Safety Program

## SECTION III

### FALL PROTECTION

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#### OSHA Standards:

29 CFR 1926.500 Scope, Application, and Definitions Applicable to This Subpart  
29 CFR 1926.501 Duty to Have Fall Protection  
29 CFR 1926.502 Fall Protection Systems Criteria and Practices  
29 CFR 1926.503 Training Requirements  
29 CFR 1926 Subpart M, App A Determining Roof Widths  
29 CFR 1926 Subpart M, App B Guardrail Systems  
29 CFR 1926 Subpart M, App C Personal Fall Arrest Systems  
29 CFR 1926 Subpart M, App D Positioning Device Systems

#### Forms:

[Found immediately following this program]

Fall Protection Plan (w/Changes)  
Safety Net Installation Certification

## OVERVIEW

One of the most serious hazards faced by our employees is falls from heights. Our Fall Protection Program has been developed to prevent injury from falls of six (6) feet or more from a walking/working surface to a lower level, to prevent objects falling from above and striking persons below, and to prevent job site persons from falling into holes.

Within the context of this program, the term “fall hazard” does not refer to tripping and falling which is addressed in our general safety & health program, nor does it apply to falling off a ladder or scaffold. Scaffold and ladder safety is addressed within its own program.

A copy of our Fall Protection **Program** can be found readily accessible to our employees on appropriate job sites.

A copy of our Fall Protection **Plan** will be found on every applicable job site.

On all job sites where fall hazards exist, there will be at least one competent person who has the training and ability to identify fall hazards and the authority to ensure that proper fall protection systems are properly implemented.

The following areas of concern are addressed by this Program:

- a. the need to know where fall protection is required.
- b. selection of fall protection systems which are appropriate for given situations.
- c. construction and installation of safety systems.
- d. supervision of employees.
- e. implementation of safe work procedures.
- f. training in selection, use, and maintenance of fall protection systems.

Our Fall Protection Program may be reviewed at any time by our employees. Should a question arise concerning this Program, personnel are encouraged to consult with their supervisor or our Fall Protection Program Administrator.

## DUTIES OF THE PROGRAM ADMINISTRATOR

The Fall Protection Program Administrator's duties include:

- a. training of personnel.
- b. maintenance of training records.
- c. random, unannounced job site inspections to assure compliance with both OSHA standards and company safety policies.

- d. resolution of specific problems that may present themselves regarding a particular job site situation.
- e. designating a competent (by training or experience) person at each applicable job site who will ensure:
  - 1. a copy of our fall protection program/plan is readily accessible on appropriate job sites.
  - 2. subcontractors with whom we work are appropriately trained in fall protection.
  - 3. a written certification record has been prepared documenting that employees who have potential exposure to fall hazards at the job site have received the required training in protection.
  - 4. the fall protection system(s) utilized at the job site are appropriate for the hazard(s) present.
  - 5. that, before any work is initiated, the walking/working surfaces at the job site are capable of supporting both our personnel and equipment.

The Fall Protection Program Administrator will be familiar with all applicable standards and will keep abreast of developments in the field of fall protection.

### **PRE-PROJECT PLANNING**

Fall protection requires a joint effort by our personnel and the specialty subcontractors who may be working with us to identify work situations in which fall hazards exist, determine the most appropriate fall protection system to be utilized, and to ensure that all persons understand the proper methods of utilizing the selected fall protection systems. A pre-construction survey by a competent person will often provide the information needed to make these determinations.

Fall protection system requirements may change during a project and the competent person on site will ensure that fall protection is maintained at all times. Care will be taken to assure that load limits are not exceeded on walking/working surfaces and attachment points and hardware is capable of withstanding (with the appropriate safety factor) the potential forces that may be generated during an actual fall incident.

Fall protection hardware and equipment owned, rented, or leased will be NIOSH/ANSI approved and it is assumed that the manufacturer's technical specifications and capabilities are accurate.

From the very inception of a potential project (pre-bid) to completion, fall protection needs and costs will be factored in.

## DEFINITIONS

There are a number of terms and phrases, not common in everyday life, which must be understood to grasp the thrust of this Program. For those employees directly involved with this Program or affected by it, there are specific requirements and procedures which would be meaningless without an understanding of the "language" of our Fall Protection Program. Words used within the definitions which are themselves defined are printed in bold italic.

**ANCHORAGE:** a secure point of attachment for *lifelines*, *lanyards* or *deceleration devices*.

**BODY HARNESS:** straps which may be secured about the employee in a manner that will distribute the fall arrest over at least the thighs, pelvis, waist, chest, and shoulders with means for attaching it to other components of a *personal fall arrest system*.

**BUCKLE:** any device for holding the *body harness* closed around the employee's body.

**CARABINER:** an oval metal ring with a snap link used to fasten a rope to the piton [a spike (attachment) with an eye to which a rope can be secured.]

**CFR:** Code of Federal Regulations.

**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.

**CONNECTOR:** a device which is used to couple (connect) parts of the *personal fall arrest system* and *positioning device systems* together. It may be an independent component of the system, such as a *carabiner*, or it may be an integral component of part of the system (such as a *buckle* or dee-ring sewn into a self-retracting *lanyard*).

**CONTROLLED ACCESS ZONE (CAZ):** an area in which certain work (e.g., *overhand bricklaying*) may take place without the use of *guardrail systems*, *personal fall arrest systems*, or safety net systems; access to the zone is controlled.

**DANGEROUS EQUIPMENT:** equipment (such as pickling or galvanizing tanks, degreasing units, machinery, electrical equipment, and other units) which, as a result of form or function, may be hazardous to employees who fall onto or into such equipment.

**DECELERATION DEVICE:** any mechanism, such as a *rope grab*, rip-stitch *lanyard*, specially-woven *lanyard*, tearing or deforming *lanyards*, automatic self-retracting *lifelines/lanyards*, etc., which serves to dissipate

a substantial amount of energy during a fall arrest, or otherwise limit the energy imposed on an employee during fall arrest.

**DECELERATION DISTANCE:** the additional vertical distance a falling employee travels from the point at which the **deceleration device** begins to operate before stopping, excluding **lifeline** elongation and **free fall distance**. It is measured as the distance between the location of an employee's **body harness** attachment point at the moment of activation (at the onset of fall arrest forces) of the **deceleration device** during a fall, and the location of that attachment point after the employee comes to a full stop.

**EQUIVALENT:** alternative designs, materials, or methods to protect against a hazard which 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.

**FAILURE:** load refusal, breakage, or separation of component parts. Load refusal is the point where the ultimate strength is exceeded.

**FREE FALL:** the act of falling before a **personal fall arrest system** begins to apply force to arrest the fall.

**FREE FALL DISTANCE:** the vertical displacement of the fall arrest attachment point on the employee's **body harness** between onset of the fall and just before the system begins to apply force to arrest the fall. This distance excludes **deceleration distance**, and **lifeline/lanyard** elongation, but includes any **deceleration device** slide distance of **self-retracting lifeline/lanyard** extension before they operate and fall arrest forces occur.

**GUARDRAIL SYSTEM:** a barrier erected to prevent employees from falling to **lower levels**.

**HOLE:** a gap or void 2 inches (5.1 cm) or more in its least dimension, in a floor, **roof**, or other **walking/working surface**.

**INFEASIBLE:** it is impossible to perform the construction work using a conventional fall protection system (i.e., **guardrail system**, safety net system, or **personal fall arrest system**) or that it is technologically impossible to use any one of these systems to provide fall protection.

**LANYARD:** a flexible line of rope, wire rope, or strap which generally has a **connector** at each end for connecting the **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. A leading edge is considered to be an "unprotected side and edge" during periods when it is not actively and continuously under construction.

**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 which serves as a means for connecting other components of **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).

**LOWER-LEVELS:** those areas or surfaces to which an employee can fall. Such areas or surfaces include, but are not limited to, ground levels, floors, platforms, ramps, runways, excavations, pits, tanks, material, water, equipment, structures, or portions thereof.

**MECHANICAL EQUIPMENT:** all motor or human propelled wheeled equipment used for **roofing work**, except wheelbarrows and mop carts.

**OPENING:** a gap or void 30 inches or more high and 18 inches or more wide, in a wall or partition through which employees can fall to a **lower level**.

**OVERHAND BRICKLAYING AND RELATED WORK:** 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. Related work 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 in a fall from a working level. It consists of an **anchorage**, **connectors**, a **body harness** and may include a **lanyard**, **deceleration device**, **lifeline**, or suitable combination of these. **The use of body belts 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 a wall, and work with both hands free while leaning.

**QUALIFIED PERSON:** one who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated his ability to solve or resolve problems relating to the subject matter, the work, or the project.

**ROPE GRAB:** a **deceleration device** which travels on a **lifeline** and automatically, by friction, engages the **lifeline** and locks so as to arrest the fall of an employee. A rope grab usually employs the principle of inertial locking, cam/level locking, or both.

**ROOF:** the exterior surface on the top of a building. This does not include floors or formworks which, because a building has not been completed, temporarily become the top surface of a building.



**ROOFING WORK:** the hoisting, storage, application, and removal of roofing materials and equipment, including related insulation, sheet metal, and vapor barrier work, but not including the construction of the **roof** deck.

**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 slight tension during normal employee movement, and which, after onset of a fall, automatically locks the drum and arrests the fall.

**SNAPHOOK:** a **connector** comprised of a hook-shaped member with a normally closed keeper of similar arrangement which may be opened to permit the hook to receive an object and, when released, automatically closes to retain the object. Snaphooks are generally one of two types:

- (1) the locking type with a self-closing, self-locking keeper which remains closed and locked until unlocked and pressed open for connection or disconnection; or
- (2) the non-locking type with a self-closing keeper which remains closed until pressed open for connection or disconnection. The use of a non-locking snaphook as part of **personal fall arrest systems** and **positioning device systems** is prohibited.

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

**TOEBOARDS:** a low protective barrier that will prevent the fall of material and equipment to **lower levels** and provide protection from falls for personnel.

**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 high.

**WALKING/WORKING SURFACE:** any surface, whether horizontal or vertical, on which an employee walks or works, including, but not limited to, floors, roofs, ramps, bridges, runway, formwork and concrete reinforcing steel; not including ladders, vehicles, or trailers on which employees must be located in order to perform their job 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 a guardrail, **body belt**, or safety net systems to protect employees in the area.

**WORK AREA:** that portion of a **walking/working surface** where job duties are being performed.

### **WHERE FALL PROTECTION IS REQUIRED**

The "key" distance is six (6) feet. All employees must be aware that if there is a possibility of falling six (6) feet or more at least one (1) fall protection system will be implemented. Further, protection from being struck by falling objects from above will be provided on all job sites.

All areas identified by OSHA are included because, over time, most of these areas will present themselves on job sites even if the exposures are the result of another contractor's work.

Below listed are specific situations where fall protection systems will be utilized.

#### **UNPROTECTED SIDES AND EDGES:**

Each employee on a walking/working surface (horizontal and vertical surface) with an unprotected side or edge which is 6 feet or more above a lower level shall be protected from falling by the use of guardrail systems, safety net systems, or personal fall arrest systems.

#### **LEADING EDGES:**

Each employee who is constructing a leading edge 6 feet or more above lower levels shall be protected from falling by guardrail systems, safety net systems, or personal fall arrest systems.

#### **HOIST AREAS:**

Each employee in a hoist area shall be protected from falling 6 feet or more to lower levels by guardrail systems or personal fall arrest systems.

If a guardrail system is utilized in a hoist area and portions of the system are removed to facilitate the hoisting operation, and an employee must lean through the access opening or out over the edge of the access opening, that employee must be protected by a fall arrest system.

#### **HOLES:**

Each employee on walking/working surfaces shall be protected from falling through holes (including skylights) more than 6 feet above lower levels by personal fall arrest systems, covers, or guardrail systems.

- a. Each employee on a walking/working surface shall be protected from tripping in or stepping into or through holes (including skylights) **(regardless of height)** by covers.
- b. Each employee on a walking/working surface shall be protected from objects falling through holes **(regardless of height)** by covers.

## **FORMWORK and REINFORCING STEEL:**

Each employee on the face of formwork or reinforcing steel shall be protected from falling 6 feet or more to lower levels by personal fall arrest systems, safety net systems, or positioning device systems.

## **RAMPS, RUNWAYS, and OTHER WALKWAYS:**

Each employee on ramps, runways, and other walkways shall be protected from falling 6 feet or more to lower levels by guardrail systems.

## **EXCAVATIONS:**

Each employee at the edge of an excavation 6 feet or more in depth shall be protected from falling by guardrail systems, fences, or barricades when the excavations are not readily seen because of plant growth or other visual barriers.

Further, each employee at the edge of a well, pit, shaft, and similar excavation 6 feet or more in depth shall be protected from falling by guardrail systems, fences, barricades, or covers.

## **DANGEROUS EQUIPMENT:**

Each employee **less than 6 feet** above dangerous equipment shall be protected from falling into or onto the dangerous equipment by guardrail systems or by equipment guards.

Each employee **6 feet or more** above dangerous equipment shall be protected from fall hazards by guardrail systems, personal fall arrest systems, or safety net systems.

## **OVERHAND BRICKLAYING AND RELATED WORK:**

Each employee performing overhand bricklaying and related work 6 feet or more above lower levels shall be protected from falling by guardrail systems, safety net systems, personal fall arrest systems, or shall work in a controlled access zone.

Each employee performing overhand bricklaying and related work who is required to reach more than 10 inches below the level of the walking/working surface on which he/she is working shall be protected from falling by a guardrail system, safety net system, or personal fall arrest system.

## **ROOFING WORK ON LOW-SLOPED ROOFS:**

Each employee engaged in roofing activities on low-sloped roofs with unprotected sides and edges 6 feet or more above lower levels shall be protected from falling by guardrail systems, safety net systems, personal fall arrest systems or a combination of a warning line system and a safety net system or a warning line system and a safety monitoring system.

NOTE: On roofs 50 feet or less in width, the use of a safety monitoring system alone (without the warning line system) is permitted.

## **STEEP ROOFS:**

Each employee on a steep roof with unprotected sides and edges 6 feet or more above lower levels shall be protected from falling by guardrail systems with toeboards, safety net systems, or personal fall arrest systems.

## **PRECAST CONCRETE ERECTION:**

Each employee, engaged in the erection of precast concrete members (including, but not limited to the erection of wall panels, columns, beams, and floor and roof "tee") and related operations such as grouting of precast concrete members, who is 6 feet or more above lower levels shall be protected from falling by guardrail systems, safety net systems, or personal fall arrest systems.

## **RESIDENTIAL CONSTRUCTION:**

Each employee engaged in residential construction activities 6 feet or more above lower levels shall be protected by guardrail systems, safety net systems, or personal fall arrest systems.

## **WALL OPENINGS:**

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 or more above lower levels and the inside bottom edge of the wall opening is less than 39 inches above the walking/working surface, shall be protected from falling by the use of a guardrail system, a safety net system, or a personal fall arrest system.

## **WALKING/WORKING SURFACES NOT OTHERWISE ADDRESSED:**

Each employee on a walking/working surface 6 feet or more above a lower level that is not addressed in the preceding fourteen (14) categories shall be protected from falling by a guardrail system, a safety net system, or a personal fall arrest system except when:

- a. working on scaffolds fall protection requirements are covered by subpart L of 29 CFR 1926.
- b. working on certain cranes and derricks fall protection requirements are covered by subpart N of 29 CFR 1926.
- c. performing steel erection work in buildings fall protection requirements are covered by subpart R of 29 CFR 1926.
- d. working on certain types of equipment used in tunneling operations fall protection requirements are covered by subpart S of 29 CFR 1926.
- e. engaged in the construction of electric transmission and distribution lines, equipment fall protection requirements are covered by subpart V of 29 CFR 1926.

- f. working on stairways and ladders fall protection requirements are covered by subpart X of 29 CFR 1926.

NOTE: On multi-employer work sites, employees of all contractors and subcontractors must understand the fall protection hazards that exist and be aware of the various methods of fall protection even if they are NOT directly exposed to fall hazards in their particular work area. For example, a contractor may have a controlled access zone in place and all persons on the job site, regardless of their employer, must understand the importance of remaining outside that CAZ.

### **PRE-CONSTRUCTION SURVEY**

Prior to the initiation of any construction project, the job site will be surveyed by a competent/qualified person to determine:

- a. if fall protection systems will be required.
- b. if fall hazards exist, the types of conventional fall protection systems to be utilized.
  - 1. particular attention will be given to anchorage points, location of warning lines, etc..
- c. rescue procedures to be used if a fall actually occurs.
- d. the load-carrying capabilities of the walking/working surface.
- e. assuring that all personnel utilizing a fall protection system have training in that system.

This survey may be made without the use of fall protection because no work will be accomplished during this survey and installing fall protection systems would create a greater hazard.

If it is determined that certain areas within the overall worksite have fall hazards that cannot be addressed with conventional fall protection systems (those areas being limited to leading edge work, residential construction work, and precast concrete work), **then** a Fall Protection Plan must be prepared to specifically protect employees from these hazards.

### **FALL PROTECTION SYSTEMS**

#### **GUARDRAIL SYSTEM:**

A guardrail system is a physical barrier erected to prevent employees from falling to lower levels.

Specific guardrail systems criteria are found in 29 CFR 1926.502(b) and we will erect guardrail systems that comply with the cited criteria.

The main advantage of a guardrail system is that it is a “passive” system which, once installed, requires no employee involvement in its function. A guardrail will stop an employee who inadvertently walks into it.

A guardrail system is an acceptable fall protection system in each of the fifteen (15) OSHA designated work areas save one (1) - “Formwork and Reinforcing Steel.”

## **GUARDRAIL SYSTEMS AT HOISTING AREAS:**

When guardrail systems are used at hoisting areas, a chain, gate or removable guardrail section shall be placed across the access opening between the guardrail sections when hoisting operations are not taking place.

NOTE: If a portion of the guardrail system is removed at a hoisting area to facilitate the hoisting operations **and** an employee must lean out over the opening, then that employee must be protected by a personal fall arrest system. In this instance it is important to remember that the personal fall arrest system may not be attached to the guardrail system.

## **GUARDRAIL SYSTEMS AT HOLES:**

Guardrail systems used at holes shall be erected on all unprotected sides of the edges of the hole.

When the hole is to be used for the passage of materials, the hole shall not have more than two sides provided with removable guardrail sections to allow the passage of materials. When the hole is not in use, it shall be closed over with a cover **or** protected with a guardrail system on all unprotected sides or edges.

NOTE: Guardrails need not be erected around holes while employees are working at the hole, passing materials through the hole, etc.. When work is completed around the hole, the hole must be protected by guardrails on all sides of the hole or by covers.

Guardrail systems used around holes which are used as points of access (such as ladderways) will be provided with a gate or be offset so that a person cannot walk directly into the hole.

## **GUARDRAIL SYSTEMS ON RAMPS AND RUNWAYS:**

Guardrail systems used on ramps and runways shall be erected along each unprotected side or edge. Ramps, runways, and other walkways on which employees need protection from falling 6 feet or more to a lower level must be protected by a guardrail system and only a guardrail system.

## **PERSONAL FALL ARREST SYSTEM:**

A personal fall arrest system is, as the name implies, a means of safety decelerating a falling body before a lower level is hit. The three (3) main components of a personal fall arrest system are the:

- a. anchorage point.
- b. lanyard.
- c. body harness.

**Note:** Body belts will not be used in a personal fall arrest system.

Specific personal fall arrest systems criteria are found in 29 CFR 1926.502(d) and we will use personal fall arrest systems that comply with the cited criteria.

The tie-off attachment point must be at or above the connection point on the harness to prevent additional free fall distance.

As are guardrails, personal fall arrest systems are “passive” and require no employee involvement once they are properly rigged.

For all practical purposes, dee-rings and locking type snaphooks shall have a minimum tensile strength of 5,000 pounds and lanyards and vertical lifelines shall have a minimum breaking strength of 5,000 pounds.

Anchorage must be capable of supporting 5,000 per employee.

Anchorage used in personal fall arrest systems must be independent of any anchorage being used to support or suspend platforms.

NOTE: Knots in a rope lanyard or lifeline can reduce its strength by as much as 50% and having a lanyard go over or around sharp edges can completely destroy its effectiveness.

With the exception that harnesses and components may be used as positioning device systems, personal fall arrest system components may not be used for purposes other than that for which they were designed.

Positioning device system components shall be inspected prior to each use for wear, damage, and other deterioration and defective components shall be removed from service.

Personnel should be aware that should a fall occur and self rescue is not possible, equipment and personnel will be available for rescue.

Should a personal fall arrest system actually be used to stop a fall, it will be removed from service and not used again until inspected and determined to be undamaged and suitable for reuse by a competent person.

### **SAFETY NET SYSTEM:**

Specific safety net systems criteria are found in 29 CFR 1926.502(c).

Safety nets will be installed as close as practicable under the walking/working surface on which employees are working and in no case shall they be more than 30 feet below such level.

Safety nets shall be inspected at least once per week and after an occurrence which could affect the integrity of the system. Defective nets will not be used.

All items that have fallen in a safety net will be removed as soon as possible and at least before the next work shift.

Safety nets will be drop-tested at the job site after initial installation and before being used as a fall protection system; whenever relocated; after major repair; and at six-month intervals if left in one place.

NOTE: If it is demonstrably unreasonable to perform a drop-test, a designated competent person shall prepare a certification in accordance with 29 CFR 1926.502(c)(4)ii.

## **WARNING LINE SYSTEM:**

A warning line system is 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.

A warning line system is to be used only during roofing work on low-sloped roofs over 50-feet in width with unprotected sides and edges 6-feet or more above lower levels (on a simple rectangular roof, width is the lesser of the two primary overall dimensions. This is also the case with roofs which are sloped toward or away from the roof center). Most importantly, warning line systems must be used in conjunction with either a guardrail system; a safety net system; a personal fall arrest system; or a safety monitoring system.

NOTE: In the above scenario, either a guardrail system, a safety net system, or a personal fall arrest system alone provides adequate fall protection.

Specific warning line systems criteria are found in 29 CFR 1926.502(f) and we will use warning line systems that comply with the cited criteria.

As a general rule, warning line systems will be used in conjunction with a safety monitoring system.

A warning line, made of ropes, wires, chains and supporting stanchions will be flagged at no more than 6-feet intervals with high-visibility material. As the name implies, this line will only “warn” employees that they are approaching an unprotected side or edge. The horizontal resisting force of a warning line is 16 pounds versus 200 pounds for a guardrail system.

No personnel are allowed in the area between a roof edge and a warning line unless they are performing roofing work in that area.

Mechanical equipment on roofs shall only be used in areas that are protected by either a warning line system, a guardrail system, or a personal fall arrest system.

The warning line shall be erected around all sides of the roof work area not less than 6-feet from the roof edge unless mechanical equipment is being used. In that case, the warning line shall be erected not less than 6-feet from the roof edge which parallels the mechanical operation and not less than 10 feet from the roof edge which is perpendicular to the direction of the mechanical operation.

Points of access, material handling areas, storage areas, and hoisting areas shall be connected to the work area by an access path formed by two warning lines. When the aforementioned areas are not in use, the



warning line will be adjusted to completely seal off the work area so that a person cannot inadvertently enter the area.

### **SAFETY MONITORING SYSTEM:**

Specific safety monitoring systems criteria are found in 29 CFR 1926.502(h) and we will use safety monitoring systems that comply with the cited criteria.

A safety monitoring system used in conjunction with a warning line system is not considered a “passive system” because it takes active employee involvement and, as such, both the Safety Monitor and the employee(s) being monitored must be alert for fall hazards.

A competent person will perform the duties of Safety Monitor. These duties include:

- a. recognizing fall hazards,
- b. warning the employee when it appears the employee is unaware of a fall hazard or is acting in an unsafe manner,
- c. remaining on the same walking/working surface and within visual sighting of the employee being monitored, and
- d. remaining close enough to communicate orally with the employee being monitored.

The Safety Monitor shall have no other responsibilities which could take the monitor’s attention from the monitoring function.

Only the employee engaged in roofing work on low-sloped roofs or an employee covered by a fall protection plan [29 CFR 1926.502(k)] is allowed in the area being protected by the Safety Monitor.

When a safety monitoring system is being used, mechanical equipment will not be used or stored in that controlled zone.

Of course, the employee being monitored is required to comply promptly with the fall hazard warnings from the Safety Monitor.

### **POSITIONING DEVICE SYSTEM:**

A positioning device system consists of a body belt or body harness system rigged to allow an employee to be supported on an elevated vertical surface, such as a wall, and work with both hands free while leaning. It is used during formwork and steel reinforcing.

Specific positioning device systems criteria are found in 29 CFR 1926.502(e) and we will use positioning device systems that comply with the cited criteria.

Positioning device systems must be inspected prior to each use for wear, damage, and other deterioration. Defective components must be removed from service. Components of positioning device systems must never be

used for purposes other than that for which they were designed -- specifically fall protection and/or positioning on a vertical surface.

### **CONTROLLED ACCESS ZONE (CAZ):**

A controlled access zone is an area in which certain work activity may take place without the use of guardrail systems, personal fall arrest systems, or safety net systems and access to the zone is controlled.

Specific controlled access zone criteria are found in 29 CFR 1926.502(g). A controlled access zone will be created when appropriate.

Controlled access zones will only be used as part of a fall protection plan (reference 29 CFR 1926.502(k) and *Fall Protection Plan*, below) or when an employee is performing overhand bricklaying and related work.

Persons performing overhand bricklaying or related work that requires reaching more than 10 inches below the walking/working surface may not be afforded fall protection by working in a controlled access zone.

Controlled access zones are work areas that have limited access to only authorized personnel by means of control lines or other means that restrict access.

### **COVERS:**

Covers can prevent an employee from stepping into a hole, tripping over a hole, falling through a hole, or being injured by objects falling through a hole.

**Note: When work is completed around a hole, the hole must be protected by guardrails on all sides of the hole or by covers.**

Specific cover criteria are found in 29 CFR 1926.502(i) and we will use covers that comply with the cited criteria.

Covers must be capable of supporting, without failure, twice the weight of the employees, equipment, and/or materials that may be imposed upon them.

Covers, when used, must be secured to prevent accidental displacement by wind, equipment, or employees.

All covers must be color coded or marked with the word: "HOLE" or "COVER" to identify the hazard.

NOTE: The above does not apply to cast iron manhole covers or roadway steel grates.

Covers, and only covers, will be used on walking/working surfaces to protect employees from tripping or stepping into or through a hole (including skylights). This provision is **regardless of the height** of the hole above a lower surface.

Covers, and only covers, will be used to protect employees from objects falling through holes (including skylights). This provision is **regardless of the height** of the hole above a lower surface.

## **PROTECTION FROM FALLING OBJECTS:**

Specific protection from falling objects criteria are found in 29 CFR 1926.502(j) and we will use that criteria to protect our employees from falling objects.

Covers are to be used to protect employees from objects falling through holes (including skylights) from upper surfaces regardless of heights.

Toeboards, used to prevent objects from falling on employees on a lower level must be at least 3½ inches high with not more than a ¼ inch clearance between the toeboard and the walking/working surface. When tools, materials, or equipment are piled higher than the top edge of the toeboard, paneling or screening will be erected from the top of the toeboard to the appropriate mid or top rail of the guardrail system to provide adequate protection to employees below.

## **FALL PROTECTION PLAN**

The foregoing Fall Protection Program is not a Fall Protection Plan per se. However, implementing the preceding guidelines for conventional fall protection systems coupled with certified formal and hands-on training will provide appropriate fall protection for our employees.

There may be occasions where conventional fall protection systems just will not work. OSHA has determined that these occasions will be limited to:

a. leading edge work.

NOTE: Leading edge work involves construction which moves the location of the edge forward (backward). Working at the edge of a walking/working surface (such as a roof) is not leading edge work - it is (roofing) work at an unprotected side or edge.

b. precast concrete construction work.

c. residential construction work.

The criteria for determination that conventional fall protection systems are infeasible are: 1) it is impossible to perform construction work using conventional fall protection systems, or 2) it is technologically impossible to use conventional fall protection systems. Inconvenience and cost are not acceptable considerations.

Specific Fall Protection Plan criteria are found in 29 CFR 1926.502(k) and, if necessary, a Fall Protection Plan will be completed that complies with the cited criteria.

Fall Protection Plans must be prepared by a qualified person and developed specifically for the site where the work is to be performed. All changes to the Plan must be approved by a qualified person.

NOTE: A qualified person is one who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated his ability to solve or resolve

problems relating to the subject matter, the work, or the project. OSHA has indicated that an employer may use the services of more than one qualified person to comply with these requirements as long as (1) those persons, collectively, are qualified to prepare the fall protection plan and approve any changes; and (2) the resulting plan complies with the applicable requirements of the standards.

Fall Protection Plans must be maintained at the job site and be up to date.

The implementation of the fall protection plan must be under the supervision of a competent person.

A Fall Protection Plan must document reasons why conventional fall protection systems are infeasible and/or offer a detailed explanation why conventional fall protection systems create a greater hazard in their use than non-use.

All measures taken to reduce or eliminate fall hazards (in lieu of conventional fall protection systems) such as the use of ladders or scaffolds shall be discussed.

In each area where a conventional fall protection system cannot be used, a safety monitoring system must be utilized that conforms with the requirements of 29 CFR 1926(h).

Either the names of the employees or some other means of employee identification (such as armbands or color coded hard hats) will be used to control access to the controlled access zone.

In the event an employee falls or a serious incident occurs, the circumstances will be investigated and changes to the Fall Protection Plan will be made to prevent a reoccurrence of a similar incident.

After completion of all work and after all fall protection systems have been removed, a competent/qualified person may survey the work areas for inspection purposes without the use of fall protection systems. Care will be taken to assure solid footing and focused attention to potential fall hazards.

There are only two (2) instances where employees may be exposed to fall hazards without the use of fall protection systems. Those times are: pre-construction activities (inspecting, investigating, or assessing the workplace) and post-construction activities. During these times, no actual construction work may take place.

## **ACCIDENTS AND NEAR ACCIDENTS**

Accidents and near accidents involving fall hazards will be investigated by the Fall Protection Program Administrator to determine the cause of the incident and a method of preventing a reoccurrence. Questions to be considered are:

- a. Was the fall protection system selected appropriate for the hazard?
- b. Was the system properly installed?

- c. Was the person involved in the accident following proper procedures?
- d. Were there contributing factors such as ice, wind, debris, etc.?
- e. Is retraining or a change of the Fall Protection Plan required?

### **TRAINING/RETRAINING**

Training, which must be certified, will include the following topics:

- a. the nature of fall hazards in the work area.
- b. the correct procedures for erecting, maintaining, disassembling, and inspecting the fall protection to be used.
- c. the use and operation of guardrail systems; personal fall arrest systems; safety net systems' warning line systems; safety monitoring systems' controlled access zones; and other protection to be used.
- d. the role of the Safety Monitor and the role of the employee when a safety monitoring system is used.
- e. the limitations on the use of mechanical equipment during the performance of roofing work on low-sloped roofs.
- f. the correct procedures for handling and storage of equipment and materials and the erection of overhead protection.
- g. the role of employees in fall protection plans.

Training will be conducted by competent person(s) using the below listed items as resource materials:

- a. this Fall Protection Program.
- b. the manufacturer's instruction manuals that come with fall protection equipment.
- c. OSHA standards pertaining to fall protection which include 29 CFR 1926.500, 501, 502, and 503.
- d. the competent person's work experiences.

Should the competent person, a supervisor, or the Program Administrator suspect that an employee lacks the skills needed for proper fall protection, that employee will be retrained.

Changes in the workplace, types of fall protection systems and equipment will also necessitate retraining.

Only the latest Training Certificate will be kept on file.

### **FALL PROTECTION AT THE JOB SITE**

A quick glance through this Fall Protection Program may leave the reader with the impression that fall protection requires an inordinate amount of attention to small details which, in practice, would render the fall protection provisions of subpart M, 29 CFR 1926 unworkable in real work situations.

The opposite is true. OSHA has gone to great lengths to make subpart M user friendly by incorporating performance-oriented criteria (as opposed to specification-oriented criteria) into their standards. Following a hazard assessment, we will select the most advantageous fall protection system that is compatible with our task needs and our protection requirements.

Lastly, while time, equipment, training, and money are devoted to fall protection systems which either physically prevent persons from falling from height, control the rate of deceleration during an actual fall, prevent objects from falling onto persons below, or warn personnel of restricted areas, we must never forget that it is important not to fall in the first place.

Accidents are more likely to occur as we become “adjusted” to working at height. Most slips, trips and falls are preventable. Proper footwear, wearing hard hats when there is a possibility of falling objects, cleaning up of debris, and paying attention to footing, hand holds, and edges is as important as the fall protection systems themselves.

## **RESIDENTIAL CONSTRUCTION**

### **Significant Changes from the Enhanced Enforcement Program (EEP)**

This Instruction **cancels** OSHA Instruction STD 03-00-001, dated June 18, 1999, the Agency's interim enforcement policy on fall protection for specified residential construction activities, and replaces it with new compliance guidance.

Employers engaged in residential construction who wish to use alternative fall protection measures **must meet the requirements in 29 CFR 1926.501(b)(13) and 1926.502(k).**

Fall protection plans used to comply with 29 CFR 1926.501(b)(13) and 1926.502(k) must be written and site-specific.

This instruction interprets "residential construction" for purposes of 29 CFR 1926.501(b)(13) to include two elements: (1) a residence requirement; and (2) a wood frame construction requirement.

### **ENFORCEMENT DATE: June 16, 2011**

Paragraph (b)(13), 29 CFR 1926.501:

Each employee engaged in residential construction activities 6 feet (1.8 m) or more above lower levels shall be protected by guardrail systems, safety net system, or personal fall arrest system unless another provision in paragraph (b) of this section provides for an alternative fall protection measure. Exception: When the employer can demonstrate that it is infeasible or creates a greater hazard to use these systems, the employer shall develop and implement a fall protection plan which meets the requirements of paragraph (k) of 1926.502.

Note: There is a presumption that it is feasible and will not create a greater hazard to implement at least one of the above-listed fall protection systems. Accordingly, the employer has the

burden of establishing that it is appropriate to implement a fall protection plan which complies with 1926.502(k) for a particular workplace situation, in lieu of implementing any of those systems.

### **1926.502(k)**

"Fall protection plan." This option is available only to employees engaged in leading edge work, precast concrete erection work, or residential construction work (See 1926.501(b)(2), (b)(12), and (b)(13)) who can demonstrate that it is infeasible or it creates a greater hazard to use conventional fall protection equipment. The fall protection plan must conform to the following provisions.

