



**W.E.S.T. USA, Inc**

# **Health, Safety, and Environmental Manual**



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**1. PURPOSE AND SCOPE**

The purpose of this manual is to provide guidance to employees to ensure a safe, healthful, and environmentally sound workplace and to provide best practices based on Local, State, and Federal regulatory requirements as well as W.E.S.T. USA, Inc. directions, industry standards, and lessons learned from previous experience.

This manual applies to all W.E.S.T. USA, Inc. employees with exposure to the Health, Safety, and Environmental topics listed throughout.

**2. ACCESS TO MEDICAL RECORDS**

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**2.1 Purpose**

This section establishes the minimum requirements for providing information to employees in accordance with medical and exposure records.

**2.2 Medical and Exposure Records**

The purpose for exposure and medical records access is to improve the detection, treatment, and prevention of occupational illness and disease.

**2.3 Access**

Employees shall be provided the right of access to relevant exposure and medical records. Upon employment and at least annually thereafter, current employees shall be informed of the existence, location, and availability of any records, the person responsible for maintaining and providing access to records, and each employee's rights of access to these records.



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Whenever an employee or designated representative requests access to a record, access shall be provided in a reasonable time, place, and manner. If access to the record cannot be reasonably provided within 15 working days, the employee shall be notified of the reason for the delay within the 15 working days.

Whenever an employee or designated representative requests a copy of a record, either a copy of the record shall be provided without cost to the employee or representative, the necessary mechanical copying facilities (e.g., photocopying) made available without cost to the employee or representative for copying the record, or, the record shall be loaned to the employee or representative for a reasonable time to enable a copy to be made.

Whenever access is requested to an analysis which reports the contents of employee medical records by either direct identifier (name, address, social security number, payroll number, etc.) or by information which could reasonably be used under the circumstances indirectly to identify specific employees (e.g., exact age, height, weight, race, sex, date of initial employment, job title, etc.), personal identifiers shall be removed before access is provided.

### 2.4 Retention

Employee medical records shall be preserved and retained for the duration of employment plus 30 years.

An employee medical record is a record concerning the health status of an employee that is made or maintained by a physician, nurse, or other health care personnel or technician including:

- Medical and employment questionnaires or histories, including job description and occupational exposure.
- Results of medical examinations and laboratory tests.
- Medical opinions, diagnoses, progress notes, and recommendations.
- First aid records.
- Descriptions of treatments and prescriptions.
- Employee medical complaints.

An employee exposure record is any of the following kinds of information:

- Environmental (workplace) monitoring or measuring of a toxic substance or harmful physical agent, including personal, area, grab, wipe, or other form of sampling, as well as related collection and analytical methodologies, calculations, and other background data relevant to interpretation of the results obtained.
- Biological monitoring results which directly assess the absorption of a toxic substance or harmful physical agent by body systems (e.g., the level of a chemical in the blood, urine,



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breath, hair, fingernails, etc.) but not including results which assess the biological effect of a substance or agent or which assess an employee's use of alcohol or drugs.

- Material safety data sheets indicating that the material may pose a hazard to human health.
- A chemical inventory or any other record which reveals where and when used and the identity (e.g., chemical, common, or trade name) of a toxic substance or harmful physical agent.

### **2.5 Transfer of Records**

If the Company ceases to do business, all exposure and medical records shall be transferred to the successor employer. The successor employer shall receive and maintain these records. If the Company ceases to do business and there is no successor employer, affected current employees shall be notified of their rights of access to records.



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**3. AERIAL LIFTS (ELEVATED & ROTATING WORK PLATFORMS) PROGRAM**

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**3.1 Purpose**

The purpose of the section is to provide minimum safe work practices for the operation of aerial lifts (elevated and rotating work platforms) to ensure the safety of employees.

**3.2 Aerial Lifts (Elevated and Rotating Work Platforms) Program**

Aerial lifts are commonly used in construction, inspection, maintenance, and repair services to lift employees to an elevated work position. Proper operation and use of aerial lifts can make completion of tasks at elevation safer and more efficient. However, with unsafe use, work with aerial lifts can result in serious injury.

**3.3 Training**

Only trained persons shall operate an aerial lift.

Training shall include:

- Explanations of electrical, fall, and falling object hazards.
- Procedures for handling hazards.
- Recognizing and avoiding unsafe conditions.
- Instructions for correct operation of the lift, including maximum load and load capacity.
- Demonstrations of the skills and knowledge needed to operate an aerial lift prior to operation.
- When and how to perform inspections.
- Manufacturer’s requirements.



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### 3.4 Testing and Inspection

A pre-start inspection shall be conducted to determine safe working conditions including the following:

- Manufacturer's recommendations,
- Vehicle components,
- Proper fluid level (oil, hydraulic, fuel, coolant, etc.),
- Leaks of fluids,
- Wheels and tires,
- Battery and charger,
- Lower-level controls,
- Horn, gauges, lights,
- Backup alarms,
- Steering and brakes,
- Lift components and controls,
- Operating and emergency controls,
- Personal protective devices,
- Hydraulic, air, pneumatic, fuel, and electrical systems,
- Fiberglass and other insulating components,
- Missing or unreadable placards, warnings, or operational, instructional, and control markings,
- Mechanical fasteners and locking pins,
- Cable and warning harnesses,
- Outriggers, stabilizers, and other structures,
- Loose or missing parts, and
- Guardrail systems.

Lift controls shall be tested each day prior to use to determine that such controls are in safe working condition.

Defective aerial lifts shall be removed from service until repairs are made.

Work zone inspections shall be conducted including the following:

- Drop-offs, holes, or unstable surfaces such as loose dirt,
- Inadequate ceiling heights,
- Slopes, ditches, or bumps,
- Debris and floor obstructions,
- Overhead electrical power lines and communication cables,
- Other overhead obstructions,
- Other hazardous locations and atmospheres,
- High wind and other severe weather conditions, and
- The presence of others near the work.





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Corrective action shall be taken to eliminate any hazards found.

**3.5 Load Limits**

Boom and basket load limits specified by the manufacturer shall not be exceeded.

**3.6 Spotter / Backup Alarm**

Aerial lifts having an obstructed view shall not be moved backward unless the vehicle has a reverse signal alarm audible above the surrounding noise level, and/or an observer signals it is safe to do so.

**3.7 Overhead Power Lines**

For overhead power lines rated 50 kV or below, minimum clearance between the lines and any part of the equipment or load shall be at least 10 feet.

If the aerial lift is insulated for the voltage involved, and if the work is performed by a qualified person, the clearance distance (between the uninsulated portion of the aerial lift and the power line) may be referenced to the distance provided in 1910.333(c)(3)(ii)(C) Table 5-5.

**3.8 Fall Protection**

A personal fall arrest or travel restraint system shall be worn and attached to the boom or basket when working from an aerial lift. Employees are prohibited from attaching to adjacent poles or structures.



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**4. AMMONIA AWARENESS**

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**4.1 Purpose**

The purpose of this section is to provide information on an awareness level basis about the properties and hazards of ammonia along with general guidelines.

**4.2 Ammonia Awareness Program**

Ammonia is a colorless gas under normal conditions. It can be a liquid under pressure. It has a pungent, suffocating odor. Anhydrous Ammonia is attracted to water and at ambient temperature is mainly a gas.

**4.3 Exposure Hazards**

High concentrations of ammonia gas, liquid ammonia, and solutions of ammonia can cause harm if inhaled or if they come into contact with eyes or skin.

Exposure of the eyes to ammonia may cause burning, tearing, temporary blindness, and severe eye damage.

Exposure of the skin to ammonia may cause severe burns and blistering.

Exposure of the respiratory tract (mouth, nose, and throat) to ammonia may cause runny nose, coughing, chest pain, severe breathing difficulties, severe burns, and death.

**4.4 Potential Functions for Exposure**

Employees may be exposed to anhydrous ammonia during their job functions while:

- Working on / near industrial refrigeration machinery rooms, equipment, and/or piping.
- Working in petroleum refineries.
- Working with / near agricultural fertilizer.



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**4.5 Personal Protective Equipment (PPE)**

Employees shall be provided with and be required to use impervious clothing, gloves, face shields, and other appropriate, protective clothing necessary to prevent any possibility of skin contact with liquid anhydrous ammonia or aqueous solutions of ammonia containing more than 10% by weight of ammonia.

Similar precautions shall be taken to prevent the skin from becoming frozen from contact with vessels containing liquid anhydrous ammonia.

**4.6 Site Safety Rules**

Employees shall be aware of contingency plans and provisions. Employees shall be informed where ammonia is used in the host facility and aware of additional site safety rules.



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**5. ASBESTOS AWARENESS**

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**5.1 Purpose**

The purpose of this section is to provide information about asbestos, the potential health effects associated with exposure, and safety procedures that should be followed to reduce exposure and protect the health of employees.

**5.2 Asbestos Awareness Program**

Asbestos is a common, naturally occurring group of fibrous minerals. Asbestos fibers have been used in a variety of building materials. Asbestos materials are used in the manufacture of heat-resistant clothing, automotive brake and clutch linings, and a variety of building materials including insulation, soundproofing, floor tiles, roofing felts, ceiling tiles, asbestos-cement pipe and sheet, and fire-resistant drywall. Asbestos is also present in pipe and boiler insulation materials, pipeline wrap and in sprayed-on materials located on beams, in crawlspaces, and between walls.

**5.3 Hazards**

Friable asbestos (that is, material that contains more than 0.1% asbestos by weight and can be crumbled by hand) is a potential hazard because it can release fibers into the air if damaged. Long-term exposure to airborne asbestos is necessary for chronic lung disease. Asbestos fibers are significantly more hazardous than dust or other materials even of the same composition because the shape of the fibers allows them to be inhaled but not eliminated by the respiratory system as with other particles.

Significant and long-term exposure to asbestos from activities that directly disturb asbestos-containing materials (such as asbestos mining) can lead to a variety of respiratory diseases, including asbestosis and mesothelioma (cancer of the lung lining), and cancer of the stomach and colon. Asbestosis is a non-malignant, irreversible disease resulting in fibrosis of the lung. Asbestos-related cancers tend also to result from substantial long-term exposure; however, mesothelioma may result from much smaller exposures to asbestos.



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**5.4 Hazard Control**

- Engineering Controls - Engineering controls include the use of enclosures such as monitoring equipment, glove bags, tenting, negative pressure work areas, HEPA filters, controlled vacuums, water misters, and other equipment to ensure containment and cleanup of asbestos work areas.
- Administrative Controls - All qualified employees shall be issued proper personal protective equipment (PPE), such as respirators, disposable coveralls, gloves, etc. Written procedures and management authorizations are required for all work involving asbestos containing material.
- Training Controls – Training shall be provided to all employees with the potential to come into contact with asbestos before work begins and yearly thereafter. Training shall include identification of the locations for potential exposure, the health hazards as previously listed, and that employees must not disturb asbestos containing materials.
- Signs and labels shall identify the material which is present, where it is located, and appropriate work practices which will ensure that asbestos containing material (ACM) and/or presumed asbestos containing material (PACM) will not be disturbed.



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**6. BENZENE EXPOSURE CONTROL AND AWARENESS**

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**6.1 Purpose**

The purpose of this section is to provide information on an awareness level basis about the properties and hazards of benzene along with general guidelines.

**6.2 Benzene Exposure Control and Awareness Program**

Benzene may be encountered at refineries and laboratories, during refueling and tank gauging, and when completing oil field and pipeline maintenance operations.

Benzene is a clear, colorless liquid with a pleasant, sweet odor. The odor of benzene does not provide adequate warning of its hazard.

**6.3 Compliance**

In the event that benzene becomes a health hazard or potential health hazard at any site, implementation of engineering controls, work practice controls, respiratory protection, or any combination of these controls shall be implemented and established as a written program to reduce employee exposure to benzene to or below the Permissible Exposure Limit (PEL).

It is the responsibility of management and local health and safety representatives to see that these written compliance programs are made available to the OSHA Assistant Secretary, the OSHA Director, affected employees, and designated employee representatives.

The written program and plans shall be furnished upon request for examination and copying by the OSHA Assistant Secretary, the OSHA Director, affected employees, and designated employee representatives.



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### 6.4 Hazard Data

Benzene can affect the body through inhalation, skin / eye contact, or accidental ingestion. Benzene has a pleasant, sweet odor, but the odor does not provide adequate warning of its hazard.

#### 1. Short-Term (Acute) Health Effects:

Exposure to high concentrations of benzene, well above the levels where its odor is first recognizable, may result in breathlessness, feelings of irritability, euphoric, or giddy; irritation in eyes, nose, and respiratory tract; headache, feel dizzy, nauseated, or intoxicated. Severe exposures may lead to convulsions and loss of consciousness.

#### 2. Long-Term (Chronic) Health Effects:

Repeated or prolonged exposure to benzene, even at relatively low concentrations, may result in various blood disorders, ranging from anemia to leukemia, an irreversible, fatal disease. Benzene has been shown to cause cancer in humans. Benzene exposure has been associated with cancers such as myeloid leukemia, Hodgkin's disease, and lymphomas. Many blood disorders associated with benzene exposure may occur without symptoms.

#### 3. Physical Hazards:

Benzene poses a serious fire and explosion hazard when exposed to heat or flame. Benzene vapor is heavier than air and may collect in low areas. Vapors can also travel for some distance and may come into contact with ignition sources. Smoking is prohibited in areas where benzene is used or stored. Since Benzene is highly flammable and vapors may form explosive mixtures in air, fire extinguishers must be readily available in areas where benzene is used or stored.

### 6.5 Permissible Exposure Limits

OSHA has issued the following guidelines for employee exposures to reduce the potential for adverse health effects:

- Action Level - The concentration of a chemical in air, calculated as an eight-hour time-weighted average (TWA), which initiates certain required activities such as exposure monitoring and medical surveillance. *The action level for benzene is 0.5 parts per million (0.5 ppm).*
- Permissible Exposure Limit (PEL) - The greatest concentration, calculated as an eight-hour TWA, to which nearly all employees may be repeatedly exposed during their eight-hour work schedule without experiencing adverse health effects. *The PEL for benzene is 1 part per million (1 ppm).*
- Short-Term Exposure Limit (STEL) - The greatest concentration that nearly all employees may be exposed during any one 15-minute period without experiencing adverse health effects. *The STEL for benzene is 5 parts per million (5 ppm).*



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### 6.6 Personal Protective Equipment (PPE)

- General

Contact with the eyes or skin with liquids containing benzene shall be prevented using protective garments and equipment which are impervious to benzene over any parts of the body that could be exposed to liquid benzene. The type of PPE necessary will vary depending on the concentration, amount used, and the potential for splashing. It may include goggles, boots, face shields, gloves, gowns, lab coats, aprons, and arm sleeves.

If there is potential for liquid benzene to get into the eyes, splash-proof safety goggles shall be worn. If there is potential for liquid benzene to splash onto the face, a face shield shall be worn.

PPE contaminated with benzene shall not be brought home by employees.

All PPE shall be inspected by employees prior to each use. PPE shall be stored in a clean and sanitary manner. Respirators shall be inspected monthly to ensure they are being used, stored, and cleaned properly. The Company shall provide protective clothing and equipment at no cost to the employee and ensure its use where appropriate. Proper eye and face protection equipment shall meet the requirements of 29 CFR 1910.133.

- Respiratory Protection

If employee exposures are found to exceed the PEL or STEL, proper respiratory protection shall be provided until feasible engineering or administrative controls can be implemented. Employees working in areas with exposure to benzene shall receive appropriate respiratory protection provided by the Company. Respirators shall be provided that comply with the following requirements:

- Periods necessary to install or implement feasible engineering and work-practice controls.
- Work operations for which the job site establishes compliance with either the TWA or STEL through the use of engineering and work-practice controls is not feasible including but not limited to: maintenance and repair activities, vessel repair / cleaning, or other operations for which engineering and work-practice controls are infeasible because exposures are intermittent and limited in duration.
- Emergencies involving benzene discharge / spill.
- PPE shall be provided and worn when appropriate to prevent eye contact and limit dermal exposure to liquid benzene.
- For employees who are or may be exposed to benzene at or above the action level, 30 or more days per year-above the PEL, or 20 or more days for employees who have been exposed to more than 10 ppm of benzene for 30 or more days in a year prior to effective date.
- Respiratory protection shall be selected according to airborne concentrations of benzene. Reference local regulation for additional information.





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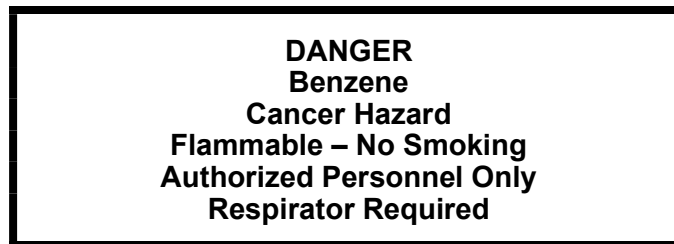
### 6.7 Storage

Since benzene liquid is highly flammable, it shall be stored in tightly closed containers in a cool, well ventilated area. Benzene vapor may form explosive mixtures in air. All sources of ignition shall be controlled. Smoking is prohibited in areas where benzene is used or stored.

### 6.8 Signage and Labeling

#### Regulated Areas:

Areas where the airborne levels of benzene are found to exceed or can reasonably be expected to exceed the PELs, either the 8-hour TWA exposure of 1 ppm or the short-term exposure limit of 5 ppm for 15 minutes shall be designated as regulated areas. Access to these areas shall be limited to persons trained to recognize the hazards of benzene. All entrances and access ways shall be posted with signs bearing the following information:



#### Container Labels:

If a chemical product containing benzene is transferred into a container other than the original, it shall be labeled with the following information:



Labels shall be provided upon request.

When labeling containers, use the following hazard ratings:

- Health - 3
- Flammability - 3
- Reactivity - 0
- Personal Protective Equipment - This rating will vary based upon the use, but shall be at least a B.

### 6.9 Monitoring

In areas that employees are subject to benzene exposure, monitoring shall be conducted and recorded to determine the employees' exposure level.



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- Measurements shall be taken that represent an average eight-hour exposure from one 8-hour sample or two separate 4-hour samples.
- Air samples shall also be taken in the employee's area where they will be working to represent air that is inhaled by the employee.
- Sampling and analysis of benzene samples may be conducted by a compilation of benzene vapor or charcoal absorption tubes, with chemical analysis by gas chromatography. Portable monitors, continuous monitoring, and passive dosimeters are also methods of sampling and monitoring.
- Monitoring shall have an accuracy to a 95% confidence level of not less than plus or minus 25% for concentrations of benzene greater than or equal to 0.5 ppm.
- For more specific monitoring requirements and air sample methods refer to local regulation.

### 6.10 Employee Information and Training

Every employee working with benzene shall receive training on its hazards. The following information shall be reviewed with employees prior to and annually when working with or around benzene:

- Requirements of the local regulation standard.
- Contents of the Safety Data Sheet.
- Description of the medical surveillance program.
- Description of the health hazards associated with exposure.
- Signs and symptoms of exposure.
- Instructions to report any signs or symptoms that may be attributable to benzene exposure.
- Description of the operations in the work area where benzene is present.
- Work practices to reduce exposure, including engineering and administrative controls and PPE required.
- Instructions for handling spills and emergency procedures.
- Contingency plans and provisions.

This training shall be conducted whenever a new hazard is introduced into the work area, when the employee transfers to another job, and whenever the employee demonstrates behavior that indicates a lack of understanding of the safe handling of chemicals.

Supervisors are responsible for ensuring that employees with potential exposure to benzene receive the appropriate training prior to working with the substance.

The individual presenting the training session shall document all training.



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**6.11 Medical Surveillance**

Employees who are or may be exposed to benzene and meet the following requirements shall be involved in a medical surveillance program at no cost to the employee.

- Exposed at or above the action level for 30 or more days per year.
- Exposure or has the potential for exposure at or above the PELs 10 or more days a year.
- Exposed to more than 10 ppm of benzene for 30 or more days in a year prior to effective date.

These employees shall complete a medical questionnaire annually and receive a physical examination. The physical shall include blood tests to determine if any blood disorders exist.

- Employees exposed to benzene shall receive medical attention under the following circumstances:
  - When an employee has developed signs or symptoms associated with exposure to benzene.
  - When an employee is involved in a spill, leak, or other occurrence resulting in a possible exposure to benzene.
- Medical surveillance shall be recorded.

The written program shall be reviewed and revised as appropriate based on the most recent exposure monitoring data to reflect the current status of the program.



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**7. BLOODBORNE PATHOGENS PROGRAM**

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**7.1 Purpose**

The purpose of this section is to provide general principles to be followed when working with potentially infectious material.

**7.2 Bloodborne Pathogens Program**

Approximately 5.6 million American employees are at risk of developing various types of illnesses due to their exposure to bloodborne pathogens such as the human immunodeficiency (HIV) and hepatitis B (HBV) viruses and other potentially infectious materials in the workplace. In recent years there has been a significant increase in the number of cases reported. This poses a serious problem for exposed employees and their employer.

The Exposure Control Plan must be readily available to employees and employees must be informed of its location.

**7.3 General**

Good general principles shall be followed when working with potentially infectious material. For example:



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- It is prudent to minimize all exposure to bloodborne pathogens / potentially infectious material.
- Risk of exposure to bloodborne pathogens should never be underestimated.
- Institute as many work practices and engineering controls as possible to eliminate or minimize employee exposure to bloodborne pathogens / potentially infectious materials.
- Any site working with potentially infectious materials shall have an Exposure Control Plan that meets the letter and intent of the local regulatory Pathogens Standard. The plan shall be easily accessible to all employees and they shall be informed of where to find it. The objective of this Plan is twofold:
  - To protect employees from the health hazards associated with bloodborne pathogens by eliminating or minimizing employee exposure.
  - To provide appropriate treatment and counseling should an employee be exposed to bloodborne pathogens / potentially infectious materials.

It is important to keep the Exposure Control Plan up to date. To ensure currency, the Plan shall be revised and updated as follows:

- Bi-annually.
- Whenever new or modified tasks and procedures are implemented that affect occupational exposure of employees.
- Whenever employees' jobs are revised such that new instances of occupational exposure may occur.
- Whenever new functional positions are established that may include exposure to bloodborne pathogens.

### 7.4 Exposure Determination

The Exposure Control Plan shall identify job classifications in which employees have regular exposure, some exposure, or no occupational exposure to bloodborne pathogens and shall identify tasks and procedures in which occupational exposure to bloodborne pathogens occur. The exposure determination shall be made without regard to the use of personal protective equipment (PPE).

### 7.5 Methods of Compliance

Universal precautions shall be observed by personnel to prevent contact with blood or other potentially infectious materials. In accordance with the concept of universal precautions, personnel shall treat blood and other potentially infectious materials as though potentially infected with HBV, HIV, or other bloodborne pathogens, particularly when differentiation between body fluid types is difficult or impossible.



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### 7.6 Engineering and Work Practice Controls

Engineering and work practice controls shall be used to minimize employee exposure. These controls and a copy of the site-specific exposure control plan shall be provided to employees in a reasonable time, place, and manner.

Where occupational exposure remains after institution of these controls, PPE shall also be used. Engineering controls may include installation of mechanical pipe-fitting devices, biosafety cabinets, and safety equipment for centrifuges; suitable facilities and mechanisms for quick drenching or flushing of the eyes and mucous membranes shall be provided in the work area for immediate emergency use; and handwashing facilities shall have hot and cold running water.

Engineering controls shall be examined and maintained or replaced on a regular schedule to ensure their effectiveness.

Training and monitoring of proper work practices shall be provided with employees instructed in performing all tasks in the use of appropriate precautions, engineering and work practice controls, and PPE.

#### 7.6.1 Handwashing

Handwashing facilities shall be readily accessible to employees (e.g., no further than what would be considered reasonable for location of restrooms).

When provision of handwashing facilities is not feasible, an appropriate antiseptic hand cleanser in conjunction with clean cloth / paper towels or antiseptic towelettes shall be provided to employees.

When antiseptic hand cleansers or towelettes are used, hands shall be washed with soap and running water as soon as feasible following exposure incidents whether or not exposure is apparent.

Employees shall wash their hands immediately, or as soon as feasible, after removal of gloves or other PPE. Employees shall wash hands and any other skin with soap or germicidal agents and water, or flush mucous membranes with water, immediately or as soon as feasible following contact of such body areas with blood or other potentially infectious materials, whether or not contact is apparent.

#### 7.6.2 Skin Surfaces

Eating, drinking, smoking, applying cosmetics or lip balm, handling contact lenses, and touching skin surfaces with contaminated hands is prohibited in work areas where there is the reasonable likelihood of occupational exposure to bloodborne pathogens and other potentially infectious materials. Personnel shall thoroughly wash hands with soap and running water prior to engaging in these types of activities.

Food and drink shall not be kept in refrigerators, freezers, shelves, or cabinets or on countertops or benchtops where blood or other potentially infectious materials are present.



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### 7.7 Personal Protective Equipment (PPE)

Where there is potential for occupational exposure, the Company shall provide, at no cost to the employee, appropriate PPE such as, but not limited to, gloves, gowns, replaceable coveralls, laboratory coats, face shields or masks, eye protection, mouthpieces, resuscitation bags, pocket masks, or other ventilation devices.

PPE will be considered appropriate only if it does not permit blood or other potentially infectious materials to pass through to or reach the employee's work clothes, street clothes, undergarments, skin, eyes, mouth, or other mucous membranes under normal conditions of use and for the duration of time that the protective equipment will be used.

The Company shall ensure that employees use appropriate PPE unless it can be shown that an employee temporarily and briefly declined to use PPE when, under rare and extraordinary circumstances, it was the employee's professional judgment that in the specific instance its use would have prevented the delivery of healthcare or public safety services or would have posed an increased hazard to the safety of the employee or coworker. When the employee makes this judgment, the circumstances shall be investigated and documented to determine whether changes can be instituted to prevent such occurrences in the future.

Training and instruction on the proper use and limitations of PPE shall be provided with proper use enforced.

Appropriate PPE in the proper sizes shall be readily accessible at the worksite, on response vehicles, or issued to employees, and shall be maintained to ensure and promote its use. Employees shall know where to obtain protective equipment.

Hypoallergenic gloves, glove liners, powderless gloves, or other similar alternatives shall be readily accessible to those employees who are allergic to the gloves normally provided.

#### 7.7.1 Cleaning, Repair, and Replacement

The cleaning, laundering, and disposal of PPE shall be provided in accordance with this procedure at no cost to the employee.

The repair or replacement of PPE shall be provided as needed to maintain its effectiveness at no cost to the employee.

Personnel shall be responsible for notifying their supervisor of the need to repair or replace PPE or clothing.

#### 7.7.2 Contaminated PPE

If a garment(s) is penetrated by blood or other potentially infectious materials, the garment(s) shall be removed immediately or as soon as feasible. In such cases where there is reasonable expectation that an employee's garments may become contaminated by blood or other potentially infectious materials during the performance of duties, the employee shall take steps to ensure that clean garments are available.



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Clothing, disposable PPE, and other items visibly contaminated with blood and not known to be contaminated with blood shall be treated as biohazardous waste regardless of the amount of blood present and shall be subject to regulated waste handling requirements. Contaminated items shall be placed in red bags or containers that meet the requirements of this procedure and shall be transported to a designated central collection point for biohazardous waste. Biohazardous waste shall be handled in accordance with local, state, and federal regulations.

### 7.7.3 Gloves

Disposable (single use) gloves, such as surgical or examination gloves, shall be replaced as soon as practical when contaminated, or as soon as feasible, if they are torn, punctured, or when their ability to function as a barrier is compromised.

Disposable (single use) gloves shall not be washed or decontaminated for re-use but shall be placed in an appropriately designated area or container for disposal in accordance with this procedure.

Utility gloves may be decontaminated for re-use if the integrity of the glove is not compromised. However, they shall be discarded if they are cracked, peeling, torn, punctured, or exhibit other signs of deterioration or when their ability to function as a barrier is compromised.

Disposable (single use) gloves, such as surgical or examination gloves, shall be worn under utility gloves to protect against penetration of fluids.