- (1) The fall protection plan shall be prepared by a qualified person and developed specifically for the site where the leading edge work, precast concrete work, or residential construction work is being performed and the plan must be maintained up to date.
- (2) Any changes to the fall protection plan shall be approved by a qualified person.
- (3) A copy of the fall protection plan with all approved changes shall be maintained at the job site.
- (4) The implementation of the fall protection plan shall be under the supervision of a competent person.
- (5) The fall protection plan shall document the reasons why the use of conventional fall protection systems (guardrail systems, personal fall arrest systems, or safety nets systems) are infeasible or why their use would create a greater hazard.
- (6) The fall protection plan shall include a written discussion of other measures that will be taken to reduce or eliminate the fall hazard for workers who cannot be provided with protection from the conventional fall protection systems. For example, the employer shall discuss the extent to which scaffolds, ladders, or vehicle mounted work platforms can be used to provide a safer working surface and thereby reduce the hazard of falling.
- (7) The fall protection plan shall identify each location where conventional fall protection methods cannot be used. These locations shall then be classified as controlled access zones and the employer must comply with the criteria in paragraph (g) of this section.
- (8) Where no other alternative measure has been implemented, the employer shall implement a safety monitoring system in conformance with 1926.502(h).
- (9) The fall protection plan must include a statement which provides the name or other method of identification for each employee who is designated to work in controlled access zones. No other employees may enter controlled access zones.
- (10) In the event an employee falls, or some other related, serious incident occurs, (e.g., a near miss) the employer shall investigate the circumstances of the fall or other incident to determine if the fall protection plan needs to be changed (e.g. new practices, procedures, or training) and shall implement those changes to prevent similar types of falls or incidents.

## MINNESOTA RULES

This program is enhanced or modified by the below copyrighted MNOSHA Rules. If there is a conflict between the federal standards and the MNOSHA Rules, the MNOSHA Rules take precedence. These Rules are printed in their entirety.

### **5207.0250 WALKING, WORKING SURFACES.**

Subpart 1. **Labeling floor or wall opening covers.** In those instances where floor or wall opening covers are used, they shall be labeled, "Floor Opening -- Do Not Remove," or "Wall Opening -- Do Not Remove" as applicable with lettering at least two inches in height.

Subp. 2. **Displacement.** Floor or wall opening covers shall be secured against accidental displacement.

Subp. 3. **Tripping and impaling hazards.** Where employees are exposed to tripping or impaling hazards caused by projecting conduit ends, reinforcing rods, pipe ends, or similar objects, these hazards shall be barricaded, guarded, or otherwise covered.

Subp. 4. **Construction stairways.** In addition to the requirements of Code of Federal Regulations, title 29, section 1926.501, semifinished permanent stairways or temporary stairways to a second floor are to be in place before supports or structure to the sixth floor are raised. Similarly, the supports or structure on multifloored buildings shall never be more than five floors ahead of stairways.

A. On steel frame buildings, stairways shall extend to the uppermost floor that has been planked or decked. Ladders for access purposes may be used only above that point.

B. A second means of egress remote from the prime means of egress shall be provided, for emergency use, when any multifloored structure reaches the 30-foot level or the fourth floor.

C. Ladders which meet the requirements of Code of Federal Regulations, title 29, section 1926.450 may be used as a second means of egress.

Subp. 5. [Repealed, 28 SR 1512]

STAT AUTH: MS s 182.655

HIST: 12 SR 634; 28 SR 1512

*Current as of 10/30/06*



# TR Concrete

## FALL PROTECTION PLAN

(Required when standard fall protection systems are not feasible)

With changes: \_\_\_\_\_  
(If no changes, enter "None")

This Fall Protection Plan is specific for the following project:

Project Name: \_\_\_\_\_

Location of Job: \_\_\_\_\_  
\_\_\_\_\_

Date Plan Prepared: \_\_\_\_\_ by: \_\_\_\_\_  
(Must be a Qualified Person)

Date Plan Modified: \_\_\_\_\_ by: \_\_\_\_\_  
(Must be a Qualified Person)

Date Plan Modified: \_\_\_\_\_ by: \_\_\_\_\_  
(Must be a Qualified Person)

Plan Approved by: \_\_\_\_\_

Plan Supervised by: \_\_\_\_\_

### POLICY STATEMENT

Our Fall Protection Program has been developed to protect our employees from the easily identifiable danger associated with working at height: falling. While the general concept of Fall Protection is straight forward, those employees to whom this Program applies must have specific training applicable to their individual jobs. It is recognized that the nature of fall hazards may vary from project to project and even change during a specific project. Training will be on-going to reflect the various existing work situations.

A copy of our Fall Protection Program can be found in the main office at:

9744 226th Ave NW  
Elk River, MN 55330

A copy of our Fall Protection Plan will be found on every applicable Job Site.

## **FALL PROTECTION SYSTEMS TO BE USED ON THIS JOB**

All employees on this job/project will be protected from fall hazards by the use of one or more conventional fall protection systems. These systems include guardrail systems; safety net systems; personal fall arrest systems; positioning device systems; warning line systems; controlled access zones; safety monitoring systems; covers; and protection from falling objects.

Further, the conventional fall protection system used in each required circumstance will be in compliance with 29 CFR 1926.502 which addresses which systems are appropriate (allowed) for specific types of work.

### **TRAINING**

All our personnel working on this job/project have received training in the our Fall Protection Program and are able to recognize fall hazards and understand procedures to minimize these hazards. Further, they have been trained, as necessary, by a competent person qualified in the following areas using both formal and hands on training:

- a. The nature of fall hazards in the work area.
- b. The procedures for erecting, maintaining, disassembling, and inspecting the fall protections to be used.
- c. The use and operation of guardrail systems; personal fall arrest systems; safety net systems' warning line systems; safety monitoring systems' controlled access zones; and other protection to be used.
- d. Their role in the safety monitoring system when this system is used.
- e. The limitations on the use of mechanical equipment during the performance of roofing work on low sloped roofs.
- f. The procedures for handling and storage of equipment and materials and the erection of overhead protection.
- g. The roll of employees in fall protection plans.

### **ENFORCEMENT**

Awareness of and respect for fall hazards, and compliance with all safety rules are of great importance. Appropriate disciplinary action will be taken should an employee disregard our safety guidelines.

## **ACCIDENT INVESTIGATION**

All accidents that result in injury to employees, regardless of their nature, will be investigated and reported. It is important that documentation of accidents take place as soon as possible so that the cause may be determined and steps may be taken to prevent a reoccurrence.

## **CHANGES TO THIS PLAN**

Changes to this plan, specifically a deviation from conventional fall protection systems, will be documented by a qualified person whose name appears on the front of this fall protection plan.

Changes will be limited to:

- a. leading edge work.

NOTE: Leading edge work involves construction which moves the location of the edge forward (backward). Working at the edge of a walking/working surface (such as a roof) is not leading edge work - it is (roofing) work at an unprotected side or edge.

- b. precast concrete construction work.
- c. residential construction work.

The criteria for determination that a conventional fall protection is infeasible is that it is impossible to perform construction work with a conventional fall protection system or it is technologically impossible to use a conventional fall protection system. Inconvenience and cost are not acceptable considerations.

Specific Fall Protection Plan criteria are found in 29 CFR 1926.502(k) and we will, if necessary, create a Fall Protection Plans that comply with the cited criteria.

A separate change will be made for each situation where conventional fall systems cannot be used.

## CHANGE TO FALL PROTECTION PLAN

CHANGE NUMBER: \_\_\_\_\_

This change to the Fall Protection Plan for the below listed project will be attached to the original Fall Protection Plan and a copy will be available at the job site.

Project Name: \_\_\_\_\_

Location of Job: \_\_\_\_\_

Date Change Prepared: \_\_\_\_\_ by: \_\_\_\_\_  
(Must be a Qualified Person)

Date Change Modified: \_\_\_\_\_ by: \_\_\_\_\_  
(Must be a Qualified Person)

Change Approved by: \_\_\_\_\_

Change Supervised by: \_\_\_\_\_

Reference the above.

Changes to this Fall Protection Plan for this specific project are required for the following reason(s):

Specific work that requires fall protection other than conventional fall protection:

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Specific work areas where the above work will take place:

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Before any non-conventional fall protections are used as part of the work plan, a controlled access zone (CAZ) shall be clearly defined by the competent person \_\_\_\_\_ as an

(Name(s) of Competent Person)

area where a recognized hazard exists. The demarcation of the CAZ will be communicated by the competent person in a recognized manner such as:

Circle one or more of the below:

- a. signs
- b. wires
- c. tapes
- d. ropes
- e. chains
- f. other: \_\_\_\_\_

All access to the CAZ will be restricted to authorized entrants. Those entrants will be identified by \_\_\_\_\_

(Color hard hats; arm bands, etc.)

and are listed below:

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The competent person will ensure the protective elements of the CAZ are implemented prior to the beginning of work.

Specific reasons why conventional fall protection is either infeasible or creates a greater hazard:

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Specific measures to be taken to reduce or eliminate fall hazards for personnel who cannot be provided conventional fall protection:

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In the above CAZ, a safety monitoring system will be implemented in conformance with 29 CFR 1926.502(h).

# TR Concrete

## SAFETY NET INSTALLATION CERTIFICATION

This is to certify that the Safety Net identified below was installed with sufficient clearance under it to prevent contact with the surface or structures below when subjected to an impact force equip to the drop test specified in 29 CFR 1926.502(c)(4)(i).

SAFETY NET MAKE: \_\_\_\_\_

SAFETY NET MODEL: \_\_\_\_\_

SAFETY NET LOCATION: \_\_\_\_\_

It was found to be unreasonable to perform the below listed drop test for the following reasons:

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Drop Test (Circle appropriate drop test to which the certification applies):

- a. After initial installation and before using drop test.
- b. After relocation drop test.
- c. After major repair drop test.
- d. After remaining in the same location for 6 months drop test.

\_\_\_\_\_  
(Competent Person)

\_\_\_\_\_  
(Date)

**TR Concrete**

**FORKLIFTS**



**TR Concrete**  
**Safety Program**  
**SECTION III**  
**FORKLIFTS**  
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**OSHA Standards:**

29 CFR 1910.178, *Powered Industrial Trucks*

## OVERVIEW

**Note: Operations where forklifts are configured to hoist and lower (by means of a winch or hook) and horizontally move a suspended load fall under the applicable requirements of our Cranes and Derricks in Construction program, below.**

This program has been developed to make our truck operators aware of the hazards associated with motorized truck use as well as to provide guidance for safe truck operations.

Persons will be authorized to operate our forklifts only after they have successfully demonstrated their understanding of proper procedures for truck inspection, use, and refueling/recharging. Operators will demonstrate their truck knowledge and abilities by passing a written test and performing designated truck maneuvers. All truck operators will be evaluated by the Forklift Program Administrator or a designated competent person.

Because of their power; weight; size; restricted visibility; and, often, high center of gravity, operation of industrial trucks takes skill and attention to detail. One moment of inattention can lead to a major mishap in an instant. Additionally, the load presents potential hazards if not properly secured, balanced, and/or properly placed on the truck.

In accordance with paragraph (b)12, 29 CFR 1910.178, Powered Industrial Trucks, the Program Administrator or other competent person will determine whether the atmosphere or location in which our industrial trucks will operate is hazardous or non-hazardous and, after further assessing our needs, will determine which types of trucks are appropriate and allowed for our specific operations.

In the unlikely event that unsafe industrial motor truck operations are observed, retraining will be given with emphasis on correcting the improper behavior. To prevent the possibility of severe injury to the operator (or a bystander), our forklifts must be operated in a professional manner and anything less will not be tolerated.

All truck operators will have ready access to this program, appropriate OSHA standards, and the truck owner/operator manuals.

## FORKLIFTS

Forklifts are designed to move items quickly, safely, and cleanly. Forklift training would also apply to numerous types of powered industrial trucks such as: tractors; platform lift trucks; motorized hand trucks; and other specialized industrial trucks powered by electric motors or internal combustion engines.

While many safety features are designed into forklifts, accidents still happen and they are generally the result of operator error.

There is a general agreement among safety professionals, as well as OSHA, that requiring training for all persons (including part-time, seasonal, and temporary employees) who operate forklifts will significantly reduce the above accident and injury rate.

## GENERAL REQUIREMENTS

All truck operators must be thoroughly familiar with the truck, itself. This includes knowing:

- a. instinctively what each and every control does.
- b. how to perform a truck safety check.
- c. the truck's limitations such as maximum load, height and width, visibility, stability, and surface requirements.
- d. the truck's stopping and turning ability and its effect on loads.

The below safety rules and guidelines to which one must adhere while operating a forklift have been established. These rules are designed to protect the operator and/or persons adjacent to truck operations.

Specifically:

1. No person shall operate one of our trucks unless authorized in writing.
  - a. Prior to authorization, the operator will have read this program, received training, passed a quiz on truck operations, and been evaluated on operational skills.
  - b. Authorization to operate one type of truck does not automatically authorize a person to operate all trucks. Different power sources, visibility restrictions, controls, and capacities may dictate, in the judgment of the Program Administrator, that a separate certification process may be required for a different type of truck. There may be instances where a new vehicle does not necessitate new training and a demonstration of proficiency. A newer model of a currently used truck may be identical to the truck the operator is qualified on as far as safety and operations are concerned. As a general rule, each **type** of truck has its own characteristics, limitations, and idiosyncrasies -- each **model** of a type of truck may or may not be unique.
2. No riders are allowed on our forklift unless:
  - a. the truck is specifically designed for such use.
  - b. the rider is authorized by the Program Administrator.

NOTE: Forklifts are generally designed to move product, supplies and equipment, not personnel.

3. The Program Administrator will revoke the authority to operate a truck if unsafe acts are observed or it is apparent that the operator has not retained the knowledge and job skills necessary to safely perform truck operations.
  - a. an operator who has lost his authorization to operate a truck will be retrained, reevaluated, and, if appropriate, re-certified.
4. At the beginning of each shift, the operator will inspect the truck using our Forklift Daily Checklist.
  - a. If deficiencies relating to safety are found, the deficiencies will be noted on the Checklist and reported to the Program Administrator or other designated person. The vehicle will not be used until safety defects are repaired.
  - b. If cosmetic damage is discovered during the daily check, it will be noted on the Checklist, however, the truck will be used. Cosmetic faults will not delay our operations.

## **HAZARDS**

The major personal safety hazards involved in truck operation include:

- a. physically hitting a person/object with the truck or load.
- b. having a load fall and hit the operator or other person.
- c. having the truck tip and crush the operator or other person.
- d. fire or explosion during refueling/recharging.

Below are rules and guidelines to control the hazards identified and reduce the likelihood of accident/injury. While some of the procedures may seem too obvious to mention or just plain common sense, remember this — serious, even fatal, accidents have occurred because for one split second an operator forgot or ignored a basic safety rule.

### **HITTING A PERSON/OBJECT**

- a. Never drive up to a person standing in front of a fixed object.
- b. When possible, stay within delineated travel lanes or aisles.
- c. Be seen and/or heard.
- d. Ensure that adequate lighting is available.
- e. Maintain a clear view of travel. If the load blocks or restricts the view, the operator will drive with the load trailing (backwards).
- f. Slow down, sound horn, and do not pass where vision is restricted.
- g. Operate the truck at speeds that will allow it and the load to be stopped in a safe, smooth, manner.

- h. Be aware of floor conditions. Remove loose objects that have found their way to the truck travel lanes. Operate the truck at slower speeds on wet or slippery floors.
- i. Of course, stunt or reckless driving is prohibited.
- j. Be aware of the height of the truck and, if equipped, its mast and load. Carelessness can damage ceiling, lights, pipes, etc..
- k. Never allow anyone to stand or pass under an elevated portion of any truck at any time.

## **FALLING LOADS**

- a. Know your load -- do not “overstack”. Because practically all loads lifted or hauled by a forklift are not secured to the truck, ensure the load is properly stacked. Cartons generally should be interlaced or banded.
- b. If lifting a load or pallet, get the forks (or other engaging means) as far under the load as possible.
- c. Travel with the load in the lowest position for stability as well as prevention of hitting objects overhead. If using forks, tilt the load backward for stabilization.
- d. Do not exceed the truck’s rated capacity or stack loads too high.
- e. Do not make “jerky” movements such as slamming the brakes or high speed turns.
- f. A load backrest extension will reduce the possibility of part of the load falling rearward.
- g. When using a fork lift, the forks may be tilted forward only for picking up or setting down a load.

## **TIPPING**

Forklifts are, by design, narrow allowing them greater access within the work setting. Unfortunately, a narrow track offers less stability. Tipping or falling off an edge (or dock) is a preventable accident by following the guidelines below. If your truck tips, keep your body and limbs within the safety of the cage. Wear a seat belt if the truck is so equipped.

- a. stay within travel lanes.
- b. if entering a trailer, ensure:
  - 1. the trailer brakes are engaged.
  - 2. the trailer is secured from movement by means of chocks and/or a locking mechanism.
  - 3. the tractor is either shut off or removed from the trailer.

4. the trailer is squared up with the dock opening and dock plates are secure.
5. the trailer floor is capable of supporting the forklift and its load.
6. the lighting within the trailer is adequate.

**Note: Falling off a dock edge because a trailer has moved is invariably a serious accident. Do not count on the tractor-trailer driver to lock his brakes or even trust that his brakes work. Physically check and ensure that the trailer into which you are taking your forklift is flush against the dock. If possible, the trailer should be actually attached to the dock, but in all cases, it should be chocked.**

- c. travel with the load in the lowest possible position and avoid sharp turns at higher speeds as well as abrupt truck movements.
- d. be aware of the surface on which you are traveling -- its traction, ability to hold weight, slope, and surface.

### **FIRE/EXPLOSION DURING REFUELING/RECHARGING**

#### **FIRE/EXPLOSION DURING REFUELING/RECHARGING:**

Refueling accidents are not common experiences, however should they occur, they would be sudden and possibly catastrophic. Follow the manufacturer's owner's manual and local fire laws.

- a. There is absolutely NO SMOKING or open flame during any portion of the refueling/recharging process.
- b. Per 29 CFR 1910.110, *Storage and handling of liquefied petroleum gases*, paragraph (f)(7), at least one approved portable fire extinguisher having a minimum rating of 8-B, C must be readily available when refueling propane.
- c. Facilities for quick drenching of the eyes and body must be readily available.

### **OTHER CONCERNS**

The program deals primarily with the personal safety of our forklift operators. However, when discussing truck operations, we would be remiss if it were not pointed out that improper truck operations could also result in physical damage to products, trucks, and/or facilities. Proper truck operation will reduce personal injury accidents, and, as an added benefit, prevent general damage.

### **OPERATOR PROTECTION**

A hazard assessment of forklift operations will be conducted by the Program Administrator. Particular attention will be given to hand, head, eye, and foot protection as well as environmental conditions such as atmospheres, heat or cold. If the truck is equipped with a seat belt, it must be worn when the truck is moving.

Keep your limbs within the running lines of the truck and keep your hands and fingers away from moving parts -- particularly the mast on a fork lift truck.

The Program Administrator will perform a hazard assessment of our truck operations and determine what, if any, personal protective equipment (PPE) requirements are appropriate. If PPE (examples: steel toed boots, leather gloves, hard hat, eye protection, etc.) is required, it must be worn.

## **FORKLIFT OPERATIONS**

In addition to safety operating practices previously identified in this manual, the following will be considered general operating procedures:

- a. fire aisles, access to stairways, and fire equipment must be kept clear.
- b. operators leaving their trucks must ensure the load is fully lowered, controls neutralized, and brakes set. On an incline, the wheels must be blocked. If the operator is 25 feet or more from the truck or does not have a clear view of the truck, the power to the truck must be shut off.
- c. a safe distance shall be maintained from the edge of ramps or platforms while on any elevated dock, platform or freight car.
- d. trucks shall not be used for opening or closing freight doors.
  1. trucks, like all items of equipment, will be used for the purpose for which they were designed.
- e. be aware that if the operator of a semi-trailer has placed the rear wheels in a far forward position, the trailer may act as a “teeter-totter” when a heavy forklift enters the trailer. When a trailer is not coupled to a tractor, fixed jacks may be necessary to support the semi-trailer during loading or unloading.
- f. be aware that the overhead guard (used as protection against falling objects) is designed to prevent injury from the impact of small packages, boxes, bagged material, etc. -- it is not necessarily designed to withstand the impact of a falling capacity load.
- g. in the event persons are lifted by a truck, a lifting platform must be securely attached to the lifting mechanism and the persons on the safety platform must have means of shutting off power to the truck.
- h. if more than one truck is operated, they must be separated by a safe distance (at least three truck lengths) and they may not pass each other in intersections, blind spots, or other dangerous locations. The right of way shall be yielded to other trucks in emergency situations.

- i. trucks traveling in the same direction shall not be passed at all.
- j. driving on grades:
  - 1. grades shall be ascended or descended slowly.
  - 2. when ascending or descending grades in excess of 10 percent, loaded trucks shall be driven with the load upgrade.
- k. motorized hand trucks must enter confined areas with the load end forward.

## **MAINTENANCE**

While the operator is responsible for checking the truck before use, actual mechanical maintenance must be performed by an authorized person.

- a. if at any time a forklift is found to be in need of repair, defective, overheating, or in any way unsafe, the truck shall be taken out of service until it has been restored to safe operating condition.
- b. forklifts should be kept reasonably clean and free of excess oil and grease.

## **DUTIES OF THE FORKLIFT ADMINISTRATOR**

The duties of the Forklift Program Administrator include:

- a. operator training and certification.
- b. hazard assessment of our truck operations.
- c. identification of truck operators who, through their performance have demonstrated a lack of retained knowledge or ability to safely operate a powered truck. These person will receive retraining.
- d. keeping abreast of developments in the materials handling field with an emphasis on safety.

Additionally, the administrator will ensure that all truck operators have ready access to 29 CFR 1910.178, Powered Industrial Trucks, this program, and the individual truck's Operator/Owner Manual.

## **TRAINING**

The Program Administrator will administer the training portion of this program.

Interactive training will be given by a competent (one with knowledge, training, and experience) person with ample opportunity to ask questions and clarify all aspects of truck operation relating to safety.

Prior to actual truck operation on the job, all truck operators will become familiar with the contents of this program as well as the operator's manual applicable to the specific powered truck they will operate. Each operator



will demonstrate an understanding of truck operations and complete a driving test which will include truck inspection, maneuvering, and fueling/charging.

The Program Administrator will ensure that all truck operators have a complete understanding of the below listed topics:

**TRUCK-RELATED TOPICS:**

- a. operating instructions, warnings, and precautions for the type of truck the operator will be authorized to operate.
- b. differences between the truck and the automobile.
- c. truck controls and instrumentation: where they are located, what they do, and how they work.
- d. engine or motor operation.
- e. steering and maneuvering.
- f. visibility (including restrictions due to loading).
- g. fork and attachment adaptation, operation, and use limitations.
- h. vehicle capacity.
- i. vehicle stability.
- j. any vehicle inspection and maintenance that the operator will be required to perform.
- k. refueling and/or charging and recharging of batteries.
- l. operating limitations.
- m. any other operating instructions, warnings, or precautions listed in the operator's manual for the types of vehicle that the employee is being trained to operate.

**WORKPLACE-RELATED TOPICS:**

- a. surface conditions where the vehicle will be operated.
- b. composition of loads to be carried and load stability.
- c. load manipulation, stacking, and unstacking.
- d. pedestrian traffic in areas where the vehicle will be operated.
- e. narrow aisles and other restricted places where the vehicle will be operated.
- f. hazardous (classified) locations where the vehicle will be operated.

- g. ramps and other sloped surfaces that could affect the vehicle's stability.
- h. closed environments and other areas where insufficient ventilation or poor vehicle maintenance could cause a buildup of carbon monoxide or diesel exhaust.
- i. other unique or potentially hazardous environmental conditions in the workplace that could affect safe operation.

New truck operators may operate powered trucks in a training capacity:

- a. when they are under the direct supervision of persons who have the knowledge, training, and experience to train and evaluate their competence.
- b. where such operation do not endanger themselves or others.

The Program Administrator will certify the training/evaluation has been accomplished per the following schedule:

<u>If the employee was hired:</u>	<u>Initial training and evaluation completed:</u>
Before December 1, 1999	By December 1, 1999.
After December 1, 1999	Before the employee is assigned to operate a forklift.

Refresher training will be given:

- a. if unsafe truck operations are observed.
- b. after an accident or near-accident.
- d. if the operator is to be assigned to drive a different type of truck.
- e. if workplace changes could affect safe operation of the truck.

### **USE OF FORKLIFTS TO SUPPORT SCAFFOLD PLATFORMS**

Per 29 CFR 1926.451(c)(2)(v), if deemed appropriate, forklifts may be used to support scaffold platforms with the following conditions:

- a. The forklift will be designed for such use as indicated either:
  - 1. in the owner's manual, or
  - 2. by a letter from the manufacturer allowing such use, or
  - 3. certification by a registered engineer that the forklift is so designed.
- b. The entire scaffold platform is securely attached to the forks.
- c. The fork lift is not moved horizontally while the platform is occupied.

- d. The platform (and machine) meet the requirements of 1926.451 for capacity, construction, access, use, and fall protection.
  - 1. if the platform is not designed by the manufacturer of the forklift, it must be designed by a qualified person.
  - 2. the forklift must be capable of supporting, without failure, its own weight and at least four times the maximum intended load.
- e. The platform for elevating personnel must not extend more than 10 inches beyond the wheelbase of the machine in use.
- f. The employees on the platform must be able to have travel and power controls at the platform level.
  - 1. this requirement is fulfilled by having the forklift operator remain with the forklift while personnel are on the platform.
- g. The use of a forklift to support a scaffold platform will be used only after a determination that the use of other equipment such as scaffolds, scissor lifts, aerial lifts and ladders is not practical.

### **MINNESOTA RULES**

This program is enhanced or modified by the below copyrighted MNOSHA Rules. If there is a conflict between the federal standards and the MNOSHA Rules, the MNOSHA Rules take precedence. These Rules are printed in their entirety.

#### **5207.0310 CARBON MONOXIDE MONITORING.**

The employer shall monitor environmental exposure of employees to carbon monoxide whenever internal combustion engines discharge engine exhaust gases indoors or unvented space heaters are operated indoors to ensure that carbon monoxide levels do not exceed those given in Code of Federal Regulations, title 29, section 1926.55, Appendix A. The air monitoring shall be done during initial operation and at least quarterly thereafter and during a period representing highest usage in areas where carbon monoxide exposure is most likely.

STAT AUTH: MS s 182.655

HIST: 12 SR 1754; 21 SR 1897

*Current as of 10/30/06*

#### **5207.0900 POWERED INDUSTRIAL TRUCK OPERATIONS.**

Subpart 1. **Restricted use.** All industrial trucks designed and constructed solely for use on solid hard level surfaces shall be restricted to such operations.

Subp. 2. **Surface condition.** All solid hard level surfaces must be free of cracks, irregularities, or holes that could upset the balance of the industrial truck.

Subp. 3. **Load positioning.** When a fork truck operator is positioning a load in an area that is not fully visible to the fork truck operator, the operator shall be assisted by a designated person who shall direct the safe placing of the load by using predetermined signals.

STAT AUTH: MS s 182.655

HIST: 12 SR 634; 21 SR 1897

*Current as of 10/30/06*

**TR Concrete**

**PERMIT-REQUIRED CONFINED SPACE PROGRAM**

**TR Concrete**  
**Safety Program**

**SECTION III**

**PERMIT-REQUIRED CONFINED SPACE**

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**OSHA Standards:**

29 CFR 1910.1046, Permit-Required Confined Spaces

29 CFR 1910.1000, Air Contaminants

    Table Z-1, Limits for Air Contaminants

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    Table Z-2, No Title

    Table Z-3, Mineral Dusts

**Forms:**

[Found immediately following this program]

Emergency Phone Numbers

Permit-Space Information & Attendant Designation

Entry Roster

Entry Permit & Pre-Entry Checklist

Pre-Entry Checklist for Confined Space Entry Using Forced Air

Ventilation for Control of Hazardous Atmosphere - Parts 1 & 2

## OVERVIEW

As a contractor, we are subject to 29 CFR 1926 standards. According to 29 CFR 1926.21(b)(6)(i), Safety Training and Education, all employees required to enter into confined or enclosed spaces shall be instructed as to the nature of the hazards involved, the necessary precautions to be taken, and in the use of protective and emergency equipment required. We are to comply with any specific regulations applying to this potentially dangerous situation. 29 CFR 1910.146, Permit-Required Confined Spaces, applies to confined space entry.

## CONFINED SPACES

Confined spaces are dangerous because of their configuration, their actual or potential atmosphere, and other hazards that may present themselves such as engulfment.

This Program is designed to:

- a. identify and evaluate permit space hazards before entry.
- b. provide a system of testing conditions before entry and monitoring conditions during entry.
- c. provide a system of preventing unauthorized entry.
- d. provide a method of eliminating or controlling hazards for safe permit-space entry operations.
- e. provide a method of ensuring at least one (1) Attendant is stationed outside the permit space for the duration of the entry operations.
- f. provide a method of coordinating and monitoring entry operations when employees of more than one employer are to be working in the permit space.
- g. provide appropriate procedures for emergency rescue.
- h. establish a written procedure for preparation, issuance, use, and cancellation of entry permits.
- i. provide a system for review and revision of our Program.
- j. provide a complete understanding of OSHA Standard 29 CFR 1910.146 for all workers affected by the provisions.

After all is said and done, the bottom line is this:

- a. A confined space is a space that:

is large enough and so configured that an employee can bodily enter and perform assigned work; and

has limited or restricted means for entry or exit. On the job site, these spaces may include: ventilation or exhaust ducts, bins and tanks, boilers, sewers, tunnels and open top spaces more than 4

feet in depth such as pits, tubs, and vessels; and  
is not designed for continuous employee occupancy.

b. A Permit-Required Confined Space is:

a confined space that contains any recognized serious safety or health hazards.

## DEFINITIONS

The Permit-Required Confined Space standard contains terms which must be understood by all those involved with entry to confined space, permit-required or not. These terms should be known to avoid miscommunication:

**ACCEPTABLE ENTRY CONDITIONS:** the conditions that must exist in a permit space to allow entry and to ensure that employees involved with a permit-required confined space entry can enter safely into and work within the space.

**ATTENDANT:** an individual stationed outside one or more permit spaces who monitors the Authorized Entrants and who performs all Attendant's duties identified and assigned in our permit-required confined space program.

**AUTHORIZED ENTRANT:** denotes an employee who is authorized to enter a permit space.

**BLANKING OR BLINDING:** the absolute closure of a pipe, line, or duct by the fastening of a solid plate (such as a spectacle blind or a skillet blind) that completely covers the bore, and is capable of withstanding the maximum pressure of the pipe, line, or duct with no leakage beyond the plate.

**DOUBLE BLOCK AND BLEED:** the closure of a line, duct, or pipe by closing and locking or tagging two in-line valves, and by opening and locking or tagging a drain or vent valve in the line between the two closed valves.

**EMERGENCY:** any occurrence (including any failure of hazard control or monitoring equipment) or event internal or external to the permit space that could endanger entrants.

**ENGULFMENT:** the surrounding and effective capture of a person by a liquid or finely divided (flowable) solid substance that can be aspirated to cause death by filling or plugging the respiratory system, or that can exert enough force on the body to cause death by strangulation, constriction, or crushing.

**ENTRY:** the action by which a person passes through an opening into a permit-required confined space. Entry includes ensuing work activities in that space and is considered to have occurred as soon as any part of the entrant's body breaks the plane of an opening into the space.



**ENTRY PERMIT (*PERMIT*):** the document that is prepared to allow and control entry into a permit space and that contains the below listed information:

- a. the permit space to be entered.
- b. the purpose of the entry.
- c. the date and authorized duration of the entry permit.
- d. the authorized entrants listed in a manner that will allow the attendant to determine, for the duration of the permit, quickly and accurately which entrants are inside the confined space.
- e. the names of personnel currently serving as attendants.
- f. the name of the individual serving as entry supervisor, with a space for the signature or initials of the entry supervisor who originally authorized entry.
- g. the hazards of the permit space to be entered.
- h. the measures used to isolate the permit space and to eliminate or control permit space hazards before entry, i.e., lockout or tagging of equipment, as well as procedures for purging, inerting, ventilating, and flushing permit spaces.
- i. the acceptable conditions.
- j. The results of initial and periodic tests accompanied by the names or initials of the testers and by an indication of when the tests were performed. Permit space conditions will be evaluated as follows:
  - 1. testing of conditions in the permit space to determine if acceptable entry conditions exist before entry is authorized to begin. If isolation of the space is not feasible because the space is large or is part of a continuous system (such as a sewer), pre-entry testing shall be performed to the extent feasible before entry is authorized. If entry is authorized, entry conditions shall be continuously monitored in the areas where Authorized Entrants are working.
  - 2. testing and/or monitoring the permit space as necessary to determine if acceptable entry conditions are being maintained during the course of entry operations.
  - 3. testing for atmospheric conditions will be conducted in this order: 1) oxygen; 2) combustible gases and vapors; and 3) toxic gases and vapors.

**ENTRY SUPERVISOR:** the person 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.

**HAZARDOUS ATMOSPHERE:** an atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue (i.e., escape unaided from a permit space), injury, or acute illness from one or more of the following causes:

- a. flammable gas, vapor, or mist in excess of 10% of its lower flammable limit.
- b. airborne combustible dust at a concentration that meets or exceeds its lower flammable limit.
- c. atmosphere oxygen concentration below 19.5% or above 23.5%.
- d. atmospheric concentration of any substance for which a dose or permissible exposure limit is published in Subpart G, *Occupational Health and Environmental Control*, or Subpart Z, *Toxic and Hazardous Substances*, (29 CFR 1910), and which could result in employee exposure in excess of its dose or permissible exposure limit.
- e. any other atmospheric condition that is immediately dangerous to life or health.

**HOT WORK PERMIT:** the written authorization to perform operations capable of providing a source of ignition, i.e., riveting, welding, cutting, burning, and heating.

**IMMEDIATELY DANGEROUS TO LIFE OR HEALTH (IDLH):** any condition that poses an immediate or delayed threat to life, causes irreversible adverse health effects, or interferes with an individual's ability to escape unaided from a permit space.

**INERTING:** The displacement of the atmosphere in a permit space by a noncombustible gas (such as nitrogen) to such an extent that the resulting atmosphere is noncombustible.

[NOTE: This procedure produces an IDLH oxygen-deficient atmosphere.]

**ISOLATION:** the process by which a permit space is removed from service and completely protected against the release of energy and material into the space by such means as: blanking or blinding; misaligning or removing sections of line, pipes, or ducts; a double block and bleed system; lockout or tagout of all sources of energy; or blocking or disconnecting all mechanical linkages.

**LFL:** lower flammable limit.

**LINE BREAKING:** the intentional opening of a pipe, line, or duct that is or has been carrying flammable, corrosive, or toxic material, an inert gas, or any fluid at a volume, pressure, or temperature capable of causing injury.

**NON-PERMIT CONFINED SPACE:** a confined space that does not contain or, with respect to atmospheric hazards, have the potential to contain any hazard capable of causing death or serious physical harm.

**OXYGEN DEFICIENT ATMOSPHERE:** an atmosphere containing less than 19.5 percent oxygen by volume.

**OXYGEN ENRICHED ATMOSPHERE:** an atmosphere containing more than 23.5 percent oxygen by volume.

**PEL:** Permissible Exposure Limit.

**PERMIT-REQUIRED CONFINED SPACE:** a confined space that has one or more of the following characteristics:

- a. contains or has a potential to contain a hazardous atmosphere.
- b. contains a material that has the potential for engulfing an entrant.
- c. has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section.
- d. contains any other recognized serious safety or health hazard.

**PERMIT SYSTEM:** our written procedure for preparing and issuing permits for entry and for returning the permit space to service following termination of entry.