Gloves visibly contaminated with blood shall be considered infectious waste and shall be disposed of in red biohazard waste containers in the work area.

### 7.7.4 Eye and Face Protection

Masks in combination with eye protection devices, such as goggles / glasses with solid side shields or chin length face shields, shall be worn whenever splashes, spray, spatter, or droplets of blood or other potentially infectious materials may be generated and eye, nose, or mouth contamination can be reasonably anticipated.

Eye protection and face shields issued for the exclusive use of one employee shall be cleaned and disinfected after each day's use, or more often if necessary and following contamination. Those used by more than one employee shall be thoroughly cleaned and disinfected after each use.

Personal protective clothing shall be considered the same as PPE and shall be treated as such for the purposes of this procedure.

## 7.8 Housekeeping

Work areas shall be maintained in a clean and sanitary condition. Appropriate written schedules for cleaning and methods of decontamination based upon the location within the facility, type of surface to be cleaned, type of soil present, and tasks or procedures being performed in the area shall be developed and implemented.





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All equipment and environmental and working surfaces shall be cleaned and decontaminated after contact with blood or other potentially infectious materials using any sterilization or disinfection procedures or sterilizing agent or high-level disinfectant that will kill viruses if used as directed.

All personnel covered under this procedure shall observe universal precautions in the performance of housekeeping duties and shall adhere to the requirements of this procedure for use of PPE to protect themselves and their fellow employees against unnecessary exposure.

### 7.9 Regulated Waste

Contaminated sharps shall be discarded immediately or as soon as feasible in containers that are:

- Closable.
- Puncture resistant.
- Constructed to contain all contents and prevent leakage of fluids during handling, storage, transport, or shipping.
- Labeled or color-coded (in accordance with this procedure). During use, containers for contaminated sharps shall be:
  - Easily accessible to personnel and located as close as feasible to the immediate area where sharps are to be used or can be reasonably anticipated to be found.
  - Maintained upright throughout use.
  - Replaced routinely and not be allowed to overfill.

When moving containers of contaminated sharps from the area of use, the container shall be:

- Closed immediately prior to removal or replacement to prevent spillage or protrusion of contents during handling, storage, transport, or shipping.
- Placed in a secondary container if outside contamination of the regulated waste container occurs or leakage is possible. The secondary container shall meet the criteria of this procedure.

Regulated waste shall be placed in containers that meet the criteria identified for contaminated sharps in this procedure.

Disposal of all regulated waste shall be handled in accordance with applicable Company procedures governing waste removal and regulations of the States and Territories.

Contaminated or potentially contaminated laundry shall be handled as little as possible with a minimum of agitation.

Contaminated or potentially contaminated laundry shall be bagged or containerized at the location where it was used and shall not be sorted or rinsed in the location of use.



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Contaminated or potentially contaminated laundry shall be placed and transported in bags or containers labeled or color-coded in accordance with this procedure. However, when a facility utilizes universal precautions in the handling of all soiled laundry, alternative labeling or color-coding is sufficient if it permits all employees to recognize the containers as requiring compliance with universal precautions.

Whenever contaminated or potentially contaminated laundry is wet and presents a reasonable likelihood of soak-through or leakage of fluids from the bag or container, the laundry shall be placed and transported in bags or containers which prevent soak-through or leakage of fluids to the exterior.

Employees who have contact with contaminated or potentially contaminated laundry shall wear protective gloves and other appropriate PPE.

When a facility ships contaminated or potentially contaminated laundry offsite to a second facility that does not utilize universal precautions in the handling of all laundry, the facility generating the contaminated or potentially contaminated laundry shall place such laundry in bags or containers that are labeled or color-coded in accordance with this procedure.

### 7.10 Hepatitis B Virus (HBV) and Post-Exposure Evaluation and Follow Up

The Company shall make available the HBV vaccine, vaccination series, and post-exposure evaluation and follow up to all employees who have had an exposure incident.

All medical evaluations and procedures, including the HBV vaccine, vaccination series, and post-exposure evaluation and follow up shall be:

- Made available at no cost to the employee.
- Made available to the employee at a reasonable time and place.
- Performed by or under the supervision of a licensed physician or under the supervision of another licensed healthcare professional.
- Provided according to recommendations of the governing Public Health Service that are current at the time these evaluations and procedures take place, except as specified herein.

The Company shall ensure that employees covered under this procedure have been offered the Hepatitis B vaccination and have signed either consent or a declination form.

All laboratory tests shall be conducted by an accredited laboratory at no cost to the employee.

#### 7.10.1 Hepatitis B Virus (HBV) Vaccination Unit

Persons at substantial risk for HBV who are demonstrated or judged likely to be susceptible should be vaccinated. The HBV vaccination is recommended for any previously unvaccinated healthcare worker who has a needle stick or other percutaneous accident with a sharp instrument or per mucosal (ocular or mucous membrane) exposure to blood.



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An HBV vaccination shall be made available to employees after employees have received training required by local regulation and within 10 working days of initial assignment to tasks with occupational exposure, unless:

- The employee has previously received the complete HBV vaccination series.
- Antibody testing has revealed that the employee is immune.
- The vaccine is contraindicated for medical reasons.

Participation in a prescreening program shall not make a prerequisite for receiving the HBV vaccination.

If the employee initially declines the HBV vaccination, but at a later date while still covered under this procedure, decides to accept the vaccination, the HBV vaccination shall be made available to the employee at that time at no cost to the employee.

If a routine booster dose(s) of the HBV vaccine is recommended by the Public Health Service at a future date, such booster dose(s) shall be made available in accordance with local regulation and this procedure.

Copies of consent and declination forms shall be retained and shall be maintained in employee medical files in accordance with this procedure.

### 7.11 Reporting Occupational Exposure

Employees shall report all occurrences of occupational exposure as soon as feasible after the exposure. The Company will initiate the post-exposure evaluation and follow up process in response to reports of occupational exposure.

The following steps shall be taken in reporting occupational exposure to bloodborne pathogens or other potentially infectious materials:

- Employees shall notify their immediate supervisor as soon as feasible following an exposure incident.
- Employees shall complete an occupational exposure report.
- Employees shall sign the occupational exposure report and give the signed and completed form to the immediate supervisor for review and signoff.
- The supervisor shall immediately forward a copy of the report to management to initiate post-exposure evaluation and follow up.

Employees and supervisors may refer to the instructions contained in the Exposure Control Plan for reporting occupational exposure incidents to ensure that proper notifications and paperwork have been completed.

#### 7.11.1 Post-Exposure Evaluation and Follow Up



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Following a report of an exposure incident, the exposed employee shall immediately be offered confidential medical evaluation and testing.

Post-exposure evaluation and follow up shall consist of at least the following elements:

- Documentation of the route(s) of exposure.
- Identification, documentation, and testing of the source individual, unless it can be established that identification is infeasible or prohibited by state or local law.
- Collection and testing of blood for HBV and HIV serological status.
- Post-exposure prophylaxis as recommended by the Public Health Service when medically indicated.
- Counseling.
- Evaluation of reported illnesses.

If the employee consents to baseline blood collection but does not give consent at that time for HIV serological 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.

After obtaining the exposed employee's consent for follow up testing, a sample of blood shall be collected and tested for HBV and/or HIV as soon as feasible following the exposure incident. The sample shall be collected and tested within 30 days of the exposure incident.

Post-exposure evaluation and follow up shall also include:

- Counseling.
- Evaluation of reported illnesses.

Following post-exposure evaluation and follow up, the exposed employee shall be provided with a copy of the evaluating healthcare professional's written opinion.

#### 7.11.2 Post-Exposure Testing of the Source Individual

A good faith effort shall be made to both identify and obtain consent for HBV and HIV testing of the source individual.

The source individual's blood shall be collected and tested as soon as feasible and after consent is obtained to determine HBV and HIV infectivity.

If consent is not obtained, the Company shall establish that legally required consent cannot be obtained, and the source individual shall not be tested.

When the source individual's consent is not required by law, the source individual's blood, if available, shall be collected, tested, and the results documented. The condition, "if available," applies to blood samples that have been drawn from the source individual for other testing.



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When the source individual is already known to be infected with HBV or HIV, testing for the source individual's known HBV or HIV status need not be repeated.

Results of the source individual's testing shall be made available to the exposed employee, and the exposed employee shall be informed of applicable laws and regulations concerning disclosure of the identity and infectious status of the source individual.

### 7.11.3 Post-Exposure Evaluation and Follow Up Results

Healthcare professionals who are responsible for evaluating employees following exposure incidents shall receive and review:

- A copy of the regulation.
- A description of the exposed employee's duties as they related to the exposure incident.
- Documentation of the route(s) of exposure and circumstances under which exposure occurred.
- Results of the source individual's blood testing, if available.

Maintenance of all medical records relevant to the treatment of the exposed employee, including vaccination status, is the responsibility of the Company.

Following evaluation of the exposed employee and testing of the source individual (if testing is done), the exposed employee shall be provided with a report, at minimum, containing:

- Documentation of the route(s) of exposure and the circumstances under which the exposure incident occurred.
- Identification and documentation of the source individual unless it can be established that identification is infeasible or prohibited by state or local law.

The exposed employee shall be provided with a copy of the evaluating healthcare professional's written opinion within 15 days of the completion of the evaluation.

The healthcare professional's written opinion for an HBV vaccination shall be limited to whether an HBV vaccination is indicated for an employee and whether the employee has received such vaccination.

The healthcare professional's written opinion for post-exposure evaluation and follow up shall be limited to:

- A statement that the employee has been informed of the results of the evaluation.
- A statement that the employee has been told about medical conditions resulting from exposure to blood or other potentially infectious materials which require further evaluation or treatment.

The healthcare professional's other findings or diagnoses shall remain confidential and shall not be included in the written report.



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Following all evaluations and testing, an evaluation shall be made of the “failures of control” at the time of the incident using the data compiled to identify and make recommendations for correction of problems in order to prevent recurrence of similar incidents.

### **7.12 Communications of Hazards to Employees**

Warning labels shall be affixed to warn employees of items containing blood or other potentially infectious material:

- Containers of regulated waste, refrigerators, and freezers containing blood or other potentially infectious materials which require further evaluation or treatment.
- Other containers used to store, transport, or ship blood or other potentially infectious materials, except where red bags or red containers have been substituted for labels.
- Labels required by this section shall include a picture of the biohazard symbol shown in the Exposure Control Plan.
- Labels shall be fluorescent orange, orange-red, or predominantly so, with lettering or the symbols in a contrasting color.
- Labels required by this section shall be affixed as close as feasible to the container by adhesive, string, wire, or other method that prevents their loss or unintentional removal.
- Red bags or red containers may be substituted for labels.
- Individual containers of blood or other potentially infectious materials that are placed in a labeled container during storage, transport, shipment, or disposal are exempted from the labeling requirement.
- Contaminated equipment shall be labeled in accordance with this procedure and shall also state those portions of the equipment that remain contaminated.

### **7.13 Information and Training**

Communicating hazards to employees and providing training and information are paramount in the implementation of this procedure since protective measures such as PPE and proper work practices will not be effective unless employees are instructed in their correct use. Training is also an important factor in risk reduction because not all employees are aware of the risks they may face in the workplace. Information programs can increase employee acceptance of the HBV vaccine and employee compliance with policies regarding PPE.

The Company shall be responsible for ensuring that employees covered under this procedure participate in the Bloodborne Pathogens Awareness Training Program, which shall be provided during working hours at no cost to the employee.

Training shall be provided:

- At the time of initial assignment.



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- At least annually thereafter.

Annual training for all employees shall be provided within one year of their previous training.

Additional training shall be provided 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.

Material appropriate in content and vocabulary to educational level, literacy, and language of employees shall be used.

The training program shall contain at a minimum the following elements:

- An accessible copy of the regulatory text and an explanation of its contents.
- A general explanation of the epidemiology, symptoms, and modes of transmission of bloodborne pathogens and diseases.
- An explanation of an Exposure Control Plan and how 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, PPE, and clothing.
- Information on the types, proper use, location, removal, handling, decontamination, and disposal of PPE and clothing.
- An explanation of the basis for selection of PPE and clothing.
- Information on the HBV 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-evaluation and follow up that the Company is required to provide for the employee following an exposure incident.
- An explanation of the signs, labels, and color-coding system being utilized by the Company as defined in this procedure.
- An opportunity for interactive questions and answers with the trainer.



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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.

The person conducting the training shall be required to ensure that the training program and training records meet the requirements of and are maintained in accordance with regulation and this procedure.

### 7.14 Recordkeeping

#### 7.14.1 Medical Records

Accurate medical records for each employee with occupational exposure shall be maintained for at least the duration of employment plus 30 years. These records shall be kept by the Company. The medical provider shall not be relied upon to keep the records for this timeframe.

The employee record shall include:

- The name and social security number of the employee.
- A copy of the employee's vaccination status including the date of all vaccinations and any medical records relative to the employee's ability to receive the vaccination as defined in this procedure.
- A copy of all results of examinations, medical testing, and follow up procedures as defined in this procedure.
- A copy of the healthcare professional's written report as required by this procedure.
- A copy of the information provided to the healthcare professional.

Employee medical records shall be kept confidential and not disclosed or reported without the employee's express written consent to any person within or outside the workplace, except as required by this procedure or as may be required by law.

All records required to be maintained by this procedure shall be made available upon request for examination and copying, to the subject employee or anyone having written consent of the subject employee, to the responsible party. Records shall be made available in accordance with the regulatory requirements.

Access to personal information shall be controlled in accordance with applicable legal, regulatory, and Company requirements (e.g., FFD Rule, Privacy Act, 29 CFR1910.1020).

#### 7.14.2 Training Records

Training records shall include:

- The dates of the training sessions.
- The contents or a summary of the training sessions.





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- The names and qualifications of the person(s) conducting the training.
- The names and job titles of all persons attending the training sessions.

Training records shall be maintained for 3 years from the date on which the training occurred in the Company designated electronic learning management system.

### **7.15 Regulatory Reporting Requirements**

As a basic requirement, all work-related needle stick injuries and cuts from sharp objects that are contaminated with another person's blood or other potentially infectious material shall be recorded. The case shall be entered on the OSHA 300 Log as an injury. To protect the employee's privacy, the employee's name shall not be entered on the OSHA 300 Log.

- If the date of the event or exposure is known, the original injury shall be recorded with the date of the event or exposure.
- If there are multiple events or exposures, the most recent injury shall be recorded with the date that seroconversion is determined.



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**8. COLD WEATHER SAFETY PROGRAM**

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**8.1 Purpose**

The purpose of this section is to provide information on cold weather safety and precautions for working in cold weather to prevent cold stress.

**8.2 Cold Stress Prevention**

Cold weather conditions can be hazardous to the health and safety of employees, endanger the stability of the body system, and cause problems such as hypothermia and frostbite. It is of vital importance that adequate precautions are taken to alleviate the effect of cold environments and to ensure that personnel can work safely and efficiently.

Before work in cold environments can begin, an assessment shall be conducted to assess jobs and tasks, wind chill and environmental conditions. Employees physical condition shall be monitored to assess risk of cold stress.

**8.3 Wind Chill Index**



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- Air temperature alone is not sufficient to assess the cold hazard in certain environments. Therefore, the Wind Chill Index, along with the air temperature, shall be used. Heat loss from convection is the greatest and most deceptive factor in loss of body heat.
- The Wind Chill Index is the cooling effect of any combination of temperature and wind velocity or air movement.
- The Wind Chill Index considers the wind velocity. If there is no anemometer (to measure wind speed), the following is a suggested guide for estimating wind speed:
  - 5 mph: light flag moves
  - 10 mph: light flag fully extended
  - 15 mph: raises newspaper sheet
  - 20 mph: causes blowing and drifting snow.
- The Wind Chill Index should be used to evaluate the cold hazard.
- The Wind Chill Index does not consider the body part(s) exposed to cold, the level of activity effect on the body's heat production, or the amount of clothing worn.

### 8.4 Control Measures

#### 8.4.1 Engineering Controls

Cold stress can be reduced by the following controls:

- General or spot heating should be used to increase temperature.
- If work is being performed with bare hands for 10 or more minutes, special provisions shall be made to keep hands warm. Warm air jets, radiant heaters, or contact warm heaters shall be supplied.
- The work area shall be shielded if the air velocity is increased by the wind, draft, or ventilation equipment.
- At temperatures below 40 °F (4 °C), metal handles of tools and control bars shall be covered with thermal insulation. This can include insulation from gloves provided that the gloves are not wet.
- When necessary, equipment and processes shall be substituted, isolated, relocated, or redesigned to reduce the cold stress.
- Power tools, hoists, cranes, and lifting aids shall be used to reduce the metabolic workload.
- Heated warming shelters such as tents, cabins, automobiles, or trucks shall be made available if work is performed continuously in an equivalent chill temperature of 30 °F (-1 °C) or below. Employees shall be encouraged to use them.



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- Regularly used walkways and travel ways shall be sanded, salted, or cleared of snow and ice as soon as practicable.
- Regular inspections on cold weather supplies (e.g., hand warmers, jackets, shovels, etc.) shall be carried out to ensure that supplies are always in stock.

### 8.4.2 Administrative Controls

These controls include the following work practices and rules designed to reduce total cold stress burden on the body. See Appendix 1 – Work / Warm-up Schedule for a 4-Hour Shift.

- Scheduling a work rest to reduce the peak of cold stress, enforcing scheduled work breaks out of the cold.
- Urging frequent intake of warm, sweet, caffeine-free, nonalcoholic drinks or soup provided at regular intervals.
- Consume warm, high calorie food to maintain energy reserves.
- Scheduling the coldest, heavy work for the warmest part of the day.
- Moving work to warmer areas whenever possible; pre-planning the activities prior to entering the cold environment.
- Assigning extra employees to highly demanding jobs.
- Allowing employees to pace themselves and take extra work breaks when needed to avoid fatigue.
- Providing relief employees for break times.
- Teaching employees the basic principles of preventing cold stress and emergency response to cold stress.
- Informing employees of the dangers associated with working around unstable snow buildup, sharp icicles, and ice dams and know how to prevent accidents caused by them.
- Maintaining protective supervision or a buddy system for those who work at 20 °F (-6 °C) or below.
- Allowing new employees time to adjust to conditions before they work fulltime in cold environments.
- Arranging work to minimize sitting still or standing for long periods at a time.
- Reorganizing work procedures to ensure as much of a job as possible is performed in a warm environment.
- Including the weight and bulkiness of clothing when estimating work performance criteria.



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### 8.4.3 Personal Protective Equipment

It is the responsibility of the employee to dress in the clothing appropriate to the expected work conditions. The correct clothing shall be addressed in the following manner:

- It is important to preserve the air space between the body and the outer layer of clothing to retain body heat.
- It is most important to protect the feet, hands, head, and face. The hands and feet are the farthest from the heart and become cooled most easily. Keeping the head covered is important because as much as 40% of heat is lost when the head is exposed to the elements.
- All clothing and equipment shall be fitted properly and not interfere with circulation.
- Clothing should be loose fitting. Tight clothing of synthetic fabrics interferes with evaporation. At least three layers of clothing shall be worn.
  - Wear at least three layers of clothing. An inner layer of wool, silk or synthetic to wick moisture away from the body. A middle layer of wool or synthetic to provide insulation even when wet. An outer wind and rain protection layer that allows some ventilation to prevent overheating.
- A change of dry clothing should be kept in case clothes become wet.
- Do not underestimate the wetting effects of perspiration. Oftentimes wicking and venting of the body's sweat and heat are more important than protecting from rain or snow.
- Socks with high wool content are best. When two pairs are worn, the inside sock should be smaller, and made of cotton. If needed, wool socks can also double for mittens.
- Wool or thermal trousers are preferred. The best kind is either quilted or specially lined.
- Tight belts are not recommended because they cut off the circulation at the waist. Suspenders are encouraged where practical.
- Trousers should fit over the top of the boot to prevent snow and ice from entering.
- Boots should be felt-lined (insulated), rubber-bottomed, and leather-topped with a removable felt insole. Boots should be waterproofed, and socks should be changed whenever the sock is sweat soaked.
- A wool sweater over a cotton shirt should be worn. Tops should be worn in a layering effect to ensure proper insulation.
- An anorak or snorkel coat or arctic parka should fit loosely and have a drawstring at the waist. The sleeves should fit snugly. A hood prevents the escape of warm air from the neck and tunnels the warm air past the face to give a slightly warmer breathing air. A wool cap should also be worn under the hood.



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- Flame Resistant (FR) outer layers shall be worn where required.
- When wearing a hard hat, liners should be worn.
- A face mask or scarf is vital when working in cold wind. A ski mask gives better visibility than a snorkel hood. Face protectors should be removed periodically to check for frostbite.
- Safety glasses with side shields should be worn when outside. Special safety goggles to protect against ultraviolet light and glare are required when there is snow coverage that could cause a potential eye exposure hazard.

### 8.5 Cold Disorder Symptoms

#### 8.5.1 Frostnip

This occurs when the face or extremities are exposed to cold wind, causing the skin to turn white.

#### 8.5.2 Frostbite

Frostbite occurs when the skin actually freezes and loses water. In severe cases, amputation of the frostbitten area may be required. While frostbite usually occurs when the temperatures are 30° F or lower, wind chill factors can allow frostbite to occur in above freezing temperatures. Frostbite typically affects the extremities, particularly the feet and hands. The affected body part will be cold, tingling, stinging, or aching followed by numbness. Skin color turns red, then purple, then white, and is cold to the touch. There may be blisters in severe cases.

#### 8.5.3 Trenchfoot or Immersion Foot

Trench Foot or immersion foot is caused by having feet immersed in cold water at temperatures above freezing for long periods of time. It is similar to frostbite but considered less severe. Symptoms usually consist of tingling, itching, or burning sensation. Blisters may be present.

#### 8.5.4 Hypothermia

Hypothermia occurs when body heat is lost faster than it can be replaced. When the core body temperature drops below the normal 98.6° F to around 95° F, the onset of symptoms normally begins. The person may begin to shiver and stomp their feet to generate heat. Employees may lose coordination, have slurred speech, and fumble with items in the hand. The skin will likely be pale and cold. Pain in extremities can be the first warning of overexposure. The symptoms include uncontrolled shivering fits, sense of cold, slow heartbeat, vague or slow speech, glassy stare, apathy, memory lapses, incoherence, drowsiness, cool skin, slow irregular breathing, sometimes irregular pulse, weakened pulse, apparent exhaustion, and fatigue after rest. In an industrial environment, decreased mental acuity due to hypothermia can present additional risk, as the affected worker(s) are not focused on the hazards of the job and may put themselves or other personnel at risk.



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Because many of the symptoms are behavioral and are not often noticed by the affected person, personnel should always watch for these symptoms in their co-workers. It is especially important to watch out for employees who are not dressed appropriately for the weather conditions (e.g., fewer layers, no hat or gloves, wet clothing, or an outer layer which is inadequate for the conditions). Personnel are responsible for stopping the work if these symptoms are noticed so that the affected person can be brought into a warmer environment for evaluation.

### 8.6 First Aid

All employees who are required to perform work in cold conditions should be knowledgeable on how to administer first aid treatment on cold induced injuries or illnesses.

#### 8.6.1 Frostbite

- Never rub affected area. Rubbing may cause further damage to soft tissue.
- Warm area gently by soaking in water. The water should start out cold and be warmed up every five minutes by adding water that is 5 °F (-15 °C) warmer. Do not immerse affected part in water that is more than 105 °F (40 °C). If a thermometer is not available, test the water temperature with your hand. If the water temperature is uncomfortable, it is too hot.
- Keep the affected area under water until it looks red and feels warm.
- Loosely bandage the area with dry, sterile dressing. If fingers and toes are frostbitten, place cotton or gauze between them before applying the loose bandage.
- Do not break blisters.
- Get professional help immediately.

#### 8.6.2 Hypothermia

- Remove any wet clothing and dry the injured person.
- Warm the body gradually by wrapping the injured person in blankets or putting on dry clothing and moving the individual to a warmer place. Do not warm body quickly by immersing the person in hot water. Rapid warming can cause dangerous heart problems. If available, apply heating pads or other heating source to the body. Keep a protective barrier, such as towel, blanket, or clothing between heat source and injured person to avoid burning the individual.
  - If the injured person is alert, give warm liquid to drink. Never give liquids to an individual who is unconscious or semi-conscious.
- Handle the patient gently.
- Get professional help immediately.



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### 8.7 Training

Personnel shall be instructed in cold stress prevention. Training shall be conducted before initial exposure and annually thereafter.

Training shall include the following instructions:

- Environmental and workplace conditions that can lead to cold stress
- Proper re-warming procedures and appropriate first aid treatment specifically for cold induced injuries or illnesses.
- Proper clothing practice.
- Proper use of warming shelters.
- Recognition of signs and symptoms of impending cold conditions such as hypothermia or excessive cooling of the body (even when shivering does not occur), frostnip, or frostbite.
- Safe work procedures such as the buddy system, vehicle breakdown procedures, and proper eating and drinking habits for working in the cold.





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**9. COMPRESSED AIR SAFETY PROGRAM**

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9.7 Training.....	42

**9.1 Purpose**

The purpose of this section is to provide information on the properties and hazards of working with compressed air.

**9.2 Compressed Air Safety Program**

Because working with compressed air is so commonplace, people fail to recognize it as the potential hazard that it is. As little as 12 p.s.i. can be deadly in the wrong circumstances and a small slip up can lead to big problems.

People shall not be cleaned off with compressed air. The regulations relate to the cleaning of objects or items, (e.g., blow drying parts, etc.).

It is prohibited to use compressed air to clean clothing while worn or any part of the body under any circumstances.

Compressed air shall not be used for cleaning or blow down activities unless air pressure is regulated to below 30 p.s.i. and areas have been isolated from pedestrian traffic and effective chip guarding and personal protective equipment is implemented.

**9.3 Guarding**

The use of protective cone air nozzles is generally acceptable for protection of the operator; however, barriers, baffles or screens may be required to protect other employees near the operator if they are exposed to flying chips or particles.

**9.4 Safety Valves**

All safety valves shall be tested frequently and at regular intervals to ensure they are in proper operating condition and that they cannot be made inoperable by any means.



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Safety valves, indicating / controlling devices, and other safety appliances shall be constructed, located, and installed so they cannot be rendered inoperative by any means.

### 9.5 Inspections

Compressed air cylinders shall be inspected regularly according to manufacturers recommended methods and frequency.

The outside of the cylinder shall be inspected for:

- Cracks
- Leaks
- Bulging
- Defective valves
- Sign of physical abuse
- Fire or heat damage
- Detrimental rusting or corrosion

Any cylinder that has a crack or leak, is bulged, has a defective valve, or a leaking or defective pressure relief device, or bears evidence of physical abuse, fire or heat damage, or detrimental rusting or corrosion, shall not be used, filled, or offered for transportation.

### 9.6 Air Receivers

All air receivers shall be equipped with a readily visible indicating pressure gauge that is equipped with one or more spring-loaded safety valves.

The total relieving capacity of these safety valves should be such as to prevent pressure in the receiver from exceeding the maximum allowable working pressure of the receiver by more than 10%.

The drain valve on air receivers shall be opened and the receiver completely drained frequently and at such intervals as to prevent the accumulation of excessive amounts of liquid in the receiver.

### 9.7 Training

Employees handling compressed air shall be adequately trained in the inherent hazards as well as proper handling, storage, and use.



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**10. COMPRESSED GAS CYLINDER SAFETY PROGRAM**

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 10.6 Leaking Cylinders ..... 47  
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**10.1 Purpose**

The purpose of this section is to ensure that employees handling compressed gases are adequately trained in the inherent hazards of the cylinders and their contents, as well as proper handling, storage, and use according to OSHA requirements.

**10.2 Compressed Gas Cylinder Safety Program**

All compressed gas cylinders shall be handled, stored, received, and used in a safe manner consistent with OSHA requirements. Any material that is under pressure can be dangerous if it is not handled properly. If the material is a compressed gas it may be flammable, explosive, reactive, toxic, or any combination of these. Because of the hazards of compressed gasses, it is important to know what you are working with, what its hazardous properties are, and how to safely handle the compressed gas cylinder.

**10.3 Labeling**

Gas identification shall be stenciled or stamped on the cylinder or affixed with a label. No compressed gas cylinder shall be accepted for use that does not legibly identify its content by name.

Do not deface or remove any markings, labels, decals, tags, or stencil marks used for identification of content attached by the distributor.

**10.4 Storage and Handling**

- Inspections of compressed gas cylinders shall be performed visually before use to determine they are in a safe condition. Check all valve connections, hoses, clamps and regulators for excessive wear, damage, incompatible parts, grease, oil, dirt, or solvents. Remove from service if inspection does not pass.
- Hoses shall be stored in cool areas and protected from damage.



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- Compressed gas cylinders, portable tanks, and cargo tanks shall have pressure relief devices installed and maintained.
- Always secure gas cylinders in such a way as to avoid them being knocked over or damaged. They shall be stored in a vertical position, upright to a wall, cylinder truck, cylinder rack or post. This is especially important when gas is in use because the regulator is on the cylinder valve and the cap is not in place.
- Cylinders shall not be stored in public hallways.
- Where gases of different types are stored at the same location, cylinders shall be grouped by types of gas, and the groups arranged to take into account the gases contained.
- Storage areas for full and empty cylinders shall be designated and labeled. Cylinders shall be stored in assigned places away from elevators, stairs, or gangways.
- Always maintain 20 feet between oxidizers and flammables or firewalls erected at least 5 feet high and with a fire rating of 30 minutes.
- Cylinders shall be protected from damage, corrosion, sunlight, and kept away from heat sources.
- Cylinders may be stored in the open but shall be protected from the ground beneath to prevent rusting. Cylinders may be stored in the sun except in localities where extreme temperatures prevail, or in the case of certain gases where the distributor's recommendation for shading shall be observed. If ice or snow accumulates on a cylinder, thaw at room temperature or with water at a temperature not exceeding 125 °F.
- Inside of buildings, cylinders shall be stored in a well-protected, well-ventilated, dry location. Cylinders shall not be kept in unventilated enclosures such as lockers and cupboards.
- Charged and empty cylinders shall be stored separately with the storage layout so planned that cylinders comprising old stock can be removed first with a minimum handling of other cylinders.
- Do not store cylinders near highly flammable substances or solvents, combustible waste material and similar substances, or near unprotected electrical connections, gas flames, or other sources of ignition.
- Close the valve and replace the cylinder cap when the cylinder is not in use or is being transported.
- Do not drop a cylinder, use them to hold up other objects, or let them strike each other violently.
- Oxygen cylinders shall be stored a minimum distance of 20 feet or have at least 5 feet high half hour fire rated wall from fuel gas cylinders and combustibles.



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- Never lift the cylinder by its valve, valve cap, chains, slings, or magnets. If a crane is needed to move several cylinders, the cylinders shall be secured on a platform or cradle. A cylinder shall never be dragged. Tilt the cylinder sideways and roll it along its bottom edge.
- Do not place cylinders in hallways or work areas. Assigned storage spaces shall be located where cylinders will not be knocked over or damaged by passing or falling objects and equipment.
- Keep cylinders away from radiators and other sources of heat, such as sparks, hot slag, and machining or foundry operations. Keep cylinders out of direct sunlight, or where they may get hotter than 130 °F. Gasses expand when heated, the hotter a cylinder gets, the higher the gas pressure will become.
- Before attaching a gas regulator to any cylinder other than Hydrogen or fuel gas, “CRACK” the cylinder valve by opening it slightly and close it immediately to remove any dirt and debris from the outlet, do not stand in front or point the outlet at anyone while cracking it.

### WARNING

Injury or death will result from “cracking” a hydrogen or fuel gas cylinder. Hydrogen is highly flammable and will ignite if released into the air too fast.

- To remove any dirt and debris from a hydrogen or fuel gas cylinder, merely wipe out the outlet connections with a clean, dry, lint free cloth.
- Always check the regulator before attaching it to a cylinder. If the connections do not fit together readily, the wrong regulator is being used.
- Only tools provided by the distributor shall be used to open and close cylinder valves.
- Always use a cylinder wrench or other tightly fitting wrench to tighten the regulator nut and hose connections. If a valve will not open by hand, call the gas distributor.
- Where removable caps are provided for valve protection, such caps shall be kept on cylinders at all times except when cylinders are in use.
- Cylinder caps that cannot be removed by hand shall be removed from service and tagged “DO NOT USE”.
- Cylinders marked “DO NOT USE” shall be returned to the designated storage area for return to the distributor.
- Cylinders shall be transported in a vertical secured position using a cylinder basket or cart and shall not be rolled. Regulators shall be removed, and cylinders capped before movement. Cylinders shall not be dropped, permitted to strike violently, dragged, or slid and protective caps shall not be used to lift cylinders.



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### 10.5 General Precautions

- Do not rely on the color of the cylinder to identify the gas inside. Suppliers use different color codes. Return any unidentifiable cylinders to the supplier.
- Do not use gas for any purposes other than which it was intended.
- Never use a cylinder unless the gas it contains is clearly stenciled on it or marked with a decal. Altering or defacing the name, numbers, or other markings on a gas cylinder is illegal and hazardous.
- Never hammer, pry, or wedge a stuck or frozen cylinder valve to loosen it. Do not use a wrench; use warm, not hot, water to free frozen cylinders from the ground.
- Do not allow grease, oil, or other combustible materials to touch any part of a cylinder. This is especially important when oxygen cylinders are involved. Grease or oil that oxidizes very slowly in air will burst into flame in pure oxygen.
- Oxygen shall not be used in place of compressed air.
- Never hang tools, gloves, or spark lighters on top of the cylinder. They may interfere with the operation of the valve and prevent the gas from being shut off quickly in an emergency.
- Every air receiver shall be equipped with an indicating pressure gauge, so located as to be readily visible, and with one or more spring-loaded safety valves. The total relieving capacity of such safety valves shall be such as to prevent pressure in the receiver from exceeding the maximum allowable working pressure of the receiver by more than 10%.
- All safety valves shall be tested frequently and at regular intervals to determine whether they are in good operating condition. Safety valves, indicating / controlling devices, and other safety appliances shall be constructed, located, and installed so they cannot be rendered inoperative by any means.
- The drain valve on air receivers shall be opened and the receiver completely drained frequently and at such intervals as to prevent the accumulation of excessive amounts of liquid in the receiver.

#### WARNING

Under certain circumstances, death may result from use of otherwise harmless gases.

#### WARNING

Asphyxiation may result from improper use of inert gases such as argon, helium, carbon dioxide, and nitrogen.



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- Always use argon, helium, carbon dioxide, and nitrogen in well-ventilated areas and check manufacturer's guidelines for additional safety material.

### 10.6 Leaking Cylinders

Leaking cylinders shall be removed to an isolated, well ventilated, area away from any ignition source.

Use soap and water to detect a leak.

Do not attempt to repair if the leak is at the junction of the cylinder and cylinder valve, instead, contact the distributor for instructions.

### 10.7 Empty Cylinders

- Empty cylinders shall be marked "MT" and dated when empty.
- Cylinder gases shall not be mixed.
- Only the distributor may refill cylinders.
- Handle empty cylinders as carefully as full cylinders would be handled.



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**11. CUTTING TOOL POLICY**

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**11.1 Purpose**

The purpose of this section is to provide information on the alternatives to and expectations for using exposed open blades.

**11.2 Cutting Tool Policy**

The Company is dedicated to providing a safe and healthful workplace by ensuring all employees use equipment in the manner that it was designed to prevent potential injury.

The use of folding knives, including pocketknives and homemade knives, in the workplace is prohibited. This includes locking folding knives and multi-tool devices with folding or retractable blades. Employees must use alternative safe cutting devices rather than exposed blade cutting tools when possible.

**11.3 Requirements for All Cutting Tools**

Knives must have a fixed handle, sharp on one side only, with a handle that is not prone to becoming slippery when wet or dirty.

Cutting instruments must be kept clean and free from grease or other lubricating substances that may cause the user to lose their grip.

Cutting edges should be kept sharp, as appropriate, and the tool be kept in good working order to avoid any undue pressure being applied when utilizing the tool.

Defective cutting instruments and knives must be taken out of service and either repaired or destroyed.

Any cutting tool that is dropped must be allowed to fall rather than attempting to catch it.

Cutting tools must not be used for any other purpose (e.g., prying, hammering, driving, removing screws, etc.).





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**11.4 Requirements for Exposed Blade Cutting Tools**

Exposed blade cutting tools should only be used when a suitable alternative tool is not available to perform the task. The following minimum requirements for safe operation must be met:

- Fixed knives with exposed blades must be kept in a device such as a sheath that covers the cutting blade or otherwise protected when not in use.
- Fixed knives with exposed blades must have a handle guard to keep the hand separated from the cutting edge.
- Exposed blades must not be carried from one location to another unless they are sheathed or otherwise protected. When carrying, the tool must be pointed down and away from the body.
- Employees using an exposed blade must wear a cutting glove on the free hand.
- Cutting made with an exposed blade must be made away from the body. If cutting cannot be done away from the body, barriers such as a leather apron must be worn to protect the user from the exposed blade.
- When utilizing an exposed blade cutting tool, the user must ensure that a “safety circle” is maintained at all times when the blade is exposed. This means that all other personnel are far enough away that the full extension of the blade users arm in any direction cannot contact another person.
- Disposable razor type blades must be placed in a puncture resistant container or otherwise appropriately packaged for disposal before placing into the trash.



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**12. DISCIPLINARY PROGRAM**

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**12.1 Purpose**

The purpose of this section is to ensure employee safety and compliance with Health, Safety, and Environmental (HSE) requirements.

**12.2 Disciplinary Program**

It is Company policy to provide a safe and healthy place of employment. A vital part of any program is employee participation and commitment to the safety program. In order to ensure compliance with established, communicated safety procedures, employee violations of those safety procedures shall be dealt with according to this program.

**12.3 Roles and Responsibilities**

The Safety Coordinator is responsible for enforcement of this disciplinary program.  
 All employees are responsible for following Company safety policies, procedures, and safe work practices.

**12.4 Safety Violations**

Safety violations include but are not limited to:

- Not following verbal or written safety policies, procedures, or safe work practices
- Not following guidelines or rules
- Horseplay
- Failure to wear or abuse of selected personal protective equipment (PPE)
- Substance abuse



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**12.5 Disciplinary Action**

If a safety violation is issued, employees are subject to:

- 1) Verbal reprimand
- 2) Written warning if the issue continues
- 3) Suspension without pay and/or termination



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**13. DRIVING SAFETY PROGRAM**

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**13.1 Purpose**

The purpose of this section is to protect employees, reduce the frequency and severity of accidents involving motor vehicles, and prevent environmental damage.

**13.2 Driving Safety Program**

Motor vehicle accidents are recognized as a leading cause of work and non-work-related serious injuries and fatalities. Therefore, the operation of motor vehicles must not be perceived as a routine activity. Successful implementation of the following elements will result in fewer driving related incidents, injuries, and fatalities.

**13.3 Roles and Responsibilities**

Drivers are responsible for possessing a valid driver’s license for the type of motor vehicle they operate.

Employees driving, along with their passengers, are responsible for ensuring seat belts are worn while the vehicle is in operation. Seat belt use is mandatory.

Drivers shall obey all traffic laws including possessing a valid driver's license, speed limits, signaling when changing lanes, obeying traffic lights, etc.

Drivers shall avoid distractions, such as adjusting the radio or other controls, eating, or drinking, and using the phone.

**13.4 Substance Abuse**

Employees are strictly prohibited from operating a motor vehicle while under the influence of drugs or alcohol. This includes:

- Blood alcohol level at or above the local legal limit,



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- Illegal drugs, and
- Prescription medications that cause drowsiness or other conditions that may cause impairment. Employees taking prescription medication that may impact their safety shall report this to their supervisor.

### 13.5 Incidents

Motor vehicle incidents occurring while on company business shall be reported, regardless of the severity. Emergency services should be called first (if necessary). All incidents shall be reported to the insurance company and the employee's supervisor as soon as feasible. All incidents shall be reviewed / investigated to determine the cause and corrective action.

### 13.6 Cargo

Any cargo on or in motor vehicles shall be adequately stored and secured to prevent unintentional movement of tools and equipment which could cause spillage, damage to the vehicle, damage to the environment, or injury to the operator.

### 13.7 Vehicle Maintenance

Vehicles shall be in a safe and working condition.

Pre-use inspections shall be performed before operating a vehicle. This consists of a walk-around the vehicle to check for any defects to the vehicle and ensure there are no barriers blocking the path. Company-owned vehicles shall have a maintenance program in place meeting the minimum manufacturer's recommendation.

In the event employees are driving personal vehicles for company business, pre-use inspections and regular vehicle maintenance shall still be completed.

### 13.8 Fatigue Management

Employees shall be well rested, alert, and sober on the road. Drivers shall continually search the roadway to be alert to situations requiring quick action. Drivers are required to stop about every 2 hours for a break and get out to stretch, take a walk, and get refreshed.



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**14. ELECTRICAL SAFETY AWARENESS**

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**14.1 Purpose**

The purpose of this section is to define the minimum requirements that all employees shall adhere to when using electrical equipment.

**14.2 Electrical Safety Awareness Program**

Electricity is dangerous when used without proper training, knowledge, and planning. The following basic safety principles provide guidance to use electricity safety prior to the start of work.

Safe work practices shall be employed to prevent electric shock or other injuries resulting from either direct or indirect electrical contacts when work is performed near or on equipment or circuits which are or may be energized.

**14.3 Training / Qualification**

Employees performing electrical work shall be trained in electrical safety-related work practices that pertain to their respective job assignments. All employees shall be trained in any electrically related safety practices which are necessary for their safety.

Only qualified persons may work on electric circuit parts or equipment that have not been deenergized. Such persons shall be capable of working safely on energized circuits and shall be familiar with the proper use of special precautionary techniques, personal protective equipment (PPE), insulating and shielding materials, and insulated tools.

**14.4 Safe Work Practices**

Conductors and parts of electrical equipment that have been de-energized but not locked or tagged out shall be treated as live parts.

While any employee is exposed to contact with parts of fixed electric equipment or circuits which have been deenergized, the circuits energizing the parts shall be locked out or tagged or both.



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Employees shall not enter spaces containing exposed energized parts unless illumination is provided which enables the employees to work safely.

Protective shields, protective barriers, or insulating materials as necessary shall be provided.

Portable ladders shall have nonconductive siderails if they are used where the employee or the ladder could contact exposed energized parts.

Conductive articles of jewelry and clothing (such as watch bands, bracelets, rings, key chains, necklaces, metalized aprons, cloth with conductive thread, or metal headgear) shall not be worn if they might contact exposed energized parts. However, such articles may be worn if they are rendered nonconductive by covering, wrapping, or other insulating means.

### 14.5 Power Lines

Assume that all overhead wires are energized at lethal voltages. Never assume that a wire is safe to touch even if it is down or appears to be insulated.

Never touch a fallen overhead power line. Call the electric utility company to report fallen electrical lines.

Stay at least 10 feet away from overhead wires during cleanup and other activities. If working at heights or handling long objects, survey the area before starting work for the presence of overhead wires.

If an overhead wire falls across your vehicle while you are driving, stay inside the vehicle and continue to drive away from the line. If the engine stalls, do not leave your vehicle. Warn people not to touch the vehicle or the wire. Call or ask someone to call the local electric utility company and emergency services.



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**15. ERGONOMICS AND THE BACK – PREVENTING MUSCULOSKELETAL INJURIES**

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**15.1 Purpose**

The purpose of this section is to provide information on the use of ergonomics to prevent musculoskeletal injuries.

**15.2 Ergonomics and the Back – Preventing Musculoskeletal Injuries**

Ergonomics is the scientific study of equipment design for the purpose of improving efficiency, comfort, and safety.

**15.3 Ergonomic Risk Factors**

Ergonomic risk factors include:

- Repetitive, forceful, or prolonged exertions of hands.
- Frequent or heavy lifting, pushing, pulling, or carrying heavy objects.
- Prolonged awkward postures.

Improper ergonomics can lead to musculoskeletal disorder (MSD)

**15.4 Prevention**

To help prevent ergonomic injuries:





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- Keep body in neutral position.
- Change working position throughout the day.
- Stretch fingers, hands, arms, and torso.
- Periodically stand up and walk around.

Hazard assessments must be performed to determine ergonomic controls.

Immediate injuries to the back can be caused by tearing or straining ligaments.

Minor, repeated damage over time can be as dangerous on your spine as one acute injury.

## **15.5 Back Injuries**

Back problems account for a large percentage of injuries to employees.

Back injuries cause serious problems such as:

- Highest loss area in Worker's Compensation claims
- Leading cause of disability in employees
- Health problems affecting quality of employee's life

### **15.5.1 Common Causes of Back Injuries**

Improper lifting is one of the most common causes of back problems.

Injuries are usually the result of several combined risk factors including:

- Lifting items that are too heavy
- Repetitive or forceful exertions
- Stretching and lifting
- Lifting and carrying a bulky load
- Twisting at the waist and lifting
- Bad posture
- Reaching above mid chest
- Working or sitting for long periods
- Slips, trips, and falls

Stress occurs when you:

- Bend at the waist
- Lift a heavy object



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- Sit leaning forward
- Have a spine degenerating disease

Bending at the waist can add ten times the amount of force to the spine. When you add in the 105 lbs. of the average upper torso, lifting a 10 lb. object puts 1,150 lbs. of pressure on your lower back.

If you were 25 lbs. overweight, the extra weight increases your upper torso to 130 lbs. That would add an additional 250 lbs. of pressure on your back, making it 1,400 lbs. of pressure every time you bend over.

## **15.6 Symptoms of Back Injuries**

If back injury is suspected, immediately report the injury, and have the injury examined.

Signs and symptoms of back injuries include:

- Pain
- Numbness
- Reduced range of motion
- Stiffness
- Weakness
- Popping or grinding in the joints
- Muscle spasms due to stress or tension

## **15.7 Prevention of Back Injuries**

### **15.7.1 Identification of Hazards**

It may be possible to redesign a job to make it less likely to cause injury.

Controls and procedures should be determined to reduce the number of back injuries.

If you have suggestions, share information with you supervisor.

### **15.7.2 Engineering Controls**

Possible engineering controls include:

- Mechanical lifting aids
- Adjustable worktables
- Storing materials
- Designing lighter materials



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15.7.3 Administrative Controls

Administrative controls include:

- Training on ergonomic principles
- Placing the right person for the job
- Issuing changes

15.7.4 Personal Protective Equipment (PPE)

PPE is not as effective at preventing back injuries as engineering controls.

15.7.5 Prevention

Reduce back injuries by:

- Staying in good shape
- Eliminating negative lifestyles by reducing stress and tension
- Asking for help
- Releasing stress to back by moving and stretching
- Transferring weight for support
- Practicing lumbar stabilization
- Avoiding extreme force when using tools
- Pushing rather than pulling loads

15.7.6 Proper Lifting Techniques

Proper lifting techniques:

- Position yourself close to the load.
- Spread feet a shoulder's width apart.
- Keep knees bent, back straight.
- Tighten the stomach muscles.
- Lift using the large muscles of the legs.
- Avoid twisting your body.
- Keep object within safe lifting zone which is between waist and shoulders.



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**16. FALL PROTECTION PROGRAM**

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**16.1 Purpose**

The purpose of this section is to provide specific requirements and safety principles to ensure that work at heights is conducted safely and effectively.

**16.2 Fall Protection Program**

The standards for regulating fall protection systems and procedures are intended to prevent employees from falling off, onto, or through working levels and to protect employees from falling objects. Fall protection requirements under the regulations require considerable planning and preparation.

**16.3 Roles and Responsibilities**

A competent person shall be assigned to act as the safety monitoring system. Responsibilities are to:

- Recognize fall hazards.
- Warn employees if they are unaware of a fall hazard or are acting in an unsafe manner.
- Be on same working surface and in visual sight.



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- Stay close enough for verbal communication.
- Not have other assignments that would take monitors attention from the monitoring function.

**16.4 Training**

Training shall be provided for each employee who might be exposed to fall hazards. Upon first employment, they shall be given instructions regarding the hazards and safety precautions applicable to the type of work in question and directed to read the Cal/OSHA Code of Safe Practices. Training must enable each employee to recognize the hazards of falling and the procedures to follow to minimize these hazards. Records showing participants, training dates, and signatures of instructors shall be maintained.

Only qualified persons are permitted to operate equipment and machinery. Where employees are subject to known job site hazards, such as, flammable liquids and gases, poisons, caustics, harmful plants and animals, toxic materials, confined spaces, falls, etc., they shall be instructed in the recognition of the hazard, in the procedures for protecting themselves from injury, and in the first aid procedure in the event of injury.

Re-training shall be provided when there are deficiencies in training, inadequacies in an affected employee's knowledge or use of fall protection systems or equipment, when work practices are changed, or when fall protection equipment is modified.

**16.5 Fall Protection Requirement**

Fall protection is required whenever employees are potentially exposed to falls from heights that exceed applicable regulatory thresholds. Guard rails, safety nets, or personal or fall arrest systems should be used. Applicable regulatory thresholds include:

- General Industry 1910.28(b)(1)(i) - Protection for wall openings and holes. Every wall opening from which there is a drop of more than 4 feet shall be guarded.

**16.6 Incidents**

Incidents shall be investigated, and corrective actions must be developed and implemented. The investigation shall look at the fall protection plan to see if any updates are needed to prevent recurrence.

**16.7 Fall Protection Plan**

100% tie off is required.

A fall protection plan shall be prepared by a qualified person and developed specifically for the site where the work is being performed. The plan shall be maintained up to date.

**16.8 Rescue Plan**



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Equipment and services for prompt rescue of fallen workers, including self-rescue, shall be available before elevated work begins. Local fire departments may not have the means to perform safe and efficient rescue so do not assume they are able to do so.

### 16.9 Fall Arrest Systems

Personal fall arrest systems and components subjected to impact loading shall be immediately removed from service and shall not be used again for employee protection until inspected and determined by a competent person to be undamaged and suitable for reuse.

#### 16.9.1 Personal Fall Arrest Systems

Personal fall arrest systems, when stopping a fall, shall:

- Limit maximum arresting force on an employee to 1,800 pounds when used with a body harness.
- Be rigged such that an employee can neither free fall more than 6 feet, nor contact any lower level, and, where practicable, the anchor end of the lanyard shall be secured at a level not lower than the employee's waist.
- Bring an employee to a complete stop and limit maximum deceleration distance an employee travels to 3.5 feet.
- Have sufficient strength to withstand twice the potential impact energy of an employee free falling a distance of 6 feet, or the free fall distance permitted by the system, whichever is less.

#### 16.9.2 Anchorages

Anchorages used for attachment of personal fall arrest equipment shall be independent of any anchorage being used to support or suspend platforms and capable of supporting at least 5,000 pounds per employee attached, or shall be designed, installed, and used as follows:

- As part of a complete personal fall arrest system which maintains a safety factor of at least two.
- Under the supervision of a qualified person.

#### 16.9.3 Positioning Systems

Positioning device systems and their use shall conform to the following provisions:

- Positioning devices shall be rigged such that an employee cannot free fall more than 2 feet.
- Position devices shall be inspected prior to each use for wear, damage, and other deterioration, and defective components shall be removed from service.
- The use of non-locking snaphooks shall be prohibited after January 1, 1998.



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- Anchorage points for positioning device systems shall be capable of supporting two times the intended load or 3,000 pounds, whichever is greater.

### 16.9.4 Fall Protection Equipment

All safety belts, harnesses, and lanyards placed in service or purchased on or before February 1, 1997, shall be labeled as meeting the requirements contained in ANSI A10.14-1975, Requirements for Safety Belts, Harnesses, Lanyards, Lifelines and Drop Lines for Construction and Industrial Use.

All personal fall arrest, personal fall restraint, and positioning device systems purchased or placed in service after February 1, 1997, shall be labeled as meeting the requirements contained in ANSI A10.14-1991 American National Standard for Construction and Demolition Use, or ANSI Z359.1-1992 American National Standard Safety Requirements for Personal Fall Arrest Systems, Subsystems and Components.

### 16.10 Access Control

Access to dangerous areas where safety monitoring systems are in place shall be controlled. When used to control access to areas where leading edge and other operations are taking place, the controlled access zone shall be defined by a control line or by any other means that restricts access. Signs shall be posted to warn unauthorized employees to stay out of the controlled access zone.

### 16.11 Guardrails

A standard guardrail shall consist of top rail, mid-rail or equivalent protection, and posts, and shall have a vertical height within the range of 42 inches to 45 inches from the upper surface of the top rail to the floor, platform, runway, or ramp level.



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**17. FATIGUE MANAGEMENT PROGRAM**

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**17.1 Purpose**

The purpose of this section is to define the minimum requirements established regarding managing employee fatigue and ensure that mental or physical fatigue does not lead to injury to personnel or damage to property.

**17.2 Fatigue Management Program**

Fatigue can significantly affect the ability to communicate clearly, work safely and productively, and react optimally in an emergency. Fatigue and related consequences such as unintentionally falling asleep can be significant factors in incidents. Even without incidents occurring, fatigue impairment can significantly impact efficiency and productivity. One of the critical consequences of fatigue is that the ability to assess fitness for duty becomes impaired. This means employees may not be fully aware of their fatigue related impairment, which can make communicating about potential issues more difficult.

**17.3 Training**

Employees shall be trained on the components of this fatigue management program.  
 Initial and annual training shall be provided on how to recognize fatigue, how to control fatigue through appropriate work and personal habits and reporting of fatigue to supervision.

**17.4 Work Hour Limitations**

The following work hour limitations have been set to control job rotation schedules to control fatigue, allow for sufficient sleep, and increase mental fitness to control employee turnover and absenteeism:





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- A planned work shift shall not exceed 12 hours.

### 17.5 Ergonomic Equipment

Ergonomic equipment shall be used to improve workstation conditions such as anti-fatigue mats for standing, lift assist devices for repetitive lifting, proper lighting, control of temperature, and other ergonomic devices as deemed appropriate.

### 17.6 Work Tasks

Work tasks and schedules to control fatigue that affect amount of sleep, timing, and quality of sleep each day, amount of time since last sleep period, time of day, and workload and time on task shall be analyzed and evaluated periodically.

### 17.7 Rest Breaks

Rest breaks shall be provided to control fatigue and increase mental fitness.

Chairs shall be provided for employees to sit periodically and will provide periodic rest breaks for personnel.

### 17.8 Reporting

Employees are expected to be fit for duty. Employees in safety critical positions shall report fatigue / tiredness and lack of mental acuity to supervision. Supervisors shall make safety critical decisions and take appropriate actions to prevent loss.

### 17.9 Drug Use

Employees shall not chronically use over the counter or prescription drugs to increase mental alertness. Employees shall not take any substance known to increase fatigue, including fatigue that sets in after the effects of the drug wear off.

### 17.10 Review

The Fatigue Management Program shall undergo periodic assessments of its effectiveness with a continuous improvement plan created to close any gaps.



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**18. FIRE PROTECTION PROGRAM**

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**18.1 Purpose**

The purpose of this section is to describe a framework for fire hazards commonly occurring at work sites and provide protocols and procedures to control these hazards.

**18.2 Fire Protection Program**

Ignition sources can include any material, equipment, or operation that emits a spark or flame including obvious items, such as torches, as well as less obvious items, such as static electricity and grinding operations. Equipment or components that radiate heat, such as kettles, catalytic converters, and mufflers, also can be ignition sources.

Fuel sources include combustible materials, such as wood, paper, trash, and clothing; flammable liquids, such as gasoline or solvents; and flammable gases, such as propane or natural gas.

**18.3 Training**

Where portable fire extinguishers are provided for employee use, employees shall be trained to familiarize themselves with the general principles of fire extinguisher use and the hazards associated with basic firefighting.

Employees who are expected to use fire extinguishers in case of emergency shall be trained during their orientation upon initial assignment. Refresher training shall occur at least annually.