**PROHIBITED CONDITION:** any conditions in a permit space that is not allowed by the permit during the period when entry is authorized.

**RESCUE SERVICE:** the personnel designated to rescue employees from permit spaces.

**RETRIEVAL SYSTEM:** the equipment (including a retrieval line, chest or full body harness, wristlets if appropriate, and a lifting device or anchor) used for non-entry rescue of persons from permit spaces.

**STRATIFIED ATMOSPHERE:** layered atmosphere.

**TESTING:** the process by which the hazards confronting entrants of a permit space are identified and evaluated. Testing includes specifying the tests to be performed in the permit space.

## JOB SITE EVALUATION

The Entry Supervisor will evaluate the job site to determine if any spaces are permit-required spaces. Should a permit-required confined space(s) be identified, all exposed employees will be informed of the location and danger by posting a sign that reads:

### **DANGER--PERMIT-REQUIRED CONFINED SPACE DO NOT ENTER**

Personnel are not allowed in the Permit-Required Confined Space except under the provisions of this Program. The above sign shall remain in place unless the space is reevaluated and re-designated a non-permit confined space. Reevaluations of confined spaces will be made if changes have occurred or employees or their representative request a reevaluation.

By the same token, non-permit confined space(s) shall be reevaluated as configurations, uses, and changes in hazards are identified, and, if necessary, re-classified as a permit-required confined space.

This program will be used for all Permit-Space Entry by our employees.

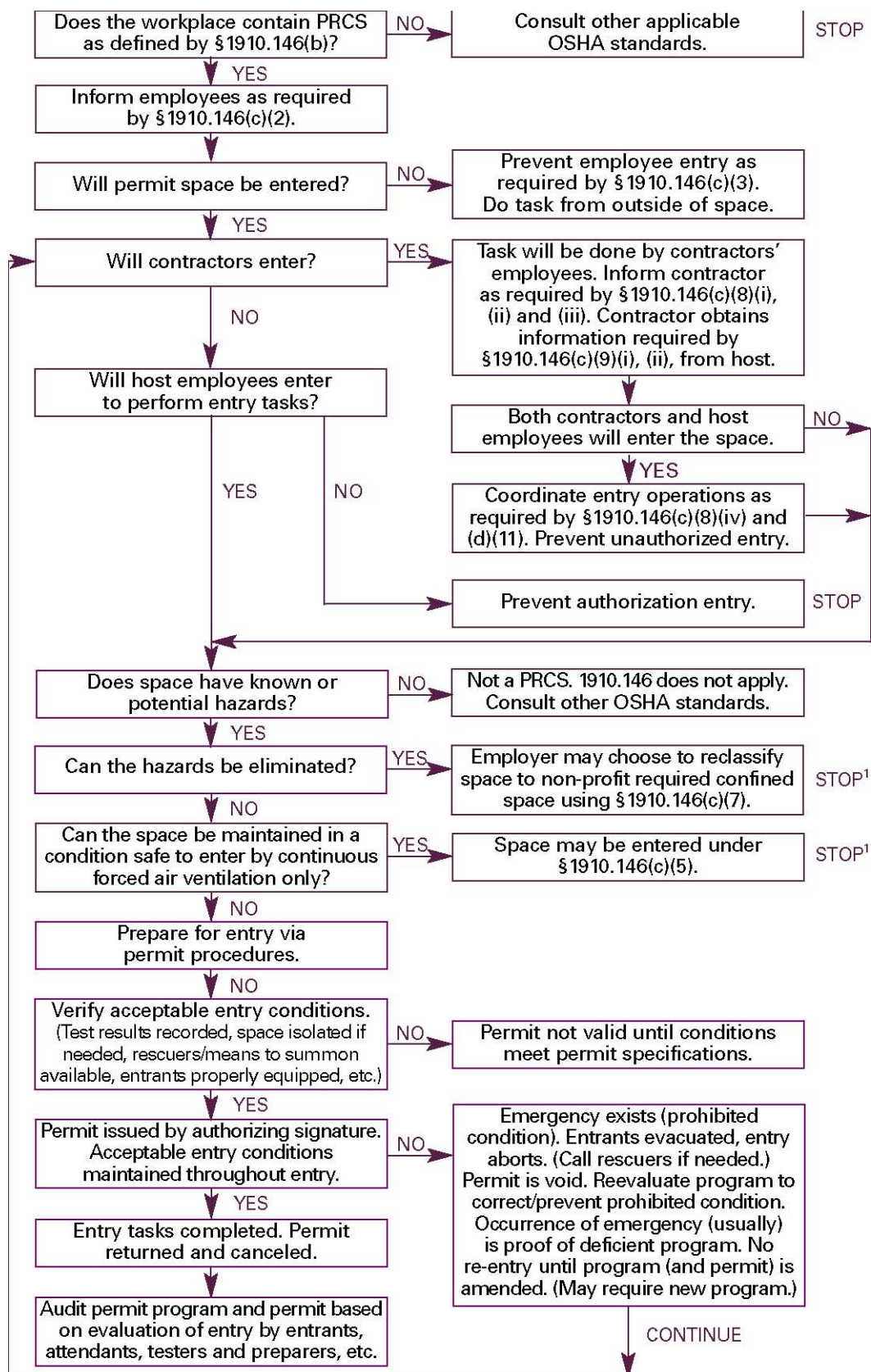
### **Procedures for Coordinating Entry Operations for Multi-Employers:**

The procedures for coordinating entry operations for multi employers so that employees of one employer do not endanger the employees of another employer are as follows:

1. All employees of every employer who are not involved with the confined space entry will be kept clear of the confined space by signage and the Entry Supervisor.
2. An Entry Supervisor and Attendant will be designated, in writing, as the Senior Entry Supervisor and Senior Attendant have authority all entrants regardless of company for whom they work.
3. All persons involved with the confined space entry will be involved in preparing a Job Task Analysis with emphasis on reasons the space is designated a [permit-required] confined space; the specific tasks each employee will be performing in the confined space; special precautions to be taken to protect employees of one employer from hazards created by employees of another; specific hazards and experiences with the confined space; and a review of rescue procedures.
4. Actual entry will be made following our entry procedures found in **pages 9 through 12 of this program.**

A decision flow chart will be used to identify permit-required confined spaces and proper procedures to be followed.

The below is from Appendix A to 29 CFR 1910.146:



As a general policy, no employee shall enter any confined space, permit-required or not, unless entry is dictated by work assignment. Entry of permit-required confined spaces will be made under the provisions of this Program.

## **STANDARD PROCEDURES FOR PERMIT-REQUIRED CONFINED SPACE ENTRY**

### **MEASURES TO PREVENT UNAUTHORIZED ENTRY**

Unauthorized entry will be prevented by:

- a. posting of the below sign:

**DANGER--PERMIT-REQUIRED CONFINED SPACE  
DO NOT ENTER**

- b. posting of Attendants outside the permit-required confined space to ensure that unauthorized personnel are not allowed in.
- c. ensuring that the Entry Supervisor is aware of his authority, under 29 CFR 1910.146(j)(5), to remove unauthorized individuals who enter or attempt to enter the permit space during entry operations.
- d. ensuring the Authorized Entrants are aware of the provisions of 29 CFR 1910.146(h)(5)(iii) which requires an immediate evacuation in the event of the detection of a prohibited condition. An unauthorized entrant is a prohibited condition.

A roster system which allows the Attendant to keep track of the Authorized Entrants within the permit space will be used. The times in and out are recorded. This system accomplishes two major safety goals and one time management goal:

- a. identifies who is actually in the permit-required space.
- b. records the time of exposure to the hazardous condition(s).
- c. documents the time required for accomplishing the assigned task.

### **ATMOSPHERIC TESTING**

**Note: Entrants, or their representatives, will have the opportunity to observe the pre-entry atmospheric testing as well as any periodic testing that may be deemed necessary for employee safety. Employees or their representative may request additional air monitoring at any time.**

Atmospheric testing is required for two (2) distinct purposes: evaluation of the hazards of the permit space and verification that acceptable conditions exist for entry into that space.

- a. **Evaluation testing.** The atmosphere of a confined space should be analyzed using equipment of sufficient sensitivity and specificity to identify and evaluate any hazardous atmospheres existing or arising so that appropriate permit entry procedures can be developed and

acceptable entry conditions stipulated for that space. Evaluation and interpretation of these data and development of the entry procedure should be reviewed by a technically qualified professional (e.g., OSHA consultation service, certified industrial hygienist, registered safety engineer, or certified safety professional) based on evaluation of all serious hazards.

- b. Verification testing.** The atmosphere of a permit space which may contain a hazardous atmosphere should be tested for residues of all contaminants identified by evaluation testing using permit specified equipment to determine that residual concentration at the time of testing and entry are within the range of acceptable entry conditions. Testing order should be oxygen, flammables, then toxics. Results of testing (i.e., actual concentration) should be recorded on the permit in the space provided adjacent to the stipulated acceptable entry condition.

*Duration of testing.* Measurement of values for each atmospheric parameter should be made for at least the minimum response time of the test instrument specified by the manufacturer.

*Testing stratified (layered) atmospheres.* When monitoring for entries involving a descent into atmospheres which may be stratified, the atmospheric envelope should be tested at a distance of approximately four (4) feet in the direction of travel and to each side. If a sampling probe is used, the entrant's rate of progress should be slowed to accommodate the sampling speed and detector response.

Periodic re-testing will verify the atmosphere remains within acceptable entry conditions.

## **PROCEDURES AND PRACTICES FOR PERMIT SPACE ENTRY**

The confined space will be evaluated to determine if, in fact, it is a Permit-Required Confined Space. The decision process will be aided by using the Permit-Required Confined Space Decision Flow Chart. The Entry Supervisor will make this determination.

Questions to be answered in the decision making process include:

- a. Does the atmosphere have an oxygen content of between 19.5% and 23.5% by volume?
- b. Does the atmosphere contain or have a potential to contain a hazardous atmosphere?
- c. Does the confined space contain a material with a potential for engulfing the entrant?

- d. Does the confined space have an internal configuration capable of entrapping or asphyxiating the entrant?
- e. Does the confined space contain any other recognized hazards?

Once it has been determined that the procedures for Permit-Required Confined Space operations will be implemented, the following actions will be taken:

- a. the space will be secured and isolated to prevent non-authorized entry. Barriers, or some other protection as dictated by circumstance, will be erected or installed to protect entrants from external hazards such as pedestrians, vehicles, falling objects, etc..
- b. the Pre-Entry Check List will be prepared.
- c. a check will be made of the records of all personnel involved with the operations to insure they have had appropriate training for the hazards involved. Material Safety Data Sheets will be made available.
- d. before entry, a comprehensive rescue plan will be written and a check of the rescue team's qualifications will be made.
- e. all feasible engineering controls will be implemented. The atmosphere will be purged, ventilated, inerted, and/or flushed to control or eliminate the hazardous atmosphere.
- f. before entry, all personnel involved will review the Pre-Entry Check List and have a completed understanding of what the operations are to accomplish, the safety measures available, and the rescue plan.
- g. all available data will be sought from our client concerning the space including its history, its hazards, their experience with the space and, if applicable, problems encountered. At the completion of the project, all information pertinent to the confined space operation will be provided to the client. Coordination of work and the assignment of one (1) Senior Attendant will be made.

Throughout the duration of an authorized entry into a permit confined space, conditions will be continually verified for acceptability.

After all measures listed above: training; testing; identification of hazards; evaluation; specifying acceptable entry conditions; controlling the atmospheric hazards and other identified hazards through engineering controls, such as forced air ventilation, isolation, and control of hazardous energy (lockout/tagout); preparing a rescue plan; barricading; equipping the appropriate employees with personal protective gear and notifying them of



all hazards involved with the entry, etc., the Entry Permit will be issued and signed by the Entry Supervisor.

The duration of the Entry Permit may not exceed the time required to complete the assigned task identified on the permit and will be terminated:

- a. when the assigned task is completed.
- b. when a condition that is not allowed under the entry permit arises in or near the permit space.

During Permit-Required Confined Space entry, employees will be provided, at no cost, the following:

- a. testing and monitoring equipment to test conditions in the permit space to determine if acceptable entry conditions exist before entry is authorized to begin and, if acceptable conditions exist, to continually monitor conditions during the entry process to ensure that acceptable conditions are maintained.
- b. ventilating equipment, if required, to maintain acceptable atmospheric conditions.
- c. communications equipment, or a method of communicating, between the entrant(s) and the Attendant.
- d. personal protective equipment should feasible engineering controls not adequately protect the entrants.
- e. adequate lighting to provide safe working conditions and enhance the ability of entrants to safely and quickly evacuate the permit-required confined space in an emergency.
- f. required equipment, such as ladders, for safe entry and exit for the Authorized Entrants.
- g. rescue equipment, such as wristlets, life lines, and harnesses to extricate entrants in the event of an emergency. The Emergency Rescue Plan will be implemented so that rescue personnel are either on call or on station with adequate medical resources.

## **RESCUE AND EMERGENCY SERVICES PLAN**

One of the most important elements of any Permit-Required Confined Space Program is the Rescue and Emergency Services Plan. **There shall be, as a matter of policy, at least one Attendant for each applicable confined space. Reference 29 CFR 1910.146(d)(7): In no circumstance will we have a single attendant monitoring more than one (1) confined space.** Regardless of the emergency, if only one Attendant is on duty, he shall not enter a Permit-Required Confined Space to attempt a rescue until replaced by a second Attendant as required by 29 CFR 1910.146 (i)(4)..

Should an employee be assigned to be a member of a Rescue Team, that employee must have had documented training in:

- a. proper use of personal protective equipment and rescue equipment.
- b. the same training as required of the entrant.
- c. a simulated rescue within at least twelve (12) months in the same type of confined space (i.e., representative space of the same general dimensions, opening size, hazard type, and accessibility.)

**At least one** member of the Rescue Team must be trained and certified in basic first aid and cardiopulmonary resuscitation (CPR) and that documentation will be on file. This person must also have training in bloodborne pathogens and exposure control.

**The attendant will ensure that only authorized rescue personnel identified on the entry permit be allowed to attempt a rescue.**

The Attendant will notify the rescue service **before** permit-required confined space entry is made to coordinate a possible rescue before the fact. The rescue service will be informed of the exact location of the project, the hazards involved, the number of entrants, the types of protective equipment worn by the entrants, etc. If needed, a practice rescue will be accomplished. If a rescue effort is required, the attendant will call the rescue service immediately by phone. **If the entry involves a possible IDLH situation, the rescue service will be on-site while work is being performed.**

Non-entry rescue will be used by retrieval systems, where possible, in lieu of actual entry unless the retrieval system would contribute to the overall risk of the entrant.

Retrieval systems to be considered include:

- a. a chest or full body harness with a retrieval line attached at the center of the entrant's back near shoulder level.
- b. wristlets if they create a lesser danger to the entrant than the above.
- c. a retrieval line attached to a mechanical lifting (pulling) device fixed to an anchorage outside the permit space.

Should a potential rescue be required to retrieve an entrant from a five (5) foot vertical drop, a mechanical retrieval device will be employed.

The Attendant will have on site the MSDS for all chemical substances to which the entrant will be exposed. The emergency responders as well as the treating hospital will be provided this information.

The rescue procedure to be used will be noted on the Entry Permit before entry.

**CONFINED SPACE ENTRY USING FORCED AIR VENTILATION  
FOR CONTROL OF HAZARDOUS ATMOSPHERE**  
(NO OTHER HAZARDS ARE IDENTIFIED)

IF it can be demonstrated that the only hazard posed by the permit space is an actual or potential hazardous atmosphere; and

IF it can be demonstrated that continuous forced air ventilation alone is sufficient to maintain that permit space safe for entry; and

IF monitoring and inspection data supports the above; and

IF the initial entry of the permit space is necessary to obtain the above data, it is carried out by the complete Permit-Required Confined Space Program; and

IF the determinations and supporting data for the above are documented and made available to each employee who enter the permit space; then

ENTRY may be made provided:

THAT any conditions making it unsafe to remove an entrance cover have been eliminated before the cover is removed; and

THAT when the entrance covers are removed, the openings shall be promptly guarded by a railing, temporary cover, or other temporary barrier preventing an accidental fall through the opening, and protecting each employee working in the space from foreign objects entering the space; and

THAT before entering the space, the internal atmosphere shall be tested, with a calibrated direct-reading instrument, for the following conditions in the order given:

- a. Oxygen content.
- b. Flammable gasses and vapors.
- c. Potential toxic air contaminants; and

THAT there be no hazardous atmosphere within the space whenever any employee is inside the space; and

THAT continuous forced air ventilation shall be used, as follows:

- a. no employee may enter the space until the forced air ventilation has eliminated any hazardous atmosphere; and
- b. the forced air ventilation will be so directed as to ventilate the immediate areas where an employee is or will be present within the space and shall continue until all employees have left the space; and
- c. the air supply for the forced air ventilation shall be from a clean source and may not increase the hazards in the space; and

THAT the atmosphere within the space shall be periodically tested as necessary to ensure that the continuous forced air ventilation is preventing the accumulation of a hazardous atmosphere; and

THAT if a hazardous atmosphere is detected during entry:

- a. each employee shall leave the space immediately; and
- b. the space will be evaluated to determine how the hazardous atmosphere developed; and
- c. measures will be implemented to protect employees from the hazardous atmosphere before any subsequent entry takes place; and

THAT all the above is verified with a written certification that contains the date, location of the space, and the signature of the person providing the certification before entry and made available to each employee entering the space.

THEN, per 29 CFR 1910.146(c)(5)(i) & (c)(5)(ii), we may use an alternate procedure for Confined Space Entry which does not require compliance with the following provisions of 29 CFR 1910.146:

- a. Permit-Required Confined Space Program.
- b. Permit System.
- c. Entry Permit.
- d. Duties of Authorized Entrants.
- e. Duties of Attendants.
- f. Duties of Entry Supervisors.
- g. Rescue and Emergency Services.

In spite of the above, this type of confined space is still a Permit-Required Confined Space. We are only talking about authorized entry here. Remember, when the forced air ventilation has been removed, the hazardous atmosphere will return.

At first glance, this may seem like a way to avoid much of the paperwork and compliance requirements. To a small degree, it is. However, the confined space which falls under these provisions of the OSHA standard do require documented evaluation, training of employees, barricading of the area, a plan for emergency contingencies, and record keeping. Adherence to all applicable safety standards and practices must be maintained.

This is an alternate set of procedures which may or may not be used. If they are used, all employees should be aware that their safety is first and foremost and that provisions of 29 CFR 1910 (5)(c)(i) & (5)(c)(ii) will be adhered to. Specifically, what we are dealing with is a space with only one

hazardous condition (atmosphere) before any action (i.e., forced air ventilation) is taken. Before entry is made the hazardous atmosphere is made acceptable through continuous forced air ventilation and the safety of the atmosphere is periodically checked to ensure that the atmosphere remains safe whenever an employee is within the space in question.

## **TRAINING**

Training will be given to all employees whose work is regulated by this plan. Training will be conducted prior to initial assignment, prior to a change in assigned duties, and, if a new hazard has been created or special deviations have occurred, training will be given to address these changes and or deviations. Training will ensure that these persons have the knowledge and skills necessary for the safe accomplishment of their assigned jobs with a confined space. Training will include the duties and responsibilities of each Permit-Required Confined Space position: Authorized Entrant, Attendant, Entry Supervisor, and Rescue Team Member.

Training will be documented and certified with the trainee's name and signature; the trainer's name and signature; and the date of the training. This certification will be available for inspection by the employees and their authorized representatives.

Training will be accomplished before any assignment involving permit-required confined space operations and when there is a change in assigned duties. Further training will be given at the introduction of a new hazard for which the employee has not been trained.

Should actual job experience indicate a lack of knowledge or proficiency, training will be re-accomplished.

Training for the various Permit-Required Confined Space job positions is noted below.

### **AUTHORIZED ENTRANTS:**

Authorized Entrants will be trained in:

- a. an awareness of the hazards that may be encountered during entry, including: information on the mode, signs or symptoms, and consequences of the exposure.
- b. proper use of monitoring equipment, ventilation equipment, communications equipment, personal protective equipment, lighting equipment, rescue equipment, entry and egress equipment, barriers to protect entrants from external hazards, and other equipment necessary for safe entry into and rescue from permit spaces.

- c. the skills necessary to communicate with the Attendant should a reason for evacuation be present.
- d. the requirement to alert the Attendant whenever:
  - 1. the entrant notices a warning sign or symptom of exposure to a dangerous situation. An example of this may be a tingling of the skin, dizziness, or a headache. Consult the Material Safety Data Sheets for information on specific chemical hazards.
  - 2. a prohibited condition is detected.
- e. exit procedures which include the need to exit the permit space as quickly as possible whenever:
  - 1. an order to evacuate is given by the attendant or the Entry Supervisor.
  - 2. the entrant recognizes any warning sign or symptom of exposure to a dangerous situation.
  - 3. a prohibited condition is recognized.
  - 4. an evacuation alarm is activated.

### **ATTENDANTS:**

Attendants will be trained in:

- a. an awareness of the hazards that may be encountered during entry, including the mode, signs or symptoms, and consequences of the exposure.
- b. an awareness of possible behavioral effects of hazard exposure in Authorized Entrants.
- c. the method used to continuously maintain an accurate count of Authorized Entrants in the permit space and the use of a roster on the entry permit to readily identify who is in the permit space.
- d. the requirement that, while an external rescue attempt may be attempted (such as the use of an external retrieval system), they may not attempt to enter a permit-required confined space to attempt a rescue under any circumstances unless:
  - 1. they are relieved by a second Attendant.
  - 2. they are thoroughly trained and certified in appropriate rescue techniques as required by the Rescue and Emergency Services Plan of this Program.

- e. communication procedures, as necessary, with Authorized Entrants to monitor entrant status and alert entrants of the need to evacuate if one of the following conditions presents itself:
  - 1. a prohibited condition is detected by the Attendant.
  - 2. the Attendant detects the behavioral effects of hazard exposure in an Authorized Entrant.
  - 3. the Attendant detects a situation outside the space that could endanger the Authorized Entrants.
  - 4. the Attendant realizes that he/she cannot perform all the required duties of this Plan.
- f. the procedures to summon rescue and other emergency services as soon as the Attendant determines that Authorized Entrants need assistance to escape from permit space hazards.
- g. taking the following steps when unauthorized persons approach or enter a permit space while entry is underway:
  - 1. warn the unauthorized persons that they must stay away from the permit space.
  - 2. advise the unauthorized persons they must exit immediately if they have entered the permit space.
  - 3. inform the Authorized Entrants and the Entry Supervisor if unauthorized persons have entered the permit space.
- h. the procedures for safe non-entry rescues as specified by our rescue procedure.
- i. an awareness that no duties may be performed which might interfere with the Attendant's primary duty to monitor and protect the Authorized Entrants. The Attendant must remain outside the Permit Space during entry operations until relieved by another Attendant.

### **ENTRY SUPERVISOR:**

The Entry Supervisor will be trained in:

- a. an awareness of the hazards that may be encountered during entry including information of the mode, signs, symptoms, and consequences of the hazard exposure.
- b. verification procedures, especially checking that the appropriate entries have been made on the permit, that all tests specified by the permit have been conducted, and that all procedures and equipment specified by the permit are in place before endorsing the permit and allowing entry to begin.

- c. termination procedures. Operations will terminate when:
  - 1. the entry operations covered by the entry permit have been completed [at this point the permit will be canceled], or
  - 2. a condition arises in or near the permit space that is not allowed.
- d. verifying that rescue services are available and that means for summoning them are operational.
- e. an awareness that unauthorized personnel who enter or attempt to enter the permit space must be removed.
- f. maintaining entry operations consistent with the terms of the entry permit. Whenever responsibility for a permit space entry operation is transferred, and at intervals dictated by the hazards and operations performed within the space, the entry operations must remain consistent with the terms of the entry permit and acceptable entry conditions must be maintained.

### **RESCUE AND EMERGENCY SERVICES:**

Rescue and Emergency Services (Teams and/or Personnel) will be trained and knowledgeable in all areas applicable to Authorized Entries as well as:

- a. the use of personal protective equipment and rescue equipment.
- b. rescue duties consistent with the permit space involved and the identified hazards or potential hazards.
- c. first aid -- at least one (1) member of a rescue team will be certified in basic first aid and CPR.

Assigned rescue personnel must complete permit space simulated rescues at least once every twelve (12) months from representative permit spaces similar to the permit space in question with regard to size, configuration, hazards involved, accessibility, and opening size.

### **REVIEW OF PROGRAM**

Canceled entry permits will be retained for at least one (1) year to facilitate the review of the permit-required confined space program. Any problems encountered during an entry operation will be noted on the appropriate permit so this program may be revised to correct deficiencies before subsequent entries are authorized.

This Permit-Required Confined Space Program will be reviewed and altered, if appropriate, at the following times:

- a. when there is reason to believe the measures taken under this program may not protect employees such as: unauthorized entry; detection of a permit space hazard not covered by the permit; occurrence of an injury or near injury; change in the use or



configuration or a permit space; or employee complaints about the effectiveness of this Program.

- b. within one year of each entry to ensure employees participating in entry operations are protected from permit space hazards.

**Note: A single review may be conducted covering all entries during a twelve (12) month period.**

**Note:: If no entry has been performed during a 12 month period, no review is necessary..**

## **RE-DESIGNATION OF CONFINED SPACES**

Confined spaces will be reevaluated and re-designated as appropriate. If all hazards, both atmospheric and non-atmospheric, are eliminated from a confined space, it shall be re-classified as a Non-Permit Confined Space. This will be accomplished provided that actual and potential hazards are eliminated.

By the same token, should a space that is classified a Non-Permit Confined Space be found to have a hazard, it shall be reclassified as a Permit-Required Confined Space.

Should a Non-Permit Confined Space, by virtue of altered configuration, use, addition, or identification of hazards become a Permit-Required Confined Space, its designation will change accordingly.

A confined space is one of the following:

- a. a non-permit confined space not falling under the Confined Space standards.
- b. a confined space whose one and only hazard is atmospheric and can be controlled by forced air ventilation. The Pre-Entry Check List provides this information.
- c. a permit-required confined space; all hazards must be identified. The Pre-Entry Check List and Entry Permit provide this information.

Controlling and eliminating hazards are two distinct concepts. Controlling an atmosphere to make it acceptable (i.e., forced air ventilation) does not eliminate the hazard. Stop the forced air ventilation, and the hazard returns.

## **SUMMARY**

All employees who, by virtue of their work assignments, fall under the provisions of this standard should have a comprehensive understanding of confined spaces and the potential dangers involved when working in them. Certain items can not be overemphasized; safety is so important. Most accidents are sudden and unexpected. It is much wiser to plan ahead for possible courses of action in response to potential danger than wait until an

accident happens and find, for example, there is no external retrieval system or method of summoning qualified medical response.

Some of the provisions of this program may, on first review, seem unnecessary and/or harsh. One item is the requirement forbidding the Attendant trained in rescue, CPR and First Aid and having the proper safety equipment on site to enter a Permit-Required Confined Space to rescue a fellow worker until he/she is replaced by another Attendant. Another item is the requirement to evacuate the Permit-Required Confined Space immediately at the first sign of a problem.

An explanation of these two items might help to clarify the importance of the whole program.

In the first case, the worker has succumbed to a hazard in a Permit-Required Confined Space. The following information is assumed: the Authorized Entrant entered the space in question after the Pre-Entry Check List and Permit were issued; he/she is aware of the dangers and trained and qualified for entry; he/she has all the required personal protective gear and it is properly worn and functioning. The worker is down! The Attendant would, at the time of the emergency, have no additional information. Therefore whatever hazard fell the first worker would certainly fall the Attendant if the Attendant were to enter the space. No one would know there are now two people to rescue. Even if they did, by the time the Emergency Response Team arrived, they would now be dealing with two people instead of one. The time lost could be critical to the survival of the Authorized Entrant and to the unwitting Attendant who, while trying to save his friend, actually put his life at greater risk.

Let's analyze the second case concerning immediate evacuation. Suppose you are in a smoke-free environment such as an office, a house, or room and someone lights a cigarette. Even a smoker can detect the odor in a few moments. This gives an indication of how fast the gases in an atmosphere mix even at room temperature (it would be faster at higher temperatures). Immediate evacuation means just that -- immediate. If an Authorized Entrant has just a few seconds to complete a work assignment in a permit-required confined space and is told by the Attendant to evacuate; a warning sign or symptom of exposure is noticed; a prohibited condition is observed; or an evacuation alarm is activated, the entrant must stop work at once and evacuate. Time is of the essence -- hazardous atmospheres may spread quickly. Other hazards (such as engulfment) can happen instantly with little or no warning. It is much easier to re-assess a situation and re-group from outside the permit-required confined space.

## MINNESOTA RULES

This program is enhanced or modified by the below copyrighted MNOSHA Rules. If there is a conflict between the federal standards and the MNOSHA Rules, the MNOSHA Rules take precedence. These Rules are printed in their entirety.

### 5207.0300 CONFINED SPACES.

Subpart 1. **Scope.** Parts 5207.0300 to 5207.0304 prescribe minimum standards for preventing worker exposure to dangerous air contamination, oxygen deficiency, or oxygen enrichment as defined under part 5207.0301, within such spaces as silos, tanks, vats, vessels, boilers, compartments, ducts, sewers, pipelines, vaults, bins, tubs, pits, and other similar spaces. Parts 5207.0300 to 5207.0304 do not apply to underwater operations conducted in diving bells or other underwater devices or to supervised hyperbaric facilities.

Subp. 2. [Repealed, 23 SR 2132]

STAT AUTH: MS s 182.655

HIST: 12 SR 1754; 23 SR 2132; 28 SR 1512

*Current as of 10/30/06*

### 5207.0301 DEFINITIONS.

Subpart 1. **Scope.** The terms used in parts 5207.0300 to 5207.0304 have the meanings given them in this part.

Subp. 2. **Confined space.** "Confined space" is defined as a space that is large enough and so configured that an employee can bodily enter and perform assigned work and has limited or restricted means for entry or exit and that could result in one or more of the following characteristics:

A. contains or has a potential to contain a dangerous air contamination, an oxygen deficiency, or an oxygen enrichment;

B. contains a material that has the potential for engulfing or asphyxiating any entrant; or

C. contains any other recognized serious safety or health hazard.

Subp. 3. **Confined space entry.** "Confined space entry" means any action resulting in any part of the worker's face breaking the plane of any opening of the confined space, and includes any ensuing work activities inside the confined space.

Subp. 4. **Dangerous air contamination.** "Dangerous air contamination" is an atmosphere presenting a threat of death, acute injury, illness, or disablement due to the presence of flammable, explosive, toxic, or otherwise injurious or incapacitating substances.

A. Dangerous air contamination due to the flammability of a gas or vapor is defined as an atmosphere containing the gas or vapor at a concentration greater than ten percent of its lower explosive (lower flammable) limit.

B. Dangerous air contamination due to a combustible particulate is defined as a concentration greater than ten percent of the minimum explosive concentration of the particulate.

C. Dangerous air contamination due to a toxic, corrosive, or asphyxiant substance listed in Code of Federal Regulations, title 29, part 1910, subpart Z, is defined as a concentration above the listed numerical value of the permissible exposure limit (PEL). In addition, an atmospheric concentration above the numerical limit listed on the Material Safety Data Sheet prepared for a hazardous substance in conformance with Code of Federal Regulations, title 29, section 1910.1200(g)(2)(vi) or the Minnesota Employee Right-to-Know Standards, chapter 5206.

D. Dangerous air contamination that presents an acute illness hazard represents an atmospheric concentration immediately dangerous to life and health (IDLH); for example, above a maximum concentration from which one could escape within 30 minutes or the length of time a worker will be exposed, whichever is longer, without any escape impairing symptoms or any immediate severe health effects. "Immediate severe health effect" means that an acute clinical sign of a serious, exposure-related reaction is manifested within 72 hours after exposure.

Subp. 5. **Engulfment.** "Engulfment" means the surrounding and effective capture of a person by finely divided particulate matter or a liquid.

Subp. 6. **Oxygen deficiency.** "Oxygen deficiency" is defined as an atmosphere containing oxygen at a concentration of less than 19.5 percent by volume.

Subp. 7. **Oxygen enrichment.** "Oxygen enrichment" is defined as an atmosphere containing oxygen at a concentration greater than 23 percent by volume.

STAT AUTH: MS s 182.655

HIST: 23 SR 2132; 28 SR 1512

*Current as of 10/30/06*

## **5207.0302 OPERATING PROCEDURES AND WORKER TRAINING.**

Subpart 1. **Implementation.** The employer shall implement the provisions of this part before any worker is allowed to enter a confined space.

Subp. 2. **Entry permit system.** The employer shall develop, implement, and use an entry permit system that includes a written permit procedure that provides all the means necessary to:

A. determine all confined spaces and identify them to the workers to prevent unauthorized entry;

B. determine the actual and potential hazards associated with the space at the time of entry so the employer can choose the appropriate means to execute a safe entry;

C. ensure by appropriate testing that the control measures used are effective; and

D. provide for preplanned emergency rescue.

Subp. 3. **Entry permit.** A written permit form must be completed before allowing a worker to enter a confined space. The written permit must contain the following minimum specific information for each permit entry space:

A. date;

B. location;

C. time of issue;

D. time of expiration;

E. names of workers assigned to enter;

F. name and position of the person authorizing or in charge of the entry;

G. description of the hazards known or reasonably expected to be present in the confined space;

H. atmospheric testing required to be done immediately before and during the entry period;

I. designated individual responsible for performing the tests;

J. personal protective equipment required, including respiratory protection, clothing, or harnesses required for entry and rescue;

K. description of any additional hazards that may be reasonably expected to be generated by the entrants' activities in the space;

L. identification of all special work practices or procedures to be followed; and

M. specification of all means of isolation, cleaning, purging, or inserting to be done before entry to remove or control those hazards, or certification that these procedures have been done if a hazardous air contamination or oxygen deficient condition exists.

Subp. 4. **Duration and retention of permit.** The maximum duration for which a permit form may be issued is one shift except as indicated in part 5207.0304, subpart 1. Each written permit form for confined space entry must be retained for a minimum of 30 days. Permits shall be readily

available to all workers before entering a confined space, and the permits shall remain at the work site as long as the work is being performed there. Where atmospheric testing showed a dangerous air contamination, oxygen deficiency, or oxygen enrichment, the employer shall retain the written permit form or record showing the results of the atmospheric testing for a minimum of one year.

**Subp. 5. Operating procedures.**

A. Written, understandable operating and rescue procedures shall be developed and provided to affected workers.

B. When respiratory protection is used, a respiratory protection program as outlined in Code of Federal Regulations, title 29, section 1910.134, shall be in place.

C. Operating procedures shall conform to the applicable requirements of parts 5207.0303 and 5207.0304 and shall include provision for surveillance of the surrounding area to avoid hazards such as drifting vapors from other work operations.

**Subp. 6. Worker training.**

A. Workers who will enter the confined space and standby persons required by part 5207.0304 shall be trained in operating and rescue procedures and on the hazards they may encounter. This training shall be conducted annually or before confined space entry.

B. Workers who will perform atmospheric monitoring in confined spaces shall be trained on the use of such equipment according to the manufacturer's instructions before confined space entry and then on an annual basis thereafter.