**18.4 Inspection**

Portable fire extinguishers shall be subjected to monthly visual inspections and annual servicing / maintenance. Monthly inspections involve a visual check to ensure the pin is in place, it is adequately charged and not corroded. Visual inspections shall be noted on the tag. The annual servicing and inspection are more thorough. The annual inspection is typically performed by a



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third-party professional, as it may involve re-charging the extinguisher and maintenance / servicing.

The annual maintenance date shall be recorded and retained for 1 year after the last entry or life of the shell, whichever is less.

**18.5 Selection and Distribution**

Portable fire extinguishers shall be provided for employee use and selected and distributed based on the classes of anticipated workplace fires and on the size and degree of hazard which would affect their use.

Management shall examine its premises and processes thoroughly and repeatedly, correcting threatening situations as soon as they are identified. In addition, adequate fire protection equipment shall be provided.

Particular guidance on fire codes and standards may be sought from manufacturers of fire protection equipment and systems, local municipal fire departments, the company insurance agency, the National Fire Protection Association (NFPA), and other fire protection agencies whose services may be secured on a consulting or staff basis.

**18.6 Number of Extinguishers Required**

See NFPA 10 for classification of occupancy hazards.

**Class A Hazards** (ordinary combustibles such as wood, cloth, paper, rubber, and many plastics)

Criteria	Light Hazard Occupancy	Ordinary Hazard Occupancy	Extra Hazard Occupancy
Minimum rated single extinguisher	2-A	2-A	4-A
Maximum floor area per unit of A	3000 sq ft	1500 sq ft	1000 sq ft
Maximum floor area per extinguisher	11,250 sq ft	11,250 sq ft	11,250 sq ft
Maximum travel distance to extinguisher	75 ft	75 ft	75 ft

**Class B Hazards** (flammable or combustible liquids, petroleum greases, tars, oils, oil-based paints, alcohols, solvents, lacquers, flammable gases, and similar materials)

Basic Minimum Extinguisher Rating for Area Specified	Basic Minimum Extinguisher Rating	Maximum Travel Distance to Extinguishers
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Light (low)	5B 10B	30 ft 50 ft
Ordinary (moderate)	10B 20B	30 ft 50 ft
Extra (high)	40B 80B	30 ft 50 ft

**Class C Hazards** (energized electrical equipment)

Live electrical fires require certain types of extinguishing agents (e.g., CO<sup>2</sup>, powder, halon). If the power can be turned off the fire hazard is reclassified as a class A or B. However, certain types of electrical equipment, such as capacitors, retain electrical charge even when electricity is turned off.

**Class D Hazards** (combustible metals such as magnesium, titanium, zirconium, sodium, lithium, and potassium)

Distribution of portable fire extinguishers for Class D hazards, such as combustible metal powders, flake, or shavings are required in the work areas so that the maximum travel distance is 75 feet or less in any direction.

**Class K Hazards** (cooking appliances that involve combustible cooking media such as vegetable or animal oils and fats)

Fire extinguishers provided for the protection of cooking grease fires shall be of an approved type compatible with the automatic fire-extinguishing system agent. Class K portable fire extinguishers must be located 30 feet of travel distance from the hazard to the extinguishers.

**18.7 Requirements of Portable Extinguishers**

- Extinguishers shall be fully charged and kept in their designated areas.
- Extinguishers shall be conspicuously located, clearly marked as to their intended use, and not be unobscured from view.
- The top shall not be more than 5 feet above the floor if the extinguisher weighs less than 40 lbs. The top must not be more than 3.5 feet above the floor if the extinguisher weighs more than 40 lbs. Clearance between the floor and the bottom of the extinguisher shall not be less than 4 inches.
- Extinguishers shall be thoroughly examined and/or recharged or repaired as needed at regular intervals not more than 1 year apart.



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- Extinguishers shall be hydrostatically tested at the specified interval.

**18.8 Reporting of Hostile Fires**

All hostile fires resulting in property damage, no matter how small, shall be investigated to prevent recurrence and to develop loss experience data upon which preventative measures can be based.

- Investigation – fires shall be investigated by the appropriate personnel (HSE, incident commander, etc.).
- Reporting – copies of the completed investigation reports shall be distributed to management.



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**19. FIRST AID PROGRAM**

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**19.1 Purpose**

The purpose of this section is to ensure the safety of employees and describe a framework for administering first aid.

**19.2 First Aid**

In the absence of an infirmary, clinic, or hospital in near proximity to the workplace, a person or persons shall be available and adequately trained to render first aid.

**19.3 Training**

A person who has a valid certificate in first-aid training from the American Red Cross or equivalent that can be verified by documentary evidence shall be available at the worksite to render first aid.

**19.4 First Aid Supplies**

The first aid equipment and supplies shall be determined by the potential occupational injuries and illnesses of personnel. First aid supplies shall be easily accessible when required.

The items and amounts of each item needed on site will depend on the following variables:

- Size of work force
- Type of work
- Availability of medical services



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- Types of injuries and illnesses
- Scope and environment of the work location

Adequate first aid supplies shall be available and periodically reassessed for the demand for supplies with inventories adjusted.

First aid kits shall be placed in a weatherproof container with individual sealed packages of each type of item. See Appendix 1 for suggested contents of a first aid kit.

For construction operations, first aid kits shall be checked before being sent out to each job and at least weekly to ensure that the expended items are replaced.

### 19.5 Location

Where there is a first aid facility provided, it shall be located as close as possible to the main work area to provide prompt first aid care to injured and ill employees. Distance should not hamper the prompt reporting of minor injuries. See Appendix 2 for suggested first aid supplies.

Location of the first aid facility shall also be near water and sanitary sewer lines. The first aid facility shall be easily accessible to ambulance service.

The first aid facility should be designed to eliminate noise, vibration, and other disturbances insofar as is practical.

### 19.6 Transport

Proper equipment for prompt transportation of the injured person to a physician or hospital or a communication system for contacting necessary ambulance service shall be provided.

### 19.7 Emergency Eye Washing

Where the eyes or body of any person may be exposed to injurious corrosive materials, suitable facilities shall be provided within the work area.

### 19.8 Emergency Phone Numbers

In areas where 911 is not available, the telephone numbers of the physicians, hospitals, or ambulances shall be conspicuously posted. The site Safety Coordinator is responsible for posting these telephone numbers.



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**20. FIT FOR DUTY PROGRAM**

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**20.1 Purpose**

The purpose of this section is to outline the Company Fit for Duty Program to ensure the safety of our employees.

**20.2 Fit for Duty Program**

Employees shall be physically capable of performing their assigned job functions.

Depending on the job function, pre-employment physicals should be included in the hiring process, also when changing into certain job functions and different environments.

Employees shall be assessed and monitored to confirm fitness to wear required personal protective equipment (PPE) for their job function.

**20.3 Drug and Alcohol Screening**

Drug and alcohol screening shall be conducted for pre-employment, post-accident, and randomly as required by Department of Transportation (DOT) regulations or site requirements.

Employees shall report all medications they are taking. Over-the-counter medications such as allergy or cold and flu medications could also impair one's ability to perform safely and shall also be reported to their supervisor.

Employee's activities and behaviors shall be monitored to determine if removal from the work site is necessary.

**20.4 Fatigue**

Employees are responsible for ensuring they are physically and mentally fit to perform their job functions safely. If an employee is not able to perform their duties safely due to their physical or mental state, they are responsible for notifying their supervisor. Employees shall take responsibility for their own safety as well as not report to work in a condition as to endanger the safety of their fellow workers.





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**21. FORKLIFTS AND POWERED INDUSTRIAL TRUCKS**

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**21.1 Purpose**

The purpose of this section is to provide safety procedures for forklifts and powered industrial trucks to maintain a safe workplace for employees and prevent or mitigate incidents.

**21.2 Forklifts and Powered Industrial Trucks Program**

A forklift or powered industrial truck is a powerful tool that allows one person to precisely lift and place large heavy loads with little effort. Using a tool such as a forklift, cart, or hand truck instead of lifting and carrying items by hand can reduce the risk of back injury. However, there is a greater risk of injury or death when an operator has not been trained properly, is not familiar with the way a particular forklift operates, operates carelessly, or operates a malfunctioning forklift.

**21.3 Operation Qualification**

Powered industrial truck operators shall be competent to operate the equipment safely. A competent operator has the necessary education / knowledge, training, and experience to safely perform the job.

**21.3.1 Training**



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Training shall consist of a combination of formal instruction (e.g., lecture, discussion, interactive computer learning, video, 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 powered industrial truck operators and evaluate their competence. The training content shall include forklift operating instructions, use of controls, capacity, and load stability as a minimum.

Refresher training in relevant topics shall be provided to the operator when:

- The operator has been observed to operate the vehicle in an unsafe manner,
- The operator has been involved in an accident or near-miss incident,
- The operator has received an evaluation that reveals that the operator is not operating the truck safely,
- The operator is assigned to drive a different type of truck, or
- A condition in the workplace changes in a manner that could affect safe operation of the truck.

An evaluation of each powered industrial truck operator's performance shall be conducted at least once every 3 years.

### **21.3.2 Trainees**

Trainees may operate powered industrial trucks only:

- Under the direct supervision of persons who have the knowledge, training, and experience to train operators and evaluate their competence; and
- Where such operation does not endanger the trainee or other employees.

### **21.4 Inspection**

Industrial trucks shall be examined before being placed in service and shall not be placed in service if the examination shows any condition adversely affecting the safety of the vehicle. Such examination shall be made at least daily.

Where industrial trucks are used on around-the-clock basis, they shall be examined after each shift. Defects when found shall be immediately reported and corrected.

### **21.5 Vehicle Certifications**

Name plates indicating the capacity are to be current and visible.

Forklifts approved for use in flammable vapor or dust-hazardous areas shall bear a label or some other identifying mark indicating approval by the testing laboratory.



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High-lift rider trucks shall be fitted with an overhead guard unless operating conditions make this impossible. If the type of load presents a hazard, the truck shall be equipped with a vertical load backrest extension.

### 21.6 Truck Operations

Trucks shall not be driven up to anyone standing in front of a bench or other fixed object.

No person is allowed to stand or pass under the elevated portion of any truck, whether loaded or empty.

Unauthorized personnel shall not be permitted to ride on powered industrial trucks. A safe place to ride shall be provided where riding of trucks is authorized.

Arms or legs shall not be placed between the uprights of the mast or outside the running lines of the truck.

Forklifts shall not be used for non-lifting tasks such as pushing or pulling unless recommended by the manufacturer or with the appropriate use of an attachment.

When a powered industrial truck is left unattended, load engaging means shall be fully lowered, controls neutralized, power shut off, and brakes set. Wheels shall be blocked if the truck is parked on an incline.

A powered industrial truck is unattended when the operator is 25 feet or more away from the vehicle which remains in view, or whenever the operator leaves the vehicle, and it is not in view.

A safe distance shall be maintained from the edge of ramps or platforms while on any elevated dock, platform, or freight car. Trucks shall not be used for opening or closing freight doors.

Brakes shall be set with wheel blocks in place to prevent movement of trucks, trailers, or railroad cars while loading or unloading. Fixed jacks may be necessary to support a semitrailer during loading or unloading when the trailer is not coupled to a tractor. The flooring of trucks, trailers, and railroad cars shall be checked for breaks and weakness before they are driven onto.

There shall be sufficient headroom under overhead installations, lights, pipes, sprinkler systems, etc.

An overhead guard shall be used as protection against falling objects. It should be noted that an overhead guard is intended to offer protection from the impact of small packages, boxes, bagged material, etc., representative of the job application, but not to withstand the impact of a falling capacity load.

A load backrest extension shall be used whenever necessary to minimize the possibility of the load or part of it from falling rearward.

Only approved industrial trucks may be used in hazardous locations.

Fire aisles, access to stairways, and fire equipment shall be kept clear.



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### 21.6.1 Spotters / Banksman

A risk assessment shall be performed to determine when operators will use spotters / banksman. As guidance, the following shall be considered when determining the need for spotters:

- Pedestrian proximity
- Adjacent traffic / simultaneous operations (SIMOPS)
- Lateral, overhead, or other obstructions exist in the work area
- Blind spots in the vicinity (equipment layout, buildings, trucks, vehicles, etc.)
- Blind spots due to the type of equipment or the load being carried
- Overall visibility (nighttime, rain, etc.)
- Ease of picking up and setting down the load
- Any other reason deemed necessary by the operator(s) or supervisor.

Spotters shall wear a high visibility vest and be in direct visual contact with the operator at all times. In the event the operator loses visual reference of the banksman / spotter they shall stop all equipment movement until they regain line of sight.

Banksman / spotters shall also have a radio that allows them to speak directly with the operator. The channel to be used shall be determined in the toolbox talk prior to the commencement of the task. The channel shall be one that is free from excessive use.

### 21.6.2 Traveling

All traffic regulations shall be observed, including authorized speed limits. A safe distance shall be maintained approximately three truck lengths from the truck ahead, and the truck shall be kept under control at all times.

The right of way shall be yielded to ambulances, fire trucks, or other vehicles in emergency situations.

Other trucks traveling in the same direction at intersections, blind spots, or other dangerous locations shall not be passed.

Drivers are required to slow down and sound the horn at cross aisles and other locations where vision is obstructed. If the load being carried obstructs forward view, the driver shall travel with the load trailing.

Railroad tracks shall be crossed diagonally wherever possible. Parking closer than 8 feet from the center of railroad tracks is prohibited.

Drivers are required to look in the direction of and keep a clear view of the path of travel.

Grades shall be ascended or descended slowly.



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When ascending or descending grades more than 10%, loaded trucks shall be driven with the load upgrade.

On all grades, the load and load engaging means shall be tilted back, if applicable, and raised only as far as necessary to clear the road surface.

Under all travel conditions the truck shall be operated at a speed that will permit it to be brought to a stop in a safe manner.

Stunt driving and horseplay is not permitted.

Drivers are required to slow down for wet and slippery floors.

Dockboards or bridge plates, shall be properly secured before they are driven over. Dockboards or bridge plates shall be driven over carefully and slowly, and their rated capacity never exceeded.

Elevators shall be approached slowly and then entered squarely after the elevator car is properly leveled. Once on the elevator, the controls shall be neutralized, power shut off, and the brakes set.

Motorized hand trucks shall enter elevator or other confined areas with load end forward.

Running over loose objects on the roadway surface shall be avoided.

While negotiating turns, speed shall be reduced to a safe level by means of turning the hand steering wheel in a smooth, sweeping motion. Except when maneuvering at a very low speed, the hand steering wheel shall be turned at a moderate, even rate.

A load engaging means shall be placed under the load as far as possible; the mast shall be carefully tilted backward to stabilize the load.

Extreme care shall be used when tilting the load forward or backward, particularly when high tiering. Tilting forward with load engaging means elevated is prohibited except to pick up a load. An elevated load shall not be tilted forward except when the load is in a deposit position over a rack or stack. When stacking or tiering, only enough backward tilt to stabilize the load shall be used.

The operator shall verify trailer chocks, supports, and dock plates prior to loading or unloading.

### 21.7 Maintenance

If at any time a powered industrial truck is found to be in need of repair, defective, or in any way unsafe, the truck shall be taken out of service until it has been restored to safe operating condition by authorized personnel.

Repairs to the fuel and ignition systems of industrial trucks which involve fire hazards shall be conducted only in locations designated for such repairs.

Trucks in need of repairs to the electrical system shall have the battery disconnected prior to such repairs.



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All parts of any such industrial truck requiring replacement shall be replaced only by parts equivalent as to safety with those used in the original design.

Industrial trucks shall not be altered so that the relative positions of the various parts are different from what they were when originally received from the manufacturer, nor may they be altered either by the addition of extra parts not provided by the manufacturer or by the elimination of any parts. Additional counterweighting of fork trucks shall not be done unless approved by the truck manufacturer.

Water mufflers shall be filled daily or as frequently as is necessary to prevent depletion of the supply of water below 75% of the filled capacity. Vehicles with mufflers having screens or other parts that may become clogged shall not be operated while such screens or parts are clogged. Any vehicle that emits hazardous sparks or flames from the exhaust system shall immediately be removed from service and not returned to service until the cause for the emission of such sparks and flames has been eliminated.

When the temperature of any part of any truck is found to be in excess of its normal operating temperature, thus creating a hazardous condition, the vehicle shall be removed from service and not returned to service until the cause for such overheating has been eliminated.

Industrial trucks shall be kept in a clean condition, free of lint, excess oil, and grease. Noncombustible agents shall be used for cleaning trucks. Low flash point (below 100 °F.) solvents shall not be used. High flash point (at or above 100 °F.) solvents may be used. Precautions regarding toxicity, ventilation, and fire hazard shall be consonant with the agent or solvent used.

### 21.8 Refueling Stations

Refueling stations shall be designated, properly equipped, maintained, and provided with instructions for each type of forklift.

#### 21.8.1 Battery Charging Station Equipment and Precautions

A carboy tilter or siphon for handling electrolyte and a hose with running water to flush and neutralize a spill are required. When charging batteries, acid shall be poured into the water.

Fire protection in accordance with the size of the forklift shall be provided.

Safety shower and eyewash station shall be provided.

Adequate ventilation for dispersal or removal of hydrogen gas shall be provided.

Non-sparking or coated battery rack supports, and an overhead hoist or equivalent battery-handling equipment shall be provided.

Trucks shall be properly positioned with brakes applied.

Vent caps shall be kept in place and battery compartment or cover shall be open.



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Smoking and open flames shall not be permitted, and efforts shall be made to prevent sparks or electric arcs.

Tools and other metallic objects shall be kept clear of the top of uncovered batteries.

#### 21.8.2 Gasoline and Diesel Precautions

Fuel tanks shall not be filled while the engine is running.

The tank shall not be filled to the top. Spillage of oil or fuel shall be carefully cleaned up or completely evaporated and the fuel tank cap replaced before restarting engine.

Open flames shall not be used for checking gasoline level in fuel tanks.

Trucks shall not be operated with a leak in the fuel system until the leak has been corrected.

An appropriate portable fire extinguisher shall be provided at the refueling station.

#### 21.8.3 LP Gas (propane) Precautions

LPG-powered trucks shall not be refueled in confined areas where LPG vapors could collect if a leak occurs.

LPG-powered trucks shall not be left near heat sources, stairways, exits, or other egress areas.

When parking LPG-powered trucks for a long period of time, the service valve shall be turned off.

Only trained and authorized personnel are authorized to replace LPG containers.

Spare tanks shall be stored in an outside shelter with adequate ventilation and an appropriate portable fire extinguisher shall be provided.



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**22. GENERAL WASTE MANAGEMENT PROGRAM**

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**22.1 Purpose**

The purpose of this section is to provide general guidelines on an awareness level basis for the proper management, handling, and storage of waste, trash, or garbage to prevent the discharge of pollutants.

**22.2 Waste Management**

The volume of waste is reduced through the use of sound waste minimization practices utilizing a reduce, reuse, and recycle approach.

**22.3 Assessment**

The amount of waste that will be generated shall be estimated prior to work being performed so that the need for containers and waste removal, if necessary, can be determined. If the same wastes or scrap materials are generated regularly, the estimation may be done initially.

**22.4 Handling and Storage**

Waste materials shall be properly stored and handled to minimize the potential for spills or impact to the environment. During outdoor activities, receptacles shall be covered to prevent dispersion of waste materials and to control the potential for run-off.

Proper segregation of waste materials is encouraged to ensure opportunities for reuse or recycling.

**22.5 Training**

Employees shall be instructed on the proper handling, storage, and disposal of wastes. This may include general instruction on disposal of non-hazardous wastes, trash, or scrap materials. If wastes generated are classified as hazardous, employees shall be trained to ensure proper disposal.





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### 22.6 Construction Activities

When materials are dropped more than 20 feet to any point lying outside the exterior walls of a building, an enclosed chute of wood, or equivalent material, shall be used. An enclosed chute is a slide, closed in on all sides, through which material is moved from a high place to a lower one.

When debris is dropped through holes in the floor without the use of chutes, the area onto which the material is dropped shall be completely enclosed with barricades not less than 42 inches high and not less than 6 feet back from the projected edge of the opening above. Signs warning of the hazard of falling materials shall be posted at each level. Removal shall not be permitted in this lower area until debris handling ceases above.

All scrap lumber, waste material, and rubbish shall be removed from the immediate work area as the work progresses.

Disposal of waste material or debris by burning shall comply with local fire regulations.

All solvent waste, oily rags, and flammable liquids shall be kept in fire resistant covered containers until removed from the worksite.



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**23. GROUND FAULT CIRCUIT INTERRUPTERS (GFCI)**

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 23.7 Defective Electrical Equipment ..... 83

**23.1 Purpose**

The purpose of this section is to provide regulations required when ground fault circuit interrupters (GFCI) are not in place.

**23.2 Ground Fault Circuit Interrupters (GFCI) Program**

The GFCI is designed to protect people from severe or fatal shocks but because a GFCI detects ground faults, it can also prevent some electrical fires and reduce the severity of other fires by interrupting the flow of electric current. If GFCIs are not used on all 120-volt, single phase 15 and 20-ampere temporary wiring on construction sites with information covered in the Company Electrical Program then the following shall be in place:

**23.3 Assured Grounding Conductor**

An assured grounding conductor program shall be implemented on sites covering all cord sets, receptacles which are not part of the building or structure, and equipment connected by cord and plug which are available for use or used by employees.

**23.4 Competent Person(s)**

There shall be a designated competent person who can identify existing and predictable electrical hazards and who has authorization to take prompt corrective measures to eliminate them.

**23.5 Inspection**

Each cord set, attachment cap, plug and receptacle of cord sets, and any equipment connected by cord and plug, except cord sets and receptacles which are fixed and not exposed to damage, shall be visually inspected before each day's use for external defects, such as



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deformed or missing pins or insulation damage, and for indications of possible internal damage. Equipment found damaged or defective shall not be used until repaired.

### **23.6 Testing**

All equipment grounding conductors shall be tested for continuity and shall be electrically continuous.

Each receptacle and attachment cap or plug shall be tested for correct attachment of the equipment grounding conductors.

The equipment grounding conductor shall be connected to its proper terminal:

- Before each use.
- Before equipment is returned to service following any repairs.
- Before equipment is used such as when a cord has been run over.
- At intervals not to exceed three months.
- Cord sets and receptacles which are fixed and not exposed to damage shall be tested at intervals not exceeding 6 months.

Tests performed as required by this program shall be recorded as to the identity of each receptacle, cord set, and cord and plug connected equipment that passed the test and shall indicate the last date tested or interval for which it was tested. This record shall be kept by means of logs, color coding, or other effective means and shall be maintained until replaced by a more current record. These records shall be made available at the job site for inspection by the Assistant Secretary and any affected employees.

### **23.7 Defective Electrical Equipment**

Any equipment which has not met the requirements of this program shall not be available or permitted to be used. Damaged items shall not be used until repaired.



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**24. HAND AND POWER TOOLS PROGRAM**

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**24.1 Purpose**

The purpose of this section is to ensure all employees are aware of safe work practices for the use of hand and power tools to prevent or mitigate incidents that may arise from the improper handling of the tools.

**24.2 Hand and Power Tools Program**

Hand tools are tools that are powered manually. Some examples of hand tools include anvils, axes, chisels, files, hammers, hand boring tools, planes, pliers, punches, saws, industrial scissors, screw drivers, tin snips, and wrenches.

Power tools must be equipped with safety switches and guards (if provided by the manufacturer). Types of power tools are determined by their power source: electric, pneumatic, liquid fuel, hydraulic, and powder actuated.

There is a variety of hazards associated with hand and power tools.

**24.3 General**

The proper tools for the job shall be selected and employees in the proximity of work shall be alerted.

Employees shall be alert to any potential hazards in the area such as flammable or explosive gases, vapors, dusts, etc. that may ignite if a spark is generated by the tool or from work being done with the tool. Use of tools in an area where flammable gases are normally present which may be explosive shall be electrically rated for service in that area.

All power-driven tools shall be stopped when not in use.



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Accidental start-ups shall be avoided. Ensure that the switch or other activating mechanism on the tools is in the "off" position before connecting to the power source.

Operators shall be capable of inspecting the tools to ensure safe operating condition prior to use and be aware of the tool's limitations and potential hazards.

### **24.4 Training**

Training on the safe and proper use of all hand and power tools shall be provided to employees that operate hand and power tools.

Only authorized, trained employees shall operate hand and power tools.

In-house power tool repairs shall be performed by trained technicians.

### **24.5 Hand and Power Tool Condition and Location**

All hand and power tools and similar equipment, whether furnished by the Company or the employee, shall be maintained in a safe condition.

The use of any machinery, tool, material, or equipment which is not in compliance with any applicable requirement of this document is prohibited. Such machine, tool, material, or equipment shall either be identified as unsafe by tagging or locking the controls to render them inoperable or shall be physically removed from its place of operation.

Compressed air shall not be used for cleaning purposes except where reduced to less than 30 psig and then only with effective chip guarding and personal protective equipment (PPE).

Machines designed for a fixed location shall be securely anchored to prevent walking or moving.

### **24.6 Guarding**

When power operated tools are designed to accommodate guards, they shall be in place and operable at all times while the tool is in use. The guard shall not be manipulated in such a way that will compromise its integrity or compromise the protection intended. Guarding shall meet the requirements set forth in ANSI B15.1-1953 (R1958), Safety Code for Mechanical Power-Transmission Apparatus.

Belts, gears, shafts, pulleys, sprockets, spindles, drums, fly wheels, chains, or other reciprocating, rotating, or moving parts of equipment shall be guarded if such parts are exposed to contact by employees or otherwise create a hazard.

One or more methods of machine guarding shall be provided to protect the operator and other employees in the machine area from hazards such as those created by point of operation, ingoing nip points, rotating parts, flying chips and sparks. Examples of guarding methods are - barrier guards, two-hand tripping devices, electronic safety devices, etc.



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The point of operation of machines whose operation exposes an employee to injury, shall be guarded. The guarding device shall be in conformity with any appropriate standards therefore, or, in the absence of applicable specific standards, shall be so designed and constructed as to prevent the operator from having any body part in the danger zone during the operating cycle.

Special hand tools for placing and removing material shall be such as to permit easy handling of material without the operator placing a hand in the danger zone. Such tools shall not be in lieu of other guarding required but can only be used to supplement protection provided.

When the periphery of the blades of a fan is less than 7 feet above the floor or working level, the blades shall be guarded. The guard shall have openings no larger than 1/2 inch.

Safety guards for bench and floor stands and cylindrical grinders, where the operator stands in front of the opening, shall be constructed so that the peripheral protecting member can be adjusted to the constantly decreasing diameter of the wheel. The maximum angular exposure above the horizontal plane of the wheel spindle shall never be exceeded, and the distance between the wheel periphery and the adjustable tongue or the end of the peripheral member at the top shall never exceed 1/4 inch.

### **24.7 Bench and Floor Stands**

The angular exposure of the grinding wheel periphery and sides for safety guards used on machines known as bench and floor stands shall not exceed 90 degrees or one-fourth of the periphery. This exposure shall begin at a point not more than 65 degrees above the horizontal plane of the wheel spindle.

### **24.8 Cylindrical Grinders**

The maximum angular exposure of the grinding wheel periphery and sides for safety guards used on cylindrical grinding machines shall not exceed 180 degrees. This exposure shall begin at a point not more than 65 degrees above the horizontal plane of the wheel spindle.

### **24.9 Positive Accessory Holding Means**

All hand-held powered platen sanders, grinders with wheels 2-inch diameter or less, routers, planers, laminate trimmers, nibblers, shears, scroll saws, and jigsaws with blade shanks 1/4 inch wide or less shall be equipped with only a positive "on-off" control.

All hand-held powered drills, tappers, fastener drivers, horizontal, vertical, and angle grinders with wheels greater than 2 inches in diameter, disc sanders, belt sanders, reciprocating saws, saber saws, and other similar operating powered tools shall be equipped with a momentary contact "on-off" control and shall have a lock-on control provided that turnoff can be accomplished by a single motion of the same finger or fingers that turn it on.

All other hand-held powered tools, such as circular saws, chain saws, and percussion tools without positive accessory holding means, shall be equipped with a constant pressure switch that will shut off the power when the pressure is released.