STAT AUTH: MS s 182.655

HIST: 23 SR 2132

*Current as of 10/30/06*

**5207.0303 PREENTRY PROCEDURES.**

Subpart 1. **Application.** The applicable provisions of this part shall be implemented before entry into a confined space is permitted.

Subp. 2. **Disconnection of lines.** Lines that may convey flammable, explosive, toxic, or otherwise injurious or incapacitating substances into the space shall be disconnected, blinded, locked out, or blocked off by other positive means to prevent the development of dangerous air contamination, oxygen deficiency, or oxygen enrichment within the space. The disconnection or blind shall be so located or done in such a manner that inadvertent reconnection of the line or removal of the blind is effectively prevented. Code of Federal Regulations, title 29, section 1910.147, applies where lockout devices are required.

This subpart does not apply to public utility gas distribution or gas transmission systems.

This subpart does not require blocking of all laterals to sewers or storm drains. Where experience or knowledge of industrial use indicates materials resulting in dangerous air contamination may be dumped into an occupied sewer or storm drain, all such laterals shall be blocked.

Subp. 3. **Calibration of testing and monitoring equipment.** Air testing and monitoring equipment shall be maintained and calibrated according to manufacturers' instructions. This equipment shall be periodically calibrated with an appropriate test gas to ensure proper operation. Records of such calibration and field tests shall be maintained for a minimum of one year. Calibration and field test information, including type of test required, date tests were due, and date tests were completed, shall be affixed to the instrument or be readily available at the time of use.

Subp. 4. **Air tests.** The air in confined spaces shall be tested with an appropriate device or method to determine whether dangerous air contamination, oxygen deficiency, or oxygen enrichment exists before entry is made. While occupied, additional continuous or periodic monitoring for dangerous air contamination, oxygen deficiency, or oxygen enrichment shall be done. A written record of the testing results shall be made and kept at the work site for the duration of the work. Affected workers or their representatives shall be afforded an opportunity to review and record the testing results.

Subp. 5. **Injurious corrosive substances.** Workers in confined spaces that have last contained injurious substances to the eyes or body shall be provided with, and shall be required to wear, appropriate personal protective clothing or devices in accordance with Code of Federal Regulations, title 29, section 1910.132. In addition, an eyewash and safety shower as required by Code of Federal Regulations, title 29, section 1910.151, shall be provided within the work area outside of the confined space for immediate emergency use.

Subp. 6. **Interconnected spaces.** Where interconnected spaces are blocked off as a unit, each space shall be tested and the results recorded in accordance with subpart 4. The most hazardous condition found shall govern procedures to be followed.

Subp. 7. **Ventilation.** Where the existence of dangerous air contamination, oxygen deficiency, or oxygen enrichment is demonstrated by tests performed under subpart 4, existing ventilation shall be augmented by appropriate means if practical and feasible. When additional ventilation provided in accordance with this subpart has removed dangerous air contamination, oxygen deficiency, or oxygen enrichment as demonstrated

by additional testing conducted and recorded under subpart 4, entry into and work within the space may proceed subject to part 5207.0304.

Subp. 8. **Ignition sources.** No sources of ignition may be introduced into the space until implementation of appropriate provisions of this part has ensured that dangerous air contamination due to flammable or explosive substances does not exist.

Subp. 9. **Oxygen consuming equipment.** Whenever oxygen consuming equipment is to be used, measures shall be taken to ensure adequate combustion air and exhaust gas venting.

Subp. 10. **Oxygen enrichment condition or use of oxygen enrichment equipment.** Whenever oxygen enrichment is possible due to conditions within the space, or oxygen enrichment equipment is to be used, measures shall be taken to ensure that the oxygen level does not exceed 23 percent in the confined space. If tests indicate the oxygen level to be greater than 23 percent, hot work is prohibited until ventilating techniques have reduced the oxygen level to less than 23 percent.

Subp. 11. **Smoking.** Smoking shall not be allowed in confined spaces or within 20 feet of a confined space opening.

Subp. 12. **Automatic fire protection systems.** Where there is no ready exit from spaces equipped with automatic fire suppression systems employing harmful design concentrations of toxic or oxygen displacing gases, or total foam flooding, such systems must be deactivated. When it is not practical or safe to deactivate such systems, the provisions of part 5207.0304, subpart 3, shall apply during entry into and work within the spaces.

STAT AUTH: MS s 182.655

HIST: 23 SR 2132

*Current as of 10/30/06*

## **5207.0304 ENTRY INTO AND WORK WITHIN CONFINED SPACES.**

Subpart 1. **Class I; confined spaces where an atmosphere with dangerous air contamination, oxygen deficiency, or oxygen enrichment is unlikely to develop.**

A. Employers whose operations require workers to perform routine repetitive entry into low hazard chambers such as boilers, vaults, vessels, tanks, bins, and vats, where no risk of engulfment can exist, and where the atmosphere cannot develop a dangerous air contaminant or oxygen enrichment, and where all known sources of hazard are positively controlled, may issue an annual permit for this type of entry instead of separate permits for each space, if established entry practices and procedures are in effect as outlined below. The employer may, at its



discretion, allow entry by one or more workers without a standby person when work under the following conditions is performed:

(1) Establish specific entry practices and procedures as required in part 5207.0302, subpart 3, items A, B, and D to I, that must be followed for entry by annual permit before any worker may be authorized to make an entry.

(2) Train workers in the practices and procedures required for such entries.

(3) Ensure that one or more of the following requirements are met:

(a) the space has been ventilated before entry using a mechanically powered ventilator for not less than is specified in the ventilation nomograph prepared for that ventilator, and that ventilation continues throughout the entry;

(b) all areas of the confined space are continuously and effectively ventilated; such ventilation shall provide positive ventilation of clean air at a rate of at least 200 cubic feet per minute per occupant, or in confined spaces larger than 2,000 cubic feet, six air changes of the confined space volume per hour; or

(c) there is no effective ventilation, but appropriate continuous oxygen monitoring is performed to ensure that permit conditions are maintained.

(4) Revoke the permit whenever any tests performed during confined space occupancy show deviation from acceptable conditions to a hazardous condition. In these circumstances, entry may be made only by an entry procedure as outlined in subpart 2 or 3.

B. Employers whose operations require workers to perform routine repetitive entry into confined spaces where entry permits are required and that are unlikely to develop a dangerous air contaminant, oxygen deficiency, or oxygen enrichment and have no potential for an engulfment condition, may issue an annual permit for this type of entry instead of separate permits for each space if established entry practices and procedures are in effect as outlined below. The employer may, at its discretion, allow entry by one or more workers without a standby person when work under the following conditions is performed:

(1) Establish specific entry practices and procedures as required in part 5207.0302, subpart 3, items A, B, and D to I, that must be followed for entry by annual permit before any worker may be authorized to make an entry.

(2) Train workers in the practices and procedures required for such entries.

(3) Ensure that whenever entry into a confined space is to be made, workers test the atmosphere before entry using an appropriate direct reading instrument (or other device capable of quantitatively identifying anticipated contaminants) with a remote sampling probe, testing for the following conditions and in the following order: oxygen concentration, combustible gas, and suspected toxic material, if any. While occupied, additional continuous monitoring for these gases or vapors shall be done during the entry period to ensure that a potentially dangerous atmosphere does not develop in the confined space.

(4) Ensure that continuous and effective positive ventilation is provided to the confined space at a minimum rate of 200 cubic feet per minute of clean air per occupant or, in confined spaces larger than 2,000 cubic feet, an exchange of six air changes of the confined space volume per hour.

(5) Revoke the permit whenever any tests performed during confined space occupancy show deviation from acceptable conditions to a hazardous condition. In these circumstances, entry may be made only by an entry procedure as outlined in subpart 2 or 3.

**Subp. 2. Class II; confined spaces where an atmosphere free of dangerous air contamination, oxygen deficiency, or oxygen enrichment has been verified.**

A. At least one person shall stand by on the outside of the confined space ready to give assistance in case of emergency.

B. Visual, voice, or signal line communications shall be maintained between all individuals in the confined space and the standby person.

C. An approved safety belt or harness with an attached line shall be used where practical and feasible. The free end of the line shall be secured outside the entry opening. The line shall be at least 2,000 pounds test.

D. The standby person shall not enter the confined space without alerting an emergency response team such as the fire department or other trained rescue workers of the intent to enter the confined space. Entry shall only occur after proper tests have been performed to show that a dangerous air contamination, oxygen deficiency, or oxygen enrichment does not exist or the standby person is protected as prescribed in subpart 3, items C and D, subitem (1).

**Subp. 3. Class III; confined spaces where an atmosphere free of dangerous air contamination, oxygen deficiency, or oxygen enrichment cannot be verified.** The requirements of this part apply to entry into and work within a confined space whenever an atmosphere free of dangerous air contamination, oxygen deficiency, or oxygen enrichment

cannot be verified through the implementation of the applicable provisions of part 5207.0303, or whenever due to an emergency, dangerous air contamination, oxygen deficiency, or oxygen enrichment cannot be prevented through the implementation of the applicable provisions of part 5207.0303.

A. Tanks, vessels, or other confined spaces with side and top openings shall be entered from side openings when practicable. For the purposes of this part, side openings are those within 42 inches of the bottom.

B. Appropriate, approved respiratory protective equipment, in accordance with Code of Federal Regulations, title 29, section 1910.134, shall be provided and worn.

C. An approved safety belt or harness with an attached line must be used. The free end of the line shall be secured outside the entry opening. The line shall be at least 2,000 pounds test.

D. At least one person shall stand by on the outside of the confined space ready to give assistance in case of emergency.

(1) The standby person shall have appropriate, approved, respiratory protective equipment, including an independent source of breathing air that conforms with Code of Federal Regulations, title 29, section 1910.134(d), available for immediate use.

(2) A standby person protected as prescribed by items C and D may enter the confined space, but only in case of emergency and only after donning the required personal protective equipment and alerting an emergency response team such as the fire department or other trained rescue workers of their intention to enter the confined space.

(3) Visual, voice, or single line communications shall be maintained between all individuals in the confined space and the standby person.

E. When entry must be made through a top opening, the requirements in subitems (1) and (2) also apply.

(1) The safety harness shall be of the type that suspends a person in an upright position.

(2) An approved hoisting device or other effective means shall be provided for lifting workers out of the space.

F. Work involving the use of flame, arc, spark, or other source of ignition is prohibited within a confined space (or any adjacent space having common walls, floor, or ceiling with the confined space) that contains, or is likely to develop, dangerous air contamination due to flammable or explosive substances.

G. Whenever gases such as nitrogen are used to provide an inert atmosphere for preventing the ignition of flammable gases or vapors, no flame, arc, spark, or other source of ignition may be permitted unless the oxygen concentration is maintained at less than 20 percent of the concentration that will support combustion.

(1) Testing of the oxygen content shall be conducted with sufficient frequency to ensure conformance with this requirement.

(2) A written record of the results of such testing shall be made and kept at the work site for the duration of the work.

H. Only approved lighting and electrical equipment may be used in confined spaces subject to dangerous air contamination by flammable or explosive substances.

Subp. 4. **Precautions for emergencies involving work in confined spaces.** At least one person trained in first aid and cardiopulmonary resuscitation (CPR) shall be immediately available whenever the use of respiratory protective equipment is required by this part. Standards for CPR training shall follow the principles of the American Heart Association or the American Red Cross.

STAT AUTH: MS s 182.655

HIST: 23 SR 2132

*Current as of 10/30/06*

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# TR Concrete

## EMERGENCY PHONE NUMBERS

(To be accessible to attendant)

AMBULANCE                      911                      [ \_\_\_\_\_ ]  
(If no 911 Service Available)

FIRE                                      911                      [ \_\_\_\_\_ ]  
(If no 911 Service Available)

POLICE                                      911                      [ \_\_\_\_\_ ]  
(If no 911 Service Available)

EMERGENCY RESCUE SERVICE      NAME: \_\_\_\_\_  
PHONE: \_\_\_\_\_

HOSPITAL                                      NAME: \_\_\_\_\_  
PHONE: \_\_\_\_\_

MAIN OFFICE                                      **612-363-3176**

Safety Director                                      Work: \_\_\_\_\_  
Pager: \_\_\_\_\_

OTHER:                                      Work: \_\_\_\_\_  
\_\_\_\_\_  
(Name/Title)                                      Pager: \_\_\_\_\_  
\_\_\_\_\_  
(Name/Title)                                      Work: \_\_\_\_\_  
\_\_\_\_\_  
(Name/Title)                                      Pager: \_\_\_\_\_  
\_\_\_\_\_  
(Name/Title)                                      Work: \_\_\_\_\_  
\_\_\_\_\_  
(Name/Title)                                      Pager: \_\_\_\_\_

When calling for EMERGENCY RESPONSE, this location is:

\_\_\_\_\_  
\_\_\_\_\_

# TR Concrete

## PERMIT-SPACE INFORMATION & ATTENDANT DESIGNATION

CONFINED SPACE

DATE: \_\_\_\_\_

SPACE IDENTIFICATION: \_\_\_\_\_

SPACE LOCATION: \_\_\_\_\_

CLIENT: \_\_\_\_\_

1. Reasons the above confined space is designated a Permit-Required Confined Space:

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2. Special precautions taken to protect personnel in or around the above space:

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3. Specific hazards and experience with the above confined space:

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## CLIENT UNDERSTANDING

I, \_\_\_\_\_, have been provided the above  
(Client Representative)  
information and understand that permit space entry is allowed only through compliance with a Permit Space Program meeting the requirements of 29 CFR 1910.146.

In the event our employees and your company employees are working near or in the same Permit-Required Confined Space, the below listed person is designated as the one and only Senior Attendant. The person, listed below, will have authority over other Attendants.

\_\_\_\_\_  
(Designated Senior Attendant)

\_\_\_\_\_  
(Client Representative Signature/Title)

\_\_\_\_\_  
(Date)

\_\_\_\_\_  
Safety Director

\_\_\_\_\_  
(Date)

[A copy of this form will be kept at the job site during all operations.]

## ENTRY ROSTER

## CONFINED SPACE

DATE: \_\_\_\_\_

## SPACE IDENTIFICATION

SPACE LOCATION:

[illegible]

# TR Concrete

## PERMIT-REQUIRED CONFINED SPACE

### ENTRY PERMIT

**Note:** This Entry Permit must be used with the attached **Pre-Entry Checklist**.  
Additional pages may be added as necessary.

PERMIT VALID FOR \_\_\_\_\_ HOURS

CONFINED SPACE-HAZARDOUS AREA: \_\_\_\_\_

CONFINED SPACE IDENTIFICATION: \_\_\_\_\_ START  
DATE: \_\_\_\_\_

SPACE LOCATION: \_\_\_\_\_ TIME: \_\_\_\_\_

PURPOSE OF ENTRY: \_\_\_\_\_

SUPERVISOR(S) in charge of crew:

AUTHORIZED ATTENDANTS:

\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

ATMOSPHERE (GAS) TESTER'S SIGNATURE & INITIALS: \_\_\_\_\_

ATMOSPHERE TESTING EQUIPMENT USED:

\_\_\_\_\_  
(Type) (Model and/or Serial Number) (Calibration date)

\_\_\_\_\_  
(Type) (Model and/or Serial Number) (Calibration date)

\_\_\_\_\_  
(Type) (Model and/or Serial Number) (Calibration date)

\_\_\_\_\_  
(Signature of Entry Supervisor/Date)

\_\_\_\_\_  
(Signature of Program Administrator/Date)

**REVIEWED BY: (Confined Space Operations Personnel)**

**NOTE:** The below listed persons, or their representative, have had the opportunity to observe the pre-entry atmospheric testing as well as any periodic testing that may be deemed necessary for employee safety.

\_\_\_\_\_  
(Print Name) (Signature) (Print Name) (Signature)

\_\_\_\_\_  
(Print Name) (Signature) (Print Name) (Signature)

\_\_\_\_\_  
(Print Name) (Signature) (Print Name) (Signature)

\_\_\_\_\_  
(Print Name) (Signature) (Print Name) (Signature)



# PRE-ENTRY CHECKLIST

This checklist is an integral part of our Permit System and **MUST** be maintained with the Entry Permit.

All items on this Pre-Entry Checklist must be completed before entry.

For items that do not apply, enter N/A.

INITIAL ATMOSPHERIC CHECK (BEFORE VENTILATION): TIME: \_\_\_\_\_

	<u>Acceptable Parameters</u>	<u>Tester's Initials</u>
Oxygen: _____ %      _____ %	> 19.5 % < 23.5 %	_____
<b>Flammable gases and vapors:</b>		
_____: _____ % LEL	< 10.0 %	_____
(NAME)		
_____: _____ % LEL	< 10.0 %	_____
(NAME)		
_____: _____ % LEL	< 10.0 %	_____
(NAME)		

		<u>Tester's Initials</u>
<b>Potential toxic air contaminants:</b>		
_____: _____ PPM	< _____ PPM	_____
(NAME)		
_____: _____ PPM	< _____ PPM	_____
(NAME)		
_____: _____ PPM	< _____ PPM	_____
(NAME)		

[NOTE: mg/m<sup>3</sup> may be substituted for PPM. See Table Z-1 to Z-3, Subpart Z 29 CFR 1910. Further, reference Subpart G, 29 CFR 1910.]

METHOD OF ISOLATION (Atmospheric Conditions): \_\_\_\_\_

MEANS OF VENTILATION (To control Atmospheric Conditions): \_\_\_\_\_

ATMOSPHERIC CHECK (AFTER VENTILATION & ISOLATION AND IMMEDIATELY PRIOR TO INITIAL ENTRY): TIME: \_\_\_\_\_

	<u>Acceptable Parameters</u>	<u>Tester's Initials</u>
Oxygen: _____ %      _____ %	> 19.5 % < 23.5 %	_____
<b>Flammable gases and vapors:</b>		
_____: _____ % LEL	< 10.0 %	_____
(NAME)		
_____: _____ % LEL	< 10.0 %	_____
(NAME)		
_____: _____ % LEL	< 10.0 %	_____
(NAME)		
<b>Potential toxic air contaminants:</b>		
_____: _____ PPM	< _____ PPM	_____
(NAME)		
_____: _____ PPM	< _____ PPM	_____
(NAME)		
_____: _____ PPM	< _____ PPM	_____
(NAME)		

[NOTE: mg/m<sup>3</sup> may be substituted for PPM. See Table Z-1 to Z-3, Subpart Z 29 CFR 1910. Further, reference Subpart G, 29 CFR 1910.]

## OTHER HAZARDS:

(Type, i.e., configuration, engulfment,  
unacceptable atmosphere, any recognized  
serious safety or health hazard)

(Engineering controls to control or eliminate the hazard to the extent feasible.)

(Type, i.e., configuration, engulfment,  
unacceptable atmosphere, any recognized  
serious safety or health hazard)

(Engineering controls to control or eliminate the hazard to the extent feasible.)

(Type, i.e., configuration, engulfment,  
unacceptable atmosphere, any recognized  
serious safety or health hazard)

(Engineering controls to control or eliminate the hazard to the extent feasible.)

(Type, i.e., configuration, engulfment,  
unacceptable atmosphere, any recognized  
serious safety or health hazard)

(Engineering controls to control or eliminate the hazard to the extent feasible.)

(Type, i.e., configuration, engulfment,  
unacceptable atmosphere, any recognized  
serious safety or health hazard)

(Engineering controls to control or eliminate the hazard to the extent feasible.)

## HAZARDS NOT COMPLETELY ELIMINATED BY ENGINEERING CONTROLS AND SAFETY GEAR REQUIRED (i.e., respirators (specific type), special boots, gloves, suits, eye protection, etc.):

(HAZARD)

(SAFETY GEAR)

(HAZARD)

(SAFETY GEAR)

(HAZARD)

(SAFETY GEAR)

## COMMUNICATIONS PROCEDURES:

[NOTE: Acceptable, non-electrical, suggestions include, but are not limited to, predetermined rapping  
sounds, tugs on a rope or line, air horn signals, voice communications]

**BELOW LISTED ITEMS MUST BE COMPLETED AND REVIEWED PRIOR TO ENTRY:**

**NOTE:** For items that do not apply, enter N/A.

<u>REQUIREMENT COMPLETED</u>	<u>DATE</u>	<u>TIME</u>	<u>REQUIREMENT COMPLETED</u>	<u>DATE</u>	<u>TIME</u>
Lock Out/De-energize/Try Out	_____	_____	Full Body Harness w/"D" ring	_____	_____
Lines Broken/Capped/blanked	_____	_____	Emergency Escape Retrieval	_____	_____
Purge-Flush & Vent	_____	_____	Equipment	_____	_____
Ventilation	_____	_____	Lifelines	_____	_____
Secure Area (Post & Flag)	_____	_____	Fire Extinguishers	_____	_____
Breathing Apparatus	_____	_____	Lighting (Explosion Proof)	_____	_____
Resuscitator-Inhalator	_____	_____	Protective Clothing	_____	_____
Standby Safety Personnel	_____	_____	Respirator(s) (Air Purifying)	_____	_____
Hoisting Equipment	_____	_____	Direct reading gas monitor	_____	_____
All electric equipment listed	_____	_____	tested	_____	_____
Class I, Division I, Group D	_____	_____	Non-Sparking Tools	_____	_____
SCBA's for entry & standby	_____	_____	Powered Communications	_____	_____
Other: _____	_____	_____	Burning & Welding Permit	_____	_____
Other: _____	_____	_____	Other: _____	_____	_____

**EMERGENCY AND RESCUE PROCEDURES**

	<b>YES</b>	<b>NO</b>	<b>N/A</b>
Rescue Procedures will be implemented by Company Employees.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Company Rescue Personnel have had training in:			
a. Use of Personal Protective Equipment.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Use of Rescue Equipment.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Practiced simulated permit space rescue within the past 12 months for a space representative of the space for which this permit is issued.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Each member of the Rescue Team has had training in basic First Aid and cardiopulmonary resuscitation (CPR) and at least one (1) member is currently certified.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NAME OF CERTIFIED PERSON (CPR): _____			
NAME OF CERTIFIED PERSON (1st AID): _____			
Appropriate Material Safety Data Sheets are at the job site.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The retrieval line is affixed to the entrants and a fixed point outside the space or a mechanical device should the space be a vertical type more than five (5) feet deep.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
All entrants will wear a chest or full body harness with a retrieval line attached at the center of the entrant's back neat shoulder level, or above the entrant's head.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Entrants will wear wristlets, in lieu of the above, should they create a lesser danger to the entrants.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**YES    NO    N/A**

Rescue procedures will be implemented by a rescue service consisting of persons who are not employees.

□ □ □

This rescue service has been provided with:

- a. information on all hazards or potential hazards they may confront.

□ □ □

- b. access to all permit spaces from which rescue may be necessary to enable the rescue service to develop appropriate rescue plans and practice rescue procedures.

□ □ □

**SPECIFIC RESCUE PLAN FOR AN EMERGENCY IN THIS CONFINED SPACE:**

[illegible]

**[The results of continuous monitoring, if applicable, are to be recorded below every two (2) hours.]**

**\*\*Short term exposure limit: Employee can work in area up to 15 minutes.**

**\*\*Short term exposure limit: Employee can work in area up to 15 minutes.**

ENTRY SUPERVISOR: \_\_\_\_\_  
(Name) (Signature) (Date)

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# TR Concrete

**PRE-ENTRY CHECK LIST**  
and  
**CERTIFICATION OF COMPLIANCE WITH 29 CFR 1910.146(c)(5)(ii)**  
for  
**CONFINED SPACE ENTRY USING FORCED AIR VENTILATION**  
**FOR CONTROL OF HAZARDOUS ATMOSPHERE**  
**(NO OTHER HAZARDS ARE IDENTIFIED)**

## PART 1

I certify that the below listed confined space falls under the Permit-Required Confined Space Standard, 29 CFR 1910.146(c)(5)(i) & entry will be performed under the provisions of 29 CFR 1910.146(c)(5)(ii).

CONFINED SPACE IDENTIFICATION: \_\_\_\_\_ DATE: \_\_\_\_\_

SPACE LOCATION: \_\_\_\_\_ TIME: \_\_\_\_\_

WORK TO BE ACCOMPLISHED IN CONFINED SPACE: \_\_\_\_\_

### PRE ENTRY CHECKLIST

INITIAL ATMOSPHERIC CHECK (BEFORE VENTILATION): TIME: \_\_\_\_\_

#### Acceptable Parameters

Oxygen: \_\_\_\_\_ % \_\_\_\_\_ % > 19.5 % < 23.5 %

#### Flammable gases and vapors:

\_\_\_\_\_ : \_\_\_\_\_ % LEL < 10.0 %  
(NAME)

\_\_\_\_\_ : \_\_\_\_\_ % LEL < 10.0 %  
(NAME)

\_\_\_\_\_ : \_\_\_\_\_ % LEL < 10.0 %  
(NAME)

#### Potential toxic air contaminants:

\_\_\_\_\_ : \_\_\_\_\_ PPM < \_\_\_\_\_ PPM  
(NAME)

\_\_\_\_\_ : \_\_\_\_\_ PPM < \_\_\_\_\_ PPM  
(NAME)

\_\_\_\_\_ : \_\_\_\_\_ PPM < \_\_\_\_\_ PPM  
(NAME)

NOTE: mg/m<sup>3</sup> may be substituted for PPM. See Table Z-1 to Z-3, Subpart Z 29 CFR 1910. Reference Subpart G, 29 CFR 1910.

METHOD OF ISOLATION: \_\_\_\_\_

MEANS OF VENTILATION: \_\_\_\_\_

ATMOSPHERIC CHECK (AFTER VENTILATION & ISOLATION): TIME: \_\_\_\_\_

Acceptable Parameters

Oxygen: \_\_\_\_\_ % \_\_\_\_\_ % > 19.5 % < 23.5 %

Flammable gases and vapors:

\_\_\_\_\_ : \_\_\_\_\_ % LEL < 10.0 %  
(NAME)

\_\_\_\_\_ : \_\_\_\_\_ % LEL < 10.0 %  
(NAME)

\_\_\_\_\_ : \_\_\_\_\_ % LEL < 10.0 %  
(NAME)

Potential toxic air contaminants:

\_\_\_\_\_ : \_\_\_\_\_ PPM < \_\_\_\_\_ PPM  
(NAME)

\_\_\_\_\_ : \_\_\_\_\_ PPM < \_\_\_\_\_ PPM  
(NAME)

\_\_\_\_\_ : \_\_\_\_\_ PPM < \_\_\_\_\_ PPM  
(NAME)

NOTE: mg/m<sup>3</sup> may be substituted for PPM. See Table Z-1 to Z-3, Subpart Z 29 CFR 1910. Reference Subpart G, 29 CFR 1910.

PERMIT AND CHECK  
LIST PREPARED BY: \_\_\_\_\_

(Entry Supervisor/Date)

APPROVED BY: \_\_\_\_\_

(Program Administrator/Date)

REVIEWED BY: (Confined Space Operations Personnel)

NOTE: The below listed persons, or their representative, have had the opportunity to observe the pre-entry atmospheric testing as well as any periodic testing that may be deemed necessary for employee safety.

_____ (Print Name)	_____ (Signature)	_____ (Print Name)	_____ (Signature)
_____ (Print Name)	_____ (Signature)	_____ (Print Name)	_____ (Signature)
_____ (Print Name)	_____ (Signature)	_____ (Print Name)	_____ (Signature)

THE ATMOSPHERE WITHIN THE SPACE SHALL BE PERIODICALLY TESTED AS NECESSARY TO ENSURE THAT THE CONTINUOUS FORCED AIR VENTILATION IS PREVENTING THE ACCUMULATION OF A HAZARDOUS ATMOSPHERE.

IF CONDITIONS ARE IN COMPLIANCE WITH THE ABOVE REQUIREMENTS AND THERE IS NO REASON TO BELIEVE CONDITIONS MAY CHANGE ADVERSELY, THEN PROCEED TO THE PERMIT SPACE PRE-ENTRY CHECK LIST. COMPLETE AND POST WITH THIS FORM. MAINTAIN THIS FORM AND SUPPORTING DOCUMENTATION FOR A PERIOD OF ONE (1) YEAR.

THIS PERMIT AND SUPPORTING DOCUMENTATION SHALL BE KEPT AT THE JOB SITE. AT COMPLETION OF THE JOB, THIS COPY WILL BE FORWARDED TO THE PROGRAM ADMINISTRATOR.

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## PRE-ENTRY CHECK LIST For CONFINED SPACE ENTRY USING FORCED AIR VENTILATION FOR CONTROL OF HAZARDOUS ATMOSPHERE (NO OTHER HAZARDS ARE IDENTIFIED)

### PART 2

I certify that the below listed confined space falls under the Permit-Required Confined Space Standard, 29 CFR 1910.146(c)(5)(i) & (c)(5)(ii):

### CONFINED SPACE PRE-ENTRY CHECK LIST

A confined space either is entered through an opening other than a door (such as a manhole or side port) or requires the use of a ladder or rungs to reach the working level. Test results must be satisfactory. This check list must be filled out whenever the job site meets this criteria.

	YES	NO
1. Did your survey of the surrounding area show it to be free of hazards such as drifting vapors from any source?	<input type="checkbox"/>	<input type="checkbox"/>
2. Does your knowledge of industrial or other discharges indicate this area is likely to remain free of dangerous air contaminants while occupied?	<input type="checkbox"/>	<input type="checkbox"/>
3. Are you certified in the operation of the gas monitor to be used?	<input type="checkbox"/>	<input type="checkbox"/>
4. Has a gas monitor functional test (Bump Test) been performed this shift on the gas monitor to be used?	<input type="checkbox"/>	<input type="checkbox"/>
5. Did you test the atmosphere of the confined space prior to entry?	<input type="checkbox"/>	<input type="checkbox"/>
6. Did the atmosphere check as acceptable (no alarms given)?	<input type="checkbox"/>	<input type="checkbox"/>
7. Will the atmosphere be continuously monitored while the space is occupied?	<input type="checkbox"/>	<input type="checkbox"/>

NOTE: If any of the above questions are answered "NO", DO NOT ENTER. Contact your immediate supervisor.

JOB LOCATION: \_\_\_\_\_ DATE: \_\_\_\_\_

COMPETENT PERSON NAME: \_\_\_\_\_ SHIFT: \_\_\_\_\_

COMPETENT PERSON SIGNATURE/DATE: \_\_\_\_\_

#### EMERGENCY PHONE NUMBERS:

LOCAL FIRE DEPARTMENT (RESCUE): \_\_\_\_\_

LOCAL FIRE DEPARTMENT (FIRE): \_\_\_\_\_

ON-SITE EMERGENCY PHONE NUMBER: \_\_\_\_\_

POLICE: \_\_\_\_\_



**TR Concrete**

**PERSONAL PROTECTIVE EQUIPMENT (PPE)**

**[General]**

**TR Concrete**  
**Safety Program**  
**SECTION III**  
**PERSONAL PROTECTIVE EQUIPMENT (PPE)**  
**[General]**  
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**OSHA Standards:**

29 CFR 1910.136, Occupational Foot Protection  
29 CFR 1910.138, Hand Protection  
29 CFR 1926.28, Personal Protective Equipment  
(w/29 CFR 1910.132, General Requirements)  
29 CFR 1926.95, Criteria for Personal Protective Equipment  
29 CFR 1926.100, Head Protection (w/29 CFR 1910.135, Head Protection)  
29 CFR 1926.101, Hearing Protection (w/ 29 CFR 1926.52, Occupational Noise Exposure)  
29 CFR 1926.102, Eye and Face Protection (w/29 CFR 1910.133, Eye and Face Protection)  
29 CFR 1926.107, Definitions Applicable to this Subpart

**Forms:**

[Found immediately following this program]  
Certificate of Workplace Hazard Assessment

## **OVERVIEW**

This Personal Protective Equipment (PPE) Program has been prepared to inform our employees of potential hazards in the workplace and to identify the proper PPE to be used to reduce or eliminate these hazards. This Program relies on a cooperative effort by all personnel to understand the reasons for PPE and to protect themselves from harm.

The use of PPE does not lessen an employee's obligation to use safe work practices and procedures. Employees are expected to be aware of the hazards within their area of responsibility and properly use prescribed PPE.

Our operations, work methods and individual job sites present specific hazards which must be identified, analyzed, and matched with the appropriate PPE through a continuing hazard assessment process.

A Certificate of Hazard Assessment will be kept on the job site for inspection purposes.

## **DUTIES OF THE PPE PROGRAM ADMINISTRATOR**

The primary duties of the Program Administrator include: hazard assessment; PPE selection; PPE training; and monitoring of our PPE Program. Certain types of PPE may require hands-on training before on the job use (primarily for sizing and fitting) and this training may be further delegated to competent persons.

## **HAZARD ASSESSMENT AND PPE SELECTION**

A careful, systematic personal protective equipment selection process is used to identify what, if any, protection is required to reduce or eliminate the possibility of eye, hand, foot, limb, or head injury.

Hazard assessment, performed by the PPE Program Administrator or a designated competent person, starts with a thorough knowledge of our job sites, work procedures and methods of operation as well as the hazards that may be created by other contractors working in the vicinity of our employees. The basic hazard categories are: impact; penetration; compression; chemical; heat; harmful dust; and light radiation.

Identifying the source of the above hazards allows for consideration of administrative or engineering controls to eliminate the hazard as opposed to providing protection against it. Examples would include: redirecting traffic flow, ventilation, temporary weather barriers, non-slip surfaces, etc..

Because administrative and engineering controls are passive -- no employee involvement is required -- they are preferable to PPE.

A PPE selection is made by analyzing the above information and evaluating the type of risk, the level of risk, the potential for injury and the possible seriousness of that injury. PPE, which is compatible with the above risks and work situation, is considered. Actual selection involves all the above factors plus an attempt to provide a level of protection greater than the minimum required.

In all situations where it has been determined that a particular type of PPE is to be used, it will be used. There will be no exceptions by virtue of position or rank to this policy. Within an area on a job site where the possibility of falling objects exists, hard hats will be worn. It follows that once an item of PPE (hard hat, in this case) is selected, it must be used by all persons in the identified area regardless of job title or function.

Having the PPE Program Administrator or designated competent person on a job site determine the PPE requirements allows for knowledgeable selection and consistency, and eliminates chaos that would result if each individual were to decide when, where, and if PPE should be used.

29 CFR 1910 Subpart I, Appendix B, Non-mandatory Compliance Guidelines for Hazard Assessment and Personal Protective Equipment Selection, provides excellent selection guidelines for eye and face protection; head protection; foot protection; and hand protection.

## **DISSEMINATION OF PPE SELECTION INFORMATION**

Employees must understand when PPE is necessary and what type(s) of PPE are necessary.

All persons for whom PPE will provide a measure of safety will be given appropriate training on that item of PPE as well as an explanation of the importance of its use.

## **ANSI STANDARDS AND PPE**

Most items of PPE are manufactured in accordance with a specific American National Standards Institute (ANSI) standard. For example, protective eye and face devices purchased after 07/05/94 must comply with ANSI standard ANSI Z87.1-1989, *American National Standard Practice for Occupational and Educational Eye and Face Protection*; protective helmets purchased after 07/05/94 must comply with ANSI standard ANSI Z89.1-1986, *American National Standard for Personnel Protection-Protective Headwear for Industrial Employees-Requirements*.

PPE safety products are tested to ensure they meet ANSI standards. Because products are tested in the manner in which they are designed to be used, ANSI certification is valid only if the user follows the manufacturer's instructions for proper sizing, fitting, wearing, and adjusting. A review of

OSHA citations reveals that fines can be levied because employees were improperly using PPE. For example, a hard hat worn with the bill toward the rear may provide adequate protection from impact, however, because it is tested with the bill toward the front, this improper use is cause for a safety violation.

Prior to purchase, items of selected PPE will be checked to ensure they were manufactured in accordance with the proper ANSI standard.

The importance of hazard assessment takes on added significance when judgments are made matching the hazard to the protection desired in cases where ANSI certification is not available. What matters most is: does the selected PPE do what it is intended to do?

Employee owned PPE must be approved for use by the PPE Program Administrator. Further, such equipment must be properly maintained and cleaned in accordance with the manufacturer's instructions.

### **SIZING AND FITTING**

The word "personal" in the phrase "personal protective equipment" correctly implies that the equipment is for a specific person. As such, sizing and fitting are important for a variety of reasons.

- a. Function: an improperly fitted piece of PPE may not do its job. For example, eye protection against dust must have an excellent face seal.
- b. Comfort: the likelihood of continued use is increased if the PPE selected is comfortably fitted. Example: gloves that fit poorly and, over time, make a person's hands hot and clammy are likely to be removed exposing that person to the hazard for which the gloves were required in the first place.
- c. Safety: ill-fitting PPE may actually cause an accident. Example: loose hard hat may slip and block one's vision.

Most PPE come in a variety of sizes and within those size groups, adjustments may be made to affect a perfect fit. It is important to understand the procedures for donning, adjusting, using, and removing PPE. Each person who is required to use any type of PPE will be taught, before initial issue, the specific procedures for properly donning, adjusting, using, and removing the specific PPE. This instruction will generally be given by the employee's Supervisor. When available, the manufacturer's instructions will be issued with the PPE.

## CARE AND MAINTENANCE OF PPE

PPE will be visually inspected before each use and if defects are noticed, it will not be used. Some types of PPE are expendable (cotton gloves) and have a limited life span after which they are discarded and new PPE is reissued. Plastic safety glasses become scratched and they too must be exchanged for new ones when vision is impaired. Other types of safety equipment consist of both non-expendable and expendable components. A hard hat is non-expendable, yet the head band does wear out and becomes expendable. PPE will be maintained in accordance with the manufacturer's instructions and, where appropriate, kept in a sanitary condition.

Cleanliness takes on an added importance when dealing with PPE designed to protect the eyes and face. Dirty or fogged lenses can impair vision and, rather than offer protection from a hazard, actually becomes a contributory factor in causing an accident.

Lastly, should PPE become contaminated with a chemical substance and decontamination is impossible, the PPE will be properly disposed of following the disposal instructions on the Material Safety Data Sheet for that substance.

## TRAINING

Affected employees will be given an understanding of:

- a. when PPE is necessary;
- b. what PPE is necessary;
- c. how to properly put on, take off, adjust, and wear PPE;
- d. the limitations of the PPE; and,
- e. the proper care, maintenance, useful life and disposal of the PPE.

Retraining will be given in situations when changes in PPE requirements render the previous training obsolete or it is noticed that an employee is not following our PPE policies -- specifically, not properly wearing the selected PPE in identified locations or work situations.

As a contractor, we are not required to have a PPE Program, per se, nor is the hazard assessment a specific requirement. In fact, there is no hand

protection standard. Construction standards are short and to the point. The complete standard for head protection is printed below:

Standard Number: 1926.100

Title: Head protection.

Applicable 1910 Standards 1910.135

- (a) Employees working in areas where there is a possible danger of head injury from impact, or from falling or flying objects, or from electrical shock and burns, shall be protected by protective helmets.
- (b) Helmets for the protection of employees against impact and penetration of falling and flying objects shall meet the specifications contained in American National Standards Institute, Z89.1-1969, Safety Requirements for Industrial Head Protection.
- (c) Helmets for the head protection of employees exposed to high voltage electrical shock and burns shall meet the specifications contained in American National Standards Institute, Z89.2-1971.

Most PPE requirements are obvious and PPE wear is so simple that training is almost unnecessary.

What is important -- vitally important -- is actually using the proper PPE when it is required.

To ensure employee compliance with PPE requirements, we have opted to treat all employees as intelligent, responsible persons who, when reminded of what PPE actually protects, will enthusiastically endorse PPE use.

## **EYE AND FACE PROTECTION**

Your eyes are a marvel of engineering. Most of us take them for granted as we do all our senses until an accident, injury, or disease forces us to realize the miracle we lost or almost lost. Can you imagine a system that can take (absorb) light and convert it to electrical signals (by way of the 120 million rods and 6 million cones on the retina) and transfer these signals through an optic nerve which has about one million fibers directly into the brain?

Most of us see the world in living color and with depth perception. The body itself does much to protect the eyes. Bony eye sockets in the skull protect the eye from many mechanical injuries. Orbital fluids and tissues cushion direct blows. Eyelids close reflexly from visual or mechanical stimuli. Eyes reflexly rotate upward with the lid closing to protect the cornea. Tears can flush away chemicals and foreign bodies. We all come with these safeguards. Sometimes, they are not enough.

Eye protection is required when there is a possibility of eye injury. Eye injury is not confined to flying objects. Eye injury can be caused by bright light, dust, chemicals, heat, and, literally, anything that can reach them. Different hazards require different types of protection.

Eye (and face) protection is required when one is exposed to flying particles, chemicals, or injurious light radiation. Types of eye protection include: impact resistant safety glasses; safety glasses with side shields; goggles; goggles with a face seal; face masks; and shaded goggles with varying degrees of darkness.

Affected employees who wear prescription lenses will wear eye protection over the prescription lenses without disturbing the proper positioning of the prescription lenses, or will wear eye protection that incorporates their prescription into the design.

All prescription glasses should be made with impact-resistant lenses. Hardened lenses, through a tempering process, are extremely hard and resistant to impact and breakage. Safety lenses are similar to hardened lenses but are 1 mm thicker. Safety lenses are used in goggles where there is a danger of flying glass or chips of metal.

All employees who wear contact lenses must also wear appropriate eye and face protection in hazardous environments.

Welding helmets and faceshields, if required, should be worn over primary eye protection (spectacles or goggles).

An inexpensive pair of safety glasses can save your priceless eyesight.

## **HEAD PROTECTION**

Talking about head protection is really talking about brain protection. Your brain, either through divine providence, evolution, or quirk of nature, is you. The brain, that soft mass of gray and white convoluted matter, is what you are all about. Destroy your brain and you no longer exist.

Your brain is naturally protected by a cranium. Your skull actually has many bones which protect your brain and support your face. Obviously, there are other parts to your head which need protecting such as your eyes, ears, nose, tongue, skin, etc., but your brain is the most important.

Head protection is required when there is a possibility of injury to the head from falling objects and when working near exposed electrical conductors which could contact the head.

Brain injury is the second most common cause of major neurologic deficits and causes more deaths than injury to any other organ.

When the skull receives an impact, it actually can indent and deform. A fracture may occur and the fracture may be distant from the point of impact.



A direct blow to the head can cause the brain to actually move within the skull. Surprisingly, there is often a reverse correlation between skull damage and brain damage. Just because there is no external visible injury to the skull does not preclude the possibility of brain injury.

Wearing head protection (a hard hat) accomplishes two major objectives: it reduces the rate of energy transfer and spreads out the area of energy transfer. Just as your head should be checked out at a hospital after a head impact, so should your hard hat. A hard hat can absorb energy by destructing and this destruction may be unnoticeable.

A head injury may occur after a blow to the head and the following symptoms may be present: unconsciousness or disorientation, confusion, nausea, vomiting, and/or double vision. Get medical help immediately. Cover open wounds lightly with sterile dressing. Keep victim still, warm, and reassured. DO NOT move the victim unless he/she would be in greater danger if you did not. DO NOT apply pressure to a head wound. DO NOT try to stop blood or clear fluid coming from ears, nose, or mouth.

## HEARING PROTECTION

Wherever it is not feasible to reduce the noise levels or duration of exposures to those specified in Table D-2, below, ear protective devices shall be provided and used.

Ear protective devices inserted in the ear shall be fitted or determined individually by competent persons.

Plain cotton is not an acceptable protective device.

TABLE D-2 - PERMISSIBLE NOISE EXPOSURES	
<u>Sound level</u> <u>Duration per day, hours</u>	<u>dBA slow response</u>
8	90
6	92
4	95
3	97
2	100
1 1/2	102
1	105
1/2	110
1/4 or less	115

Hearing damage is caused by noise level and duration of exposure to the noise. If, after using the formula below, the equivalent noise exposure exceeds unity (1), then a Hearing Conservation Program will be initiated.

$F(e) = (T(1) \text{ divided by } L(1)) + (T(2) \text{ divided by } L(2)) + \dots + (T(n) \text{ divided by } L(n))$  where:

$F(e)$  = The equivalent noise exposure factor.

$T$  = The period of noise exposure at any essentially constant level.

$L$  = The duration of the permissible noise exposure at the constant level (from Table D-2).

If the value of  $F(e)$  exceeds unity (1) the exposure exceeds permissible levels.

A sample computation showing an application of the formula in paragraph (d)(2)(ii) of this section is as follows. An employee is exposed at these levels for these periods:

110 db A 1/4 hour.

100 db A 1/2 hour.

90 db A 1 1/2 hours.

$F(e) = (1/4 \text{ divided by } 1/2) + (1/2 \text{ divided by } 2) + (1 \text{ 1/2 divided by } 8)$

$F(e) = 0.500 + 0.25 + 0.188$

$F(e) = 0.938$

Since the value of  $F(e)$  does not exceed unity, the exposure is within permissible limits.

Understanding some interesting facts about your hearing will emphasize the need for hearing protection.

Your outer ears on the side of your head are the least important part of your hearing system. Should you lose your ear, you would not necessarily lose your hearing. Your outer ear, made of cartilage, includes the external auditory canal which leads to the eardrum which is only 2/5" in diameter. The eardrum separates the outer ear from the middle ear. Within the middle ear are three (3) bones commonly called the hammer, anvil, and stirrup. The stirrup (stapes) is the smallest bone in your body -- thinner than a grain of rice. Also in the middle ear is the Eustachian tube which connects the middle ear to the back of the throat to maintain equal air pressure on both sides of the ear drum.

The inner ear, where sound waves are converted to electrical impulses, actually has a function unrelated to hearing. It contains the semicircular canals which completely control your balance. Also in the inner ear is the cochlea, a small spiral coil in which you would find the basilar membrane which has over 15,000 hair cells. These hair cells are the end of the auditory nerve which goes directly to the temporal lobe of the brain.

The hardest bone in your whole body is the temporal bone which protects two thirds of the auditory canal and all of the middle and inner ear. Nature, itself, seems to have placed a high priority on your hearing.

Protect your hearing. If you are issued hearing protection, use it!

## **FOOT PROTECTION**

When purchasing new protective footwear, ensure that it complies with ANSI Z41-1991, "American National Standard for Personal Protection-Protective Footwear".

Specific hazards require specific types of protective footwear. Certain types of footwear can offer traction, crush protection, penetration protection, electrical protection, chemical resistance, heat and/or fire resistance, dryness, cushion, or ankle-protection. Further, certain activities may require a combination of these features.

Your foot is a remarkable piece of engineering which is composed of 26 bones, muscles, fatty tissue, nerves, tendons, skin and joints. The foot itself can absorb a tremendous amount of punishment without damage. But there are limits and it would be a shame to lose a foot, or part of a foot, because of failure to wear the prescribed protective footwear.

## **HAND PROTECTION**

Your hand is composed of 20 muscles, 3 major nerves, 27 bones (14 of which are in your fingers) plus skin, fatty tissue, tendons, and joints. There are 15 muscles in your forearm which provide power to your hand. Your hand is your gateway to the world. It lets you do what you think. Its function is feeling and grasping.

Try to pick up something while holding your thumb still. It is very difficult. If the nerve to the small muscles of the thumb is severed, 80% of the total hand function is lost.

There are numerous types of hand protection (gloves) available -- each with a specific purpose. The most common are general purpose cotton work gloves which provide protection from minor skin abrasions and cold. However, there are many other types of gloves. Hands need protection from chemicals, abrasions, cuts and lacerations, temperature extremes, germs, radiation, impact, punctures, electricity, and other hazards in the workplace. Specific job requirements determine the type of hand protection needed. Proper hand protection must do more than protect your hand; it must allow you to accomplish your job assignment with efficiency as well as safety.

Wearing hand protection could prevent your hand and/or fingers from being severed, burned, crushed, punctured, lacerated, cut, or generally abused.

## **MISCELLANEOUS PERSONAL PROTECTION**

PPE immediately brings to mind eye, head, hand, and foot protective equipment. However, there may be other types of protective equipment which are readily available and which have the capability of protecting employees from identified hazards in the workplace. Some of these items may not fall under a specific OSHA standard or may not be ANSI approved or disapproved, however, in the judgment of our PPE Program Administrator, they may be appropriate for use in our operations.

## **RESPIRATORY PROTECTION**

Employees who, by nature of their work, are exposed to harmful aerosols, vapors, gases, contaminated air, or non-breathable air will be provided air purifying or air supplying respirators after training, medical evaluation, and fit testing per our Respiratory Protection Program. The one exception is dust masks worn solely for comfort and not for respiratory protection.

## **SUMMARY**

The true beneficiary of PPE utilization is the user. The whole thrust of this Program is to protect our employees from injury. This is accomplished by, among other things, explaining the process of hazard assessment; the reasons for PPE use; and the necessity of using the PPE selected.

What possible justification could there be for maiming, losing, or even slightly injuring a body part because available (and required) PPE was not used? "I forgot"; "I was in a hurry"; "I misplaced my PPE"; "I felt silly wearing PPE"; or "I really didn't believe PPE was necessary" will not undo what could be a lifetime of regret.

# TR Concrete

## CERTIFICATE OF WORKPLACE HAZARD ASSESSMENT

I certify, this date, that I have performed a hazard assessment of our job sites and our methods of operations.

This hazard assessment was accomplished to determine if hazards are present, or are likely to be present, which necessitate the use of personal protective equipment (PPE).

Identified hazards which cannot be eliminated through engineering controls or changes in procedures will be addressed by the use of selected PPE.

All affected employees will be informed of the required PPE for specific work locations or specific types of work to be performed and will receive initial training or retraining, if necessary, before being allowed to perform work requiring PPE.

If conditions or procedures change, a reassessment will be made.

---

Personal Protective Equipment  
Program Administrator

---

(Date)

## **TR Concrete**

### **PERSONAL PROTECTIVE EQUIPMENT (PPE)**

#### **[Hearing Conservation Overview]**

TR Concrete  
Safety Program

SECTION III

PERSONAL PROTECTIVE EQUIPMENT (PPE)  
[Hearing Conservation Overview]

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29 CFR 1926.52, Occupational Noise Exposure  
29 CFR 1926.101, Hearing Protection

## OVERVIEW

Wherever it is not feasible to reduce the noise levels or duration of exposures to those specified in Table D-2, below, ear protective devices shall be provided and used.

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Hearing damage is caused by noise level and duration of exposure to the noise. If, after using the formula below, the equivalent noise exposure exceeds unity (1), then a Hearing Conservation Program will be initiated.

$F(e) = (T(1) \text{ divided by } L(1)) + (T(2) \text{ divided by } L(2)) + \dots + (T(n) \text{ divided by } L(n))$  where:

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T = The period of noise exposure at any essentially constant level.

L = The duration of the permissible noise exposure at the constant level (from Table D-2).

If the value of F(e) exceeds unity (1) the exposure exceeds permissible levels.

A sample computation showing an application of the formula in paragraph (d)(2)(ii) of this section is as follows. An employee is exposed at these levels for these periods:

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$F(e) = 0.500 + 0.25 + 0.188$

$F(e) = 0.938$

Since the value of F(e) does not exceed unity, the exposure is within permissible limits.

Hearing protection is different from most other types of PPE because loss of hearing generally occurs painlessly over a period of time and, when finally realized, the damage is permanent.



As one would reasonably expect, acoustic trauma to your hearing can cause instant and permanent damage.

The initial determination of excessive noise levels is generally subjective. Indications of excessive noise would include: actual information pertaining to specific machines; personal observation; complaints from employees; and noticed indications of hearing loss. It is requested that employees draw attention to work situations where there is an apparent loudness that possibly requires hearing protection.

The noise levels on our job sites have been determined to be within acceptable levels.

At no cost, and replaced as necessary, hearing protectors will be provided as needed.

Appropriate hearing protectors will be available in a variety of styles from which to choose from to provide a comfortable fit; employees will be made aware of the proper use and care of the protectors selected.

In selecting appropriate hearing protectors, the Program Administrator will consider the below factors:

- a. the hearing protector's noise reduction rating (Subject Fit) [NRR(SF)].

NOTE: The NRR(SF), measured in dB and found as a number on the hearing protector, can be used by subtracting that number from an A-weighted sound level or a time-weighted average noise exposure to determine the level of protection for most (84%) of the users.

NOTE: The NRR(SF) is based on tests of continuous noise and may not be an appropriate indicator for protection against impulse or impact noise.

- b. the user's daily equivalent noise exposure.
- c. variations in noise levels.
- d. user preference.
- e. communication needs.
- f. hearing ability.
- g. compatibility with other safety equipment.
- h. user's physical limitations.
- i. climate and other working conditions.
- j. replacement, care, and use requirements.

## **TR Concrete**

### **SCAFFOLD & LADDER**

**TR Concrete**  
**Safety Program**

**SECTION III**  
**SCAFFOLD & LADDER**  
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**OSHA Standards:**

**Scaffold Standards:**

- 29 CFR 1926.450 *Scope, Application and Definitions Applicable to this Subpart*
- 29 CFR 1926.451 *General Requirements*
- 29 CFR 1926.452 *Additional Requirements Applicable to Specific Types of Scaffolds*
- 29 CFR 1926.454 *Training Requirements (For Scaffold Safety)*
- 1926 Subpart L App A: *Scaffold Specifications*
- 1926 Subpart L App D: *List of Training Topics for Scaffold Erectors and Dismantlers*
- 1926 Subpart L App E: *Drawings and Illustrations*

**Ladder Standards:**

- 29 CFR 1926.1051 *General Requirements (Ladders)*
- 29 CFR 1926.1053 *Ladders*
- 29 CFR 1926.1060 *Training Requirements (Ladders)*

## OVERVIEW

Scaffolds and ladders are everyday items on most construction sites and their use presents specific hazards -- the most common being electrical shock, falls and falling objects. This program addresses these hazards and provides safety rules for the use of this type of equipment.

Affected individuals must be aware of the specific hazards applicable to their work situation and the proper safety procedures for avoiding these hazards.

All scaffold and ladder applications require a knowledge of: equipment inspection, load capacities, ground conditions, effects of weather, fall protection, potential electrical hazards, and protection from falling objects. It is expected that all personnel understand how to perform work in a safe manner while on a scaffold or ladder, recognize unsafe work situations, and effectively deal with them. If you are aware of a ladder or scaffold hazard (or any safety hazard), immediately bring it to the attention of your immediate Supervisor or the competent person on the job site.

## SCAFFOLD SAFETY

A scaffold, by definition, is any temporary elevated platform and its supporting structure used for supporting employees or materials or both. Because of the numerous types of scaffolds, the infinite possible combinations of uses, the various surface features on which the scaffold may rest, and the varying conditions in which scaffolds may be used, it would be impossible to detail what to do in every situation. The goal of any safety program - including scaffold safety - is to eliminate the possibility of harm to employees while they are performing their duties.

Only safety harnesses, not belts, will be used in fall protection.

Leading causes for scaffold accidents and injuries are plank slippage, being struck by falling objects, and the actual collapse of the support structure or planking.

## DEFINITIONS

There are a number of terms and phrases which must be understood by all employees when dealing with scaffolds. Below are listed important definitions to aid in the understanding of this Program, however they are not all-inclusive. A complete list of definitions, including the many types of scaffolds and their individual components is found in 29 CFR 1926.450.

**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.

**COMPETENT PERSON:** one who is capable of identifying existing and predictable hazards in the surrounding or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

**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.

**FAILURE:** load refusal, breakage, or separation of component parts. Load refusal is the point where the ultimate strength is exceeded.

**GUARDRAIL SYSTEM:** a vertical barrier consisting of, but not limited to, top rails, mid rails, and posts erected to prevent employees from falling off a scaffold platform or walkway to lower levels.

**LANDING:** a platform at the end of a flight of stairs.

**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.

**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.

**OPEN SIDES AND ENDS:** the edges of a platform that are more than 14 inches 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.

**PERSONAL FALL ARREST SYSTEM:** a system used to arrest an employee's fall. It consists of an anchorage, connectors, a 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.

**QUALIFIED PERSON:** 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 equipment.

**SCAFFOLD:** any temporary elevated platform (supported or suspended) and its supporting structure (including points of anchorage) used for supporting employees or materials or both.

**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.

## **GUIDELINES FOR SCAFFOLD USE**

### **ALL SCAFFOLDS:**

Employees who work on any type of scaffold must follow the below listed guidelines:

- a. scaffolds and scaffold components shall not be loaded in excess of their maximum intended loads or rated capacities, whichever is less.
- b. scaffolds and scaffold components will be inspected for visible defects by a competent person before each work shift and after any occurrence which could affect a scaffold's structural integrity.
- c. damaged or weakened parts will be immediately replaced.
- d. 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. Such activities shall be performed only by experienced and trained employees selected for such work by the competent person.
- e. work on or from scaffolds is prohibited during storms or high winds unless a competent person has determined that it is safe for employees to be on the scaffold and these employees are protected by a personal fall arrest system or wind screens.
- f. personnel may not work on scaffolds covered with snow, ice or other slippery material except to remove the material with extreme care.

- g. 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.
- h. debris shall not be allowed to accumulate on platforms.
- i. make-shift devices on top of scaffold platforms shall not be used to increase the working level height of employees.
- j. guardrails should have smooth surfaces to prevent puncture, laceration, or snagging injuries.
- k. make-shift parts will not be used. A nail is not a substitute for a pin.

### **SUPPORTED SCAFFOLDS:**

Employees who work on supported scaffolds must follow the below listed rules and guidelines. These guidelines cover most, but not all situations. The competent person will address unusual situations.

- a. Each platform unit on all working levels of a scaffold shall be fully planked or decked between the front uprights and the guardrail supports and each platform unit shall be installed so that the space between adjacent units and the space between the platform and the uprights is no more than 1 inch wide (where feasible.)
- b. Supported scaffolds must have a height to base (including outrigger supports, if used) width ratio of no more than 4:1 unless restrained from tipping by guying, tying, bracing, or equivalent means. The competent person will direct the procedures for prevention of tipping.
- c. Supported scaffold poles, legs, posts, frames and uprights must rest on **base plates AND** mud sills or other adequate firm foundation.

**Note: Base plates must always be used on supported scaffolds**

- 1. Footings must be level, sound, rigid, and capable of supporting the loaded scaffold without settling or displacement.
- 2. Unstable objects can not be used to support scaffolds or platform units.
- 3. Unstable objects shall not be used as working platforms.
- 4. 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.
- 5. Fork-lifts shall not be used to support scaffold platforms unless the entire platform is attached to the fork and the fork-lift is not moved horizontally while the platform is occupied.

- d. Supported scaffold poles, legs, posts, frames and uprights shall be plumb and braced to prevent swaying and displacement.
- e. 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, in the case of mobile scaffolds:
  - 1. the surface on which the scaffold is being moved is within 3 degrees of level and free of pits, holes, and obstructions.
  - 2. the height to base width ratio of the scaffold during movement is two to one or less.
  - 3. outrigger frames, when used, are installed on both sides of the scaffold.
  - 4. when power systems are used, the propelling force is applied directly to the wheels and does not produce a speed in excess of 1 foot per second.
  - 5. no employee is on any part of the scaffold which extends outward beyond the wheels, casters, or other supports.
  - 6. before the scaffold is moved, each employee on the scaffold must be made aware of the move.

### **SUSPENDED SCAFFOLDS:**

Employees who work on suspended scaffolds must follow the below listed rules and guidelines. These guidelines cover most, but not all situations. The competent person will address unusual situations.

- a. All suspension scaffold 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).
- b. Direct connections on suspension scaffolds must be evaluated before use by a competent person who shall confirm that the supporting surfaces are capable of supporting the loads to be imposed.



- c. Counterweights shall be made of non-flowable material. Sand, gravel and similar materials that can be easily dislocated may not be used as counterweights.
  - 1. Only items specifically designed as counterweights shall be used as counterweights. Construction material shall not be used as counterweights.
  - 2. Counterweights shall not be removed from an outrigger beam until the scaffold is disassembled.
- d. The use of repaired wire rope as suspension rope is prohibited.
- e. Wire ropes shall not be joined together except through the use of eye splice thimbles and secured by eye splicing or equivalent means.
- f. Wire ropes shall be inspected for defects by a competent person prior to each work shift and after every occurrence which could affect a wire rope's integrity. Wire ropes will be **replaced** if any of the following conditions exist:
  - 1. any physical damage which impairs the function and strength of the rope.
  - 2. kinks that might impair the tracking or wrapping of rope around the drum(s) or sheave(s).
  - 3. six randomly distributed broken wires in one rope lay or three broken wires in one strand in one rope lay.
  - 4. abrasion, corrosion, scrubbing, flattening or peeling causing loss of more than one third of the original diameter of the outside wires.
  - 5. heat damage caused by a torch or any damage caused by contact with electrical wire.
  - 6. evidence that the secondary brake has been activated during an overspeed condition and has engaged the suspension rope.
- g. Gasoline-powered equipment and hoists shall not be used on suspension scaffolds.
- h. Gears and brakes of power-operated hoists used on suspension scaffolds shall be enclosed.
- i. Manually operated hoists shall require a positive crank force to descend.

## **GUIDELINES FOR THE CONTROL OF ELECTRICAL HAZARDS**

To prevent the possibility of electrical shock, neither the scaffold nor any conductive material handled on the scaffold shall come closer to exposed and energized power lines as noted below:

### **INSULATED POWER LINES**

<u>Voltage</u>	<u>Minimum Distance</u>	<u>Alternatives</u>
Less than 300 volts	3 feet	
300 volts to 50 kv	10 feet	
More than 50 kv	10 feet plus 0.4" for each 1 kv over 50 kv	2 X's the length of the line insulator, but never less than 10 feet

### **UNINSULATED POWER LINES**

<u>Voltage</u>	<u>Minimum Distance</u>	<u>Alternatives</u>
Less than 50 kv	10 feet	
More than 50 kv	10 feet plus 0.4" for each 1 kv over 50 kv	2 X's the length of the line insulator, but never less than 10 feet

Scaffolds may be closer to power lines if it is necessary to accomplish the work, but 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 or relocated the lines or installed protective coverings to prevent accidental contact with the lines.

When using 110 volt electrical power tools or lights, ground fault circuit breakers must be used. Electrical extension cords must be inspected for cuts or cracks in the insulation before use.

## **GUIDELINES FOR THE CONTROL OF FALL HAZARDS**

Each employee working on a scaffold more than 10 feet above a lower level must be protected from falling to that lower level as noted below:

<u>SCAFFOLD TYPE</u>	<u>FALL PROTECTION REQUIREMENTS</u>
Boatswains' Chair Catenary Scaffold Float Scaffold Needle Beam Scaffold Ladder Jack Scaffold	Personal Fall Arrest System

## SCAFFOLD TYPE

## FALL PROTECTION REQUIREMENTS

Single-Point Adjustable Suspension Scaffold	Personal Fall Arrest System and a
Two-Point Adjustable Suspension Scaffold	Guardrail System
Crawling Board (Chicken Ladder)	Personal Fall Arrest System; *Guardrail System or a $\frac{3}{4}$ " diameter grabline or equivalent handhold securely fastened beside each crawling board.
Self-Contained Adjustable Scaffold	*Guardrail System when the platform is supported by the frame structure; by both a Personal Fall Arrest System and a *Guardrail System when the platform is supported by ropes.
Walkway Located within a Scaffold	*Guardrail System installed within $9\frac{1}{2}$ " of and along at least one side of the Walkway.
Supported Scaffolds used while performing Overhand Bricklaying	Personal Fall Arrest System or a *Guardrail System (except at the side next to the wall being laid.)
All Other Scaffolds not specified above	Personal Fall Arrest System or a *Guardrail System

\*Guardrail Systems must have a minimum 200 pound toprail capacity.

## **SPECIAL PRECAUTIONS FOR THE PREVENTION OF FALLING**

### **PLANKING REQUIREMENTS:**

Plank slippage causes falls and falls cause injuries. Below are requirements for platforms and/or planks used on scaffolds and walkways:

- a. 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 space between the platform and the uprights is no more than 1 inch wide.

1. Exceptions to the above:

when a wider space is necessary (for example, to fit around uprights when side brackets are used to extend the width of the platform). In this instance, the platform must be planked or decked as fully as possible and the remaining open space between the platform and the uprights shall not exceed  $9\frac{1}{2}$ ", or

when planking or decking is used solely for walkways or solely for use by personnel erecting or dismantling the scaffold. In these instances, only the planking the competent person establishes as necessary to provide safe working conditions is required.

b. Each scaffold platform and walkway shall be at least 18 inches wide.

1. Exceptions to the above:

each ladder jack scaffold, top plate bracket scaffold, roof bracket scaffold, and pump jack scaffold shall be at least 12 inches wide.

there is no minimum width for boatswain's chairs.

where working areas are so narrow that platforms and walkways cannot be at least 18 inches wide, the platforms and walkways shall be as wide as feasible. In these instances, personnel shall be protected from fall hazards by the use of guardrails and/or personal fall arrest systems regardless of the height.

c. The front edge of all platforms shall not be more than 14 inches from the face of the work unless guardrail systems are erected along the front edge and/or fall arrest systems are used.

1. Exceptions to the above:

for outrigger scaffolds, the maximum distance from the face of the work shall be 3 inches.

for plastering and latching operations, the maximum distance from the face of the work shall be 18 inches.

d. Each end of a platform, unless cleated or otherwise restrained by hooks or equivalent means, shall extend over the centerline of its support by at least 6 inches and not more than:

1. twelve (12) inches for a platform 10 feet or less in length unless the platform is designed and installed so that the cantilevered\* portion of the platform is able to support personnel and/or material without tipping, or has guardrails which block access to the cantilevered end.

2. eighteen (18) inches for a platform greater than 10 feet in length unless it is designed and installed so that the cantilevered\* portion of the platform is able to support personnel without tipping or has guardrails which block access to the cantilevered end.

\*NOTE: Cantilevered portion of the platform is the portion of the platform which extends beyond the support by 12 or 18 inches.

- e. On scaffolds where scaffold planks are abutted to create a long platform, each abutted end shall rest on a separate support surface. The use of common support members such as “T” sections to support abutting planks or hook on platforms designed to rest on common support is acceptable.
- f. Where platforms are overlapped to create a long platform, the overlap shall occur only over supports and shall not be less than 12 inches unless the platforms are nailed together or otherwise restrained to prevent movement.
- g. At 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; platforms which rest at right angles over the same bearer shall be laid second on top of the first platform.
- h. With the exception that the edges may be marked for identification, wood platforms shall not be covered with opaque finishes. Platforms may be coated with wood preservatives, fire-retardant finishes, and slip-resistant finishes as long as the coatings allow the actual wood to be seen. This is so the wood platforms may be inspected for damage and/or deterioration.
- i. Scaffold components manufactured by different manufacturers can not be intermixed unless the components fit together without force and the scaffold’s structural integrity, as determined by a competent person, is maintained.
- j. 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 below acceptable levels.

### **FALL PROTECTION DURING ERECTION & DISMANTLING OF SUPPORTED SCAFFOLDS**

**Supported Scaffolds:** The competent person must determine the feasibility and safety of providing fall protection for employees erecting and dismantling supported scaffolds.

**Suspended Scaffolds:** Fall protection for those erecting and dismantling suspended scaffolds is possible because the anchorage points used for supporting the scaffold would certainly support a fall protection system. Therefore, fall protection will be utilized for personnel erecting or dismantling supported scaffolds.

## GUIDELINES FOR THE CONTROL OF FALLING OBJECTS

All personnel working on a scaffold must wear hard hats. Further protection from falling objects will be provided, if needed, by toeboards\*, screens, or guardrail systems; or through the erection of debris nets, catch platforms, or canopy\*\* structures that contain or deflect the falling objects.

Objects that are too heavy or massive to be prevented from falling by the above measures will be kept away from the edge of the scaffold and secured as necessary to prevent their falling.

Where there is a possibility of falling objects (tools, materials, or equipment), the below safeguards must be implemented:

- a. 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**
- b. a toeboard will be erected along the edge of platforms more than 10 feet above lower levels for a distance sufficient to protect employees below.

When tools, material, or equipment are piled to a height higher than the top edge of the toeboard, the below listed safeguards must be implemented:

- a. paneling or screening extending from the toeboard or platform to the top of the guardrail shall be erected for a distance sufficient to protect employees below, **or**
- b. a guardrail system shall be installed with openings small enough to prevent passage of potential falling objects, **or**
- c. a canopy structure, debris net or catch platform strong enough to prevent passage of potential falling objects shall be erected over the employees below.

**\*NOTE:** Toeboards must be capable of withstanding, without failure, a force of at least 50 pounds applied in any downward or horizontal direction and be at least 3½" high from the top edge of the walking/working surface. Further, toeboards must be secured to the outermost edge of the platform and not have more than ¼" clearance above the walking/working surface. Toeboards must either be solid or have openings not over 1" in the greatest dimension.

**\*\*NOTE:** Canopies used for falling object protection must be installed between the falling object hazard and the employees below.

## ACCESS

Two feet -- 24 inches -- is the height at which some sort of access is required to reach a scaffold platform. When a scaffold platform is two (2) feet above or below the point of access (often the ground level), portable ladders, hook-on ladders, ramps, walkways, ladder stands, etc. must be used. Never use a crossbrace as a means of getting on or off a scaffold.

Hook-on and attachable ladders must:

- a. be positioned so they do not tip the scaffold.
- b. have the bottom rung within 24 inches of the supporting level.
- c. have rest platforms at least at 35-foot vertical intervals when used on supported scaffolds.
- d. be designed for use with the scaffold being used.
- e. have a minimum spacing between rungs of 16  $\frac{3}{4}$  inches and a minimum rung length of 11  $\frac{1}{2}$  inches.

Stairway type ladders have essentially the same requirements except that:

- a. the rest platforms must be at the 12 foot (maximum) vertical level.
- b. the minimum step width is 16 inches (mobile scaffold stairway-type ladders: 11  $\frac{1}{2}$  inches).
- c. slip-resistant treads are required on all steps and landings.

Stairtowers, if used, must have the bottom step within 24 inches of the supporting level and have

- a. a toprail and midrail (stairrail) on each side.
- b. a landing platform at least 18 inches by 18 inches at each level.
- c. a width of 18 inches between stairrails.
- d. resistant surfaces on treads and landings.

Employees must be able to safely get on and off a scaffold platform and, at 24 inches, you will need a specific method of access.