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**24.10 Personal Protective Equipment (PPE)**

Employees using hand and power tools and exposed to the hazard of falling, flying, abrasive, and splashing objects, or exposed to harmful dust, fumes, mists vapors, or gases shall be provided with particular PPE necessary to protect them from the hazard.



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**25. HAZARD ANALYSIS (JSA)**

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**25.1 Purpose**

The purpose of this section is to provide requirements for hazard analysis to identify, evaluate and, where applicable, reduce the likelihood and/or minimize the consequences of hazards.

**25.2 Hazard Analysis Program**

A hazard analysis (facility level) and a job safety analysis (JSA) (operations / task level) shall be conducted for all facilities and activities identified in the safety and environmental management systems (SEMS) program.

The hazard analysis shall be appropriate for the complexity of the operation and must identify, evaluate, and manage the hazards involved.

**25.3 Hazard Analysis (Facility Level)**

The hazards analysis shall address the following:

- Hazards of the operation.
- Previous incidents related to the operation being evaluated, including any incident in which an Incident of Noncompliance or a civil or criminal penalty was issued.
- Control technology applicable to the operation the hazards analysis is evaluating.
- A qualitative evaluation of the possible safety and health effects on employees, and potential impacts to the human and marine environments, which may result if the control technology fails.

The hazards analysis shall be performed by a person(s) with experience in the operations being evaluated. These individuals also need to be experienced in the hazards analysis methodologies being employed.

Recommendations in the hazard analysis shall be resolved and the resolution documented.

A single hazard analysis can be performed to fulfill the requirements for simple and nearly identical facilities, such as well jackets and single well caissons. This single hazard analysis can





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also be applied to simple and nearly identical facilities after verification that any site-specific deviations are addressed in each SEMS program.

### 25.4 Job Safety Analysis

A JSA shall be developed and implemented for each identified operation and task in the SEMS program.

Operational JSA's shall be maintained at the job site for the life of the operation at the facility and shall be readily accessible to employees.

The JSA shall include all personnel involved with the job activity.

The JSA shall identify, analyze, and record:

- The steps involved in performing a specific job.
- The existing or potential safety, health, and environmental hazards associated with each step.
- The recommended action(s) and/or procedure(s) that will eliminate or reduce these hazards, the risk of a workplace injury or illness, or environmental impacts.

The immediate supervisor of the crew performing the job onsite shall conduct the JSA, sign the JSA, and ensure that all personnel participating in the job understand and sign the JSA.

The individual designated as being in charge of the facility shall approve and sign all JSAs before personnel start the job.

If a particular job is conducted on a recurring basis, and if the parameters of these recurring jobs do not change, then the person in charge of the job may decide that a JSA for each individual job is not required. The parameters to consider in making this determination include, but are not limited to, changes in personnel, procedures, equipment, and environmental conditions associated with the job.

All personnel, which includes contractors, shall be trained in accordance with the requirements of SEMS training criteria. Prior to performing a job, contractor training according to SEMS training criteria shall be verified.



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**26. HAZARD COMMUNICATION PROGRAM**

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**26.1 Purpose**

The purpose of this section is to provide information concerning the hazards associated with the work activities, including but not limited to the health, safety, environmental, and security hazards where employees may be exposed to hazardous substances under normal working conditions or during emergency situations.

**26.2 Hazard Communication Program**

Potential hazards include materials that cause fire or explosion or result in injury by inhalation, skin or eye contact, or ingestion. One of the benefits of this program is that employees will know the hazards of the chemicals with which they are working.

**26.3 General**

A written hazard communication program shall be developed, implemented, and maintained at each workplace. The program shall describe how the requirements for labels and other forms of warning, safety data sheets, and employee information and training will be met.

Examples of qualities which make a chemical "hazardous" include but are not limited to:

- Flammable, combustible, and/or explosive
- Corrosive (acids/caustics)
- Irritating/damaging to the eyes and/or skin on contact
- Poses health hazard through inhalation, ingestion, or body contact
- Any known or suspected carcinogen



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### 26.4 Training

Employees shall be trained on the dangers of the hazardous chemicals with which they work. This training shall be given when the employee starts work and when a new chemical is used in the workplace. This training shall cover types of hazards (e.g., flammability or carcinogenicity) or specific chemicals. Chemical-specific information shall always be available through labels and safety data sheets (SDS).

On job sites with multiple employers / companies performing work, information concerning hazardous chemicals in use, methods of providing SDS sheets, methods of precautionary measures to be taken and methods of providing information on labeling systems shall be provided.

Documentation of safety and health training shall include:

- Employee name or another identifier
- Training dates
- Type(s) of training
- Training providers.

This documentation shall be maintained for at least one year.

### 26.5 Inventory of Hazardous Chemicals

An up-to-date working inventory of all chemicals in stock along with all chemicals sent to other destinations shall be compiled. The list may be compiled for the workplace as a whole or for individual work areas.

This inventory shall include:

- The full chemical name or identity that is referenced on the appropriate SDS
- CAS number
- Approximate amount of the chemical with suitable units of measurement
- Physical state
- Responsible party
- Location
- Expiration date if applicable

### 26.6 Non-routine Tasks

Before employees perform non-routine or special tasks that may expose them to hazardous chemicals, they shall be trained on the hazards associated with those chemicals. This training shall be documented and maintained, including how and by whom the employees were trained.



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### 26.7 Multiple Worksites

If hazardous chemicals are produced, used, or stored in such a way that the employees of other employers may be exposed, the hazard communication program shall include:

- The methods used to share SDS.
- The methods used to inform other employers of any precautionary measures that need to be taken to protect employees during the workplace's normal operating conditions and in foreseeable emergencies.
- The methods used to inform other employers of the labeling system used in the workplace.

The program shall be made available, upon request, to employees, their designated representatives, the OSHA Assistant Secretary, and the OSHA Director. Where employees must travel between workplaces during a work shift (multi job sites), the written program may be kept at a primary job site.

### 26.8 Labeling

Each container of hazardous chemicals shall be labeled with information regarding the hazards of the chemicals, and which, in conjunction with the other information immediately available to employees under the hazard communication program, will provide employees with the specific information regarding the physical and health hazards of the hazardous chemical.

Container labels shall contain at least the following information:

- Product identifier
- Signal word
- Hazard statement(s)
- Pictogram(s)
- Precautionary statement(s)
- And name, address, and telephone number of the chemical manufacturer, importer, or other responsible party

Labels or other forms of warning shall be legible, in English, and prominently displayed on the container, or readily available in the work area throughout each work shift. If there are employees who speak other languages information in that language may be added to the material presented, as long as the information is presented in English as well.

### 26.9 Safety Data Sheets

Safety data sheets (SDS) following the Globally Harmonized System of Classification and Labelling of Chemicals (GHS) standard are required for each hazardous chemical used in the workplace.



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Chemical manufacturers are responsible for developing SDSs. An SDS for each chemical used shall be on hand. If an SDS is not provided, appears inadequate, or the composition of the chemical is unknown or questionable, then the manufacturer, supplier, and/or client shall be contacted for more details.

The manufacturer, importer, or employer preparing the safety data sheet shall ensure that the information recorded accurately reflects the scientific evidence used in making the hazard determination.

If the manufacturer, importer, or employer becomes aware of any significant information regarding the hazards of a substance, or ways to protect against the hazards, this new information shall be added to the safety data sheet within 3 months. If the substance is not currently being produced or imported, the manufacturer or importer shall add the information to the safety data sheet before the substance is introduced into the workplace again.

SDSs shall be readily accessible during each work shift to employees when they are in their work area(s). Where employees must travel between workplaces during a work shift (i.e., their work is carried out at more than one geographical location) the safety data sheets may be kept at the primary workplace facility.

### **26.10 Accidents, Incidents, and Emergencies Involving Hazardous Substances**

All spills shall be cleaned up as soon as possible.

Disposal of any clean up materials shall be carried out in a responsible manner and any discharge shall be immediately reported according to Company policy and legislation.



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**27. HEAT ILLNESS PREVENTION PROGRAM**

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**27.1 Purpose**

The purpose of this section is to provide information on the recognition, evaluation, and control of potential heat stress conditions to prevent heat related illnesses.

**27.2 Heat Illness Prevention**

Heat stress occurs when the heat load on the body exceeds the body's capacity to cool itself. Being uncomfortable is not the major problem with working in high temperature and humidity. Employees who are suddenly exposed to working in a hot environment face additional and generally avoidable hazards to their safety and health.

**27.3 Workplace and Task Evaluation**

A thorough evaluation of the workplace may be necessary to identify tasks and conditions that present a potential heat stress hazard. This evaluation should include observations, discussions



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with employees and supervisors, and the review of any reported heat-related disorders. Physical and other factors that can contribute to heat related illness shall be taken into consideration prior to performing tasks in a heat stress environment, which include but are not limited to:

- Job Location
- Work Duration
- Schedule
- Staffing
- Clothing type, weight, and breathability
- Metabolism
- Environmental conditions (ambient temperature, relative humidity)
- Fitness for duty
- Existing controls (e.g., proper tools and equipment, work/rest ratio, ventilation, cool zones, cool vests, fluid and electrolyte replacement, buddy system, etc.).

### 27.4 Risk Factors

Physical factors that contribute to heat related illness shall be taken into consideration before performing a task. The most common physical factors that can contribute to heat related illness are type of work, level of physical activity and duration, and clothing color, weight, and breathability.

Personal risk factors include medical conditions, lack of physical fitness, previous episodes of heat-related illness, alcohol consumption, drugs, and use of certain medication.

Supervisors shall ensure personal factors that contribute to heat related illness are taken into consideration before assigning a task where there is the possibility of a heat-related illness occurring.

### 27.5 Recognition

When the human body cannot maintain the internal body temperature or electrolyte balance, this leads to heat related illness such as heat edema, heat cramps, heat exhaustion, and heat stroke.

The body temperature must be maintained near the normal body temperature of 98.6 °F to function properly. The body is capable of removing excess heat, leading to the following heart related illnesses:

#### 27.5.1 Heat Stroke



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Heat stroke is the most serious heat-related illness. It occurs when the body becomes unable to control its temperature: the body's temperature rises rapidly, the sweating mechanism fails, and the body is unable to cool down. When heat stroke occurs, the body temperature can rise to 106 °F or higher within 10 to 15 minutes. Heat stroke can cause death or permanent disability if emergency treatment is not given. Symptoms include confusion, altered mental status, slurred speech, loss of consciousness, seizures, very high body temperature.

Take the following steps to treat an employee with heat stroke:

- Call 911 for emergency medical care.
- Stay with the employee until emergency medical services arrive.
- Move the employee to a shaded, cool area and remove outer clothing.
- Cool the employee quickly with a cold water or ice bath if possible; wet the skin, place cold wet cloth on skin, or soak clothing with cool water.
- Circulate the air around the employee to speed cooling.
- Place cold wet cloth or ice on head, neck, armpits, and groin; or soak the clothing with cool water.

### 27.5.2 Heat Exhaustion

Heat exhaustion is the body's response to an excessive loss of the water and salt, usually through excessive sweating. Employees most prone to heat exhaustion are those that are elderly, have high blood pressure, and those working in a hot environment. Symptoms include headache, nausea, dizziness, weakness, irritability, thirst, heavy sweating, elevated body temperature, and decreased urine output.

Treat an employee suffering from heat exhaustion with the following:

- Take them to a clinic or emergency room for medical evaluation and treatment.
- If medical care is unavailable, call 911.
- Someone should stay with employee until help arrives.
- Remove the employee from hot area and give liquids to drink.
- Remove unnecessary clothing, including shoes and socks.
- Cool the employee with cold compresses or have the employee wash head, face, and neck with cold water.
- Encourage frequent sips of cool water.

### 27.5.3 Rhabdomyolysis





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Rhabdomyolysis is a medical condition associated with heat stress and prolonged physical exertion, resulting in the rapid breakdown, rupture, and death of muscle. When muscle tissue dies, electrolytes and large proteins are released into the bloodstream that can cause irregular heart rhythms and seizures and damage the kidneys. Symptoms include muscle cramps / pain, abnormally dark urine, weakness, exercise intolerance, or be asymptomatic.

Employee with symptoms of rhabdomyolysis should:

- Stop activity.
- Increase oral hydration (water preferred).
- Seek immediate care at the nearest medical facility.
- Ask to be checked for rhabdomyolysis (i.e., blood sample analyzed for creatine kinase).

### 27.5.4 Heat Syncope

A fainting (syncope) episode or dizziness that usually occurs with prolonged standing or sudden rising from a sitting or lying position. Factors that may contribute to heat syncope include dehydration and lack of acclimatization.

Employees with heat syncope should sit or lie down in a cool place and slowly drink water, clear juice, or a sports drink.

### 27.5.5 Heat Cramps

Heat cramps usually affect employees who sweat a lot during strenuous activity. This sweating depletes the body's salt and moisture levels. Low salt levels in muscles causes painful cramps. Heat cramps may also be a symptom of heat exhaustion.

Employees should drink water and have a snack and/or carbohydrate-electrolyte replacement liquid every 15 to 20 minutes. Salt tablets should be avoided. Get medical help if the employee has heart problems, is on a low sodium diet, or if cramps do not subside within one hour.

### 27.5.6 Heat Edema

Heat causes the blood vessels to expand, so body fluid moves into the hand or legs by gravity.

Mild edema usually goes away on its own, particularly if the affected limb is raised higher than the heart.

### 27.5.7 Heat Rash

Heat rash is a skin irritation caused by excessive sweating during hot, humid weather. Symptoms include what looks like red cluster of pimples or small blisters that usually appear on the neck, upper chest, groin, under the breasts, and in elbow creases.

Employee experiencing heat rash should:



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- When possible, a cooler, less humid work environment is best treatment.
- Keep rash area dry.
- Powder may be applied to increase comfort.
- Ointments and creams should not be used.

### 27.6 Evaluation

The Heat Index should be used as a reference or indicator to define the general overall heat stress conditions. The Heat Index is also known as the “effective / feels like temperature”.

The Heat Index is based on relative humidity and air temperature. It is predictive of heat stress in circumstances in which the relationship has been established for a particular environment. Heat Index indicates thermal comfort.

### 27.7 Controls

Employees shall have access to fresh, pure, and suitably cool potable drinking water at no charge. Where it is not plumbed or otherwise continuously supplied, it shall be provided in sufficient quantity at the beginning of the work shift, but not less than one quart per hour per employee.

At or below 80 degrees Fahrenheit employees shall have timely access to shade that is either open to the air or provided with ventilation or cooling upon request. For temperatures at or above 80 degrees Fahrenheit, one or more areas with shade shall be provided at all times while employees are present. Shade shall accommodate the number of employees on recovery or rest periods at all times.

In high temperatures, the following shall be considered:

- Effective communication by voice or electronic means.
- Observation of employees for alertness and signs / symptoms of heat illness.
- Designation of employees on each worksite to call for emergency medical services.
- Reminders to drink water throughout the shift.
- Pre-shift meetings before beginning work.
- Reminders to employees of their right to take a cool-down rest when necessary.

An individual at the worksite shall be responsible for monitoring conditions and implementing the heat plan throughout the workday. This individual can be a foreman, jobsite supervisor, safety director, or anyone else with the proper training.

Engineering controls such as air conditioning, with cooled air, and increased air flow shall be employed. During their first few days in warm or hot environments, employees should consume



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adequate fluids, work shorter shifts, take frequent breaks, and quickly identify any heat illness symptoms.

### 27.7.1 Acclimation

Acclimatization is the beneficial physiological adaptations that occur during repeated exposure to a hot environment.

To acclimatize employees, gradually increase their exposure time in hot environmental conditions over a 7-to-14-day period. New employees will need more time to acclimatize than employees who have already had some exposure.

For new employees, the schedule should be no more than a 20% exposure on day one and an increase of no more than 20% on each additional day.

For employees who have had previous experience with the job, the acclimatization regimen should be no more than a 50% exposure on day one, 60% on day two, 80% on day three, and 100% on day four.

In addition, the level of acclimatization each employee reaches is relative to the initial level of physical fitness and the total heat stress experienced by the individual.

### 27.8 Training

The program shall include:

- The environmental and personal risk factors for heat illness.
- Company procedures for complying with the requirements of the standard.
- The importance of frequent consumption of small quantities of water, up to four cups per hour, when the work environment is hot, and employees are likely to be sweating more than usual in the performance of their duties.
- The importance of acclimatization.
- The different types of heat illness and the common signs and symptoms of heat illness.
- The importance to employees of immediately reporting to the employer, directly or through the employee's supervisor, symptoms, or signs of heat illness in themselves, or in co-workers.
- Company procedures for responding to symptoms of possible heat illness, including how emergency medical services will be provided should they become necessary
- Company procedures for contacting emergency medical services, and if necessary, for transporting employees to a point where they can be reached by an emergency medical service provider.



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- Company procedures for ensuring that, in the event of an emergency, clear and precise directions to the work site can and will be provided as needed to emergency responders.

Supervisors shall be trained in heat related illness prior to supervision of employees working in the heat. Training shall include:

- The procedures the supervisor is to follow to implement the applicable procedures to prevent heat illness.
- The procedures the supervisor is to follow when an employee exhibits symptoms consistent with possible heat illness, including emergency response procedures.

### **27.9 Emergency Response**

When any heat-related illness symptom is present, promptly provide first aid to the affected employee. First aid for heat related illness includes:

- Taking the affected employee to a cooler area,
- Cooling the employee immediately,
- Never leave an employee with heat-related illness alone, and
- When in doubt, call 911.



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**28. HYDROGEN SULFIDE**

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**28.1 Purpose**

The purpose of this section is to provide specific requirements and safety principles for exposure to hydrogen sulfide (H<sub>2</sub>S).

**28.2 Hydrogen Sulfide Program**

Hydrogen sulfide (H<sub>2</sub>S) may be encountered during drilling operations. The gas may be associated with recycled drilling mud, water from sour crude wells, blowouts, tank gauging, field maintenance, and tank batteries and wells. Hydrogen sulfide may also be present in refineries and is associated with decaying material in natural settings.

Hydrogen sulfide is colorless and has the odor of rotten eggs. H<sub>2</sub>S is toxic, flammable, corrosive, soluble in water, and creates toxic by-products when burned. At higher concentrations, H<sub>2</sub>S is odorless and smell alone cannot be used to detect its presence.

It is heavier than air and can collect in low-lying and enclosed, poorly ventilated areas such as basements, manholes, sewer lines, and underground telephone / electrical vaults. At the same time, since it is only 18% denser than air, it should not be assumed that personnel are safe from the hazard in an elevated location. H<sub>2</sub>S can and will spread in all directions away from the source.

In addition, H<sub>2</sub>S is a highly flammable gas and gas / air mixtures can be explosive. It may travel to sources of ignition and flash back. If ignited, the gas burns to produce toxic vapors and gases, such as sulfur dioxide.

Further information can be found in Appendix 1.



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### 28.3 Exposure Health Effects

The health effects of hydrogen sulfide include irritation of the eyes, nose, throat, respiratory system, headache, cough, nausea, loss of sense of smell, blistering, central nervous system weakness, difficulty breathing, unconsciousness, and possible death. Hydrogen sulfide is both an irritant and a chemical asphyxiant with effects on both oxygen utilization and the central nervous system. Its health effects can vary depending on the level and duration of exposure.

Chronic exposures to low doses of H<sub>2</sub>S may lead to high blood pressure, chronic headaches, nausea, and sleep disorders.

Contact with liquid H<sub>2</sub>S causes frostbite. If clothing becomes wet with the liquid, avoid ignition sources, remove the clothing, and isolate it in a safe area to allow the liquid to evaporate.

### 28.4 Air Monitoring

In areas where H<sub>2</sub>S may be present monitors shall be used. Monitors shall be bump tested at a minimum as required by manufacturer, if monitor fails a bump test a full calibration is required. Monitors shall be calibrated according to manufacturer's recommendations.

Personal or area monitors that alarm when the permissible exposure limit (PEL) exceeds the preset level of 20 ppm for General Industry or 10 ppm for the Construction Industry shall be used.

Employees shall immediately put on supplied air respiratory equipment (SCBA) and/or evacuate the area upon sounding of H<sub>2</sub>S alarms. Notify or contact necessary personnel and do not return to work area until clearance is given for re-entry.

### 28.5 Protection Against Exposure

Before entering areas where H<sub>2</sub>S may be present:

- Air shall be tested for the presence and concentration of H<sub>2</sub>S by a qualified person using air monitoring equipment, such as H<sub>2</sub>S detector tubes or a multi-gas meter that detects the gas.
- Testing should also determine if fire / explosion precautions are necessary.
- If the gas is present, the space / area must be ventilated continually to remove the gas.
- If the gas cannot be removed, the person entering the space / area shall use appropriate respiratory protection and any other necessary personal protective equipment, rescue, and communication equipment.

### 28.6 Training

Employees shall be trained prior to working in H<sub>2</sub>S environments with a minimum of three to four hours of instructor led classroom training. Training programs shall adhere to the ANSI/ASSE Z390.1-2017 Accepted Practices for H<sub>2</sub>S Training Programs. Employees are



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required to refresh training annually. Training must also include site specific emergency action plans.

Employees who have the potential to be exposed to H<sub>2</sub>S above the occupational exposure limit (OEL) or the permissible exposure limit (PEL) must be trained in:

- The operation and maintenance of the portable and personal gas detection equipment they are expected to use
- How to bump test the portable and personal gas detection equipment they are expected to use
- How to accurately calibrate the portable and personal gas detection equipment they are expected to use
- The required elements of OSHA's Respiratory Protection standard, 29 CFR 1910.134, to include medical evaluations, fit testing, and selected respirator training

### 28.7 Contingency Plan

Contingency plan provisions shall be developed and communicated.

### 28.8 Respirators

For concentrations exceeding 10ppm, supplied air respirators of a self-contained breathing apparatus shall be used.

### 28.9 Confined Spaces

A written confined space program shall be developed per 29 CFR 1910.146 and employees shall be trained under 1910.146(g).



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**29. INCIDENT INVESTIGATION**

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**29.1 Purpose**

The purpose of this section is to define the company incident investigation procedures.

**29.2 Incident Investigations**

When notification of a work-related incident is received, qualified personnel shall be appointed to complete an investigation of the incident. Qualified personnel shall be knowledgeable in investigation techniques, processes involved, and other relevant specialties. The investigation should take place as soon as possible after the incident occurs. While all incidents, regardless of size and impact, including fatalities, injuries, illness, and near misses should be investigated, the extent of such investigation shall reflect the seriousness of the incident. First aid incidents shall be investigated but minimal resources may be required.

Prior to an incident occurring, assignments shall be made establishing responsibility for how and when management is to be notified; who will conduct investigations and what training they should have received; who will receive investigation recommendations; and who is responsible for implementing corrective actions.

Before investigating, all emergency response needs shall be completed, and the incident site shall be safe and secure for entry and investigation.

At a minimum, the incident investigation program shall address:

- The nature of the incident.
- Human or other contributing factors leading to the incident.
- Recommended changes identified as a result of the investigation.





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### 29.3 Reporting

Fatalities shall be reported to OSHA within 8 hours of their discovery. Inpatient hospitalizations, amputations, and loses of an eye shall be reported to OSHA within 24 hours. Incidents shall also be reported to the host client / site operator as soon as possible, or in a timely manner (within 24 hours of incident).

### 29.4 Training

Members of the incident investigation team shall be qualified / competent individuals. Training shall be provided on investigation techniques used during an incident investigation. Personnel shall be trained in their roles and responsibilities for incident response and incident investigation techniques.

### 29.5 Evidence Collection

Initial identification of evidence may include:

- A listing of people, equipment, and materials involved.
- A recording of environmental factors such as weather, illumination, temperature, noise, ventilation.
- Physical factors such as fatigue, age, and medical conditions.

Incident information can be collected through interviews, document reviews and other means including equipment manuals, industry guidance documents, Company policies and records, maintenance schedules, records and logs, training records, audit and follow-up reports enforcement policies and records, and previous corrective action recommendations.

Witness interviews and statements shall be collected. Evidence shall be preserved using cones, tapes, and/or guards, secured, and collected through notes, photographs, witness statements, flagging, and impoundment of documents and equipment.

### 29.6 Corrective Action

Corrective action programs shall be established based on the findings of the incident investigation. The investigation shall be expedited, and findings and recommendations resolved in a timely manner. Corrective action programs shall analyze incidents for root causes and shall, at a minimum:

- Retain incident investigation findings for future hazard analysis or 2 years; whichever is greater.
- Determine and document responses to findings to ensure corrective action plans are completed.
- Implement a system to distribute incident investigation findings to appropriate personnel and/or similar facilities throughout the organization.



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**29.7 Incident Investigation Report**

Incident investigations shall be documented. Participants shall prepare a written report including the description of the incident, any evidence collected during the investigation, an explanation of the causes of the incident, and corrective actions.

The written incident investigation report shall include any immediate corrective actions that were taken as well as any long-term actions that are required to prevent the recurrence of the incident.

Incident facts may include:

- The injured employee's name
- Injury description
- Whether they are temporary or permanent
- The date and location of the incident

Document the investigation such as date of the investigation and who is investigating. Investigators may also document the scene by video recording, photographing, and sketching.

**29.8 Lesson Learned**

Lessons learned shall be reviewed and communicated. Changes to processes shall be placed into effect to prevent reoccurrence or similar events. Corrective actions shall be supported by senior management.



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**30. JOURNEY MANAGEMENT PROGRAM**

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**30.1 Purpose**

The purpose of this section is to describe the significant aspects of the journey management process and provide the essential elements of a Journey Management Plan for planning and undertaking road transport journeys in compliance with Health, Safety, and Environmental (HSE) requirements, with the goal of arriving safely.

**30.2 Journey Management Program**

Journey Management is a process for planning and executing necessary land transport journeys in compliance with HSE requirements.

When making a road journey, whether it is for business or pleasure, chances of arriving safely are greatly increased by careful planning. Fail to plan adequately and chances of being involved in an incident will increase.

**30.3 Plan Review**

The Journey Management Plan shall be reviewed with road travelers before they perform any driving on company business. A copy of the plan shall be readily available at the workplace. Road travelers shall carry a copy of the plan.



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**30.4 Journey Planning**

30.4.1 Seatbelts

All occupants shall wear seatbelts when the vehicle is in operation.

30.4.2 Necessary Driving

Road journeys shall only be taken when necessary. Completing multiple tasks in single trips will reduce the amount of driving for improved safety and efficiency. If the trip is being taken to meet with someone, determine if the meeting can be done over the phone instead. Safer methods of travel (air, train, etc.) shall be considered where practicable.

30.4.3 Day vs Night Driving

Driving shall be done during daylight hours rather than after dark whenever possible. Reduce speed when driving at night. Be aware of the potential for wildlife to be on the road, especially when driving at dusk or dawn.

30.4.4 Weather Conditions

Before leaving on a trip, employees shall ensure that weather conditions are safe for driving and the vehicle being used is adequate for the weather conditions. Ensure emergency supplies are in the vehicle and the driver has a cell phone in case of emergency. In particularly harsh conditions, employees shall consider canceling or rescheduling the trip.

30.4.5 Driving Directions

Before taking a trip to an unfamiliar location, employees shall ensure they have printed driving directions available. Do not plan to read directions from a smartphone while driving. A GPS device may be used, but printed directions should be kept as a back-up. Allow extra time to account for delays.

30.4.6 Travel Plan Notification

Employees shall notify their supervisor or another individual who is not traveling with them of their travel plans. This includes where they are going, when they should arrive, and when they plan to return. If diversion from the planned route is necessary, notify the supervisor or other individual of the change.

30.4.7 Communication

Drivers shall always carry a cell phone and charger, especially when traveling in rural areas. Consider subscribing to an in-vehicle communication / remote diagnostic service (e.g., On-Star) if the vehicle is equipped with one.



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### 30.4.8 Fatigue Management

Fatigue is one of the most obvious consequences of poor journey planning and is a major contributing factor in road traffic incidents. A good Journey Management Plan shall consider all the factors that will minimize your chances of feeling sleepy while driving.