## **GENERAL VERSUS SPECIFIC SCAFFOLD SAFETY GUIDELINES**

General safety guidelines apply to all situations. In all situations, employees must be aware of:

- a. potential electrical hazards, fall hazards, and falling object hazards and how to eliminate them.
- b. the proper use of scaffolds and the proper handling methods of materials on the scaffold being used.
- c. the maximum intended load and the load-carrying capacities of the scaffold being used and never exceeding these limits.

Within the broad categories of suspended and supported scaffolds, there are many specific types of scaffolds -- each with its own limitations and special characteristics. Each job site has its own unique ground composition on which a supported scaffold is erected, or unique attachment points for suspended scaffolds. The competent person on the job site will instruct affected employees on any unusual or unique items that must be known about a specific circumstance.

## **LADDERS**

Ladder safety is no less important than scaffold safety. How easy it is to overlook ladder safety. After all, who hasn't used a ladder? All employees using ladders are required by OSHA standard to receive training and understand proper procedures for ladder use before using a ladder in a work situation. For employees who have been using ladders safely for years, consider this a refresher course.

American National Standards Institute (ANSI) and NIOSH approval labels should never be covered with paint or tape. Having ladders that are constructed to standard will prevent collapse and resultant falls.

Specific operational procedures for ladders directly relating to the elimination of fall hazards are listed below:

- a. a stairway or a ladder will be provided at all personnel points of access where there is a break in elevation of 19 inches or more.
- b. ladders will never be overloaded.
- c. ladder rungs, cleats, and steps must be parallel, level, and uniformly spaced when a ladder is in position for use.
- d. ladders will not be tied or fastened together unless they are so designed.



- e. portable ladders used for gaining access to an upper level will extend at least 3 feet above the upper landing surface or the ladder will be secured at its top.
- f. ladders must be free of oil, grease, or other slipping hazards.
- g. ladders must be used for the purpose for which they were designed.
- h. non-self supporting ladders will be used at an angle that the horizontal distance from the top support to the foot of the ladder is approximately  $\frac{1}{4}$  of the working length of the ladder.
- i. ladders will only be used on stable and level surfaces unless secured to prevent displacement.
- j. ladders shall not be used on slippery surfaces unless secured or provided with slip-resistant feet to prevent accidental displacement.
- k. ladders placed in any location where they can be displaced by workplace activities or traffic will be secured to prevent accidental displacement, or a barricade will be used to keep the activities or traffic away from the ladder.
- l. the area around the top and bottom of the ladder shall be kept clear.
- m. ladders shall not be moved, shifted, or extended while occupied.
- n. the top step of a stepladder shall not be used as a step.
- o. portable ladders with structural defects will be immediately marked in a manner that readily identifies them as defective and removed from service until repaired.
- p. when ascending or descending a ladder, one must face the ladder.
- q. employees must use at least one hand to grasp the ladder when progressing up and/or down the ladder.
- r. employees are not to carry any object or load that could cause loss of balance and a resultant fall.

Fixed ladders where the length of climb is less than 24 feet but the top of the ladder is greater than 24 feet above the lower level must have cages, wells, ladder safety devices, or self-retracting lifelines.

Fixed ladders where the length of climb equals or exceeds 24 feet shall have at least one of the following:

- a. ladder safety devices;
- b. self-retracting lifelines and rest platforms not exceeding 150 feet;
- c. a cage or well, and multiple ladder sections not exceeding 50 feet in length. At the maximum interval of 50 feet, ladder sections will be offset on landing platforms.

## **TRAINING**

Interactive training will be given to all employees who will be performing work on scaffolds by a competent person; it will focus on the hazards associated with the type(s) of scaffolding used on our job site, as well as the methods to minimize or eliminate those hazards.

For those employees who will be erecting, disassembling, moving, operating, repairing, inspecting, or maintaining our scaffolds, the competent person will provide additional training applicable to their job requirements.

Retraining will be provided should new types of scaffolding be introduced, standards change, or on-the-job performance indicate that a particular employee has not retained the required proficiency in scaffold safety.

Training will be given, as necessary, to all employees who will be performing work using ladders by a competent person. Issues addressed will include:

- a. the nature of fall hazards in the work area.
- b. the correct procedures for erecting, maintaining, and disassembling the fall protection systems to be used.
- c. the proper construction, placement, care and handling of all ladders.
- d. the maximum intended load-carrying capacities of ladders used.
- e. the availability of the ladder standards which are contained within this program.

Retraining will be provided, as necessary. Observation of failure to follow established ladder safety procedures would be a cause for retraining.

## **MINNESOTA RULES**

This program is enhanced or modified by the below copyrighted MNOSHA Rules. If there is a conflict between the federal standards and the MNOSHA Rules, the MNOSHA Rules take precedence. These Rules are printed in their entirety.

## **5207.0200 SHIPS LADDERS.**

Subpart 1. **Requirement.** Employers shall replace fixed and portable ladders with ships ladders whenever possible.

The angle of rise of ships ladders shall be between 50 and 60 degrees measured from the horizontal.

Subp. 2. **Soffits.** Where ladders are located one above the other, soffits shall be enclosed except where solid treads and risers are provided.

Subp. 3. **Treads.** Treads shall be uniformly spaced eight to 12 inches vertically. Tread surfaces other than steel grating shall be provided with skid resistance. Treads shall be flat steps that are a minimum of six inches wide and at least 24 inches long.

Subp. 4. **Handrails.** Handrails shall be provided on both sides of ladders and shall be placed to run parallel with stringers and be positioned 12 to 14 inches measured vertically, from the stringers. Handrail diameters shall be 1-1/4 to 1-5/8 inches outside diameter. When ships ladders serve door entrances, handrails shall continue to the door.

Subp. 5. **Stringers.** Ladder stringers shall be at least six inches in depth and permanently attached at terminations.

STAT AUTH: MS s 182.655

HIST: 12 SR 634

*Current as of 10/30/06*

## **5207.0210 SHIPS LADDERS, SPECIAL REQUIREMENTS.**

Ships ladders shall be provided in all buildings where mechanical equipment is located on the roof in order to make all equipment accessible to maintenance and inspection personnel. Ships ladders shall be placed at an angle between 50 and 60 degrees measured from the horizontal. The opening in ceilings and building roofs shall have a minimum area of nine square feet and a minimum width of two feet. No ships ladders shall be located in or pass through elevator shafts, elevator penthouses, or elevator machine rooms.

Inside a penthouse, handrails shall continue through ceiling and roof openings to a distance of 36 inches. A guardrail and intermediate rail shall be provided on all open sides with a substantial chain guard on the entrance.

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*Current as of 10/30/06*

## **TR Concrete**

### **PREVENTION OF COLD AND HEAT STRESS**

**Page 1: Prevention of Cold Stress**

**Page 5: Prevention of Heat Stress**

## TR Concrete

### Prevention of Cold Stress

Cold related work illness is a real threat to our employees who work outside during months of cold weather. In order to lessen this threat, this program has been prepared.

All employees will be given instruction in this program prior to working outside where the possibility of frostbite and hypothermia exist.

On days when applicable environmental conditions exist (**temperatures or wind chill factors equal to or less than 30 degrees F**), the supervisor will, before the morning shift starts, remind workers of the danger of frostbite and hypothermia, the procedures to lessen its impact, and, in the worst case, the procedure for medical response.

All persons should recognize the symptoms of cold related illness.

#### FROSTBITE

(Sensations of coldness; tingling, stinging or aching feeling of the exposed area followed by numbness of ears, fingers, toes, cheeks, and noses. Frostbitten areas appear white and cold to the touch)

Seek medical assistance immediately.

Frostbitten parts should be covered with dry, sterile gauze or soft, clean cloth bandages.

**DO NOT** massage frostbitten tissue

Take measures to prevent further cold injury.

#### GENERAL HYPOTHERMIA

(Shivering, an inability to do complex motor functions, lethargy, and mild confusion)

Conserving remaining body heat.

Providing additional heat sources.

Seek medical assistance for persons.

#### SEVERE HYPOTHERMIA

(Unresponsive and not shivering)

Seek medical attention immediately.

Reduce heat loss by:

1. obtaining shelter.
2. removal of wet clothing.
3. adding layers of dry clothing, blankets, or using a pre-warmed sleeping bag.

The four environmental conditions that cause cold-related stress are low temperatures, high/cool winds, dampness and cold water. Wind chill, a combination of temperature and velocity, is a crucial factor to evaluate when working outside. For example, when the actual air temperature of the wind is 40°F (4°C) and its velocity is 35 mph, the exposed skin receives conditions equivalent to the still-air temperature being 11°F. A dangerous situation of rapid heat loss may arise for any individual exposed to high winds and cold temperatures.

The purpose of this program is to take definitive measures prior to the onset of cold related illnesses so that medical response will not be necessary. If the above conditions do present themselves, the supervisor, who will always have access to a mobile phone, will follow our standard emergency procedures.

Definitive measures to prevent cold related illness include:

### **1. Personal Protective Clothing**

Personal Protective Clothing is the most important step in fighting the elements is providing adequate layers of insulation from them. Wear at least three layers of clothing:

1. An outer layer to break the wind and allow some ventilation (like Gore-Tex® or nylon);
2. A middle layer of wool or synthetic fabric (Qualofil or Pile) to absorb sweat and retain insulation in a damp environment. Down is a useful lightweight insulator; however, it is ineffective once it becomes wet.
3. An inner layer of cotton or synthetic weave to allow ventilation.

Pay special attention to protecting feet, hands, face and head. Up to 40% of body heat can be lost when the head is exposed. Footgear should be insulated to protect against cold and dampness. Keep a change of clothing available in case work garments become wet.

### **2. Engineering Controls**

Engineering Controls help reduce the risk of cold-related injuries.

1. Use an on-site source of heat, such as air jets, radiant heaters, or contact warm plates.
2. Shield work areas from drafty or windy conditions.
3. Provide a heated shelter for employees who experience prolonged exposure to equivalent wind-chill temperatures of 20°F or less.
4. Use thermal insulating material on equipment handles when temperatures drop below 30°F.

### **3 Safe Work Practices**

Safe Work Practices, such as changes in work schedules and practices, are necessary to combat the effects of exceedingly cold weather. Possible workable safe practices include:

1. Allowing a period of adjustment to the cold before embarking on a full work schedule.
2. Permitting employees to set their own pace and take extra work breaks when needed.
3. Reducing, as much as possible, the number of activities performed outdoors. When employees must brave the cold, selecting the warmest hours of the day and minimize activities that reduce circulation.
4. Ensuring that employees remain hydrated.
5. Establishing a buddy system for working outdoors.
6. Educating employees to the symptoms of cold-related stresses -- heavy shivering, uncomfortable coldness, severe fatigue, drowsiness, or euphoria.

#### **Provision of water**

Employees will have access to adequate quantities of potable drinking water.

Where the supply of water is not plumbed or otherwise continuously supplied, water will be provided in sufficient quantity.

Supervisor will provide frequent reminders to employees to drink frequently, and, if needed, more water breaks will be provided.

Drinking water will be dispensed in containers with a tight sealing lid and labeled as Drinking Water. Drinking water containers are to be cleaned daily. Water containers will be placed as close as possible to the workers.

Supervisors will monitor water consumption and water supply and ensure adequate levels are available to last the whole shift

Disposable/single use drinking cups will be provided to employees

Supervisors will remind employees that personal military style canteens may be worn containing water. In cold weather conditions, employees are encouraged to drink warm, sweet beverages (sugar water, sports-type drinks. They should avoid drinks with caffeine (coffee, tea, or hot chocolate). Employees are cautioned, however, that sharing water from a personal canteen is forbidden and, because of the health hazard to the user and the person with whom it is shared, disciplinary action will be taken

against both employees if they drink out of the same container. This disciplinary action will be documented using our disciplinary enforcement form.

### **Training**

All employees will read this program and be given interactive training in its provisions. A copy of this program will be kept on the job site during applicable periods of cold weather.

All supervisors will read the below informational items prior to utilization of this program and have an opportunity for discussion and clarification with our Safety Director.

OSHA Cold Stress QuickCard 3156



## TR Concrete

### Prevention of Heat Stress

Heat related work illness is a real threat to our employees who work outside during months of high heat and humidity. In order to lessen this threat, this program has been prepared.

All employees will be given instruction in this program prior to working in heat illness inducing environments or other severe environmental conditions.

On days when applicable environmental conditions exist - periods of hot weather (equal to or greater than 85°F and 40% Relative Humidity) -the site supervisor will, before the morning shift starts, remind workers of the danger of heat illness, the procedures to lessen its impact, and, in the worst case, the procedure for medical response.

All persons should recognize the symptoms of heat related illness.

#### HEAT EXHAUSTION

(Fatigue; weakness; profuse sweating; normal temperature; pale clammy skin; headache; cramps; vomiting; fainting)

Remove from hot area.

Have victim lay down and raise feet.

Apply cool wet cloths.

Loosen or remove clothing.

Allow small sips of water if victim is not vomiting.

#### HEAT STROKE

(Dizziness; nausea; severe headache; hot dry skin; confusion; collapse; delirium; coma and death)

Call for immediate medical assistance.

Remove victim from hot area.

Remove clothing.

Have victim lay down.

Cool the body (shower, cool wet cloths)

**Do not** give stimulants.

The purpose of this program is to take definitive measures prior to the onset of heat exhaustion and heat stroke so that medical response will not be necessary. If the above conditions do present themselves, the supervisor, who will always have access to a mobile phone, will follow our standard emergency procedures.

Definitive measures to prevent heat related illness include:

1. Provision of water
2. Provision of shade
3. Provision of rest (recovery period)
4. Modified work procedures

### **Provision of water**

Water is a key preventive measure to minimize the risk of heat related illnesses. Employees will have access to adequate quantities of potable drinking water.

Where the supply of water is not plumbed or otherwise continuously supplied, water will be provided in sufficient quantity at the beginning of the work shift to provide one quart per employee per hour for drinking for the entire shift.

Supervisors will encourage the frequent drinking of water. The supervisor or a designated person will monitor water consumption every 30 minutes. Employees are encouraged to report bad tasting water or low levels of water immediately so the situation can be corrected.

Supervisor will provide frequent reminders to employees to drink frequently, and, if needed, more water breaks will be provided.

Every morning during conditions where this program is applicable, there will be short safety meetings to remind workers about the importance of frequent consumption of water throughout the shift.

Drinking water will be dispensed in containers with a tight sealing lid and labeled as Drinking Water. Drinking water containers are to be cleaned daily. Water containers will be placed as close as possible to the workers.

Supervisors will monitor water consumption and water supply and ensure adequate levels are available to last the whole shift

Disposable/single use drinking cups will be provided to employees

During extreme conditions, the supervisor will blow an air horn to remind workers to take a water break.

Supervisors will remind employees that personal military style canteens may be worn containing water. Employees are cautioned, however, that sharing water from a personal canteen is forbidden and, because of the health hazard to the user and the person with whom it is shared, disciplinary action will be taken against both employees if they drink out of the same container. This disciplinary action will be documented using our disciplinary enforcement form.

As a reminder of the importance of water to the human system, the following information is supplied which was extracted from one of our safety meetings:

## FLUIDS

If you heard in advance that this safety meeting was on job site fluids, you may well have thought that the meeting would focus on the storage, use, clean-up, and possible emergency procedures involved with the liquid chemical products used on or job sites. You'd be wrong. While the above are important topics and questions related to them should be addressed to the competent person, this safety meeting is about **your** bodily fluids.

From a safety standpoint, you must not neglect your need for potable (drinkable) fluids. Water is not only the most abundant of all compounds found on the earth, it is the most abundant part of you -- actually about 65% of you is water.

On construction sites, exertion and heat dictate the need for plenty of water.

Drink fluids! From a life process standpoint, what fluid intake is doing is keeping you healthy by allowing your body to maintain its core body temperature at its appropriate level. When your brain senses that cooling action is needed, your body circulates blood to your skin to allow it to cool with the outside temperature. If the water used for sweat is not replaced, a water deficit starts to occur. The millions of chemical reactions taking place in your body at every moment can only occur in the presence of water. The fluids in your body transport nourishment, gases, and waste.

Imagine your body as a water based chemical factory that functions only within a narrow temperature range. An average, healthy person, at rest, has an oral temperature of between 98.6°F and 100.4°F. If your body temperature reaches 105.8°F, convulsions may occur. Your whole central nervous system is impaired when your body temperature rises 9°F above normal. At 106.0°F, the thermoregulatory center in your brain fails and, because of damage to your central nervous system, the sweating (cooling) mechanism cuts off when you need it most. It is a vicious circle -- the hotter you get, the more heat you generate through metabolism. In fact, at 107.6°F, cellular metabolism is 50% higher than at normal temperatures.

Without getting too graphic, here are some of the problems associated with extreme water loss: cells will shrink; the skin will lose its elasticity; skin and mucous membrane cells will dry out;

eyeballs will become soft; weight loss will occur; the body temperature will rise; apprehension, restlessness, and even coma may occur; urine will become concentrated; renal shutdown will occur; red blood cells will shrink; death.

Stay healthy! Drink water!

Water is truly the stuff of life.

### **Provision of shade**

The supervisor will ensure that employees have access to shade to minimize the risk of heat related illnesses. If natural shade is not available, the supervisor will ensure that sun umbrellas or portable canopies are provided in adequate number. These umbrellas or canopies will be placed in close proximity to the work activity (i.e., no more than 50-100 yards).

Ideally, if available, employees will be allowed to get out of the sun by entering an air conditioned structure such as a building or job trailer. This not only provides shade, it provides a cool, less humid atmosphere. Any employee who feels the need for shade will protect himself/herself from the sun for a period of not less than 5 minutes.

Lastly, but importantly, persons must provide personal shade in the form of shirts (preferably light colored to reflect the sun). Shirts are required to prevent sunburn, another health hazard.

### **Provision of rest (recovery period)**

While shade and rest often go hand in hand, they are two distinct activities. Any employee who, due to heat, humidity, or exertion under the provisions of this program, may rest for a period of not less than 5 minutes if that employee believes a preventative recovery period is required.

### **Modified work procedures**

The supervisor will make every effort, consistent with our effort to properly perform our job tasks, to modify work procedures. Example would include performing work requiring heavy exertion during the cooler hours of the day, assigning more persons to a job task to lessen the effort required of each, and the use of machinery in lieu of physical effort.

All employees, but new employees in particular, should be allowed to acclimate to hotter weather. It takes a body four to fourteen days to acclimate to hotter weather. Reduced workloads and careful attention to new employees may be required.

## **Training**

All employees will read this program and be given interactive training in its provisions. A copy of this program will be kept posted on the bulletin board during applicable periods of heat and humidity.

All supervisors will read the below informational items prior to utilization of this program and have an opportunity for discussion and clarification with our Safety Director.

FLC Protecting Workers from Heat Stress

The American Red Cross Health & Safety Tips, Heat Related Illness

**TR Concrete**

**CRANES AND DERRICKS IN CONSTRUCTION**

# **CRANES AND DERRICKS IN CONSTRUCTION**

To access Subpart CC—Cranes and Derricks in Construction, [Click Here](#)

1926.1400 Scope.

1926.1401 Definitions.

1926.1402 Ground conditions.

1926.1403 Assembly/Disassembly – selection of manufacturer or employer procedures.

1926.1404 Assembly/Disassembly – general requirements.

1926.1405 Disassembly – additional requirements for dismantling of booms and jibs (applies to both the use of manufacturer procedures and employer procedures).

1926.1406 Assembly/Disassembly – employer procedures – general requirements.

1926.1407 Power line safety (up to 350 kV) – assembly and disassembly.

1926.1408 Power line safety (up to 350 kV) – equipment operations.

1926.1409 Power line safety (over 350 kV ).

1926.1410 Power line safety (all voltages) – equipment operations closer than the Table A zone.

1926.1411 Power line safety – while traveling.

1926.1412 Inspections.

1926.1413 Wire rope – inspection.

1926.1414 Wire rope – selection and installation criteria.

1926.1415 Safety devices.

1926.1416 Operational aids.

1926.1417 Operation.

1926.1418 Authority to stop operation.

1926.1419 Signals – general requirements.

1926.1420 Signals – radio, telephone or other electronic transmission of signals.

1926.1421 Signals – voice signals – additional requirements.

1926.1422 Signals – hand signal chart.

1926.1423 Fall protection.

1926.1424 Work area control.

1926.1425 Keeping clear of the load.

1926.1426 Free fall and controlled load lowering.

1926.1427 Operator qualification and certification.

1926.1428 Signal person qualifications.

1926.1429 Qualifications of maintenance & repair employees.

1926.1430 Training.

1926.1431 Hoisting personnel.

1926.1432 Multiple-crane/derrick lifts -- supplemental requirements.

1926.1433 Design, construction and testing.

1926.1434 Equipment modifications.

1926.1435 Tower cranes.

1926.1436 Derricks.

1926.1437 Floating cranes/derricks and land cranes/derricks on barges.

1926.1438 Overhead & gantry cranes.

1926.1439 Dedicated pile drivers.

1926.1440 Sideboom cranes.

1926.1441 Equipment with a rated hoisting/lifting capacity of 2,000 pounds or less.

1926.1442 Severability.

Subpart CC, Cranes and Derricks in Construction, applies to power-operated equipment, and their attachments, that can hoist, lower and horizontally move a suspended load.

**Note:** Exclusions to this standard include, but are not limited to:

1. Power-operated equipment that has been converted or adapted for a non-hoisting/lifting use.
2. Power shovels, excavators, wheel loaders, backhoes, loader backhoes, track loaders.
3. Machinery originally designed as vehicle-mounted aerial devices (for lifting personnel) and self-propelled elevating work platforms.
4. Powered industrial trucks (forklifts), except when configured to hoist and lower (by means of a winch or hook) and horizontally move a suspended load.
5. Articulating/knuckle-boom truck cranes that deliver material to a construction site when used to transfer materials from the truck crane to the ground, without arranging the materials in a particular sequence for hoisting.
6. Articulating/knuckle-boom truck cranes that deliver material to a construction site when the crane is used to transfer building supply sheet goods or building supply packaged materials from the truck crane onto a structure, using a fork/cradle at the end of the boom, but only when the truck crane is equipped with a properly functioning automatic overload prevention device. Such sheet goods or packaged materials include, but are not limited to: sheets of sheet rock, sheets of plywood, bags of cement, sheets or packages of roofing shingles, and rolls of roofing felt.

**Note:** The above articulating/knuckle-boom crane exclusion does not apply when it is used to 1) hold, support or stabilize the material to facilitate a construction activity, such as holding material in place while it is attached to the structure; 2) when the material being handled is a prefabricated component such as precast concrete members or panels, roof trusses, prefabricated building sections such as, but not limited to: floor panels, wall panels, roof panels, roof structures, or similar items; and, 3) when the material being handled by the crane is a structural steel member (for example, steel joists, beams, columns, steel decking (bundled or unbundled) or a component of a systems-engineered metal building.

The Safety Director or the competent person on the job site will ensure that all persons involved with crane operations, with the exception of the exclusions above, are qualified and have received certification as noted below:

More detailed training, qualification, and certification requirements are found on pages 19 through 23 of this program.

### **Qualifications:**

During the period **November 8, 2010 through November 9, 2014**, all operators must be competent to operate the equipment safely.

- a. As of November 10, 2014, All operators must be certified or qualified.



Riggers must be qualified.

Signal persons must be qualified.

Assembly/disassembly directors both a competent and qualified.

### **Required Actions Prior to Assembly:**

Prior to assembly of a crane, care must be taken to ensure ground conditions are appropriate for the crane and other hazards, specifically, electrical hazards, are eliminated.

#### **Ground Conditions**

**Note: Ground conditions means the ability of the ground to support the equipment (including slope, compaction, and firmness).**

The controlling entity must ensure that the equipment is not assembled **or used** unless the ground conditions are firm drained, and graded to a sufficient extent so that, in conjunction (if necessary) with the use of supporting materials, the equipment manufacturer's specifications for adequate support and degree of level of the equipment are met.

**Note: The requirement for the ground to be drained does not apply to marshes/wetlands.**

The controlling entity must inform the user of the equipment and the operator of the location of hazards beneath the equipment set-up area (such as voids, tanks, utilities) if those hazards are identified in documents (such as site drawings, as-built drawings, and soil analyses) that are in the possession of the controlling entity (whether at the site or off-site) or the hazards are otherwise known to that controlling entity.

**Note If there is no controlling entity for the project, the requirements above must be met by the employer that has authority at the site to make or arrange for ground preparations for crane operations.**

If the Assembly/Disassembly director **or the operator** determines that ground conditions do not meet the above requirements, that person's employer **must** have a discussion with the controlling entity regarding the ground preparations that are needed so that, with the use of suitable supporting materials/devices (if necessary), the above requirements are met.

#### **Electrical Hazards:**

Before assembling or disassembling equipment, the Assembly/Disassembly director must determine if any part of the equipment, load line, or load (including rigging and lifting accessories) could get, in the direction or area of assembly/disassembly, closer than 20 feet to a power line during the assembly/disassembly process.

If so, the A/D director must meet the requirements in Option (1), Option (2), or Option (3), below:

**Option (1) Deenergize and ground:**

Confirm from the utility owner/operator that the power line has been deenergized and visibly grounded at the worksite.

**Option (2) – 20 foot clearance:**

Ensure that no part of the equipment, load line or load (including rigging and lifting accessories), gets closer than 20 feet to the power line by implementing the measures found in “preventing encroachment”, below.

**Option (3) – Table A clearance:**

1. Determine the line’s voltage and the minimum clearance distance permitted under Table A.

<b>Table A – Minimum Clearance Distances</b>	
Voltage (nominal, kV, alternating current)	Minimum clearance distance (feet)
up to 50	10
over 50 to 200	15
over 200 to 350	20
over 350 to 500	25
over 500 to 750	35
over 750 to 1000	45
over 1000	(as established by the power line owner/operator or registered professional engineer who is a qualified person with respect to electrical power transmission and distribution)

2. Determine if any part of the equipment, load line, or load (including rigging and lifting accessories), could get closer than the minimum clearance distance to the power line permitted under Table A .

If so, the Assembly/Disassembly director must ensure that no part of the equipment, load line, or load (including rigging and lifting accessories), gets closer to the line than the minimum clearance distance.

**Note: Voltage information. Where Option (3) of is used, the utility owner/operator of the power lines must provide the requested voltage information within two working days of our request.**

## **Preventing encroachment/electrocution:**

Where encroachment precautions are required under Option (2), or Option (3), above, the following requirements must be met:

1. A planning meeting will be conducted with the Assembly/Disassembly director, operator, assembly/disassembly crew and the other workers who will be in the assembly/disassembly area to review the location of the power line(s) and the steps that will be implemented to prevent encroachment/electrocution.
2. If tag lines are used, they must be nonconductive.
3. At least **one** of the following additional measures must be in place. The measure selected from this list must be effective in preventing encroachment.

The additional measures are:

1. Use a dedicated spotter who is in continuous contact with the equipment operator. The dedicated spotter must:
  - a. Be equipped with a visual aid to assist in identifying the minimum clearance distance. Examples of a visual aid include, but are not limited to: a clearly visible line painted on the ground; a clearly visible line of stanchions; a set of clearly visible line-of sight landmarks.
  - b. Be positioned to effectively gauge the clearance distance.
  - c. Where necessary, use equipment that enables the dedicated spotter to communicate directly with the operator.
  - d. Give timely information to the operator so that the required clearance distance can be maintained.
2. A proximity alarm set to give the operator sufficient warning to prevent encroachment.
3. A device that automatically warns the operator when to stop movement, such as a range control warning device. Such a device must be set to give the operator sufficient warning to prevent encroachment.
4. A device that automatically limits range of movement, set to prevent encroachment.
5. An elevated warning line, barricade, or line of signs, in view of the operator, equipped with flags or similar high-visibility markings.

### Additional Electrical Safety Measures:

1. Assembly/disassembly below power lines is prohibited. No part of a crane/derrick, load line, or load (including rigging and lifting accessories), whether partially or fully assembled, is allowed below a power line unless the Assembly/Disassembly director has confirmed that the utility owner/ operator has deenergized and (at the worksite) visibly grounded the power line.
2. Assembly/disassembly inside Table A clearance is prohibited. No part of a crane/derrick, load line, or load (including rigging and lifting accessories), whether partially or fully assembled, is allowed closer than the minimum approach distance under Table A to a power line unless the Assembly/Disassembly director has confirmed that the utility owner/operator has deenergized and (at the worksite) visibly grounded the power line.
4. The Assembly/Disassembly director must assume that all power lines are energized unless the utility owner/operator confirms that the power line has been and continues to be deenergized and visibly grounded at the worksite.
5. There must be at least one electrocution hazard warning conspicuously posted in the cab so that it is in view of the operator and (except for overhead gantry and tower cranes) at least two on the outside of the equipment.

### **Assembly/Disassembly**

When assembling or disassembling equipment (or attachments), the Assembly/Disassembly director must comply with all applicable manufacturer prohibitions and will select to use the manufacturer's procedures applicable to the equipment and/or attachments.

Assembly/disassembly must be directed by a person who meets the criteria for both a competent person and a qualified person, or by a competent person who is assisted by one or more qualified persons ("Assembly/Disassembly director").

Where the assembly/disassembly is being performed by only one person, that person must meet the criteria for both a competent person and a qualified person. This person will be considered the Assembly/Disassembly director.

The Assembly/Disassembly director must understand the applicable assembly/disassembly procedures.

The Assembly/Disassembly director must review the applicable assembly/disassembly procedures immediately prior to the commencement of assembly/ disassembly unless the Assembly/Disassembly director

understands the procedures and has applied them to the same type and configuration of equipment (including accessories, if any).

Before commencing assembly/disassembly operations, the Assembly/Disassembly director must ensure that the crew members understand all of the following:

1. Their tasks.
2. The hazards associated with their tasks.
3. The hazardous positions/locations that they need to avoid.

**Note: If during assembly/disassembly operations, before a crew member takes on a different task, or when adding new personnel during the operations, the Assembly/Disassembly director must complete the above three (3) steps.**

Before a crew member goes to a location that is out of view of the operator and is either in, on, or under the equipment, or near the equipment (or load) where the crew member could be injured by movement of the equipment (or load), the crew member must inform the operator that he/she is going to that location.

Where the operator knows that a crew member went to a location noted above, the operator must not move any part of the equipment (or load) until the operator is informed in accordance with a prearranged system of communication that the crew member is in a safe position.

When pins (or similar devices) are being removed, employees must not be under the boom, jib, or other components, except where Addressable/Disassembly director demonstrates that site constraints require one or more employees to be under the boom, jib, or other components when pins (or similar devices) are being removed, the Assembly/Disassembly director must implement procedures that minimize the risk of unintended dangerous movement and minimize the duration and extent of exposure under the boom.

During all phases of assembly/disassembly, rated capacity limits for loads imposed on the equipment, equipment components (including rigging), lifting lugs and equipment accessories, must not be exceeded for the equipment being assembled/disassembled.

The Assembly/Disassembly director supervising the assembly/disassembly operation must address the hazards associated with the operation, which include:

1. Site and ground conditions must be adequate for safe assembly/disassembly operations and to support the equipment during assembly/disassembly.

2. The size, amount, condition and method of stacking the blocking must be sufficient to sustain the loads and maintain stability.
3. When used to support lattice booms or components, blocking must be appropriately placed to:
  - a. Protect the structural integrity of the equipment, and,
  - b. Prevent dangerous movement and collapse.
4. When using an assist crane, the loads that will be imposed on the assist crane at each phase of assembly/disassembly must be verified in accordance with § 1926.1417(o)(3) before assembly/disassembly begins.
5. The point(s) of attachment of rigging to a boom (or boom sections or jib or jib sections) must be suitable for preventing structural damage and facilitating safe handling of these components.
6. The center of gravity of the load must be identified if that is necessary for the method used for maintaining stability.

**Note: Where there is insufficient information to accurately identify the center of gravity, measures designed to prevent unintended dangerous movement resulting from an inaccurate identification of the center of gravity must be used.**

7. The boom sections, boom suspension systems (such as gantry A-frames and jib struts), and components must be rigged or supported to maintain stability upon the removal of the pins.
8. Suspension ropes and pendants must not be allowed to catch on the boom or jib connection pins or cotter pins (including keepers and locking pins).
9. The potential for unintended movement from inadequately supported counterweights and from hoisting counterweights.
10. Each time reliance is to be placed on the boom hoist brake to prevent boom movement during assembly/disassembly, the brake must be tested prior to such reliance to determine if it is sufficient to prevent boom movement. If it is not sufficient, a boom hoist pawl, other locking device/back-up braking device, or another method of preventing dangerous movement of the boom (such as blocking or using an assist crane) from a boom hoist brake failure must be used.
11. Backward stability before swinging the upperworks, travel, and when attaching or removing equipment components.
12. The effect of wind speed and weather on the equipment.

Additionally, the following must be addressed, if applicable:

1. Manufacturer limitations on the maximum amount of boom supported only by cantilevering must not be exceeded. Where these are unavailable, a registered professional engineer familiar with the type of equipment involved must determine in writing this limitation, which must not be exceeded.
2. The weight of each of the components must be readily available.
3. The selection of components, and configuration of the equipment, that affect the capacity or safe operation of the equipment must be in accordance with:
4. Manufacturer instructions, prohibitions, limitations, and specifications.
  - b. Where these are unavailable, a registered professional engineer familiar with the type of equipment involved must approve, in writing, the selection and configuration of components; or
  - a. Approved modifications that meet the requirements of §1926.1434 (Equipment modifications).
5. Upon completion of assembly, the equipment must be inspected to ensure compliance with the above.

#### **Post-assembly:**

Upon completion of assembly, the equipment must be inspected by a qualified person to assure that it is configured in accordance with manufacturer equipment criteria.

Where manufacturer equipment criteria are unavailable, a qualified person must:

- a. Determine if a registered professional engineer (RPE) familiar with the type of equipment involved is needed to develop criteria for the equipment configuration. If an RPE is not needed, the employer must ensure that the criteria are developed by the qualified person. If an RPE is needed, the employer must ensure that they are developed by an RPE.
- b. Determine if the equipment meets the criteria developed in accordance with paragraph a. above.

Equipment must not be used until an inspection demonstrates that the equipment is configured in accordance with the applicable criteria.

**Note: Reusable shipping pins, straps, links, and similar equipment must be removed. Once they are removed they must either be stowed or otherwise stored so that they do not present a falling object hazard.**

## **Rigging:**

In addition to following the requirements in 29 CFR 1926.251 and other requirements in this and other standards applicable to rigging, when rigging is used for assembly/disassembly, the employer must ensure that:

1. The rigging work is done by a qualified rigger.
2. Synthetic slings are protected from: abrasive, sharp or acute edges, and configurations that could cause a reduction of the sling's rated capacity, such as distortion or localized compression. NOTE: Requirements for the protection of wire rope slings are contained in 29 CFR 1926.251(c)(9).
3. When synthetic slings are used, the synthetic sling manufacturer's instructions, limitations, specifications and recommendations must be followed.

## **Hazard Assessments and Precautions Inside the Work Zone:**

Before beginning equipment operations, the qualified person must identify the work zone by either:

1. Demarcating boundaries (such as with flags, or a device such as a range limit device or range control warning device) and prohibiting the operator from operating the equipment past those boundaries, or
2. Defining the work zone as the area 360 degrees around the equipment up to the equipment's maximum working radius.