When driving long distances, sufficient breaks shall be taken to prevent fatigue. Plan when and where to take breaks. When driving alone and having trouble staying awake, pull off the road to a safe area and get out of the vehicle for fresh air or take a power nap. If driving late at night, consider getting a hotel room and starting fresh the next day. If two licensed drivers are in the vehicle, take turns driving. Get plenty of rest before beginning the journey.

### 30.4.9 Emergency Preparedness

Roadside emergency kits shall be kept in all vehicles used for highway travel. These kits shall include equipment to assist in a roadside emergency such as water, booster cables, first aid supplies, warning triangles, flashlights, etc. If there is a potential for snow and ice, carry sandbags and a shovel.



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**31. LADDER SAFETY PROGRAM**

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**31.1 Purpose**

The purpose of this section is to establish guidelines for the safe use of ladders to minimize hazards and ensure employee safety.

**31.2 Ladder Safety Program**

Ladders are a very handy tool, both at work and around the home. Ladders are such simple tools that many people forget the dangers involved when using a ladder.

**31.3 Ladder Specifications**

Ladders shall meet the following OSHA / ANSI specifications:

- Ladder rungs, cleats, and steps shall be parallel, level, and uniformly spaced, when the ladder is in position for use.
- Rungs, cleats, and steps of portable ladders (except as provided below) and fixed ladders (including individual rung/step ladders) shall be spaced not less than 10 inches apart, nor more than 14 inches apart, as measured between center lines of the rungs, cleats, and steps.
- Rungs, cleats, and steps of step stools shall be not less than 8 inches apart, nor more than 12 inches apart, as measured between center lines of the rungs, cleats, and steps.
- Rungs, cleats, and steps of the base section of extension trestle ladders shall not be less than 8 inches nor more than 18 inches apart, as measured between center lines of the rungs, cleats, and steps. The rung spacing on the extension section of the extension trestle



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ladder shall be not less than 6 inches nor more than 12 inches, as measured between center lines of the rungs, cleats, and steps.

- The minimum clear distance between the sides of individual rung / step ladders and the minimum clear distance between the side rails of other fixed ladders shall be 16 inches. The minimum clear distance between side rails for all portable ladders shall be 11 1/2 inches.
- The rungs of individual rung / step ladders shall be shaped such that employees' feet cannot slide off the end of the rungs. The rungs and steps of portable metal ladders shall be corrugated, knurled, dimpled, coated with skid-resistant material, or otherwise treated to minimize slipping.

### 31.4 Load Limits

Ladders are built to hold a limited amount of weight. Ladders shall not be loaded beyond the maximum intended load for which they were built, nor beyond their manufacturer's rated capacity.

Ladder shall be capable of supporting the following loads without failure:

- Each self-supporting portable ladder: At least four times the maximum intended load, except that each extra-heavy-duty type 1A metal or plastic ladder shall sustain at least 3.3 times the maximum intended load. The ability of a ladder to sustain the loads indicated shall be determined by applying or transmitting the requisite load to the ladder in a downward vertical direction. Ladders built and tested in conformance with the applicable provisions of Appendix 1 of this subpart will be deemed to meet this requirement.
- Each portable ladder that is not self-supporting: At least four times the maximum intended load, except that each extra-heavy-duty type 1A metal or plastic ladders shall sustain at least 3.3 times the maximum intended load. The ability of a ladder to sustain the loads indicated shall be determined by applying or transmitting the requisite load to the ladder in a downward vertical direction when the ladder is placed at an angle of 75 1/2 degrees from the horizontal. Ladders built and tested in conformance with the applicable provisions of Appendix 1 will be deemed to meet this requirement.
- Each fixed ladder: At least two loads of 250 pounds each, concentrated between any two consecutive attachments (the number and position of additional concentrated loads of 250 pounds each, determined from anticipated usage of the ladder, shall also be included), plus anticipated loads caused by ice buildup, winds, rigging, and impact loads resulting from the use of ladder safety devices. Each step or rung shall be capable of supporting a single concentrated load of at least 250 pounds applied in the middle of the step or rung. Ladders built in conformance with the applicable provisions of Appendix 1 will be deemed to meet this requirement.



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### 31.5 Ladder Usage

Ladders shall be used only for the purpose for which they were designed. Never use a ladder in a horizontal position or as scaffolding. Do not place ladders on top of boxes, barrels, crates, etc.

### 31.6 Inspection

Ladders shall be inspected by a competent person for defects that can be seen and after any event that could make them unsafe to use. Ladders shall be inspected before initial use in each work shift and more frequently, as necessary, to identify any visible defects that could cause employee injury.

Portable and fixed ladders that are unsafe to use shall be immediately marked to show they are unsafe to use or be tagged with "Do Not Use" or similar language. They shall be taken out of service until they are repaired or replaced.

Examples of problems that make a ladder unsafe to use include:

- Broken or missing rungs, cleats, or steps.
- Broken or split rails, corroded components.
- Other faulty or defective components.

### 31.7 Safe Work Practices

When portable ladders are used to reach a surface above the employee, the ladder side rails shall extend at least 3 feet above the surface the employees will be stepping onto. A ladder that cannot be extended shall be secured to a rigid support that will not cause it to slip or move and a grasping device, such as a grabrail, shall be provided to assist employees in mounting and dismounting the ladder.

A ladder that does not support itself shall be placed at an angle that is safe. This angle is defined by OSHA as being about one-quarter of the working length of the ladder, which is usually known as a 4:1 ratio. This means the ladder shall be 1 foot from the wall for every 4 feet it reaches up.

Employees shall face the ladder when climbing up or down, using at least one hand to grasp the ladder. Employees shall not carry any object or load that could cause the employee to lose balance and fall while climbing up or down the ladder.

Ladders shall only be used on stable and level surfaces unless they are secured or stabilized to prevent accidental displacement.





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**32. LEAD AWARENESS**

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**32.1 Purpose**

The purpose of this section is to protect employees against potential exposure to Lead in accordance with regulation on Lead standards. The procedure defines the requirements to manage potential exposure of employees to Lead where it may be encountered.

**32.2 Lead Awareness Program**

Lead enters the body primarily through inhalation and ingestion. Today, adults are mainly exposed to lead by breathing in lead-containing dust and fumes at work or from hobbies that involve lead.

Lead passes through the lungs into the blood where it can harm many of the body's organ systems. While inorganic lead does not readily enter the body through the skin, it can enter the body through accidental ingestion (eating, drinking, and smoking) via contaminated hands, clothing, and surfaces.

**32.3 Training**

Lead awareness training shall be provided for employees whose work activities may contact lead containing materials but do not disturb the material during their work activities. Lead awareness training is required at time of hire, during orientation, or before assignment to areas containing lead. Refresher training shall be given annually. Lead awareness training shall be documented including dates of training, employee name, and trainer name.

**32.4 Lead Containing Material**

Lead containing materials may be found in lead paints, leaded solders, pipes, batteries, circuit boards, cathode ray tubes, leaded glass, and demolition / salvage materials.

Employees shall abide by any signs / labels / assessment reports indicating the presence of lead containing materials. Appropriate work practices shall be followed to ensure the lead containing materials are not disturbed.



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Employees' hands and faces shall be washed if lead containing materials are contacted.

### 32.5 Exposure Health Effects

Common symptoms of acute lead poisoning are:

- Loss of appetite
- Nausea
- Vomiting
- Stomach cramps
- Constipation
- Difficulty in sleeping
- Fatigue
- Moodiness
- Headache
- Joint or muscle aches
- Anemia

Long term (chronic) overexposure to lead may result in severe damage to the blood-forming, nervous, urinary, and reproductive systems.



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**33. LOCKOUT TAGOUT PROGRAM**

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**33.1 Purpose**

This section outlines safeguards to prevent the unexpected energization or startup of machinery and equipment or release of hazardous energy or material that could cause injury to personnel.

**33.2 Lockout / Tagout (LOTO) Program**

Energy sources including electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other sources in machines and equipment can be hazardous to employees. During the servicing and maintenance of machines and equipment, the unexpected startup or release of stored energy can result in serious injury, including electrocution, burns, being crushed, lacerations, amputations, fracture limbs, or death.

**33.3 Requirements**

LOTO devices shall indicate the identity of the employee applying the device(s) and shall be durable, standardized, substantial, and identifiable.

LOTO shall be performed only by the authorized employees who are performing the servicing or maintenance.



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### **33.4 Training**

Training shall be provided to ensure that the purpose and function of the energy control program are understood by employees and that the knowledge and skills required for the safe application, usage, and removal of the energy controls are acquired by employees.

Accomplishment of employee training shall be certified and kept up to date. The certification shall contain each employee's name and dates of training.

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. Additional retraining shall also be conducted whenever a periodic inspection reveals, or whenever the Company has reason to believe that there are deviations from or inadequacies in the employee's knowledge or use of the energy control procedures.

Employee training must be accomplished and kept up to date. The certification shall contain each employee's name and dates of training.

### **33.5 Inspection**

A periodic inspection of the energy control procedure shall be conducted at least annually to ensure the procedure is being followed. The periodic inspection shall be performed by an authorized employee other than the ones(s) utilizing the energy control procedure being inspected. The periodic inspection shall be conducted to correct any deviations or inadequacies identified.

Where lockout is used for energy control, the periodic inspection shall include a review, between the inspector and each authorized employee, of that employee's responsibilities under the energy control procedure being inspected.

Where tagout is used for energy control, the periodic inspection shall include a review, between the inspector and each authorized and affected employee, of that employee's responsibilities under the energy control procedure.

Performance of periodic inspections shall have certification. The certification shall identify the machine or equipment on which the energy control procedure was being utilized, the date of the inspection, the employees included in the inspection, and the person performing the inspection.

### **33.6 Shutdown Procedures**

Before an authorized or affected employee turns off a machine or equipment, the authorized employee shall have knowledge of the type and magnitude of the energy, the hazards of the energy to be controlled, and the methods or means to control the energy.

The machine or equipment shall be turned off or shutdown using the procedures established for the machine or equipment. An orderly shutdown shall be utilized to avoid any additional or increased hazard(s) to employees as a result of the equipment stoppage.



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### **33.7 Isolation**

All energy isolating devices that are needed to control the energy to the machine or equipment shall be physically located and operated in such a manner as to isolate the machine or equipment from the energy source(s).

### **33.8 Application**

LOTO devices shall be affixed to each energy isolating device by authorized employees.

Lockout devices, where used, shall be affixed in a manner that will hold the energy isolating devices in a safe or off position.

Tagout devices, where used, shall be affixed in such a manner as will clearly indicate that the operation or movement of energy isolating devices from the safe or off position.

Where tagout devices are used with energy isolating devices designed with the capability of being locked, the tag attachment shall be fastened at the same point at which the lock would have been attached.

Where a tag cannot be affixed directly to the energy isolating device, the tag shall be located as close as safely as possible to the device in a position that will be immediately obvious to anyone attempting to operate the device.

### **33.9 Stored Energy**

Following the application of LOTO devices to energy isolating devices, all potentially hazardous stored or residual energy shall be relieved, disconnected, restrained, or otherwise rendered safe. If there is a possibility of re-accumulation of stored energy, verification of isolation shall be continued until the servicing or maintenance is completed or until the possibility of such accumulation no longer exists.

### **33.10 Verification**

Prior to starting work on machines or equipment that have been locked or tagged out, the authorized employee shall verify that isolation and de-energization of the machine or equipment have been accomplished.

### **33.11 Removal without Authorized Employee**

The device may be removed under the direction of the Company, provided that specific procedures and training for such removal have been developed, documented, and incorporated into the energy control program. First, verify the authorized employee is not at the facility, make reasonable efforts to contact the authorized employee to inform them of removal, and ensure that the authorized employee has this knowledge before they resume work at the facility.



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### 33.12 Notification

Affected employees shall be notified by the Company or authorized employee of the application and removal of LOTO devices. Notification shall be given before the controls are applied and after they are removed from the machine or equipment.

### 33.13 Safety Testing

The following sequence of actions shall be followed to safety test machines when the LOTO devices must be temporarily removed:

- 1) Clear away tools,
- 2) Remove employees,
- 3) Remove the LOTO device,
- 4) Energize and proceed with testing,
- 5) De-energize and reapply control measures.

### 33.14 Group LOTO

Primary responsibility is vested in an authorized employee. The authorized employee ascertains the exposure status of group members.

Each employee shall affix a personal LOTO device to the group LOTO device before engaging in the servicing and maintenance operation. The supervisor in charge of the group LOTO shall not remove the group LOTO device until each employee in the group has removed the personal device. When more than one crew, craft, department, etc. is involved, overall job associated LOTO control shall be assigned.

### 33.15 Shift or Personnel Changes

Specific procedures shall be utilized during shift or personnel changes to ensure the continuity of LOTO protection including provision for the orderly transfer of LOTO device protection between off going and oncoming employees to minimize exposure to hazards from the unexpected energization or startup of the machine or equipment or the release of stored energy.

### 33.16 Outside Personnel / Contractors

Outside personnel / contractors shall be advised that the Company has and enforces the use of LOTO procedures. They shall be informed of the use of locks and tags and notified about the prohibition of attempts to restart or re-energize machines or equipment that are locked out or tagged out.

The company shall obtain information from the outside personnel / contractor about their LOTO procedures and advise affected employees of this information.



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The outside personnel / contractor shall be required to sign a certification form. If outside personnel / contractor has previously signed a certification that is on file, additional signed certification is not necessary.



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**34. MACHINE GUARDING**

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**34.1 Purpose**

The purpose of this section is to provide information on safe work by using machine guarding.

**34.2 Machine Guarding**

Safeguards are essential for protecting employees from preventable injuries caused by moving machine parts. Any machine part, function, or process that may cause injury must be safeguarded.

Machine guards are barriers that prevent access to the danger area of a machine.

Moving machine parts can cause injuries, such as crushed fingers or hands, amputations, burns, or blindness.

Employees who operate and maintain machinery experience approximately 18,000 amputations, lacerations, crushing injuries, and abrasions, and more than 800 deaths per year.

**34.3 Injuries**

Amputations are one of the most severe and crippling types of injuries in the occupational workplace, and often result in permanent disability.

Amputations are widespread and involve a variety of activities and equipment.

Amputations often occur when the following equipment is unguarded or inadequately safeguarded:

- Mechanical power presses
- Power press brakes
- Roll-forming and roll-bending machines





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- Band saws
- Drill presses
- Milling machines
- Shears, grinders, and slitters
- Table and portable saws

**34.4 Safeguards**

Employees must be protected from amputation hazards through adequate guarding and employee training on how to do the job safely.

The best way to prevent amputations caused by stationary or portable machinery is with machine safeguarding.

Safeguards should be secure and strong, and employees should not be able to bypass, remove, or tamper with them.

Safeguards should not obstruct the operator's view or prevent others from working.

Safeguards must prevent hands, arms, and any other part of an employee's body from contacting dangerous moving parts.

Machine guards protect employees from:

- The point of operation
- In-running nip points
- Rotating parts
- Flying chips and sparks

**34.5 Types of Machine Guards**

Types of machine guards include:

- Fixed
- Interlocked
- Adjustable
- Self-adjusting

Fixed guarding is a permanent part of the machine. They may be constructed of sheet metal, screen, wire cloth, bars, or plastic. Fixed guards provide a barrier and allow for stock feeding but do not allow the operator to reach the danger area.

Interlocked guards stop the machine before an employee can reach their hand into the danger area. When an interlocked machine guard is opened or removed, the:

- Tripping mechanism and/or power automatically shuts off or disengages.
- Moving parts of the machine are stopped.



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- Machine cannot cycle or be started until the guard is back in place.

Adjustable guards are useful because they allow flexibility in accommodating different sizes of stock. They provide a barrier that may be adjusted to work with a variety of production operations.

Self-adjusting guards open and close to admit stock. They provide a barrier that moves according to the size of the stock entering the danger area.

### 34.6 Training

Machine operators should receive specific and detailed training in safeguarding against mechanical hazards.

Training should explain:

- All hazards in the work area, including machine-specific hazards.
- Safe work practices and machine operating procedures.
- The purpose and proper use of machine safeguards.
- All procedures for responding to safeguarding problems.

### 34.7 Personal Protective Equipment (PPE)

When engineering controls cannot fully protect employees, machine operators must wear personal protective equipment (PPE).

Appropriate PPE may include hard hats, eye protection, hearing protection, protective coveralls, special sleeves and gloves, and protective footwear.

Sometimes PPE can create a hazard, like a protective glove becoming caught between rotating parts or loose clothing becoming entangled in rotating spindles or other kinds of moving equipment.

### 34.8 Safe Practices

Employees should not wear loose-fitting clothing or jewelry or other items that could become entangled in machinery.

Long hair should be worn under a cap or otherwise contained to prevent entanglement in moving machinery.

Other safe work practices when working around machinery include:

- Remove slip, trip, and fall hazards from the areas around machines.
- Use drip pans when oiling equipment and remove waste stock as it is generated.
- Make the work area large enough for machine operation and maintenance.



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- Place machines away from high traffic areas to reduce employee distraction.



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**35. MANUAL LIFTING PROGRAM**

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**35.1 Purpose**

The purpose of this section is to provide specific requirements and safety principles for manual lifting.

**35.2 Manual Lifting Program**

Anyone may be involved in manually lifting objects while at work or at home. Whether lifting is an everyday job or an occasional task, lifting improperly can cause serious injury regardless of the weight of the object or the physical condition of the person lifting the object.

Always follow proper lifting procedures to reduce the risk of injury. Being physically ready to do the job can further reduce the risk of injury

**35.3 Hazard Assessment**

Before manual lifting is performed, a hazard assessment shall be completed. The assessment must consider size, bulk, and weight of the object(s), if mechanical lifting equipment is required, if two-man lift is required, whether vision is obscured while carrying, the walking surface and path where the object is to be carried, awkward posture, high-frequency and long duration lifting, inadequate handholds, and environmental factors.

**35.4 Training**

Training shall include general principles of ergonomics, recognition of hazards and injuries, procedures for reporting hazardous conditions, and methods and procedures for early reporting of injuries. Additionally, job specific training shall be given on safe lifting and work practices, hazards, and controls.



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### 35.5 Injury Investigation

Musculoskeletal injuries caused by improper lifting shall be investigated and documented. Incorporation of investigation findings into work procedures shall be accomplished to prevent future injuries.

### 35.6 Controls

Manual lifting equipment shall be used instead of manual lifting where possible. Supervisors shall enforce the use of lifting equipment.

Where use of lifting equipment is impractical or not possible, two-man lifts shall be used.

Engineering controls such as worktable height, ergonomic layout of the workplace, and use of lifts, jacks, and other machinery shall be used to lessen the physical burden of lifting.

Manual lifting equipment such as dollies, hand trucks, lift-assist devices, jacks, carts, and hoists shall be provided for employees.

When moving materials manually, employees shall attach handles or holders to loads. In addition, employees shall wear appropriate personal protective equipment (PPE) and use proper lifting techniques.

### 35.7 Evaluation

Supervision shall periodically evaluate work areas and employees' work techniques to assess the potential for and prevention of injuries. New operations shall be evaluated to engineer out hazards before work processes are implemented.



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**36. NOISE AWARENESS, EXPOSURE, AND HEARING CONSERVATION PROGRAM**

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**36.1 Purpose**

The purpose of this section is to provide requirements to minimize employee hearing loss caused by excessive occupational exposure to noise.

**36.2 Noise Awareness, Exposure, and Hearing Conservation Program**

Occupational hearing loss is a cumulative result of repeated or continued absorption of sound energy by the ear; employee protection is based on reduction of the noise level at the ear or limiting the employee’s exposure time.

A continuing effective hearing conservation program shall be administered when employees are exposed to sound levels greater than 85 decibels on an 8-hour time-weighted average (TWA) basis.

Whenever practical, noise levels identified as exceeding 85 decibels shall be reduced by means of engineering or administrative controls, including isolation, enclosure, and application of noise-reduction materials.

**36.3 Training**

A training program shall be provided for all employees who are exposed to noise at or above an 8-hour TWA of 85 decibels. The training shall be provided initially and repeated annually for each employee.

Training shall include:

- The effects of noise on hearing,
- The purpose of hearing protection,
- The advantages and disadvantages and attenuation of various types of protection,



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- Instruments on selection, fitting, use, and care of protection, and
- Techniques for selection, use, and the purpose of audiometric testing along with an explanation of the test procedures.

Training shall be updated to stay current with any changes in processes.

### **36.4 Hearing Protection**

Hearing protection shall be available to and worn by all employees exposed to an 8-hour TWA of 85 decibels or greater at no cost to the employee. Hearing protection shall be replaced, as necessary.

Hearing protection shall be evaluated for the specific noise environments in which the protection will be used.

Employees shall be given the opportunity to select their hearing protection from a variety of suitable hearing protectors provided by the Company.

Hearing protection shall be worn by any employee that has been provided hearing protection. Employees shall wear hearing protection in signed areas while at a host facility.

Unless a physician determines that the standard threshold shift is not work related or aggravated by occupational noise exposure, employees already using hearing protection shall be refitted and retrained in the use of hearing protection and provided with hearing protection offering greater attenuation if necessary. The employee shall be referred for a clinical audiological evaluation or an otological examination, as appropriate, if additional testing is necessary or if it is suspected that a medical pathology of the ear is caused or aggravated by the wearing of hearing protectors.

The company is responsible for ensuring proper initial fitting of hearing protection and for supervising the correct use of all hearing protection.

### **36.5 Monitoring**

Noise measuring shall be done to see if employees are being exposed to noise that is 85 decibels or louder on an 8-hour TWA. This measuring can be either sampling performed when needed or monitoring performed all the time.

Monitoring shall be repeated whenever a change in production, process, equipment, or controls increases noise exposures to the extent that additional employees may be exposed at or above the action level or the attenuation provided by hearing protectors being used by employees may be rendered inadequate.

### **36.6 Audiometric Testing**

Employees who are exposed to noise that is 85 decibels or louder on an 8-hour TWA shall have hearing tests (also called audiograms or audiometric testing) available to them at no cost to the



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employees. These tests help by showing any hearing loss that might be happening and shall be done every year after the baseline test.

A baseline, or initial, hearing test shall be done within 6 months if an employee has been exposed to noise that is 85 decibels or louder on an 8-hour TWA. Testing to establish a baseline audiogram shall be preceded by at least 14 hours without exposure to workplace noise. Hearing protection may be used to meet the requirement. Employees shall be notified of the need to avoid high levels of noise.

If a mobile testing van for hearing tests is used, the baseline can be established within one year.

At least annually after obtaining the baseline audiogram, a new audiogram shall be obtained for each employee exposed at or above an 8-hour TWA of 85 decibels. Each employee's annual audiogram shall be compared to that employee's baseline audiogram to determine if the audiogram is valid and if a standard threshold shift has occurred. If a comparison of the annual audiogram to the baseline audiogram indicates a standard threshold shift, the employee shall be informed of this fact in writing within 21 days of the determination.

### **36.7 Signage**

Equipment or areas with noise levels equal to or exceeding 85 decibels shall be identified with labels or signs, which are posted on the individual pieces of equipment (whether owned or leased) or at the entrance to noisy areas. The sign or label shall state either "Hearing Protection Is Required While the Equipment Is Operating" or "Hearing Protection Is Required While Working in the Area" or similar wording, as appropriate.

Equipment typically requiring labels includes but is not limited to compressors, forklifts, generators, and pneumatic tools.

Labels shall be placed where the operator can readily see the warning, such as next to power switches.

### **36.8 Recordkeeping**

Accurate records of all employee exposure and audiometric measurements shall be maintained as required by the regulation. The record shall include:

- Name and job classification of the employee.
- Date of the audiogram.
- The examiner's name.
- Date of the last acoustic or exhaustive calibration of the audiometer.
- Employee's most recent noise exposure assessment.





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Noise exposure measurement records shall be retained for 2 years. Audiometric test records shall be retained for the duration of the affected employee's employment.

All records shall be provided upon request to employees, former employees, representatives designated by the individual employee, and the Assistant Secretary.

If the company ceases to do business, all records shall be transferred to the successor company for retention.



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**37. NON-DOT DRUG AND ALCOHOL PROGRAM**

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**37.1 Purpose**

The purpose of this section is to eliminate drug and alcohol abuse among employees and to prevent the threat to the health and safety of employees and to the security of the company's equipment and facilities caused by drug and alcohol abuse.

**37.2 Non-DOT Drug and Alcohol Policy**

The use, sale, purchase, transfer, possession, or presence in one's system of any controlled substance (except medically prescribed drugs) by any employees while on the Company's premises, engaged in Company business, operating Company equipment, or while under the authority of the Company is strictly prohibited.

The unauthorized use, sale, purchase, transfer, possession, or presence in one's system of alcohol or any other intoxicating agent by any employee while on the Company's premises, engaged in Company business, operating Company equipment, or while under the authority of the Company is strictly prohibited.

**37.3 Pre-Employment Testing**

Applicants being considered for hire shall pass a drug test before beginning work or receiving an offer of employment. Refusal to submit to testing will result in disqualification of further employment consideration.

**37.4 Random Testing**



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Drug and alcohol testing shall be administered at random times for all employees. Employees shall be chosen through an unbiased selection process. No qualifiers or exclusions can be made to limit the applicability of the random testing requirement.

### **37.5 Reasonable Suspicion**

If a company official or competent person has determined that there is reasonable cause or suspicion that an individual is performing work under the influence, then that individual shall be required to submit to a drug and alcohol test.

### **37.6 Incidents**

Employees involved in a work-related incident where drug or alcohol use can be reasonably suspected as contributing to the incident shall be tested. This does not require testing for all work-related incidents.

### **37.7 Site Removal**

Any employee that receives unacceptable drug and alcohol test results shall not be allowed to work on a client / host site or facility.

### **37.8 Return to Duty and Follow Up**

Employees retained by the Company after a positive test result or a test refusal shall be subject to return-to-duty drug and alcohol testing. No employee shall be permitted to perform any safety-sensitive function until they have received a verified negative drug and alcohol test result. Thereafter, such employees shall be subject to certain follow-up drug and alcohol testing as established by a Substance Abuse Professional (SAP).

### **37.9 Drug Test Refusal**

Drug testing refusal includes:

- Failure to appear at a collection site for any test (except a pre-employment test) within a reasonable time, as determined by the Company. This includes the failure of the employee to appear for a test when called by the Company's third-party administrator.
- Failure to remain at the collection site until the testing process is complete, provided that a person who leaves the testing site before the testing process commences for a pre-employment test is not deemed to have refused to test.
- Failure to provide a specimen.
- Failure to permit a monitored or observed collection if the Company ordered or if the collector required the collection to be monitored or observed or if instructions during monitoring are not followed



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- Failure to provide a sufficient amount of urine specimen, provided the Medical Review Officer (MRO) finds there was no medical reason for the employee to provide insufficient amount of urine.
- Failure or declination to take an additional drug test that the Company or collector has directed.
- Failure to undergo a medical examination or evaluation the MRO or the Company has directed.
- Failure to cooperate with any part of the specimen collection process.
- Possessing or wearing a prosthetic or other device that could be used to interfere with the collection process if the employee is found to have or wear a prosthetic or other device designed to carry clean urine or a urine substitute.
- Admitting to the collector to having adulterated or substituted the specimen.
- Adulterated or substituted a urine specimen.
- Admitting to the MRO to having adulterated or substituted the specimen.

### 37.10 Alcohol Testing Refusal

Alcohol testing refusal includes:

- Failure to appear at an alcohol test site for any test within a reasonable time, as determined by the Company. This includes the failure of the employee to appear for a test when called by the Company's third-party administrator.
- Failure to remain at the alcohol test site until the testing process is complete.
- Failure to provide an adequate amount of saliva or breath.
- Failure to provide a sufficient breath specimen, provided the physician finds that there was no medical reason for the employee to provide an insufficient amount of breath.
- Failure to undergo a medical examination or evaluation as the Company has directed as part of the insufficient breath procedures.
- Failure to cooperate with any part of the testing process.



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**38. PANDEMIC PREPAREDNESS PROGRAM**

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**38.1 Purpose**

The purpose of this section is to ensure employees are informed, prepared, and protected from potential pandemic exposure and to ensure early precaution and preventive actions are in place to stop the possible threat in the workplace.