Determine if any part of the equipment, load line or load (including rigging and lifting accessories), if operated up to the equipment's maximum working radius in the work zone, could get closer than 20 feet to a power line.

If so, the qualified person must meet the requirements in Option (1), Option (2), or Option (3) as follows:

### **Option (1) Deenergize and ground:**

Confirm from the utility owner/operator that the power line has been deenergized and visibly grounded at the worksite.

### **Option (2) – 20 foot clearance:**

Ensure that no part of the equipment, load line or load (including rigging and lifting accessories), gets closer than 20 feet to the power line by implementing the measures found in “preventing encroachment”, below.

### **Option (3) – Table A clearance:**

1. Determine the line's voltage and the minimum clearance distance permitted under Table A.



**Table A – Minimum Clearance Distances**

Voltage (nominal, kV, alternating current)	Minimum clearance distance (feet)
up to 50	10
over 50 to 200	15
over 200 to 350	20
over 350 to 500	25
over 500 to 750	35
over 750 to 1000	45
over 1000	(as established by the power line owner/operator or registered professional engineer who is a qualified person with respect to electrical power transmission and distribution)

2. Determine if any part of the equipment, load line, or load (including rigging and lifting accessories), could get closer than the minimum clearance distance to the power line permitted under Table A .

If so, the qualified person must ensure that no part of the equipment, load line, or load (including rigging and lifting accessories), gets closer to the line than the minimum clearance distance.

**Note: Voltage information. Where Option (3) of is used, the utility owner/operator of the power lines must provide the requested voltage information within two working days of our request.**

### **Preventing encroachment/electrocution:**

Where encroachment precautions are required under Option (2), or Option (3), above, the following requirements must be met:

1. A planning meeting will be conducted with the qualified person, operator, and the other workers who will be in the of the equipment or load to review the location of the power line(s) and the steps that will be implemented to prevent encroachment/electrocution.
2. At least **one** of the following additional measures must be implemented:

The additional measures are:

1. A proximity alarm set to give the operator sufficient warning to prevent encroachment.
2. Use a dedicated spotter who is in continuous contact with the equipment operator. The dedicated spotter must:

- a. Be equipped with a visual aid to assist in identifying the minimum clearance distance. Examples of a visual aid include, but are not limited to: a clearly visible line painted on the ground; a clearly visible line of stanchions; a set of clearly visible line-of sight landmarks.
  - b. Be positioned to effectively gauge the clearance distance.
  - c. Where necessary, use equipment that enables the dedicated spotter to communicate directly with the operator.
  - d. Give timely information to the operator so that the required clearance distance can be maintained.
3. A device that automatically warns the operator when to stop movement, such as a range control warning device. Such a device must be set to give the operator sufficient warning to prevent encroachment.
  4. A device that automatically limits range of movement, set to prevent encroachment.
  5. An insulating link/device [defined as “an insulating device listed, labeled, or accepted by a Nationally Recognized Testing Laboratory in accordance with 29 CFR 1910.7”] installed at a point between the end of the load line (or below) and the load.

#### Additional Electrical Safety Measures:

1. No part of the equipment, load line, or load (including rigging and lifting accessories) is allowed below a power line unless the qualified person has confirmed that the utility owner/ operator has deenergized and (at the worksite) visibly grounded the power line.
2. The qualified person must assume that all power lines are energized unless the utility owner/operator confirms that the power line has been and continues to be deenergized and visibly grounded at the worksite.
3. There must be at least one electrocution hazard warning conspicuously posted in the cab so that it is in view of the operator and (except for overhead gantry and tower cranes) at least two on the outside of the equipment.

#### Inspections:

**Note:** Any part of a manufacturer’s procedures regarding inspections that relate to safe operation (such as to a safety device or operational aid, critical part of a control system power plant, braking system, load-sustaining structural components, load hook, or in-use operating mechanism) that is more

**comprehensive or has a more frequent schedule of inspection than the requirements of 1926.1412 must be followed.**

**Note: All inspection documents must be available, during the applicable document retention period, to all persons who conduct inspections.**

#### Modified Equipment Inspection:

Equipment that has had modifications or additions which affect the safe operation of the equipment (such as modifications or additions involving a safety device or operational aid, critical part of a control system, power plant, braking system, load-sustaining structural components, load hook, or in-use operating mechanism) or capacity must be inspected by a **qualified person** after such modifications/additions have been completed, prior to initial use. The inspection must meet all the requirements of 1926.1412(a).

#### Repaired/adjusted Equipment Inspection:

Equipment that has had a repair or adjustment that relates to safe operation (such as: a repair or adjustment to a safety device or operator aid, or to a critical part of a control system, power plant, braking system, load-sustaining structural components, load hook, or in-use operating mechanism), must be inspected by a **qualified person** after such a repair or adjustment has been completed, prior to initial use. The inspection must meet all the requirements of 1926.1412(b).

#### Post-assembly Inspection:

Upon completion of assembly, the equipment must be inspected by a **qualified person** to assure that it is configured in accordance with manufacturer equipment criteria.

The inspection must meet all the requirements of 1926.1412(c).

#### Each Shift Inspection:

A **competent person** must begin a visual inspection prior to each shift the equipment will be used, which must be completed before or during that shift. The inspection must consist of observation for apparent deficiencies. Taking apart equipment components and booming down is not required as part of this inspection unless the results of the visual inspection or trial operation indicate that further investigation necessitating taking apart equipment components or booming down is needed. Determinations made in conducting the inspection must be reassessed in light of observations made during operation. Some of the items include control mechanisms, pressurized lines, hooks and latches, wire rope, electrical apparatus, tires (when used), and ground conditions.

The inspection must meet all the requirements of 1926.1412(d).

Daily (each shift) inspections will be documented and include the following: items checked, results of the inspection, and name and signature of the inspection. Documentation of daily (each shift) inspections will be retained for 3 months.

#### Monthly Inspection:

Per, 1926.1412(e) Each month the equipment is in service it must be inspected by **competent person**. The inspection must meet all the requirements of 1926.1412(d). See “Each Shift” inspection, above.

**Note: Documented monthly inspection is not required if the daily (each shift) inspection is documented and records are retained for 3 months.**

#### Annual/Comprehensive Inspection:

1. At least every 12 months the equipment must be inspected by a **qualified** person in accordance with paragraph (d) of this section (each shift) except that the corrective action set forth in paragraphs (f)(4), (f)(5), and (f)(6) of this section must apply in place of the corrective action required by paragraphs (d)(2) and (d)(3) of this section. The inspection must meet all the requirements of 1926.1412(f).
2. In addition, at least every 12 months, the equipment must be inspected by a qualified person. Disassembly is required, as necessary, to complete the inspection. The inspection must meet all the requirements of 1926.1412(f).

#### Documentation of Annual/Comprehensive Inspection:

The following information must be documented, maintained, and retained for a minimum of 12 months, by the employer that conducts the inspection:

1. The items checked and the results of the inspection.
2. The name and signature of the person who conducted the inspection and the date.

#### Severe Service Inspection:

Where the severity of use/conditions is such that there is a reasonable probability of damage or excessive wear (such as loading that may have exceeded rated capacity, shock loading that may have exceeded rated capacity, prolonged exposure to a corrosive atmosphere), the equipment will stop being used and a **qualified** person must inspect it. The inspection must meet all the requirements of 1926.1412(g).

### Equipment Not In Regular Use Inspection:

Equipment that has been idle for 3 months or more must be inspected by a qualified person in accordance with the requirements of the Monthly inspection, above.

### Wire Rope Inspection:

#### Wire Rope Shift Inspection:

A competent person must begin a visual inspection prior to each shift the equipment is used, which must be completed before or during that shift. The inspection must consist of observation of wire ropes (running and standing) that are likely to be in use during the shift for apparent deficiencies, including those listed in 1926.1413(a)(2). Untwisting (opening) of wire rope or booming down is not required as part of this inspection.

Daily (each shift) inspections will be documented and include the following: items checked, results of the inspection, and name and signature of the inspection. Documentation of daily (each shift) inspections will be retained for 3 months.

#### Wire Rope Monthly Inspection:

Each month an inspection must be conducted in accordance shift inspection, above, and 1926.1413(b).

**Note: Documented monthly inspection is not required if the daily (each shift) inspection is documented and records are retained for 3 months.**

#### Wire Rope Annual/Comprehensive Inspection:

At least every 12 months, wire ropes in use on equipment must be inspected by a qualified person in accordance with shift inspection, above, and 1926.1413(c).

In addition, at least every 12 months, the wire ropes in use on equipment must be inspected by a qualified person in accordance with 1926.1413(c)

#### Documentation of Annual/Comprehensive Wire Rope Inspection:

The following information must be documented, maintained, and retained for a minimum of 12 months, by the employer that conducts the inspection:

1. The items checked and the results of the inspection.
2. The name and signature of the person who conducted the inspection and the date.

### Safety Devices:

Operations must not begin unless all of the devices listed below are in proper working order. If a device stops working properly during operations,

the operator must safely stop operations. If any of the devices listed in this section are not in proper working order, the equipment must be taken out of service and operations must not resume until the device is again working properly.

1. Crane level indicator.
  - a. The equipment must have a crane level indicator that is either built into the equipment or is available on the equipment.
  - b. If a built-in crane level indicator is not working properly, it must be tagged-out or removed. If a removable crane level indicator is not working properly, it must be removed.
  - c. This requirement does not apply to portal cranes, derricks, floating cranes/derricks and land cranes/derricks on barges, pontoons, vessels or other means of flotation.
2. Boom stops, except for derricks and hydraulic booms.
3. Jib stops (if a jib is attached), except for derricks.
4. Equipment with foot pedal brakes must have locks.
5. Hydraulic outrigger jacks and hydraulic stabilizer jacks must have an integral holding device/check valve.
6. Equipment on rails must have rail clamps and rail stops, except for portal cranes.
7. Horn
  - a. The equipment must have a horn that is either built into the equipment or is on the equipment and immediately available to the operator.
  - b. If a built-in horn is not working properly, it must be tagged-out or removed. If a removable horn is not working properly, it must be removed.

### **Equipment Operations:**

Operators must comply with all manufacturer procedures applicable to the operational functions of equipment, including its use with attachments.

Operators must have access to procedures applicable to the operation of the equipment and these items must be readily available in the cab at all times for use by the operator. These items include: rated capacities (load charts), recommended operating speeds, special hazard warnings instructions, and operator's manual.

**Note: Where rated capacities are available in the cab only in electronic form: in the event of a failure which makes the rated capacities inaccessible, the**

**operator must immediately cease operations or follow safe shut-down procedures until the rated capacities (in electronic or other form) are available.**

The operator must not engage in any practice or activity that diverts his/her attention while actually engaged in operating the equipment, such as the use of cellular phones (other than when used for signal communications).

The operator has the authority **and responsibility** to stop and refuse to handle loads whenever there is a safety concern. A qualified person, at this point, must determine that safety has been assured.

### **Signals:**

A signal person must be provided in each of the following situations:

1. The point of operation, meaning the load travel or the area near or at load placement, is not in full view of the operator.
2. When the equipment is traveling, the view in the direction of travel is obstructed.
3. Due to site specific safety concerns, either the operator or the person handling the load determines that it is necessary.

### **Work Control Area:**

#### **Swing radius hazards:**

The requirements below apply where there are accessible areas in which the equipment's rotating superstructure (whether permanently or temporarily mounted) poses a reasonably foreseeable risk of:

1. Striking and injuring an employee; or
2. Pinching/crushing an employee against another part of the equipment or another object.

To prevent employees from entering these hazard areas, the below procedures will be accomplished:

1. Train each employee assigned to work on or near the equipment ("authorized personnel") in how to recognize struck-by and pinch/crush hazard areas posed by the rotating superstructure.
2. Erect and maintain control lines, warning lines, railings or similar barriers to mark the boundaries of the hazard areas. *Exception:* When the employer can demonstrate that it is neither feasible to erect such barriers on the ground nor on the equipment, the hazard areas must be clearly marked by a combination of warning signs (such as "Danger – Swing/Crush Zone") and high visibility markings on the equipment that identify the hazard areas. In addition, the employer must train each employee to understand what these markings signify.

### Protecting employees in the hazard area:

Before an employee goes to a location in the hazard area that is out of view of the operator, the employee (or someone instructed by the employee) must ensure that the operator is informed that he/she is going to that location.

Where the operator knows that an employee went to a location within the swing area radius, the operator must not rotate the superstructure until the operator is informed in accordance with a prearranged system of communication that the employee is in a safe position.

Where any part of a crane/derrick is within the working radius of another crane/derrick, the controlling entity must institute a system to coordinate operations. If there is no controlling entity, the employer (if there is only one employer operating the multiple pieces of equipment), or employers, must institute such a system.

### **Equipment Modifications:**

Modifications or additions which affect the capacity or safe operation of the equipment are prohibited except where below requirements are met.

1. Manufacturer review and approval.
  - a. The manufacturer approves the modifications/additions in writing.
  - b. The load charts, procedures, instruction manuals and instruction plates/tags/decals are modified as necessary to accord with the modification/addition.
  - c. The original safety factor of the equipment is not reduced.
2. *Manufacturer refusal to review request.* The manufacturer is provided a detailed description of the proposed modification/addition, is asked to approve the modification/ addition, but it declines to review the technical merits of the proposal or fails, within 30 days, to acknowledge the request or initiate the review, and all of the following are met:
  - a. A registered professional engineer who is a qualified person with respect to the equipment involved:
    - 1) Approves the modification/addition and specifies the equipment configurations to which that approval applies, and
    - (B) Modifies load charts, procedures, instruction manuals and instruction plates/tags/decals as necessary to accord with the modification/addition.
  - b. The original safety factor of the equipment is not reduced.



3. *Unavailable manufacturer.* The manufacturer is unavailable and the below is met.
  - a. The manufacturer approves the modifications/additions in writing.
  - b. The load charts, procedures, instruction manuals and instruction plates/tags/decals are modified as necessary to accord with the modification/addition.
4. *Manufacturer does not complete the review within 120 days of the request.* The manufacturer is provided a detailed description of the proposed modification/addition, is asked to approve the modification/addition, agrees to review the technical merits of the proposal, but fails to complete the review of the proposal within 120 days of the date it was provided the detailed description of the proposed modification/addition, and the below is met.
  - a. The manufacturer approves the modifications/additions in writing.
  - b. The load charts, procedures, instruction manuals and instruction plates/tags/decals are modified as necessary to accord with the modification/addition.
5. *Multiple manufacturers of equipment designed for use on marine work sites.* The equipment is designed for marine work sites, contains major structural components from more than one manufacturer, and the below is met.
  - a. The manufacturer approves the modifications/additions in writing.
  - b. The load charts, procedures, instruction manuals and instruction plates/tags/decals are modified as necessary to accord with the modification/addition.

Modifications or additions which affect the capacity or safe operation of the equipment are prohibited where the manufacturer, after a review of the technical safety merits of the proposed modification/addition, rejects the proposal and explains the reasons for the rejection in a written response.

## **TRAINING:**

### **Operator Training, Qualification and Certification:**

**Note:** A state or local license is required if:

1. working within a state or locality that has licensing requirements, and
2. the licensing program meets the licensing and certification criteria listed in subpart CC.
3. A state or local license is valid for the period of time stipulated by the licensing office, but no longer than 5 years. It is portable only within the jurisdiction of the issuing agency.

**Written tests may be administered in a language understood by the operator candidate. When an operator's testing is based on a language other than English, it must be noted on the certificate.**

All costs associated with training will be at no expense to the employee.

During the period November 8, 2010 through November 9, 2014, all operators must be competent to operate the equipment safely and are trained and evaluated on that training before operating the equipment.

As of November 10, 2014, All operators must be certified or qualified.

### **Accredited Crane Operator Testing Organization**

An operator will be deemed qualified to operate a particular piece of equipment if the operator is certified for that type and capacity of equipment or for higher-capacity equipment of that type. If no accredited testing agency offers certification examinations for a particular type and/or capacity of equipment, an operator will be deemed qualified to operate that equipment if the operator has been certified for the type/capacity that is most similar to that equipment and for which a certification examination is available.

The operator's certificate must state the type/capacity of equipment for which the operator is certified.

To achieve the above qualification, the operator must have received certification by an **accredited crane operator testing organization**.

Certification issued by an accredited crane operator testing organization is both portable and valid for 5 years .

### **Audited Employer Program:**

Currently this option will not be used because:

1. It is not portable.
2. It is time and manpower consuming.
3. It requires monitoring and outside approvals.

If this is used in the future, it will be in accordance with 1926.1427(c).

### **Operator-in-training:**

An employee who is not qualified or certified is permitted to operate equipment only as an operator-in-training and only where the below requirements are met:

1. The employer must provide each operator-in-training with sufficient training prior to operating the equipment to enable the operator-in-training to operate the equipment safely under limitations established

by this section (including continuous monitoring) and any additional limitations established by the employer.

2. The tasks performed by the operator-in-training while operating the equipment must be within the operator-in-training's ability.
3. While operating the equipment, the operator-in-training must be continuously monitored by an individual ("**operator's trainer**") who meets all of the following requirements:
  - a. The operator's trainer is our employee or agent.
  - b. The operator's trainer is either a certified operator under this section or has passed the written portion of a certification test, and is familiar with the proper use of the equipment's controls.
  - c. While monitoring the operator-in-training, the operator's trainer performs no tasks that detract from the trainer's ability to monitor the operator-in-training.
  - d. For equipment other than tower cranes: the operator's trainer and the operator-in-training must be in direct line of sight of each other. In addition, they must communicate verbally or by hand signals. For tower cranes: the operator's trainer and the operator-in-training must be in direct communication with each other.

### **Rigger Training, Qualification and Certification:**

All costs associated with training will be at no expense to the employee.

Riggers must be qualified. A qualified person means a person who, by possession of a recognized degree certificate, or professional standing, or who by extensive knowledge, training and experience, successfully demonstrated the ability to solve/resolve problems relating to the subject matter, the work, or the project.

### **Signal Person Training, Qualification and Certification:**

All costs associated with training will be at no expense to the employee.

Signal persons must be qualified by either:

- |                                    |                                |
|------------------------------------|--------------------------------|
| 1. A third party evaluator         | Documentation is Portable, or  |
| 2. An employer qualified evaluator | Documentation is not Portable. |

Upon completion of documented training which must include either a verbal or written test PLUS a practical test.

Training will include, but not be limited to:

## **Types of signals:**

### Hand signals:

**Note: Hand signal charts must be either posted on the equipment or conspicuously posted in the vicinity of the hoisting operations. These charts will comply with the instructions found in Appendix A to Subpart CC of Part 1926—Standard Hand Signals.**

1. When using hand signals, the Standard Method must be used (see Note, above). Exception: Where use of the Standard Method for hand signals is infeasible, or where an operation or use of an attachment is not covered in the Standard Method, non-standard hand signals may be used in accordance with paragraph 2, below:
2. Non-standard hand signals. When using non-standard hand signals, the signal person, operator, and lift director (where there is one) must contact each other prior to the operation and agree on the non-standard hand signals that will be used.

### Signals – radio, telephone or other electronic transmission of signals.

The device(s) used to transmit signals must be tested on site before beginning operations to ensure that the signal transmission is effective, clear, and reliable.

Signal transmission must be through a dedicated channel, except:

1. Multiple cranes/derricks and one or more signal persons may share a dedicated channel for the purpose of coordinating operations.
2. Where a crane is being operated on or adjacent to railroad tracks, and the actions of the crane operator need to be coordinated with the movement of other equipment or trains on the same or adjacent tracks.

The operator's reception of signals must be by a hands-free system.

### New signals:

Signals other than hand, voice, or audible signals may be used where it may be demonstrated that:

1. The new signals provide at least equally effective communication as voice audible, or Standard Method hand signals, or
2. The new signals comply with a national consensus standard that provides at least equally effective communication as voice, audible, or Standard Method hand signals.

### Voice Signals:

If voice signals are used, prior to beginning operations, the operator, signal person and lift director (if there is one), must contact each other and agree on the voice signals that will be used. Once the voice signals are agreed upon, these workers need not meet again to discuss voice signals unless another worker is added or substituted, there is confusion about the voice signals or a voice signal is to be changed.

Each voice signal must contain the following three elements, given in the following order: function (such as hoist, boom, etc.), direction; distance and/or speed; function stop command.

The operator, signal person and lift director (if there is one), must be able to effectively communicate in the language used.

### Additional signal information:

1. The signals used (hand, voice, audible, or new), and means of transmitting the signals to the operator (such as direct line of sight, video, radio, etc.) must be appropriate for the site conditions.
2. During operations requiring signals, the ability to transmit signals between the operator and signal person must be maintained. If that ability is interrupted at any time the operator must safely stop operations requiring signals until it is reestablished and a proper signal is given and understood.
3. If the operator becomes aware of a safety problem and needs to communicate with the signal person, the operator must safely stop operations. Operations must not resume until the operator and signal person agree that the problem has been resolved.
4. Only one person may give signals to a crane/derrick at a time, except in circumstances covered by the below:
  - a. Anyone who becomes aware of a safety problem must alert the operator or signal person by giving the stop or emergency stop signal. (NOTE: § 1926.1417(y) requires the operator to obey a stop or emergency stop signal).
5. All directions given to the operator by the signal person must be given from the operator's direction perspective.

Where a signal person(s) is in communication with more than one crane/derrick, a system must be used for identifying the crane/derrick each signal is for, as follows:

1. for each signal, prior to giving the function/direction, the signal person must identify the crane/derrick the signal is for, or
2. must use an equally effective method of identifying which crane/derrick the signal is for.

# **TR Concrete**

## **APPENDIX A**

### **TRAINING DOCUMENTATION [Minnesota]**

# TR Concrete

## APPENDIX A Training Documentation

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# **Certificate of Training**

## **With Training Synopsis**



# TR Concrete

## CERTIFICATE OF TRAINING

I certify the below listed person(s) have received interactive training by a competent person in the subject matter initialed below. All appropriate standards are available to our personnel. The prime training directive is found in 29 CFR 1926.21, Title: *Safety training and education*, paragraph (b)(2): "The employer shall instruct each employee in the recognition and avoidance of unsafe conditions and the regulations applicable to his work environment to control or eliminate any hazards or other exposure to illness or injury." Training, at a minimum, included all items required by appropriate standard and Minnesota rule.

Initials of Trainer	Date	Subject
		All subjects contained in our Safety Program.
		Minnesota AWAIR Compliance & Program Design
		Control of Hazardous Energy      Qualified Trainer: _____
		Employee Right-To-Know      Qualified Trainer: _____
		Exposure Control for Bloodborne Pathogens and Other Infectious Materials
		Fall Protection – Signature of Trainer: _____
		Permit-Required Confined Space Entry      Qualified Trainer: _____
		Personal Protective Equipment – General      Qualified Trainer: _____
		Personal Protective Equipment - Hearing      Qualified Trainer: _____
		Personal Protective Equipment - Respiratory      Qualified Trainer: _____
		Forklifts      Trainer: _____      Evaluation Date: _____
		Scaffolds & Ladders      Qualified Trainer: _____
		Steel Erection Activities      Qualified Trainer: _____
		Multiple Lift Procedures      Qualified Trainer: _____
		Connector Procedures      Qualified Trainer: _____
		Controlled Decking Zone Procedures      Qualified Trainer: _____
		Other: _____

Note: Trainers, whose signatures are above, are qualified in the subject matter by training or experience.

(Employee Name - Print)

(Employee Signature)

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Safety Director

(Initials)

See following four pages for training synopsis.

## TRAINING SYNOPSIS:

### Control of Hazardous Energy - 29 CFR 1910.147

A complete understanding of the purpose and function of the energy control program and the knowledge and skills required for the safe application, usage, and removal of the energy controls. The training shall include the following:

- a. Each authorized employee will receive training in the recognition of applicable hazardous energy sources, the type and magnitude of the energy available in the workplace, and the methods and means necessary for energy isolation and control.
- b. Each affected employee will be instructed in the purpose and use of the energy control procedure.
- c. All other employees whose work operations are or may be in an area where energy control procedures may be utilized, will be instructed about the procedure, and about the prohibition relating to attempts to restart or reenergize machines or equipment which are locked out or tagged out.
- d. When tagout systems are used, employees will also be trained in the following limitations of tags: 1) tags are essentially warning devices affixed to energy isolating devices, and do not provide the physical restraint on those devices that is provided by a lock; 2) when a tag is attached to an energy isolating means, it is not to be removed without authorization of the authorized person responsible for it, and it is never to be bypassed, ignored, or otherwise defeated; 3) tags must be legible and understandable by all authorized employees, affected employees, and all other employees whose work operations are or may be in the area, in order to be effective; 4) tags and their means of attachment must be made of materials which will withstand the environmental conditions encountered in the workplace; 5) tags may evoke a false sense of security, and their meaning needs to be understood as part of the overall energy control program; and 6) tags must be securely attached to energy isolating devices so that they cannot be inadvertently or accidentally detached during use.

NOTE: Control of Hazardous Energy Training must be certified and kept up to date. The certification must include the employee's name and dates of training.

### Employee Right-To-Know

All new employees attend training on our Employee Right-To-Know program prior to initial work assignment.

Hazardous substance training will include a review of our Employee Right-To-Know program, review of Minnesota Rules, Chapter 5206, and all detailed information found on MSDS including:

- a. Methods and observations that may be used to detect the presence or release of a hazardous chemical in the work area. The primary method to detect the presence of a release is sight and smell. As mentioned above, the appearance and odor of a hazardous chemical can be found on the MSDS for that chemical.
- b. Physical and health hazards of the chemicals in the workplace. Again, this information is found on the appropriate MSDS.
- c. Measures to take to protect the employee from chemical hazards. This program, the specific MSDS, as well as oral and hands on training and instruction provide the basis for measures to protect one's self. When required, protective equipment will be provided. Never minimize the value of protective safety equipment. For example, the use of relatively inexpensive eye protection could easily save your eyesight.
- d. Where MSDS can be found on the job site.

Infectious agent training will include a review of items contained in this program and of our Exposure Control Plan for Bloodborne Pathogens & Other Infectious Materials with emphasis on Universal Precautions and fulfillment of training requirements.

Physical agent training will include a review of items contained in this program as well as in our Hearing Conservation Program.

Training will be given in English and for those employees who do not understand English, the provisions of this program will be explained to them in their native tongue.

With the introduction of each new chemical hazard, not necessarily each new chemical, training will be given with specific emphasis on emergency procedures as noted on the MSDS.

The introduction of any new infectious agent or physical agent will also require immediate training prior to employee exposure.

This training will include procedures for handling leaks and spills, personal protection equipment if required, decontamination procedures, etc..

Training records will be maintained for three years.

## **Exposure Control for Bloodborne Pathogens or Other Infectious Materials - 19 CFR 1910.1030**

An accessible copy of the regulatory text and an explanation of its contents; a general explanation of the epidemiology and symptoms of bloodborne diseases; an explanation of the modes of transmission of bloodborne pathogens; an explanation of the employer's exposure control plan and the means by which the employee can obtain a copy of the written plan; an explanation of the appropriate methods for recognizing tasks and other activities that may involve exposure to blood and other potentially infectious materials; an explanation of the use and limitations of methods that will prevent or reduce exposure including appropriate engineering controls, work practices, and personal protective equipment; information on the types, proper use, location, removal, handling, decontamination and disposal of personal protective equipment; an explanation of the basis for selection of personal protective equipment; information on the hepatitis B vaccine, including information on its efficacy, safety, method of administration, the benefits of being vaccinated, and that the vaccine and vaccination will be offered free of charge; information on the appropriate actions to take and persons to contact in an emergency involving blood or other potentially infectious materials; an explanation of the procedure to follow if an exposure incident occurs, including the method of reporting the incident and the medical follow-up that will be made available; information on the post-exposure evaluation and follow-up that the employer is required to provide for the employee following an exposure incident; an explanation of the signs and labels and/or color coding requirements; and an opportunity for interactive questions and answers with the person conducting the training session.

NOTE: The person conducting the training shall be knowledgeable in the subject matter covered by the elements contained in the training program as it relates to the workplace that the training will address.

## **Fall Protection - 29 CFR 1926.503**

Training must enable each employee to recognize the hazards of falling and explain the procedures to be followed in order to minimize these hazards. Specific training will include: 1) the nature of fall hazards in the work area; 2) the correct procedures for erecting, maintaining, disassembling, and inspecting the fall protection systems to be used; 3) the use and operation of guardrail systems, personal fall arrest systems, safety net systems, warning line systems, safety monitoring systems, controlled access zones, and other protection to be used; 4) the role of each employee in the safety monitoring system when this system is used; 5) the limitations on the use of mechanical equipment during the performance of roofing work on low-sloped roofs; 6) the correct procedures for the handling and storage of equipment and materials and the erection of overhead protection; and, 7) the role of employees in fall protection plans.

NOTE: The latest certification of training must be maintained and include the name of the employee trained, the date(s) of training, and the signature of the competent person who conducted the training or the signature of the employer.

## **Forklifts - 29 CFR 1910.178 (See Powered Industrial Trucks, below)**

### **Permit-Required Confined Space Entry - 29 CFR 1910.146**

Training will be provided so that all employees whose work is regulated by 29 CFR 1910.146 acquire the understanding, knowledge, and skills necessary for the safe performance of the duties assigned under this standard. Training will be given to each affected employee: a) before the employee is first assigned duties under this standard; and, b) whenever there is a change in permit space operations that presents a hazard about which an employee has not previously been trained. The training shall establish employee proficiency in the duties required by this standard and shall introduce new or revised procedures, as necessary, for compliance with 29 CFR 1910.146.

NOTE: Training must be certified and the certification must contain each employee's name, the signatures or initials of the trainers, and the dates of training. The certification shall be available for inspection by employees and their authorized representatives.

Worker training: Workers who will enter the confined space and standby persons required by part 5207.0304 shall be trained in operating and rescue procedures and on the hazards they may encounter. This training shall be conducted annually or before confined space entry.

Workers who will perform atmospheric monitoring in confined spaces shall be trained on the use of such equipment according to the manufacturer's instructions before confined space entry and then on an annual basis thereafter.

### **Personal Protective Equipment [General] - 29 CFR 1926.28 & 29 CFR 1910.132**

Each such employee shall be trained to know at least the following: when PPE is necessary; what PPE is necessary; how to properly don, doff, adjust, and wear PPE; the limitations of the PPE; and, the proper care, maintenance, useful life and disposal of the PPE. Each affected employee shall demonstrate: 1) an understanding of the training specified above and, 2) the ability to use PPE properly, before being allowed to perform work requiring the use of PPE.

## **Personal Protective Equipment [Hearing] - 29 CFR 1926.52 & 29 CFR 1910.95**

The effects of noise on hearing; the purpose of hearing protectors, the advantages, disadvantages, and attenuation of various types, and instructions on selection, fitting, use, and care; and the purpose of audiometric testing, and an explanation of the test procedures.

## **Personal Protective Equipment [Respiratory] - 29 CFR 1910.134**

Training will ensure that each employee can demonstrate knowledge of at least the following: a) why the respirator is necessary and how improper fit, usage, or maintenance can compromise the protective effect of the respirator; b) what the limitations and capabilities of the respirator are; c) how to use the respirator effectively in emergency situations, including situations in which the respirator malfunctions; d) how to inspect, put on and remove, use, and check the seals of the respirator; e) what the procedures are for maintenance and storage of the respirator; f) how to recognize medical signs and symptoms that may limit or prevent the effective use of respirators; and, g) the general requirements of 29 CFR 1910.134 including Appendix D.

## **Powered Industrial Trucks - 29 CFR 1910.178**

<u>If the employee was hired:</u>	<u>The initial training and evaluation of that employee must be completed:</u>
Before December 1, 1999	By December 1, 1999.
After December 1, 1999	Before the employee is assigned to operate a forklift.

**Allowed exception to required training:** If an operator has previously received training in a topic specified below, and such training is appropriate to the truck and working conditions encountered, additional training in that topic is not required if the operator has been evaluated and found competent to operate the truck safely.

Forklift operators shall receive initial training in the following topics if applicable to our circumstances: a) operating instructions, warnings, and precautions for the types of truck the operator will be authorized to operate; b) differences between the truck and the automobile; c) truck controls and instrumentation: where they are located, what they do, and how they work; d) engine or motor operation; e) steering and maneuvering; f) visibility (including restrictions due to loading); g) fork and attachment adaptation, operation, and use limitations; h) vehicle capacity; i) vehicle stability; j) any vehicle inspection and maintenance that the operator will be required to perform; k) refueling and/or charging and recharging of batteries; l) operating limitations; m) any other operating instructions, warnings, or precautions listed in the operator's manual for the types of vehicle that the employee is being trained to operate n) surface conditions where the vehicle will be operated; o) composition of loads to be carried and load stability; p) load manipulation, stacking, and unstacking; q) pedestrian traffic in areas where the vehicle will be operated; r) narrow aisles and other restricted places where the vehicle will be operated; s) hazardous (classified) locations where the vehicle will be operated; t) ramps and other sloped surfaces that could affect the vehicle's stability; u) closed environments and other areas where insufficient ventilation or poor vehicle maintenance could cause a buildup of carbon monoxide or diesel exhaust; and, v) other unique or potentially hazardous environmental conditions in the workplace that could affect safe operation. Each operator will be made aware of the requirements of 29 CFR 1910.178.

NOTES: Trainees may operate a forklift only:

- a. Under the direct supervision of persons who have the knowledge, training, and experience to train operators and evaluate their competence; and
- b. Where such operation does not endanger the trainee or other employees.

Training will consist of a combination of formal instruction (e.g., lecture, discussion, interactive computer learning, video tape, written material), practical training (demonstrations performed by the trainer and practical exercises performed by the trainee), and evaluation of the operator's performance in the workplace.

All operator training and evaluation shall be conducted by persons who have the knowledge, training, and experience to train forklift operators and evaluate their competence.

Certification. The employer will certify that each operator has been trained and evaluated as required above. The certification shall include the name of the operator, the date of the training, the date of the evaluation, and the identity of the person(s) performing the training or evaluation.

## **Scaffolds & Ladders - 29 CFR 1926.454 & 29 CFR 1926.1060**

**Ladders (and Stairways):** Training, as necessary, will enable each employee to recognize hazards related to ladders and stairways and the procedures to be followed to minimize these hazards. Training will include, as applicable: 1) the nature of fall hazards in the work area; 2) the correct procedures for erecting, maintaining, and disassembling the fall protection systems to be used; 3) the proper construction, use, placement, and care in handling of all stairways and ladders; and, 4) the maximum intended load-carrying capacities of ladders.

**Scaffolds:**

Training will enable those who perform work on scaffolds 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 that apply to our operations.

NOTE: Those employees who are involved in erecting, disassembling, moving, operating, repairing, maintaining, or inspecting a scaffold will be trained to recognize any hazards associated with the work in question. The training shall include the following topics, as applicable: 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; and, 4) any other pertinent requirements that apply to our operations.

# **Certificate of Retraining**

## **With Retraining Synopsis**

# TR Concrete

## CERTIFICATE OF RETRAINING

I certify the below listed person(s) have received interactive retraining by a competent person in the subject matter initialed below. All appropriate standards are available to our personnel. The prime training directive is found in 29 CFR 1926.21, Title: *Safety training and education*, paragraph (b)(2): "The employer shall instruct each employee in the recognition and avoidance of unsafe conditions and the regulations applicable to his work environment to control or eliminate any hazards or other exposure to illness or injury." Retaining, at a minimum, included all items required by appropriate standard and Minnesota rules.