**38.2 Pandemic Preparedness Program**

Disease can spread quickly from sick employees to others who are nearby in the workplace. Employees are often in close contact, sharing the same space, supplies, and equipment for long periods of time. As a result, there is an increased risk that employees will spread illnesses to each other.

**38.3 Roles and Responsibilities**

In the event of a disease outbreak, ownership of this program shall be assigned to the Safety Coordinator who shall be responsible for dealing with disease issues and their impact at the workplace. Should it be necessary, health care providers shall be contracted in advance to develop and implement protocols for response to ill employees.

**38.4 Prevention of Spread**

Any employee, in the event of possible exposure shall self-quarantine and seek medical screening and testing as appropriate and notify their manager or supervisor.

Hand washing and use of hand sanitizers shall be encouraged by company supervision. Hand washing facilities, hand sanitizers, tissues, no touch trash cans, hand soap, and disposable towels shall be provided.



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Consideration shall be given to social distancing including increasing space between employee work areas and decreasing the possibility of contact by limiting large or close contact gatherings.

Areas that are likely to have frequent hand contact such as doorknobs, faucets, handrails, etc. shall be cleaned periodically and when visibly soiled. Employee work surfaces shall also be cleaned frequently with normal cleaning products.

Upon return to work, the incident management team shall devise a plan to prevent further spread and authorization for employees to return.

Employees are encouraged to obtain appropriate immunizations, when available, to help avoid disease.

### 38.5 Training

Employees shall be trained on:

- Health issues of the pertinent disease to include prevention of illness.
- Initial disease symptoms.
- Preventing the spread of the disease.
- When it is appropriate to return to work after illness.

Disease containment plans and expectations shall be shared with employees. Communicating information with non-English speaking employees or those with disabilities shall be considered.

### 38.6 Business Continuity

Business continuity plans shall be prepared so that if significant absenteeism or changes in business practices are required business operations can be effectively maintained. Telecommuting or other work-at-home strategies should be developed. The plan shall include a chain of communications, contact information for employees, and a process for tracking business and employee status.

If the company's ability to perform regular services is impacted, key contacts such as customers and suppliers shall be notified of this impact and when operations resume.

### 38.7 Testing and Lessons Learned

The plan and emergency communication strategies shall be periodically tested to ensure it is effective and workable.

Following a pandemic event, the program owner shall identify lessons learned and take action to implement any corrective actions.



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**39. PERSONAL PROTECTIVE EQUIPMENT (PPE)**

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**39.1 Purpose**

The purpose of this section is to establish minimum requirements to protect employees through the use of personal protective equipment (PPE).

**39.2 Personal Protective Equipment (PPE) Program**

Personal Protective Equipment (PPE) is equipment worn to minimize exposure to serious workplace injuries and illnesses. These injuries and illnesses may result from contact with chemical, radiological, physical, electrical, mechanical, or other workplace hazards.

PPE shall be provided at no cost to the employee with the exception of non-specialty safety-toe footwear and non-specialty prescription safety eyewear if permitted to be worn off the jobsite.

**39.3 Training**

Training shall be provided to each employee who is required to use PPE. Proper training includes at least:

- When PPE is necessary.
- What PPE is necessary.
- How to properly don, doff, adjust, and wear PPE.
- The limitations of PPE.
- The proper care, maintenance, useful life, and disposal of PPE.

Training shall be documented including the employee name, the dates of training, and the training content.



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Retraining is required when the workplace changes, making the earlier training obsolete, the type of PPE changes, or when the employee demonstrates lack of use, improper use, or insufficient skill or understanding.

### 39.4 PPE Maintenance

PPE shall be provided, used, and maintained in a sanitary and reliable condition wherever it is necessary by reason of hazards.

### 39.5 Hazard Assessment

A workplace hazard assessment shall be conducted to determine if hazards are present or are likely to be present, which necessitate the use of PPE. Verification shall be conducted to ensure the required workplace hazard assessment has been performed through a written certification that identifies the workplace evaluated, the person certifying that the evaluation has been performed, the date(s) of the hazard assessment, and identification of assessment documents.

If hazards are present, or likely to be present, the Company shall select and have each affected employee use the type of PPE necessary, communicate selection decisions, and select PPE that properly fits each affected employee.

Consideration shall be given to comfort and fit. PPE that fits poorly will not afford the necessary protection. Continued wearing of the PPE is more likely if it fits the wearer comfortably. PPE is generally available in a variety of sizes. Care should be taken to ensure that the right size is selected.

### 39.6 Defective PPE

Defective or damaged PPE shall not be used. PPE that is in disrepair shall be discarded or removed from service until repaired.

### 39.7 Employee-Owned PPE

If employee-owned PPE is allowed, the Company shall be responsible for the assurances of its adequacy, maintenance, and sanitation.

### 39.8 Types of Protection

The correct level of PPE determined by the assessment, shall be worn at all times. PPE may include:

- Coveralls
- Flame Resistant Clothing (FRC)
- Hand Protection (gloves-chemical resistant, anti-impact, leather, rubber)
- Foot Protection (steel toe boots, shoes, toe covers)





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- Head Protection
- Eye and Face Protection (safety glasses, shields)
- Hearing Protection
- Respiratory Protection
- Fall Prevention and Protection



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**40. RISK ASSESSMENT PROGRAM**

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**40.1 Purpose**

The purpose of this section is to identify hazards and evaluate any associated risks to health, safety, and the environment arising from work activities, enabling informed decisions to be made to eliminate or minimize any risk of harm to those affected.

**40.2 Risk Assessment**

Risk assessments do not have to be complicated; the level of detail contained in them should be relevant to the level of the risks involved with the activity. Risk assessments may lead to clarification of procedures, identifying efficiencies in existing processes, and identification of training and supervision required for the activity.

**40.3 Hazard Identification**

Risk assessments shall be conducted prior to the beginning of work to formally identify and assess hazards. This can be accomplished through Job Safety Analysis (JSA), daily hazard assessments, pre-job hazard assessments, or hazard workplace inspection.

A JSA shall be developed for all routine tasks. Formal workplace inspections for safety hazards of all operations, equipment, work areas, and facilities shall be performed on a regular basis. Risk assessments and JSAs shall be updated whenever changes occur to processes, equipment, work areas, and facilities.



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Information shall be collected, organized, and reviewed with employees to determine what types of hazards may be present and which employees may be exposed or potentially exposed. Information available in the workplace may include:

- Equipment and machinery operating manuals.
- Safety Data Sheets (SDS).
- Inspection reports.
- Records of previous injuries and illnesses.
- Incident investigation reports.
- Results of JSAs.

Employees shall be actively involved in the risk identification process. If subcontractors are performing work at the location, they should be included. Identified hazards and risks shall be reviewed with all affected employees.

### 40.3.1 Health Hazards

Identification of health hazards shall include chemical hazards, physical hazards, biological hazards, and ergonomic risk factors by conducting qualitative exposure assessments and reviewing employee medical records.

### 40.4 Training

All employees shall be trained on the hazard identification in the workplace, the risk assessment process, and how to report and control hazards.

### 40.5 Incident Investigations

Workplace incidents including injuries, illnesses, near misses, and stop work interventions shall be investigated to identify the root cause in order to prevent future occurrences.

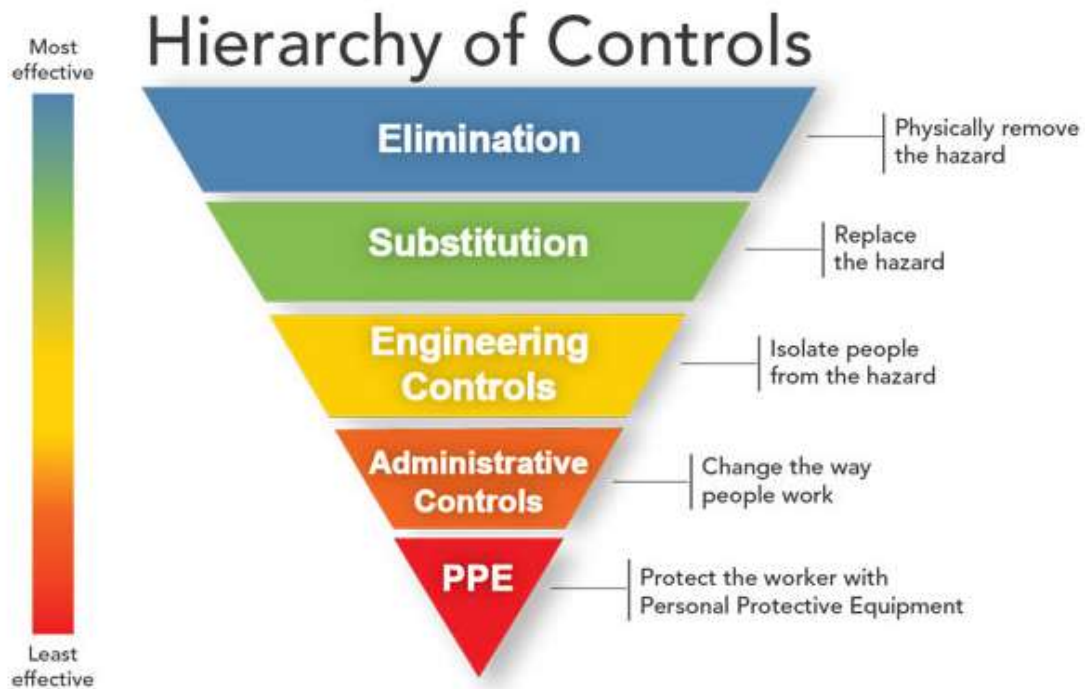
### 40.6 Hazard Classification and Rank

A formal system for classifying and ranking hazards according to risk shall be followed. Risk shall be determined by analyzing the probability of the hazard causing harm, the frequency the hazard is encountered, and the potential consequences of impact with the hazard. A risk matrix shall be followed to assist with the risk assessment.

Evaluation of each hazard by considering the severity of potential outcomes, the likelihood that an event or exposure will occur, and the number of employees who might be exposed shall be conducted to prioritize the hazards so that those presenting the greatest risk are addressed first.

**40.7 Hierarchy of Controls**

The hierarchy of controls shall be used to mitigate hazards. When a hazard is identified, first attempt to eliminate the hazard. If elimination is not practicable, use engineering controls. If engineering controls are not practicable, implement administrative controls. If the hazard cannot be adequately controlled using engineering and/or administrative controls, employees shall use Personal Protective Equipment (PPE). A combination of engineering controls, administrative controls, and PPE is usually best.



**40.8 Risk Evaluation and Estimation**

**40.9 Likelihood and Severity**

Once hazards associated with activities have been identified, the likelihood of a hazardous event occurrence and the severity of that occurrence shall be estimated using the levels below:

<b>Likelihood:</b>
1. <b>Improbable</b> (unlikely to occur)
2. <b>Remote</b> (unlikely, though possible)
3. <b>Occasional</b> (likely to occur occasionally during standard operations)



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- |  |
|--|
| 4. <b>Probable</b> (not surprised, will occur in given time) |
| 5. <b>Frequent</b> (likely to occur, to be expected)         |

- |   |
|---|
| <b>Severity:</b>  |
| 1. <b>Negligible</b> (the hazard will not result in serious injury or illness, or has a remote possibility of damage)                   |
| 2. <b>Marginal</b> (the hazard could cause illness, injury, or equipment or environmental damage, but its effects would not be serious) |
| 3. <b>Moderate</b> (the hazard can result in serious injury or illness, property, or equipment or environmental damage)                 |
| 4. <b>Critical</b> (the hazard can result in serious injury, illness, property, or equipment or environmental damage)                   |
| 5. <b>Catastrophic</b> (the hazard is capable of causing death or illness)  |

**40.10 Risk Matrix**

Multiply the hazards probability and severity to calculate the level of risk. Use the following risk matrix to determine the level of risk. Reduce risk as described in the table below.

	<b>Catastrophic: 5</b>	<b>Critical: 4</b>	<b>Moderate: 3</b>	<b>Marginal: 2</b>	<b>Negligible: 1</b>
<b>Frequent: 5</b>	High – 25	High – 20	Serious – 15	Serious – 10	Medium – 5
<b>Probable: 4</b>	High – 20	Serious – 16	Serious – 12	Medium – 8	Medium – 4
<b>Occasional: 3</b>	Serious – 15	Serious – 12	Medium – 9	Medium – 6	Low – 3
<b>Remote: 2</b>	Serious – 10	Medium – 8	Medium – 6	Medium – 4	Low – 2
<b>Improbable: 1</b>	Medium – 5	Medium – 4	Low – 3	Low – 2	Low - 1



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<b>Low</b>	The risk is tolerable, assuming all control measures are fully identified and effectively implemented.
<b>Medium</b>	The risk is tolerable assuming the risk levels have been reduced to as low as reasonably practicable (ALARP).
<b>Serious</b>	The risk is likely tolerable. Reduce to ALARP. May be acceptable where consequences are potentially high, but the likelihood has been reduced significantly.
<b>High</b>	The risk is intolerable. The risk must be reduced to medium or low before work begins.



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**41. SAFE HOUSEKEEPING**

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 41.7 Equipment Maintenance ..... 145  
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**41.1 Purpose**

The purpose of this section is to provide information on recommended safe housekeeping practices.

**41.2 Safe Housekeeping**

Housekeeping is an important part of maintaining a safe and healthful workplace.

Good housekeeping can reduce workplace injuries and illnesses and promote positive behavior, habits, and attitudes.

Tidy working conditions should be maintained at all times in both work and office areas.

Properly managing housekeeping allows for effective operation and use of tools, equipment, storage facilities, supplies, and waste material.

Using safe housekeeping practices can lead to lower incident rates and increased efficiency.

**41.3 Working Surfaces**

Occupational Safety and Health Administration (OSHA) regulations require that each working surface be cleared of debris, including solid and liquid waste, at the end of each work shift or job.

It is recommended that good housekeeping be maintained throughout the course of the job and workday.

Each workplace must be assessed before work begins to identify potential hazards and determine ways to remove those hazards.

Walkways and working surfaces should be inspected often for hazards before they become a danger to employees.



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Slips or falls can happen when employees have to walk or work on oily or slippery facility floors or other potentially hazardous working surfaces. To help prevent slips and falls:

- Keep floors free from grease and oil.
- Keep walkways free from ice, snow, and standing water.

Any spilled materials such as oil, grease, and water must be immediately cleaned from walkways and working surfaces to remove slip hazards.

### 41.4 Flammable and Hazardous Materials

Fires can be caused by oily rags left in an area where hot work is performed or the accumulation of combustible dust. Reduce fire risks by:

- Properly disposing of flammable waste
- Keeping surfaces free from accumulated dust, including elevated locations

Poor storage and improper labeling of hazardous chemicals can lead to employees being exposed to hazardous substances.

Make sure all materials and chemicals are stored and labeled properly.

### 41.5 Lighting

Inadequate lighting can increase the chances of employee injuries, such as lacerations and amputations, because employees cannot see those hazards effectively.

Reduce the chances of these kinds of injuries by making sure areas have enough lighting for the work being done.

### 41.6 Walkways

Cords in walkways and work areas can cause employees to trip or fall over them. To prevent employees from tripping or falling:

- Properly arrange hoses and cords
- Keep machinery and equipment neat and orderly
- Use cord and wire covers

Another part of safe housekeeping is properly identifying passageways and making sure there is unobstructed access to all entrances, exits, and fire extinguishers.

This allows employees to safely respond and evacuate during a fire or other emergency.





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**41.7 Equipment Maintenance**

Poorly maintained equipment or energy sources, such as broken, cracked, or damaged insulation and wiring connections, can cause electric shock. Protect employees from electric shock by:

- Inspecting electrical wiring for damage
- Removing and replacing any damaged parts or components

**41.8 Written Policy**

Jobsites should have written policies for housekeeping procedures. These policies should detail how frequently housekeeping tasks should be performed.

Written housekeeping policies should also contain specific instructions for how each housekeeping task should be performed, such as:

- Listing which chemicals to use for cleaning up spills
- Explaining how to properly dispose of flammable waste

All employees should be trained on safe housekeeping practices and all employees should participate in good housekeeping because safety is part of everyone's job.



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**42. SHORT SERVICE EMPLOYEE (SSE) PROGRAM**

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**42.1 Purpose**

The purpose of this section is to prevent work related injury and illness to new hires.

**42.2 Short Service Employee Program**

All new employees face a period of transition into new surroundings and work processes. It is during this period that new employees are exposed to the greatest risk of personal injury.

An SSE is a permanent employee, temporary employee, contractor, subcontractor, or supplier that has less than 6 months experience in their craft or assigned job.

An SSE shall not work alone. A work crew of less than five employees shall not have more than one SSE.

Prior to starting work, the contractor shall notify the host facility (project coordinator, contractor contact, and/or on-site supervisor) if SSEs are present on work crews.

Contractors, subcontractors, and suppliers shall manage their SSEs in accordance with the requirements of the SSE program.

**42.3 Training**

Management shall ensure that each SSE is assigned a mentor and properly trained per federal, state, industry, Company, and client requirements before starting work. The mentor selection for each SSE shall be based upon the area and craft in which the employee will perform work.

Training may include, but not be limited to:

- General safety rules.
- General and job specific requirements for personal protective equipment (PPE).
- Injury reporting and follow-up procedures.
- Regulatory and job skill training specific to job tasks.



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- Safety meetings and pre-job job safety analysis (JSA) processes.
- Site specific procedures and hazard information.

**42.4 Identification**

SSEs shall be visibly identified using a different colored hardhat or other method of identification. The method used to identify SSEs should be communicated to the client.

**42.5 Monitoring**

SSEs shall be monitored for compliance with health, safety, and environmental (HSE) policies and procedures. Once the SSE has demonstrated competency and compliance with HSE policies and procedures, the hi-visibility identifier may be removed.

**42.6 Mentor**

A mentoring system shall be implemented to provide guidance to SSEs and assist with their development. A mentor may only be assigned to one crew that includes SSEs and shall remain on site with them.

The mentor shall provide on the job safety training and guidance and ensure that the SSE has demonstrated the necessary work ethic and safety knowledge necessary for their work.

The mentor shall communicate with management on the progress of the SSEs placed under their guidance.



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**43. SPILL PREVENTION AND RESPONSE PROGRAM**

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 43.5 Spill Response Materials ..... 149  
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 43.7 Reporting ..... 149

**43.1 Purpose**

The purpose of this section is to outline the procedures and training necessary to ensure adequate and efficient control, containment, and management of materials and equipment that may be accidentally released during operations.

**43.2 Spill Prevention and Response**

The ultimate goal of a spill prevention and response plan is to prevent or reduce pollutants from operations and to promote good housekeeping practices.

**43.3 Best Management Practices**

Chemical substances shall be stored in proper containers to minimize the potential for a spill. Whenever possible, chemicals shall be kept in closed containers and stored so they are not exposed to stormwater.

Other best management practices include but are not limited to:

- Material compatibility of the chemicals with the containers and the container with its environment.
- Keeping substances in closed containers and away from potential receiving waters.
- Good housekeeping including neat and orderly storage of chemicals and prompt removal of spillage.

**43.4 Inventory**

A material inventory identifying hazardous substances and toxic chemicals shall be part of the risk identification and assessment plan needed to determine the potential for spills.



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**43.5 Spill Response Materials**

A proper spill kit shall contain the appropriate supplies for materials that may be spilled. Supplies shall be easily accessible when required, and considerations shall be made for both the type and quantity of materials.

**43.6 Training**

Employees shall be instructed on the proper response procedures for spilled materials. The training shall include materials and processes available for use, proper waste disposal, safety hazards, practices for preventing spills, communication procedures, and procedures for responding properly and rapidly to toxic and hazardous materials incidents.

**43.7 Reporting**

Environmental spills shall be reported to environmental authorities as required. Reporting procedures must be based on type and quantity of materials spilled.

Reporting procedures shall include notification of a discharge to appropriate personnel to initiate immediate action, formal written reports for review and evaluation by management, and notification as required by law to governmental and environmental agencies.



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**44. STOP WORK AUTHORITY**

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**44.1 Purpose**

The purpose of this section is to provide employees with the responsibility and obligation to stop work when a perceived unsafe condition or behavior may result in damage to the environment, equipment, or people.

**44.2 Stop Work Authority (SWA) Program**

No activity is so urgent or important that health, safety, or the environment (HSE) may be compromised. Stop work actions take precedence over all other priorities and procedures.

All employees have the authority and obligation to stop any task or operation where concerns or questions regarding the control of HSE risk exist.

Work shall not resume until all stop work concerns have been addressed and the designated individual with restart authority determines that the imminent risk does not exist or no longer exists.

Any form of retribution or intimidation directed at any individual or company for exercising their right to issue a stop work authority in good faith shall not be tolerated, even if deemed unnecessary.

**44.3 Training**

Employees shall receive Stop Work Authority training before initial assignment. The training shall be documented including the employee name, the dates of training, and subject.

**44.4 Roles and Responsibilities**

Senior management shall be responsible for creating a culture that promotes SWA and supports use of SWA without potential for retribution.



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Supervisors and managers shall be responsible for honoring SWA requests and resolution before resuming operations.

The HSE department is responsible for providing training, support, and documentation and monitoring compliance of the SWA program.

Employees and contractors are responsible for initiating stop work and supporting stop work initiated by others.

### **44.5 SWA Steps**

SWA is a several step process.

- 1) Stop - When an employee perceives conditions or behaviors that pose imminent danger, a stop work intervention shall be initiated immediately.
- 2) Notify - Affected personnel and supervision shall be notified of the stop work action.
- 3) Investigate - Affected personnel shall discuss the situation and come to an agreement on the stop work action.
- 4) Correct - Corrective actions shall be made according to the corrections agreed upon in the investigation.
- 5) Resume - All affected employees shall be notified of what corrective actions were implemented and work shall recommence by personnel with restart authority.
- 6) Follow Up - A root cause analysis to the stop work shall be completed to identify any potential opportunities for improvement.

### **44.6 Corrective Action**

All stop work interventions shall be documented for lessons learned and corrective measures to be put into place.

### **44.7 Follow-Up**

Stop work reports shall be reviewed by a supervisor or manager in order to measure participation, determine quality of interventions and follow-up, trend common issues, identify opportunities for improvement, and facilitate sharing of learnings.

It is the desired outcome of any stop work intervention that the identified safety concern(s) has been addressed to the satisfaction of all involved persons prior to the resumption of work. Most issues can be adequately resolved in a timely manner at the job site. Occasionally additional investigation and corrective actions may be required to identify and address root causes.



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**45. SUBCONTRACTOR MANAGEMENT PROGRAM**

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**45.1 Purpose**

The purpose of this section is to provide health, safety, and environmental (HSE) requirements to subcontractors and their employees.

**45.2 Subcontractor Management**

The subcontractor management plan shall contain key components to consider ensuring that existing issues, vulnerabilities, and risks are adequately addressed.

**45.3 Training**

Written health, safety and environmental programs, and training documentation applicable to the type of work the subcontractor will perform shall be obtained and reviewed to assist with the hiring of safe subcontractors.

**45.4 Statistics**

Past performance is a key indicator of future performance. Incident statistics shall be obtained and analyzed to ensure that only safe subcontractors are hired. A copy of the subcontractor's OSHA logs and Experience Modifier Report (EMR) shall be obtained to compare their performance to others in the industry. Those who outperform the industry shall be selected whenever practicable.

**45.5 Orientation**

Subcontractors shall be provided a site orientation that addresses health, safety, security, and environmental concerns.

**45.6 Assessments**

Subcontractors shall be included in pre-job meetings and job safety analysis (JSA) / hazard assessments, and/or tailgate meetings.





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Post-job performance reviews shall be conducted for subcontractors. A combination of factors may be considered including, but not limited to, housekeeping, cost, safety, and quality of work.



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**46. WELDING, CUTTING, AND HOT WORK PROGRAM**

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**46.1 Purpose**

The purpose of this section is to establish hot work requirements to ensure all hazards are evaluated and the appropriate safety measures and controls are administered prior to and during any process that involved welding and cutting or any other hot work.

**46.2 Welding, Cutting, and Hot Work Program**

Welding, cutting, and hot work such as brazing or grinding present a significant opportunity for fire and injury. All precautions of this program shall be applied prior to commencing any hot work.

**46.3 Responsibilities**

**Management** shall recognize its responsibility for the safe usage of cutting and welding equipment on the property and:

- Based on fire potentials of plant facilities, establish areas for cutting and welding, and establish procedures for cutting and welding, in other areas.
- Designate an individual responsible for authorizing cutting and welding operations in areas not specifically designed for such processes.



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- Insist that cutters or welders and their supervisors are suitably trained in the safe operation of their equipment and the safe use of the process.
- Advise all contractors about flammable materials or hazardous conditions of which they may not be aware.

### The **Supervisor**:

- Shall be responsible for the safe handling of the cutting or welding equipment and the safe use of the cutting or welding process.
- Shall determine the combustible materials and hazardous areas present or likely to be present in the work location.
- Shall protect combustibles from ignition by the following:
  - Have the work moved to a location free from dangerous combustibles.
  - If the work cannot be moved, have the combustibles moved to a safe distance from the work or have the combustibles properly shielded against ignition.
  - See that cutting and welding are so scheduled that operations that might expose combustibles to ignition are not started during cutting or welding.
- Shall secure authorization for the cutting or welding operations from the designated management representative.
- Shall determine that the cutter or welder secures approval that conditions are safe before going ahead.
- Shall determine that fire protection and extinguishing equipment are properly located at the site.
- Where fire watches are required, see that they are available at the site.

### **46.4 Training**

Cutters, welders, and their supervisors shall be suitably trained and qualified in the safe operation of hot work equipment and safe use of the process.

Assigned fire watchers shall be trained in the use of fire extinguishing equipment and familiar with the facilities for sounding an alarm in the event of a fire.

Affected company employees assigned to maintain or operate welding or cutting equipment must be familiar with 29 CFR 1910.254 and 29 CFR 1910.252(a-c).

### **46.5 Special Precautions**

If the object to be welded or cut cannot readily be moved, all movable fire hazards in the vicinity shall be taken to a safe place.



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If the object to be welded or cut cannot be moved and if all the fire hazards cannot be removed, then guards shall be used to confine the heat, sparks, and slag, and to protect the immovable fire hazards.

Where practicable, all combustibles shall be relocated at least 35 feet from the work site. Where relocation is impracticable, combustibles shall be protected with flameproof covers or otherwise shielded with metal or asbestos guards or curtains.

If the requirements for fire hazards and guarding cannot be followed, then welding and cutting shall not be performed.

Wherever there are floor openings or cracks in the flooring that cannot be closed, precautions shall be taken so that no readily combustible materials on the floor below will be exposed to sparks which might drop through the floor. The same precautions shall be observed regarding cracks or holes in walls, open doorways, and open or broken windows.

The frame or case of welding machines, except engine-driven machines, shall be grounded.

Before starting operations all connections to welding machines shall be checked to make certain they are properly made.

Ducts and conveyor systems that might carry sparks to distant combustibles shall be suitably protected or shut down.

Where cutting or welding is done near walls, partitions, ceiling, or roof of combustible construction, fire-resistant shields or guards shall be provided to prevent ignition.

If welding is to be done on a metal wall, partition, ceiling or roof, precautions shall be taken to prevent ignition of combustibles on the other side, due to conduction or radiation, preferably by relocating combustibles. Where combustibles are not relocated, a fire watch on the opposite side from the work shall be provided.

Welding shall not be attempted on a metal partition, wall, ceiling, or roof having a combustible covering nor on walls or partitions of combustible sandwich-type panel construction.

Cutting or welding on pipes or other metal in contact with combustible walls, partitions, ceilings, or roofs shall not be undertaken if the work is close enough to cause ignition by conduction.

### 46.6 Fire Watch

Fire watchers shall be required whenever welding or cutting is performed in the following situations:

- Locations where other than a minor fire might develop.
- Appreciable combustible material is closer than 35 feet to the point of operation.
- Appreciable combustibles are more than 35 feet away but are easily ignited by sparks.



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- Wall or floor openings within a 35-foot radius expose combustible material in adjacent areas including concealed spaces in walls or floors.
- Combustible materials are adjacent to the opposite side of metal partitions, walls, ceilings, or roofs and are likely to be ignited by conduction or radiation.