Initials of Trainer	Date	Subject
		All subjects contained in our Safety Program.
		Minnesota AWAIR Compliance & Program Design
		Control of Hazardous Energy Qualified Trainer: _____
		Employee Right-To-Know Qualified Trainer: _____
		Exposure Control for Bloodborne Pathogens and Other Infectious Materials
		Fall Protection – Signature of Trainer: _____
		Permit-Required Confined Space Entry Qualified Trainer: _____
		Personal Protective Equipment – General Qualified Trainer: _____
		Personal Protective Equipment - Hearing Qualified Trainer: _____
		Personal Protective Equipment - Respiratory Qualified Trainer: _____
		Forklifts Trainer: _____ Evaluation Date: _____
		Scaffolds & Ladders Qualified Trainer: _____
		Steel Erection Activities Qualified Trainer: _____
		Multiple Lift Procedures Qualified Trainer: _____
		Connector Procedures Qualified Trainer: _____
		Controlled Decking Zone Procedures Qualified Trainer: _____
		Other: _____

Note: Trainers, whose signatures are above, are qualified in the subject matter by training or experience.

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(Employee Name - Print)

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(Employee Signature)

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Safety Director

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(Initials)

See following two pages for retraining synopsis.

## **Retraining Synopsis**

### **Control of Hazardous Energy - 29 CFR 1910.147**

- a. Retraining shall be provided for all authorized and affected employees whenever there is a change in their job assignments, a change in machines, equipment or processes that present a new hazard, or when there is a change in the energy control procedures.
- b. Additional retraining shall also be conducted whenever a periodic inspection under paragraph (c)(6) of this section reveals, or whenever the employer has reason to believe that there are deviations from or inadequacies in the employee's knowledge or use of the energy control procedures.
- c. Retraining shall reestablish employee proficiency and introduce new or revised control methods and procedures, as necessary.

NOTE: Control of Hazardous Energy Training must be certified and kept up to date. The certification must include the employee's name and dates of training.

### **Employee Right-To-Know**

Annually, all employees will receive refresher training to ensure that awareness is maintained. Furthermore, with the introduction of each new chemical hazard, not necessarily each new chemical, training will be given with specific emphasis on emergency procedures as noted on the MSDS.

The introduction of any new infectious agent or physical agent will also require immediate training prior to employee exposure.

### **Exposure Control for Bloodborne Pathogens or Other Infectious Materials - 19 CFR 1910.1030**

- a. At least annually.
- b. When changes such as modification of tasks or procedures or institution of new tasks or procedures affect the employee's occupational exposure. The additional training may be limited to addressing the new exposures created.

NOTE: The person conducting the training shall be knowledgeable in the subject matter covered by the elements contained in the training program as it relates to the workplace that the training will address.

### **Fall Protection - 29 CFR 1926.503**

When it is determined that an affected employee who has already been trained does not have the understanding and skill required by the initial training. Circumstances where retraining is required include, but are not limited to, situations where: 1) changes in the workplace render previous training obsolete; 2) changes in the types of fall protection systems or equipment to be used render previous training obsolete; or, 3) inadequacies in an affected employee's knowledge or use of fall protection systems or equipment indicate that the employee has not retained the requisite understanding or skill.

NOTE: The latest certification of training must be maintained and include the name of the employee trained, the date(s) of training, and the signature of the competent person who conducted the training or the signature of the employer.

### **Forklifts - 29 CFR 1910.178 (See Powered Industrial Trucks, below)**

### **Permit-Required Confined Space Entry - 29 CFR 1910.146**

- a. Before there is a change in assigned duties;
- b. Whenever there is a change in permit space operations that presents a hazard about which an employee has not previously been trained;
- c. Whenever there is reason to believe either that there are deviations from the permit space entry procedures required by paragraph (d)(3) of 29 CFR 1910.146 or that there are inadequacies in the employee's knowledge or use of these procedures.

NOTE: Training must be certified and the certification must contain each employee's name, the signatures or initials of the trainers, and the dates of training. The certification shall be available for inspection by employees and their authorized representatives.

Worker training: Workers who will enter the confined space and standby persons required by part 5207.0304 shall be trained in operating and rescue procedures and on the hazards they may encounter. This training shall be conducted annually or before confined space entry.

Workers who will perform atmospheric monitoring in confined spaces shall be trained on the use of such equipment according to the manufacturer's instructions before confined space entry and then on an annual basis thereafter.



## **Personal Protective Equipment [General] - 29 CFR 1926.28 & 29 CFR 1910.132**

When there is reason to believe that any affected employee who has already been trained does not have the understanding and skill required. Circumstances where retraining is required include, but are not limited to, situations where:

- a. Changes in the workplace render previous training obsolete; or
- b. Changes in the types of PPE to be used render previous training obsolete; or
- c. Inadequacies in an affected employee's knowledge or use of assigned PPE indicate that the employee has not retained the requisite understanding or skill.

## **Personal Protective Equipment [Hearing] - 29 CFR 1926.52 & 29 CFR 1910.95**

Annually.

## **Personal Protective Equipment [Respiratory] - 29 CFR 1910.134**

Annually and when the following situations occur:

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

## **Powered Industrial Trucks**

Every three (3) years or when the operator:

- a. Has been observed to operate the vehicle in an unsafe manner.
- b. Has been involved in an accident or near-miss incident.
- c. Has received an evaluation that reveals that the operator is not operating the truck safely.
- d. Is assigned to drive a different type of truck and/or a condition in the workplace changes in a manner that could affect safe operation of the truck.

## **Scaffolds & Ladders - 29 CFR 1926.454 & 29 CFR 1926.1060**

**Ladders (and Stairways):** As necessary. Observation of employee use of ladders (and stairways) will be used to determine if additional training is necessary.

**Scaffolds:** When there is reason to believe that an employee lacks the skill or understanding needed for safe work involving the erection, use or dismantling of scaffolds, retraining will be given 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; 2) where changes in the types of scaffolds, fall protection, falling object protection, or other equipment present a hazard about which an employee has not been previously trained; and, 3) where inadequacies in an affected employee's work involving scaffolds indicate that the employee has not retained the requisite proficiency.

## **Training Cards**

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

Has demonstrated, this date, an understanding of our Safety Program and will work in a safe manner and follow established work rules and procedures.

Certificates of training are located at our main office:  
9744 226th Ave NW  
Elk River, MN 55330

\_\_\_\_\_  
(Date)

\_\_\_\_\_  
Safety Program Administrator

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

Has demonstrated, this date, an understanding of our Safety Program and will work in a safe manner and follow established work rules and procedures.

Certificates of training are located at our main office:  
9744 226th Ave NW  
Elk River, MN 55330

\_\_\_\_\_  
(Date)

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9744 226th Ave NW  
Elk River, MN 55330

\_\_\_\_\_  
(Date)

\_\_\_\_\_  
Safety Program Administrator

# **Forklift Instruction Guide**

# TR Concrete

## FORKLIFT INSTRUCTION GUIDE

### PREFACE

This guide has been prepared to ensure that the training requirements contained in 29 CFR 1910.178, *Forklifts*, are met.

Prior to training, the Program Administrator should make a hazard assessment of truck operations and identify real or potential areas of concern such as:

**a. physical layout:**

1. are aisles sufficiently wide?
2. are there “blind” spots?
3. are other personnel kept clear of truck operations?
4. are dock plates & chocks in good repair?
5. are stacked items the proper height?
6. are fuel storage/battery charging areas properly maintained with appropriate fire extinguishers?
7. is the atmosphere in which the truck will operate appropriate?

**b. personal protective equipment (PPE):**

1. are PPE requirements identified?
2. is PPE available and its use enforced?

**c. trucks:**

1. are trucks properly inspected and maintained?
2. are owner’s/operator’s manuals available?

**d. operations:**

1. are vehicles being operated in a safe manner?

The Program Administrator or the designated competent (by training or experience) person who will conduct the training should understand the underlining reason for instruction and evaluation is to provide a safe work environment for the truck operator.

While it is not **legally** necessary to provide re-training on truck and work related topics if an operator has had training in those topics, for ease and consistency, we will provide the same **initial** training for all operators. This would include new, experienced, hires.

Initial training should consist of three distinct phases:

- a. interactive, formal training.
- b. practical training.
  - 1. This will include demonstrations performed by the trainer and practical exercises performed by the trainee.
- c. evaluation.
  - 1. This is an actual evaluation of the operator's performance in the workplace conducted by the Program Administrator or a designated competent person.

Forklift training must be certified.

# FORKLIFT TRAINING

## **Materials needed:**

- a. Our Forklift Program.
- b. 29 CFR 1910.178, *Powered Industrial Trucks*.
- c. The Owner's/Operator's Manual for our truck(s).
- d. Forklift Daily Check List.
- e. Forklift Quiz and Quiz Explanations.
- f. Answer Sheets, paper & pencils.

## **Procedure:**

- a. Use the following formal training as a guide to ensure all major topics are covered.
  - 1. The items in *italics* are notes to the instructor.
  - 2. Prior to teaching, fill in the blanks on pages:
- b. Encourage questions and group discussion. Identify and solve problems with the help of the employees.
- c. Administer the written (multiple-choice) quiz.
- d. Self-grade the quizzes using the Quiz Explanations as a starting point for discussion.

NOTE: How personnel do on the quiz is less important than their understanding of the material after answers are explained and discussed. Satisfy yourself that information pertinent to our truck operations -- especially safety information -- is retained by the operators.

## **INTRODUCTION**

We are committed to safety and providing a work environment that is free of recognized hazards. That same commitment is expected of all our employees.

As part of our continuing effort to provide a safer workplace for our employees, we have developed a training program for our forklifts operators.

Forklifts are an indispensable asset allowing us to move materials efficiently within our facility. However, because of their size, weight, power, and restricted visibility, these trucks present a potential hazard if improperly used.

Only trained and authorized personnel will operate our industrial trucks.

This training will be interactive which means, to the extent possible, a dialogue will be established between all of us present. Not only are questions welcome, but real life examples of difficulties experienced with truck operations are encouraged. All of us will benefit by discussing these problems and finding solutions.

References for this training include:

- a. Our Forklift Program.
- b. 29 CFR 1910.178, Forklifts, upon which our program is based. This will be readily available for our operators to review and they are encouraged to read it.
- c. The Owner and/or Operator Manuals for our trucks.

All of the above references are readily available for review at any time. Just ask.

## **WHY IS TRAINING NEEDED?**

***Ask if anyone can answer that question. Try to get a discussion going to keep up interest and activity in the training.***

Because of their power; weight; size; restricted visibility; and, often, high center of gravity, operation of industrial trucks takes skill and attention to detail. One moment of inattention can lead to a major mishap in an instant. Additionally, the load presents potential hazards if not properly secured, balanced, and/or properly placed on the truck.

***Ask if anyone has heard of a truck accident or mishap (not necessarily at this facility). More than likely, someone would have heard about a truck falling off a dock edge, through a trailer floor, or hitting an object or person. What about falling loads?***

While many safety features are designed into forklifts such as seat belts, lights, fire extinguishers, audible alarms, etc., accidents still happen and they are generally the result of operator error.

There is a general agreement that training for all persons (including part-time, seasonal, and temporary employees) who operate forklifts will significantly reduce the above accident and injury rate.

## **THE TRUCKS**

Forklifts are designed to move items quickly, safely, and cleanly. As a point of interest, forklifts include: fork trucks; tractors; platform lift trucks; motorized hand trucks; and other specialized industrial trucks powered by electric motors or internal combustion engines.



Generally, trucks are powerful and nimble with many safety features built into them. However, each type of truck has its limitations which would include stability, capacity, and visibility --with and without a load.

***Ask if anyone has had a problem with stability, capacity or visibility.***

To get an idea of the value of forklifts, in a typical factory, 40% of all activity involves material handling. In a ware-house operation, material handling approaches 100% of the activity.

***Ask if anyone knows the percentage of truck activity in our facility.  
The number is approximately: \_\_\_\_\_%.***

## **RULES REGARDING INDUSTRIAL TRUCKS**

1. No person shall operate one of our trucks without written authorization.
2. No riders are allowed unless:
  - a. the truck is specifically designed for such use.
  - b. the rider is authorized for the performance of a job.
3. Unsafe acts will result in the revocation of your authority to operate a truck retraining will be required.
4. At the beginning of each shift, the operator will inspect the truck using our Forklift Daily Check List.

***Go over the Check List and answer all questions related to its use.***

- a. Safety deficiencies will be noted on the Check List and the truck will not be used until they are corrected.
- b. No truck will be operated with safety defects.
- c. If cosmetic damage will not stop operations.

## **METHODS TO AVOID MAJOR INDUSTRIAL TRUCK HAZARDS**

***Ask if anyone can identify a major category of truck accidents which result in injury.***

The major categories are:

- a. physically hitting a person/object with the truck or load.
- b. having a load fall and hit the operator or other person.
- c. having the truck tip and crush the operator or other person.
- d. fire or explosion during refueling/recharging.

**Ask what procedures might prevent these accidents.**

## **HITTING A PERSON/OBJECT**

- a. Never drive up to a person standing in front of a fixed object.
- b. When possible, stay within delineated travel lanes or aisles.
- c. Be seen and/or heard.
- d. Ensure that adequate lighting is available.
- e. Maintain a clear view of travel. If the load blocks or restricts your view, drive with the load trailing (backwards).
- f. Slow down, sound horn, and do not pass where vision is restricted.
- g. Operate the truck at speeds that will allow it and the load to be stopped in a safe, smooth, manner.
- h. Be aware of floor conditions. Remove loose objects in the travel lanes. Low down on wet or slippery floors.
- i. Of course, stunt or reckless driving is prohibited.
- j. Be aware of the height of the truck and, if equipped, its mast and load. Carelessness can damage ceiling, lights, pipes, etc..
- k. Never allow anyone to stand or pass under an elevated portion of any truck at any time.

**Ask if anyone has had this type of accident. If yes, discuss what would prevent a reoccurrence.**

## **FALLING LOADS**

- a. Know your load -- do not "overstack". Because practically all loads lifted or hauled by a forklift are not secured to the truck, ensure the load is properly stacked. Cartons generally should be interlaced or banded.
- b. If lifting a load or pallet, get the forks (or other engaging means) as far under the load as possible.
- c. Travel with the load in the lowest position for stability as well as prevention of hitting objects overhead. If using forks, tilt the load backward for stabilization.
- d. Do not exceed the truck's rated capacity or stack loads too high.
- e. Do not make "jerky" movements such as slamming the brakes or high speed turns.

- f. A load backrest extension will reduce the possibility of part of the load falling rearward.
- g. When using a fork lift, the forks may be tilted forward only for picking up or setting down a load.

**Ask if anyone has had this type of accident. If yes, discuss what would prevent a reoccurrence.**

## **TIPPING**

Tipping or falling off an edge (or dock) is a preventable accident by following the guidelines below. If your truck tips, keep your body and limbs within the safety of the cage. Wear a seat belt if the truck is so equipped.

- a. Stay within travel lanes.
- b. If entering a trailer, ensure:
  - 1. the trailer brakes are engaged.
  - 2. the trailer is secured from movement by means of chocks and/or a locking mechanism.
  - 3. the tractor is either shut off or removed from the trailer.
  - 4. the trailer is squared up with the dock opening and dock plates are secure.
  - 5. the trailer floor is capable of supporting the forklift and its load.
  - 6. the lighting within the trailer is adequate.

NOTE: Falling off a dock edge because a trailer has moved is invariably a serious accident. Do not count on the tractor-trailer driver to lock his brakes or even trust that his brakes work. Physically check and ensure the trailer into which you are taking your forklift is securely against the dock. If possible, the trailer should be actually attached to the dock, but in all cases, it should be chocked.

- c. Travel with the load in the lowest possible position and avoid sharp turns at higher speeds as well as abrupt truck movements.
- d. Be aware of the surface on which you are traveling -- its traction, ability to hold weight, slope, and surface.

**Ask if anyone has had this type of accident. If yes, discuss what would prevent a reoccurrence.**

## **FIRE/EXPLOSION DURING REFUELING/RECHARGING**

Refueling accidents are not common experiences, however should they occur, they would be sudden and possibly catastrophic. Follow the manufacturer's owner's manual and local fire laws.

- a. There is absolutely NO SMOKING or open flame during any portion of the refueling/recharging process.
- b. An appropriate (B:C) fire extinguisher must be readily available.

**Ensure that refueling/recharging procedures are clearly understood.**

**Conduct an interactive discussion on the appropriate truck-related and workplace-related topics listed below.**

**For example, you could start each subparagraph below with, "Do you understand ....?"**

### **TRUCK-RELATED TOPICS**

- a. Operating instructions, warnings, and precautions for the types of truck the operator will be authorized to operate.
- b. Differences between the truck and the automobile.
- c. Truck controls and instrumentation: where they are located, what they do, and how they work.
- d. Engine or motor operation.
- e. Steering and maneuvering.
- f. Visibility (including restrictions due to loading).
- g. Fork and attachment adaptation, operation, and use limitations.
- h. Vehicle capacity.
- i. Vehicle stability.
- j. Any vehicle inspection and maintenance that the operator will be required to perform.
- k. Refueling and/or charging and recharging of batteries.
- l. Operating limitations.
- m. Any other operating instructions, warnings, or precautions listed in the operator's manual for the types of vehicle that the employee is being trained to operate.

## **WORKPLACE-RELATED TOPICS**

- a. Surface conditions where the vehicle will be operated.
- b. Composition of loads to be carried and load stability.
- c. Load manipulation, stacking, and unstacking.
- d. Pedestrian traffic in areas where the vehicle will be operated.
- e. Narrow aisles and other restricted places where the vehicle will be operated.
- f. Hazardous (classified) locations where the vehicle will be operated.
- g. Ramps and other sloped surfaces that could affect the vehicle's stability.
- h. Closed environments and other areas where insufficient ventilation or poor vehicle maintenance could cause a buildup of carbon monoxide or diesel exhaust.
- i. Other unique or potentially hazardous environmental conditions in the workplace that could affect safe operation.

Lastly, remind all personnel that the reference materials are readily available for their use and that should a safety concern develop, it will be resolved before proceeding with work.

## **PRACTICAL TRAINING**

### **Materials Needed:**

- a. A “Demonstration of Operational Skills” form for each trainee.
- b. A forklift.
- c. The Forklift Daily Check List.
- d. Typical items to be moved, placed, or lifted.

### **Procedure:**

- a. Establish a protected training area that has been cordoned off to prevent injury to persons not involved with truck training.
- b. Establish stations which are representative of typical operations such as:
  - 1. lifting, pulling, pushing, stacking materials.
  - 2. maneuvering in tight spaces, narrow aisles, or blind spots.
  - 3. entering trailers.

- c. Demonstrate:
  - 1. inspecting the truck.
  - 2. performing the tasks required at each station.
  - 3. fuel/charging the truck.
  - 4. securing the truck as if the shift was completed.
- d. Observe:
  - 1. the trainee performing the above tasks.
  - 2. complete a “Demonstration of Operational Skills” for each trainee.

As with all training, an interactive approach should be taken with the operator being encouraged to ask questions and resolve any safety issues.

## **EVALUATION**

### **Materials needed:**

- a. A Certification of Truck Operator Training Form.
- b. Operator’s Licenses.

**NOTE: The trainee may not be authorized as an operator until an evaluation of performance during actual operations is made by the Program Administrator or a designated competent person.**

**Prior to this certification, all truck operations must be under the direct supervision and observation of a competent person.**

### **Procedure:**

- a. Observe the employee performing actual operations safely in accordance with the training received.
- b. Complete our Certification of Truck Operator Training Form.
- c. Provide a completed Operator’s License to the individual.

## **Forklift Quiz**

# **FORKLIFT**

## **QUIZ**

**Circle the correct answer.**

1. To become an authorized forklift operator, one must:
  - a. read and understand all pertinent information in the Owner's Manual.
  - b. understand the hazards associated with truck operations and how to avoid them.
  - c. demonstrate skills in actual truck operation.
  - d. all of the above.
  
2. Who is allowed to operate an industrial truck?
  - a. Anyone over 25 years of age.
  - b. Anyone who can turn it on.
  - c. One who has demonstrated his/her knowledge and ability to safely operate the truck and has authorization to do so.
  
3. A malfunctioning truck may be used:
  - a. with extreme caution.
  - b. only after being properly repaired by authorized personnel.
  - c. by ground controls only.



4. Trucks should be inspected:
  - a. daily.
  - b. weekly.
  - c. monthly.
5. There is absolutely NO SMOKING or open flame during any portion of the refueling/recharging process.
  - a. True.
  - b. False.
6. Rated load capacities are:
  - a. general guidelines established by the manufacturer.
  - b. must never be exceeded.
  - c. are used to determine fluid levels.
7. Industrial trucks are so stable they may be driven on any grade.
  - a. True.
  - b. False.
8. Because of the driver protection and the rubber tires, there is no danger if overhead electrical lines are hit by a truck component or load.
  - a. True.
  - b. False.

9. Loads should always be carried as close to the ground as possible to lower the center of gravity.
  - a. True.
  - b. False.
10. The surface on which a truck travels should be checked for:
  - a. load bearing capacity.
  - b. traction.
  - c. lack of debris.
  - d. all of the above.
11. Primary hazards that present themselves during truck operations include:
  - a. hitting a person/object; falling loads; tipping; and fire/explosion during refueling/recharging.
  - b. flat tires; leaking fuel tanks; and excess debris.
  - c. hazardous atmospheres and excessive noise.
12. Accidents involving forklifts result in approximately:
  - a. 90,000 injuries and 100 deaths per year.
  - b. 1,000,000 injuries and 350 deaths per year.
  - c. three (3) billion dollars in property damage per year.

## **Forklift Quiz Answer Sheet**

## **FORKLIFT QUIZ**

### **ANSWER SHEET**

---

(Name)

---

(Date)

**Circle the correct, or best, answer.**

1.     a.   b.   c.   d.
2.     a.   b.   c.   d.
3.     a.   b.   c.   d.
4.     a.   b.   c.   d.
5.     a.   b.   c.   d.
6.     a.   b.   c.   d.
7.     a.   b.   c.   d.
8.     a.   b.   c.   d.
9.     a.   b.   c.   d.
10.    a.   b.   c.   d.
11.    a.   b.   c.   d.
12.    a.   b.   c.   d.

## **Forklift Quiz Scoring Sheet**

**FORKLIFT QUIZ**  
**SCORING SHEET**

- 1. d.**
- 2. c.**
- 3. b.**
- 4. a.**
- 5. a.**
- 6. b.**
- 7. b.**
- 8. b.**
- 9. a.**
- 10. d.**
- 11. a.**
- 12. a.**

## **Forklift Quiz Explanations**

## **FORKLIFT**

### **QUIZ EXPLANATIONS**

1. To become an authorized forklift operator, one must:
  - a. read and understand all pertinent information in the Owner's Manual.
  - b. understand the hazards associated with truck operations and how to avoid them.
  - c. demonstrate skills in actual truck operation.
  - d. all of the above.**

**The actual standard on which this training is based states, as far as training goes, that a method must be devised to train operators in the safe operation of forklifts. By successfully completing the above tasks, it is our opinion that the goal of zero accidents will be achieved.**

2. Who is allowed to operate an industrial truck?
  - a. Anyone over 25 years of age.
  - b. Anyone who can turn it on.
  - c. One who has demonstrated his/her knowledge and ability to safely operate the truck and has authorization to do so.**

**Improperly used forklifts are potentially very dangerous items of equipment. Therefore, only authorized personnel may operate them. Should an operator be found to be lacking in any of the required skills for safe operation, re-training will be given. Intentional recklessness or disregard of safety guidelines may result the operator's authorization being revoked.**



3. A malfunctioning truck may be used:
  - a. with extreme caution.
  - b. only after being properly repaired by authorized personnel.**
  - c. by ground controls only.

***There are two (2) points to this question. One, to emphasis that any truck that is mechanically defective will be taken out of service until repaired, and, two, only authorized maintenance personnel may do the actual repairs. Of course, operators are allowed to replenish fluids as allowed in the Operator's Manual.***

4. Trucks should be inspected:
  - a. daily.**
  - b. weekly.
  - c. monthly.

***There are three (3) main categories of items to inspect on our Forklift Daily Checklist: 1) Visual Overall Truck Condition; 2) Fluids; and 3) Truck Operations. Be sure to check each item indicating that it is O.K., deficient, or not applicable. This inspection checklist is part of our maintenance procedures and will ensure that not only are our trucks safe, they will perform at their expected capacities and lifetimes.***

5. There is absolutely NO SMOKING or open flame during any portion of the refueling/recharging process.
  - a. True.**
  - b. False.

***Refueling propane requires at least an 8B:C rated fire extinguisher and recharging batteries requires immediate access to eye flush and body drenching.***

6. Rated load capacities are:
  - a. general guidelines established by the manufacturer.
  - b. must never be exceeded.**
  - c. are used to determine fluid levels.

***Rated capacities must never be exceeded. Remember, you are dealing with powerful, heavy, expensive machinery capable of serious work. At the least, going beyond truck capacities may damage the truck (or load), and, at the most, you may seriously injure yourself or a fellow employee if something gives way.***

7. Industrial trucks are so stable they may be driven on any grade.
  - a. True.
  - b. False.**

***Forklifts are extremely stable when properly driven, loaded, and operated within its stated limits. Exceeding a truck's limit, such as the grade on which it may be driven, is asking for a sudden, possibly violent, certainly tragic accident.***

8. Because of the driver protection and the rubber tires, there is no danger if overhead electrical lines are hit by a truck component or load.
  - a. True.
  - b. False.**

***This is blatantly false. Any reasonable person would know that there is danger in hitting any object. However, remember not only the driver of the truck is put at risk through careless operations, other persons are as well.***

9. Loads should always be carried as close to the ground as possible to lower the center of gravity.

a. True.

b. False.

***Not only does this lower the center of gravity, it greatly reduces the chance of injury should the load fall. If lowering the load blocks your line of sight, travel with the load trailing.***

10. The surface on which a truck travels should be checked for:

a. load bearing capacity.

b. traction.

c. lack of debris.

d. all of the above.

***Not only is the above an OSHA requirement, it makes good sense. Slow down when traction is poor (a wet floor, for example). Serious accidents can occur when trailer floors fail, dock plates slip, or there is some sort of surface collapse.***

11. Primary hazards that present themselves during truck operations include:

a. hitting a person/object; falling loads; tipping; and fire/explosion during refueling/recharging.

b. flat tires; leaking fuel tanks; and excess debris.

c. hazardous atmospheres and excessive noise.

***One of the main purposes of our training has been to point out the primary hazards involved with forklift operations and the methods and procedures to avoid them.***

12. Accidents involving forklifts result in approximately:
- a. **90,000 injuries and 100 deaths per year.**
  - b. 1,000,000 injuries and 350 deaths per year.
  - c. three (3) billion dollars in property damage per year.

***Ninety thousand injuries and 100 deaths per year is a terrible price to pay for disregarding standard safety procedures. Most accidents are preventable. With a concerted effort by all personnel from the highest levels of management to the newest hire, needless accidents and injuries can be eliminated.***

## **Demonstration of Operation Skills**

# TR Concrete

## DEMONSTRATION OF OPERATION SKILLS

The truck operator whose signature appears below has demonstrated his/her ability to perform the below listed tasks in a satisfactory manner.

☒ = O.K.

☒ = Not Applicable

☐ A truck walk-around and safety check.

☐ A check of all fluid levels.

☐ A check of horn, lights, brakes, fire extinguisher, etc..

☐ Fueling the truck.

☐ Starting the truck.

☐ Driving around obstacles (such as empty boxes) both in a forward and reverse direction.

☐ Lifting a stack of empty pallets and placing them on another empty pallet.

☐ Securing the truck after use (engaging the parking brake).

☐ Special maneuvers appropriate for job requirements such as ramps, trailer entry, narrow aisles, high reach, etc..

Notes:

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\_\_\_\_\_  
(Operator's Signature)

\_\_\_\_\_  
(Program Administrator's Signature)

\_\_\_\_\_  
(Date)

# **Certification of Forklift Operator Training**

# TR Concrete

## Certification of Forklift Operator Training

I certify the below listed personnel have received training/refresher training as required by 29 CFR 1910.178, *Powered Industrial Trucks*.

Name(s) of competent persons who performed the training:

(If other than the Program Administrator)

\_\_\_\_\_  
(Print Name)

\_\_\_\_\_  
(Print Name)

Date(s) of training:

\_\_\_\_\_  
(From)

\_\_\_\_\_  
(To)

<u>NAME</u>	<u>Initial Training</u>	<u>Refresher Training</u>	<u>Evaluation Date</u>
_____	<input type="checkbox"/>	<input type="checkbox"/>	_____
_____	<input type="checkbox"/>	<input type="checkbox"/>	_____
_____	<input type="checkbox"/>	<input type="checkbox"/>	_____
_____	<input type="checkbox"/>	<input type="checkbox"/>	_____
_____	<input type="checkbox"/>	<input type="checkbox"/>	_____
_____	<input type="checkbox"/>	<input type="checkbox"/>	_____
_____	<input type="checkbox"/>	<input type="checkbox"/>	_____
_____	<input type="checkbox"/>	<input type="checkbox"/>	_____
_____	<input type="checkbox"/>	<input type="checkbox"/>	_____
_____	<input type="checkbox"/>	<input type="checkbox"/>	_____

\_\_\_\_\_  
Program Administrator's Signature

\_\_\_\_\_  
(Date)



## **Forklift Operator Cards**

\_\_\_\_\_  
(Operator's Name)  
Has demonstrated, this date, the skills & knowledge  
necessary to operate a forklift and is  
**AUTHORIZED TO OPERATE**  
the below  
TR Concrete  
**Forklifts**

\_\_\_\_\_  
[Type(s)]                      [Model(s)]

\_\_\_\_\_  
(Date)

Safety Program Administrator

\_\_\_\_\_  
(Operator's Name)  
Has demonstrated, this date, the skills & knowledge  
necessary to operate a forklift and is  
**AUTHORIZED TO OPERATE**  
the below  
TR Concrete  
**Forklifts**

\_\_\_\_\_  
[Type(s)]                      [Model(s)]

\_\_\_\_\_  
(Date)

Safety Program Administrator

\_\_\_\_\_  
(Operator's Name)  
Has demonstrated, this date, the skills & knowledge  
necessary to operate a forklift and is  
**AUTHORIZED TO OPERATE**  
the below  
TR Concrete  
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\_\_\_\_\_  
[Type(s)]                      [Model(s)]

\_\_\_\_\_  
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[Type(s)]                      [Model(s)]

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\_\_\_\_\_  
[Type(s)]                      [Model(s)]

\_\_\_\_\_  
(Date)

Safety Program Administrator

## TR Concrete

### Training

New hires will receive a safety orientation that includes:

- a. reading Section I of our safety program.
- b. reading and signing the employee acknowledgement on our employee handbook.
- c. being informed of any chemical or physical hazards that may present themselves on our job sites.
  1. if a chemical hazard, being provided appropriate MSDS.
  2. if a heat, noise, or biological, hazard information about those hazards and how to protect one's self will be provided.
- d. a demonstration that they can perform their initial assignment safely.

All personnel will receive continual training utilizing all or some of the below types of training or resources, as appropriate:

- a. our safety program.
- b. safety meetings.
- c. classroom instruction.
- d. on-line courses.
- e. hands-on instruction.
- f. posters.

At least annually, all persons will receive, and acknowledge in writing, that they have received training as required by federal and Minnesota regulations.

All personnel will receive an employee handbook which outlines general safety procedures.

Employee will acknowledge, with their signature that they:

1. will, to the best of their ability, work in a safe manner and follow established work rules and procedures.
2. will ask for clarification of safety procedures of which I am not sure **prior** to performing a task.
3. will report to the job site supervisor or competent person any unsafe acts or procedures and will ensure they are addressed and resolved before continuing work.

4. have received instruction on the Employee Right-To-Know program and have been advised of any and all job site hazardous substances, physical agents, and infectious agents prior to going on a job site.
5. have demonstrated, or proved, their ability to perform their job tasks in a safe manner prior to actually doing them.
6. have received instruction on the AWAIR program.

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Safety Director

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(Date)

## **TR Concrete**

### **Safety Program Review**

We will conduct and document a review of our total safety effort including a review of our written safety program.

The primary focus of our review is to determine if we have achieved our primary safety goals and objectives, specifically:

#### **Goals and objectives:**

Goal: To achieve and maintain an accident free workplace.

Objectives:

1. To involve all personnel, from the newest hire to senior management, in safety.
2. To ensure that new hires understand the safety procedures for the job task they are to perform.
3. To ensure that all employees understand and acknowledge with their signature, before working, that: they will: 1) to the best of their ability, work in a safe manner and follow established work rules and procedures; 2) ask for clarification of safety procedures of which they are not sure **prior** to performing a task; and, 3) report to the job site supervisor or competent person any unsafe acts or procedures and will ensure they are addressed and resolved before continuing work.
4. To the best of our ability encourage interactive training and allow for dialogue so that it is clear that employees understand particular safety policies and procedures.

Goal: To instill in all employees the importance of safety.

1. To have supervisors lead by example and perform all our job site tasks in compliance with federal OSHA standards except as modified by MNOSHA standards and regulations.
2. To commit the resources necessary to provide for training, equipment, and appropriate PPE to accomplish work safely.
3. To provide every employee an employee handbook which outlines our basic safety policies and have each employee acknowledge with their signature they understand the importance of safety.

The Safety Director will interview employees and supervisors during routine job site inspections and ask for their input on improving our safety effort.

New safety policies and/or procedures will be incorporated in our safety program if appropriate. See the following annual certification.

# TR Concrete

## Certification of Safety Program Review

I certify that I have, this date, with the assistance of employees and supervisors, conducted a review of our safety effort including our written safety program as noted on the preceding page.

Suggested areas of improvement include:

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Specific recommended new policies and/or procedures:

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Safety Director

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(Date)

## **TR Concrete**

### **Safety Committee**

We have established a joint labor-management safety committee as an integral part of our AWAIR program. The committee will consist of at least one management person and at least two employees. The employee members will be selected by the employees.

The Safety Committee will convene at least monthly at a time and place to be announced.

1. The Safety Committee will review the following:
2. All citations.
3. All Enforcement Procedures.
4. All accidents, injuries, and near-misses.
5. The effectiveness of our safety effort.

Employees are to bring to their representatives safety concerns for discussion.

The minutes of the Safety Committee will be recorded on the attached form and will be posted or otherwise conveyed to the employees.

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Chairperson

# TR Concrete

## Safety Committee Minutes

Date: \_\_\_\_\_

Time: \_\_\_\_\_

Location: \_\_\_\_\_

Chairperson: \_\_\_\_\_

Recorder: \_\_\_\_\_

Members Present: \_\_\_\_\_

\_\_\_\_\_

Members Absent: \_\_\_\_\_

\_\_\_\_\_

Subject/Speaker	Key Items/Recommendations	Action/Follow-up

The above minutes are approved.

\_\_\_\_\_  
Chairperson

Page \_\_\_\_ of \_\_\_\_