Fire watchers shall have fire extinguishers readily available and shall be trained in its use. They shall be familiar with facilities for sounding an alarm in the event of a fire. They shall watch for fires in all exposed areas, try to extinguish them only when obviously within the capacity of the equipment available, or otherwise sound the alarm. A fire watch shall be maintained at least half an hour after the welding or cutting operation was completed.

### 46.7 Hot Work Permit

Before cutting or welding is permitted, the area shall be inspected by the individual responsible for authorizing cutting and welding operations. Precautions shall be designated to be followed in granting authorization to proceed, preferably in the form of a written permit.

### 46.8 Prohibited Areas

Cutting or welding shall not be permitted in areas not authorized by management, in sprinkled buildings while such protection is impaired, in the presence of explosive atmospheres, areas near the storage of large quantities of exposed, readily ignitable materials.

### 46.9 Personal Protective Equipment (PPE)

Employees exposed to the hazards created by welding, cutting, or brazing operations shall be protected by personal protective equipment (PPE).

Goggles or other suitable eye protection shall be used during all gas welding or oxygen cutting operations. Spectacles without side shields, with suitable filter lenses are permitted for use during gas welding operations on light work, for torch brazing, or for inspection.

Helmets or hand shields shall be used during all arc welding or arc cutting operations.

### 46.10 Ventilation

Local exhaust or general ventilating systems shall be provided and arranged to keep the amount of toxic fumes, gases, or dusts below the maximum allowable concentration.

### 46.11 Confined Spaces

When hot work is to be performed in confined spaces, ventilation, securing cylinders, lifelines, electrode removal, gas cylinders shutoff, and warning signs shall be addressed.

When welding or cutting is being performed in any confined spaces the gas cylinders and welding machines shall be left on the outside. Before operations are started, heavy portable equipment mounted on wheels shall be securely blocked to prevent accidental movement.



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Where a welder must enter a confined space through a manhole or other small opening, means shall be provided for quick removal in case of emergency. When safety belts and lifelines are used for this purpose, they shall be so attached to the welder's body that the body cannot be jammed in a small exit opening. An attendant with a preplanned rescue procedure shall be stationed outside to observe the welder at all times and be capable of putting rescue operations into effect.

When arc welding is to be suspended for any substantial period of time, such as during lunch or overnight, all electrodes shall be removed from the holders and the holders carefully located so that accidental contact cannot occur, and the machine shall be disconnected from the power source.

In order to eliminate the possibility of gas escaping through leaks of improperly closed valves, when gas welding or cutting, the torch valves shall be closed and the fuel-gas and oxygen supply to the torch positively shut off at some point outside the confined area whenever the torch is not to be used for a substantial period of time, such as during lunch hour or overnight. Where practicable, the torch and hose shall also be removed from the confined space.

After welding operations are completed, the welder shall mark the hot metal or provide some other means of warning other employees.

### 46.12 Equipment

The operator shall report any equipment defect or safety hazard to the supervisor and the use of the equipment shall be discontinued until safety has been assured. Repairs shall be made only by qualified personnel.

First aid equipment shall be available at all times.

Only approved apparatus such as torches, regulators or pressure-reducing valves, acetylene generators, and manifolds shall be used.

Employees in charge of the oxygen or fuel-gas supply equipment, including generators, and oxygen or fuel-gas distribution piping systems shall be instructed and judged competent by the Company for this important work before being left in charge.

### 46.13 Identification

Compressed gas cylinders shall be legibly marked, for the purpose of identifying the gas content, with either the chemical or the trade name of the gas. Such marking shall be by means of stenciling, stamping, or labeling, and shall not be readily removable. Whenever practical, the marking shall be located on the shoulder of the cylinder.

### 46.14 Transportation and Storage

Cylinders shall be kept away from radiators and other sources of heat. Inside of buildings, cylinders shall be stored in a well-protected, well-ventilated, dry location, at least 20 feet from highly combustible materials.



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Cylinders shall be stored in assigned places away from elevators, stairs, or gangways. Assigned storage spaces shall be located where cylinders will not be knocked over or damaged by passing or falling objects, or subject to tampering by unauthorized persons.

Cylinders shall not be kept in unventilated enclosures such as lockers and cupboards.

Empty cylinders shall have their valves closed. Valve protection caps, where cylinder is designed to accept a cap, shall always be in place except when cylinders are in use or connected for use.



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**47. WORKING ALONE PROGRAM**

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 47.2 Working Alone Program..... 160  
 47.3 Training..... 160  
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     47.4.1 High Risk Areas ..... 160  
     47.4.2 Low Risk Areas ..... 161  
 47.5 Communication Plan..... 161

**47.1 Purpose**

The purpose of this section is to encourage awareness and promote safe work practices to minimize the risk of injury for employees who work alone.

**47.2 Working Alone Program**

Employees who work alone tend to be more vulnerable than those who have co-workers present. Even though emergency incidents are not that common, when they do occur, the consequences can be serious.

**47.3 Training**

Employee training shall include how to:

- Perform tasks safely
- Operate machines and equipment safely
- Use and maintain any required personal protective equipment (PPE)
- Identify and report hazards
- Follow the written person check procedures

**47.4 Hazard Assessment**

A hazard assessment shall be conducted to evaluate the risk of working alone. Hazards shall be addressed, and control measures identified to minimize the risk associated with working alone.

**47.4.1 High Risk Areas**

Employees shall not work alone in high-risk areas such as work involved with:





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- Live electrical
- Diving operations
- Extreme temperatures
- Acutely toxic chemicals
- Confined spaces
- Dangerous machinery
- Working at heights

47.4.2 Low Risk Areas

Examples of low-risk areas include:

- Maintenance, other than on active equipment
- Security, except in hazardous locations
- Janitorial or custodial positions, except when location is hazardous
- Transportation under ideal conditions
- Offices or while in transit on a business trip

**47.5 Communication Plan**

Employees shall carry a mobile phone or electronic monitoring device at all times while working alone. This means of communication shall be established between the lone employee and the designated check person.

A designated check person shall be established for check-in with the employee working alone.

Employees shall be monitored at regular intervals or the employee shall contact the designated check person at pre-determined intervals based on determinations made in the risk assessment.

A backup form of communication shall be established in the event that communication is unavailable.

Employee status at check-in shall be documented.

Emergency response procedures, including search procedures, shall be followed if the employee working alone cannot be contacted or fails to check in.



**48. WORKPLACE VIOLENCE**

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 48.3 Risk Factors..... 162  
 48.4 Sources ..... 163  
 48.5 Prevention ..... 163

**48.1 Purpose**

The purpose of this section is to provide information on preventing and reporting workplace violence or harassment.

**48.2 Workplace Violence**

Workplace violence is any act or threat of physical violence, harassment, intimidation, or other threatening disruptive behavior that happens at work.

Workplace violence can include:

- Threats
- Verbal abuse
- Physical assaults
- Homicide

Homicide is the fourth leading cause of work-related deaths in the US.

Nearly 2 million American workers report having been victims of workplace violence each year.

Each week, an average of 20 workers are murdered and 18,000 are assaulted while at work or on duty.

**48.3 Risk Factors**

A risk factor is a condition or circumstance that can increase the likelihood of violence in a particular setting.

It does not mean violence will definitely happen, only that there is a greater chance for it to happen.

Risk factors can include:

- Increased work demands



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- Personality conflicts
- Emotional disturbances
- Unfair disciplinary actions
- Drug or alcohol use on the job

Warning signs can also alert you to potential violence. Some warning signs to watch for include:

- Aggressive behavior
- Failure to handle criticism
- Holding a grudge
- Frequent bad moods

#### **48.4 Sources**

Workplace violence can come from different people, not just your coworkers.

The four main sources of workplace violence are classified by the relationship between the victim and the attacker.

The four sources are:

- Type I – Strangers
- Type II – Clients or customers
- Type III – Coworkers
- Type IV – Personal relationships, including family, friends, and other people outside of work

#### **48.5 Prevention**

To help prevent workplace violence:

- Maintain a safe and secure jobsite with security on the premises.
- Clearly communicate company security policies to employees.
- Create a zero-tolerance policy on workplace violence.
- Enforce the rules fairly and consistently according to the zero-tolerance policy.

A zero-tolerance policy means any form of violence or harassment will not be tolerated.

Do not hesitate to tell your supervisor about a potentially violent situation as soon as possible.

If there is a complaint or report, your supervisor should investigate the complaint and follow through with the appropriate disciplinary action.



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Employees should be proactive when it comes to potential violence at work.

All employees need to be on the lookout for signs of workplace violence and take action before there is an incident.

Tell your supervisor immediately if you:

- Are being threatened
- Are the victim of a violent act
- Witness a threat or violent act
- Find out about a threat or violent act



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**49. REFERENCES**

Number	Title
29 CFR 1910 Subpart D	Walking-Working Surfaces
29 CFR 1910 Subpart G	Occupational Health and Environmental Control-Occupational Noise Exposure
29 CFR 1910 Subpart H	Hazardous Materials
29 CFR 1910 Subpart I	Personal Protective Equipment
29 CFR 1910 Subpart J	General Environmental Controls
29 CFR 1910 Subpart K	Medical and First Aid
29 CFR 1910 Subpart M	Compressed Gas and Compressed Air Equipment-Air Receivers
29 CFR 1910 Subpart N	Materials Handling and Storage
29 CFR 1910 Subpart P	Hand and Portable Powered Tools and Equipment
29 CFR 1910 Subpart Q	Welding, Cutting, and Brazing
29 CFR 1910 Subpart S	Electrical
29 CFR 1910 Subpart Z	Toxic and Hazardous Substances
29 CFR 1915 Subpart E	Scaffolds, Ladders, and Other Working Surfaces
29 CFR 1926 Subpart C	General Safety and Health Provisions
29 CFR 1926 Subpart D	Occupational Health and Environmental Controls
29 CFR 1926 Subpart E	Personal Protective and Life Saving Equipment
29 CFR 1926 Subpart F	Fire Protection and Prevention
29 CFR 1926 Subpart G	Signs, Signals, and Barricades – Accident Prevention Signs and Tags
29 CFR 1926 Subpart I	Tools-Hand and Power
29 CFR 1926 Subpart J	Welding and Cutting - Gas Welding and Cutting
29 CFR 1926 Subpart K	Electrical
29 CFR 1926 Subpart M	Fall Protection
29 CFR 1926 Subpart O	Motor Vehicles, Mechanized Equipment, and Marine Operations - Motor Vehicles
29 CFR 1926 Subpart V	Electric Power Transmission and Distribution - Job Briefing
29 CFR 1926 Subpart X	Stairways and Ladders-Ladders
29 CFR 1926 Subpart Z	Toxic and Hazardous Substances
30 CFR 56.11016	Snow and Ice on Walkways and Travelways
N/A	Centers for Disease Control and Prevention
N/A	Compressed Gas Association (CGA)
NFPA 10	Portable Fire Extinguishers
NFPA 51B	Standard for Fire Prevention During Welding, Cutting, and Other Hot Work
NFPA 70E	Electrical Safety in the Workplace



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**50. FORMS**

<b>Number</b>	<b>Title</b>
CMS-FM-0007	Notice to Employees Form
CMS-FM-0008	Asbestos Exposure Control Checklist
CMS-FM-0013	Hepatitis B Vaccination Consent Form
CMS-FM-0014	Hepatitis B Vaccination Declination Form
CMS-FM-0015	Employee Report of Occupational Exposure
CMS-FM-0016	Bloodborne Pathogens Exposure Control Plan
CMS-FM-0021	Safety Violation Form
CMS-FM-0022	Vehicle Inspection Form
CMS-FM-0026	First Aid Kit Inspection Form
CMS-FM-0027	Forklift/Powered Industrial Truck Inspection Checklist
CMS-FM-0028	Inventory of Hazardous Chemicals Form
CMS-FM-0032	Journey Management Plan Form
CMS-FM-0029	Incident Reporting Form
CMS-FM-0030	Incident Investigation Report
CMS-FM-0033	Lockout Tagout Form
CMS-FM-0034	LOTO Certification of Training
CMS-FM-0035	LOTO Certification of Inspection
CMS-FM-0037	Incident Workplace Related Flowchart
CMS-FM-0038	Injury and Illness Classification Chart
CMS-FM-0040	Job Safety Analysis (JSA) Form
CMS-FM-0042	Injury / Illness Recording Flowchart
CMS-FM-0046	Pandemic Health Screening Tool for Employees
CMS-FM-0047	Personal Protective Equipment (PPE) Hazard Assessment Form
CMS-FM-0048	Hazard Identification Worksheet
CMS-FM-0049	Subcontractor Safety Pre-Qualification Form
CMS-FM-0050	Hot Work Permit
CMS-FM-0051	Working Alone Checklist



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**Appendix 1            Signs and Symptoms of COVID-19**

People with COVID-19 have had a wide range of symptoms reporting – ranging from mild symptoms to severe illness.

These symptoms may appear 2-14 days after exposure of the virus. People with these symptoms may have COVID-19:

- Fever
- Cough
- Shortness of breath or difficulty breathing
- Fatigue
- Muscle or body aches
- Headache
- New loss of taste or smell
- Sore throat
- Congestion or runny nose
- Nausea or vomiting
- Diarrhea

Look for emergency warning signs for COVID-19. If someone is showing any of these signs, seek emergency medical care immediately:

- Trouble breathing
- Persistent pain or pressure in the chest
- New confusion
- Inability to wake or stay awake
- Bluish lips or face



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**Appendix 2      Approach Distances for Qualified Employees**

TABLE S-5 - 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).





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**Work/Warm-up Schedule for a 4-Hour Shift**

Air Temperature--Sunny Sky		No Noticeable Wind		5 mph Wind		10 mph Wind		15 mph Wind		20 mph Wind	
°F (approximate)	°C (approximate)	Maximum Work Period	Number of Breaks	Maximum Work Period	Number of Breaks	Maximum Work Period	Number of Breaks	Maximum Work Period	Number of Breaks	Maximum Work Period	Number of Breaks
-15 to -26	-19 to -28	(Normal Breaks ) 1		(Normal Breaks ) 1		75 min	2	55 min	3	40 min	4
-20 to -29	-24 to -31	(Normal Breaks ) 1		75 min	2	55 min	3	40 min	4	30 min	5
-25 to -32	-29 to -34	75 min	2	55 min	3	40 min	4	30 min	5	Non-emergency work should cease	
-30 to -35	-34 to -37	55 min	3	40 min	4	30 min	5	Non-emergency work should cease			
-35 to -38	-39 to -39	40 min	4	30 min	5	Non-emergency work should cease		Non-emergency work should cease			
-40 to -40	-44 to -44	30 min	5	Non-emergency work should cease		Non-emergency work should cease		Non-emergency work should cease			
-45 & below	-45 & below	Non-emergency work should cease		Non-emergency work should cease		Non-emergency work should cease		Non-emergency work should cease		Non-emergency work should cease	

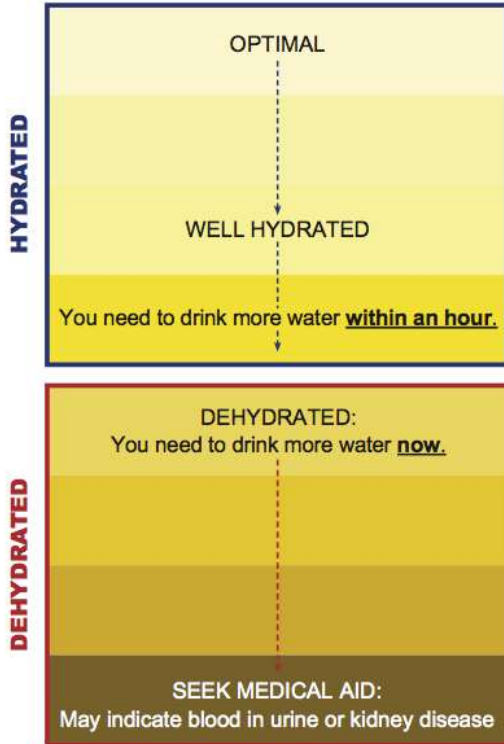
Schedule applies to any 4-hour work period with moderate to heavy work activity; with warm-up periods of ten (10) minutes in a warm location and with an extended break (e.g. lunch) at the end of the 4-hour work period in a warm location.

*Adapted from ACGIH 2012 TLVs*

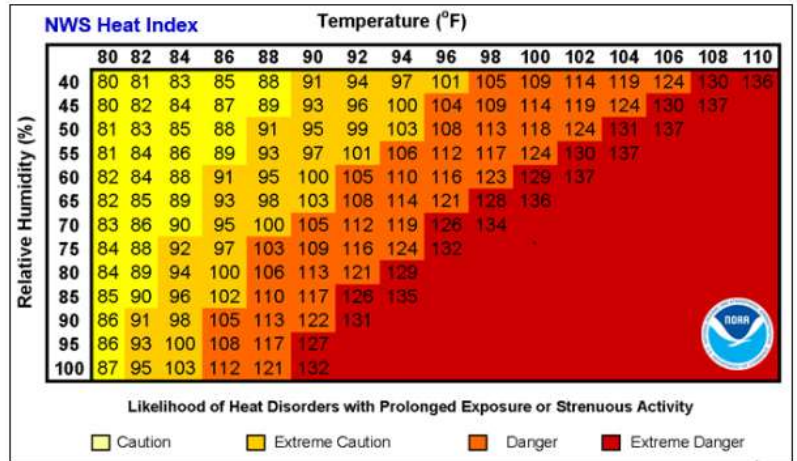
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**Appendix 4 Hydration Chart and Heat Index**

**Urine Color Chart\***







\*This color chart is not for clinical use.



Heat Category	WBGT Index, °F	Easy Work	Moderate Work	Hard Work
		Water Intake (Quart/Hour)	Water Intake (Quart/Hour)	Water Intake (Quart/Hour)
1	78° - 81.9°	½	¾	¾
2	82° - 84.9°	½	¾	1
3	85° - 87.9°	¾	¾	1
4	88° - 89.9°	¾	¾	1
5	> 90°	1	1	1





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**Appendix 5      Alternative Cutting Tools**

	<p><b>Utility Cutters:</b> Cutters feature an offset pivot design, a replaceable super-sharp stainless-steel blade, an ergonomic handle design with vinyl grips and a handle latch for protective storage.</p>
	<p><b>Strap and/or Box Cutter Knife:</b> A guarded fixed position blade cutter designed for cutting tape, stretch film, straps, etc.</p>
	<p><b>Diagonal Cutter:</b> Diagonal pliers, side cutter, wire cutters, diagonal cutting pliers, or dikes are wire-cutting pliers.</p>
	<p><b>Retractable Utility Knife:</b> Utility knife with an automatic retracting blade or automatic safety hood that snaps and locks as soon as contact is lost with the cutting surface.</p>

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**Appendix 6      Examples of Personal Protective Equipment**

	<p><b>Cutting Gloves:</b> Cut-resistant gloves provide cut, slash, and abrasion resistance. Use alone or with another glove as a liner. They are usually made of Kevlar mesh or may be any other material designed and designated for cut resistance.</p>
	<p><b>Cut Resistance Sleeve:</b> Sleeves provide cut protection for forearms. Gauntlet length gloves also provide extended coverage to the forearm, as the cut is extended up the arm. The material may be Kevlar, leather, or other material designed and designated for cut resistance.</p>
	<p><b>Apron:</b> An outer protective garment that covers primarily the front of the body. The material may be Kevlar, leather, or other material designed and designated for cut resistance.</p>
	<p><b>Chaps:</b> Sturdy coverings for the legs, usually of leather, consisting of leggings and a belt. They are buckled on over pants with the chaps integrated belt, but they have to seat and are not joined at the crotch. They are designed to provide protection for the legs. They are usually made of leather or Kevlar.</p>



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**Appendix 7            Suggested First Aid Kit Contents**

- 3 packages - Adhesive Bandages, 1" x 3" pad, 16 per package
- 1 package - Ammonia Inhalants, 1/3 cc, 10 per package
- 3 packages - Compress Bandage, 4" pad, 1 per package
- 3 packages - Compress Bandage, 2" pad, 4 per package
- 1 package - Burn Ointment Tubes, 0.11 oz., 6 per package
- 1 package - Wound Ointment Tubes, 1/2 oz., 2 per package
- 1 package - Gauze Bandage, 4" x 6 yards, 1 per package
- 2 packages - Gauze Compress, 24" x 2 yards, 1 per package
- 2 packages - Merthiolate, Swabs, 0.5 cc, 10 per package
- 1 package - Paper cups, 10 per package
- 1 package - Tourniquet & Forceps
- 2 packages - Triangular Bandage, Nonsterile, 40", 1 per package
- 1 package - Wire Splint, 33/4" x 30", 1 per package
- 2 pair - Sterile Gloves
- 1 Bottle - Eye Irrigating Solution



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### Appendix 8 Suggested First Aid Supplies

- Adhesive Tape Dispenser
  - Sterile H2O
  - Ziplock Freezer Bags (Ice Pack)
  - Burn Spray
  - Needleless Irrigation Syringe
  - SilverSorb Antimicrobial Dressing
  - Junior Band Aids
  - Furacin Soluble Dressing
  - 3/4" Band Aids
  - Caladryl
  
  - Band Aids
  - Ichthammol - N.F.
  - Band Aids
  - PVP Wipe Ups (Iodine)
  
  - Knuckle Coverlets
  - Insect Sting Wipe Ups
  - Fingertip Coverlets
  - Anbesol
  - 1" Dermicil Hypo-Allergenic Tape
  - Collyrium Eye Solution
  - 1/2" Adhesive Tape
  - Visine Eye Drops
  - 1" Adhesive Tape
  - Sterile Eye Patches
  - 2" Adhesive Tape
  - Ocusol Eye Solution
  - 2 x 2 Sterile Gauze Pads
  - Cotton Swabs (Q-Tips)
  - 3 x 3 Sterile Gauze Pads
  - Cotton Balls
  - 4 x 4 Sterile Gauze Pads
  - Alcohol Swabs
  - 2 x 2 Unsterile Gauze Pads
  - Antiseptic Spray/Towlettes
  - 3 x 3 Unsterile Gauze Pads
  - Eye Cups
  - 4 x 4 Unsterile Gauze Pads
  - Eye Spears/Swabs
  - Triangular Bandages w/ Pins
- Triple Antibiotic Ointment
  - Trauma Dressing
    - Finger Cots
    - 2" Rubber Elastic Bandages
    - Tongue Depressors
    - 3" Rubber Elastic Bandages
    - Flashlight or Penlight
    - 3" Kling
    - Cutter Snake Bite Kit
    - 4 1/2" Kerlix
    - Cold Blanket
    - 2" Kling
    - Safety Pins
    - 1" Improved Gauze
    - Dental Poultice
    - 4" Rubber Elastic Bandages
    - Oropharyngeal Airways
    - Tweezer
    - Nasopharyngeal Airways
    - Hemastat (Small)
    - CPR Mask w/ Replacement Valves
    - 5 1/2" Bandage Scissors
    - Ambu Bag w/ Oxygen Tubing
    - Ammonia Inhalants
    - Second Skin
    - Acetone Nail Polish Remover
    - Blankets-Disposable



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**Appendix 9      Guideline for Ladder Loading and Strength Requirements**

This appendix serves as a non-mandatory guideline to assist in complying with the ladder loading and strength requirements. A ladder designed and built in accordance with the applicable national consensus standards, as set forth below, will be considered to meet the OSHA requirements:

- **Manufactured portable wood ladders:**  
American National Standards Institute (ANSI) A14.1-1982 - American National Standard for Ladders-Portable Wood-Safety Requirements.
- **Manufactured portable metal ladders:**  
ANSI A14.2-1982 - American National Standard for Ladders - Portable Metal - Safety Requirements.
- **Manufactured fixed ladders:**  
ANSI A14.3-1984 - American National Standard for Ladders - Fixed - Safety Requirements.
- **Job-made ladders:**  
ANSI A14.4-1979 - Safety Requirements for Job-Made Ladders.
- **Plastic ladders:**  
ANSI A14.5-1982 - American National Standard for Ladders - Portable Reinforced Plastic - Safety Requirements



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**Appendix 10      H<sub>2</sub>S Information**

Hydrogen sulfide	CAS 7783-06-4
<b>H<sub>2</sub>S</b>	RTECS <a href="#">MX1225000</a> <a href="https://www.cdc.gov/niosh/topics/hydrogensulfide/">https://www.cdc.gov/niosh/topics/hydrogensulfide/</a>
<b>Synonyms &amp; Trade Names</b> <ul style="list-style-type: none"><li>Hydrosulfuric acid</li><li>Sewer gas</li><li>Sulfuretted hydrogen</li></ul>	DOT ID & Guide 1050 117 <a href="https://www.fmcsa.dot.gov/regulations/hazardous-materials">https://www.fmcsa.dot.gov/regulations/hazardous-materials</a>

<b>Physical Description</b> Colorless gas with a strong odor of rotten eggs. [Note: Sense of smell becomes rapidly fatigued and cannot be relied upon to warn of the continuous presence of H <sub>2</sub> S. Shipped as a liquefied compressed gas.]			
MW: 34.1	BP: -77°F	FRZ: -122°F	Sol: 0.4%
VP: 17.6 atm	IP: 10.46 eV	RGasD: 1.19	
Fl.P: NA (Gas)	UEL: 44.0%	LEL: 4.0%	
<b>Flammable Gas</b>			
<b>Incompatibilities &amp; Re-activities:</b> Strong oxidizers, strong nitric acid, metals			





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<b>Measurement Methods</b> NIOSH 6013 ( <a href="https://www.cdc.gov/niosh/docs/2003-154/pdfs/6013.pdf">https://www.cdc.gov/niosh/docs/2003-154/pdfs/6013.pdf</a> ) OSHA ID141 ( <a href="http://www.osha.gov/dts/sltc/methods/inorganic/id141/id141.html">http://www.osha.gov/dts/sltc/methods/inorganic/id141/id141.html</a> ) See: NMAM ( <a href="http://www.cdc.gov/niosh/nmam/">http://www.cdc.gov/niosh/nmam/</a> ) or OSHA Methods	
<b>Personal Protection &amp; Sanitation:</b> See <a href="#">protection</a>  <a href="https://www.cdc.gov/niosh/npg/">(https://www.cdc.gov/niosh/npg/)</a>	<b>First Aid:</b> See <a href="#">procedures</a>  <a href="https://www.cdc.gov/niosh/npg/">(https://www.cdc.gov/niosh/npg/)</a>
Skin: Frostbite Eyes: Frostbite Wash skin: No recommendation Remove: When wet (flammable) Change: No recommendation Provide: Frostbite wash	Eye: Frostbite Skin: Frostbite Breathing: Respiratory support
<b>Respirator Recommendations</b> NIOSH Up to 100 ppm: (APF = 25) Any powered, air-purifying respirator with cartridge(s) providing protection against the compound of concern (APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted canister providing protection against the compound of concern (APF = 10) Any supplied-air respirator* (APF = 50) Any self-contained breathing apparatus with a full facepiece Emergency or planned entry into unknown concentrations or IDLH conditions: (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode (APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus Escape: (APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted canister providing protection against the compound of concern/Any appropriate escape-type, self-contained breathing apparatus <a href="http://www.cdc.gov/niosh/npg/pgintrod.html#mustread">Important additional information about respirator selection (http://www.cdc.gov/niosh/npg/pgintrod.html#mustread)</a>	
<b>Exposure Routes:</b>  inhalation, skin and/or eye contact	
<b>Symptoms:</b>  H <sub>2</sub> S is both an irritant and a chemical asphyxiant with effects on both oxygen utilization and the central nervous system.  Irritation eyes, respiratory system; apnea, coma, convulsions; conjunctivitis, eye pain, lacrimation (discharge of tears), photophobia (abnormal visual intolerance to light), corneal vesiculation; dizziness, headache, lassitude (weakness, exhaustion), irritability, insomnia; gastrointestinal disturbance; liquid: frostbite	
<b>Target Organs:</b>  Eyes, respiratory system, central nervous system	