



# GSI Site-Specific Health and Safety Plan

Former City Texaco Station LUST Site #21-97-4123  
200 North Main Street, Toledo, Oregon

June 27, 2025

Prepared by:

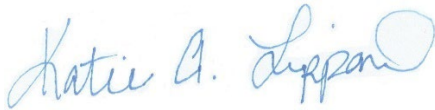


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## GSI Site-Specific Health and Safety Plan

Prepared for:

Oregon Department of Environmental Quality



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Figure 1. Site Vicinity Map

Figure 2. Site Plan

## Attachments

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Attachment 2	OSHA Fact Sheet: Lightning Safety When Working Outdoors
Attachment 3	OSHA Fact Sheet: Protecting Workers from the Effects of Heat
Attachment 4	Key Requirements: Oregon OSHA's Permanent Rules for Heat Illness Prevention
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Attachment 6	Safety Data Sheets
Attachment 7	Activity Hazard Analyses

## Abbreviations and Acronyms

°F	degrees Fahrenheit
AED	automated external defibrillator
AHA	activity hazard analysis
CFR	Code of Federal Regulations
COC	contaminant of concern
CPR	cardiopulmonary resuscitation
CRZ	Contamination Reduction Zone
EPA	U.S. Environmental Protection Agency
EZ	Exclusion Zone
FD	Field Director
FSP	Field Sampling Plan
GFCI	ground fault circuit interrupter
GSI	GSI Water Solutions, Inc.
HASP	Health and Safety Plan
HAZWOPER	Hazardous Waste Operations and Emergency Response
IDW	investigation-derived waste
LOTO	lockout/tag-out
LUST	leaking underground storage tank
mph	miles per hour
NRC	National Response Center
OSHA	U.S. Occupational Safety and Health Administration
PAH	polycyclic aromatic hydrocarbon
PM	Project Manager
PPE	personal protective equipment
Project Site	Former City Texaco Station LUST Site
SAIF	State Accident Insurance Fund Corporation
SDS	safety data sheets
SSO	Site Safety Officer

SZ	Support Zone
USCG	U.S. Coast Guard
VOC	volatile organic compound

# 1 Emergency Action Plan

## 1.1 Emergency Services and Contacts

**For emergencies, call 911. Direct Responders to:**

**Toledo City Hall Parking Lot - 200 North Main Street, Toledo, Oregon**

**For non-emergencies, notify your supervisor and then call WorkCare (888.449.7787) for assistance and instruction. WorkCare will instruct you on the level of care required, including first aid, medical treatment, appropriate facility for treatment, etc.**

Always use an ambulance to go to the closest hospital (Table 1-1) for life-threatening injuries.

**Table 1-1. Emergency Contacts**

Emergency Service or Contact	Name	Phone Number
Local Police	Toledo Police Department	911 (emergency) 541-336-5555(non-emergency)
Local Ambulance	Pacific West Ambulance	911 (emergency) 541-265-3175
Local Fire Department	Toledo Fire Department	911 (emergency) 541-336-3311(non-emergency)
Local Hospital	Samaritan Pacific Communities Hospital: 930 SW Abbey Street, Newport, OR 97365	911 (emergency) 541-265-2244 (non-emergency)
Health and Safety Coordinator	Ronan Igloria (GSI Water Solutions, Inc. [GSI])	Work: 971.200.8510 Cell: 503-901-6897
GSI Incident Intervention (WorkCare)	WorkCare	888-449-7787
Poison Control Center	---	1-800-222-1222
Oregon Emergency Response System (to report a hazardous spill to the state agency)	---	911 emergency 1-800-452-0311
National Response Center (NRC) (to report a hazardous spill)	---	1-800-424-8802
State Reporting Agency (Oregon Occupational Safety and Health [OSHA])	---	1-800-321-6742 (Oregon)
GSI Program Manager	Rick Ernst (GSI)	Cell: (503) 708-5945
Field Director (and On-Site Coordinator for emergencies)	Braedon Warner (GSI)	Cell: (208) 991-6713

Site Safety Officer

Riley Salzwedel-Kemp (GSI)

Cell: (541) 880-3939

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## 1.2 Hospital Location and Directions Map

The following provides directions to the closest hospital. If after consulting with WorkCare, they recommend a different facility, then defer to their recommendation.

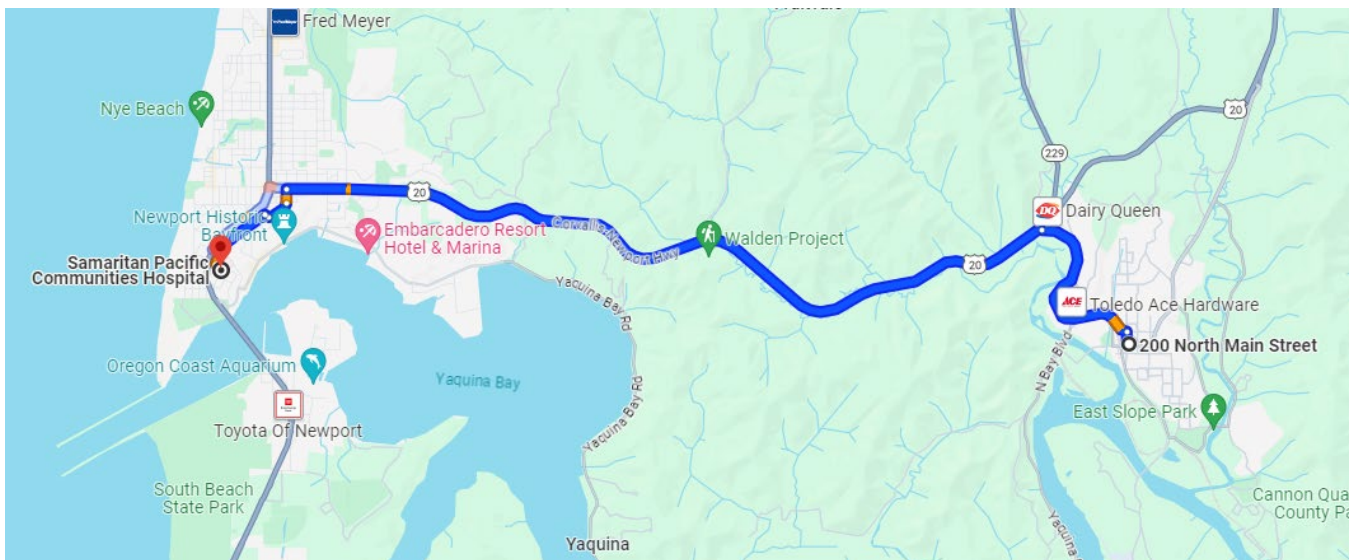
For emergencies, emergency medical services should be directed to meet personnel at the site at:

**Toledo City Hall (Parking Lot) - 200 North Main Street, Toledo, Oregon (Figure 2)**

For non-emergencies, WorkCare will confirm the appropriate facility for the type of injury and call the facility in advance of your arrival.

**Driving directions to the nearest emergency medical facility** (Samaritan Pacific Communities Hospital; 930 SW Abbey Street, Newport, Oregon 97365), approximately **7.7 miles** from the site:

1. Head north on North Main Street (400 feet)
2. Turn left onto US-20 BUS W to US-20 W (1.2 miles)
3. Make a slight left onto US-20 W (5.5 miles)
4. Turn left onto SE Benton Street (0.1 miles)
5. Continue onto SE 10th Street (0.2 miles)
6. Continue onto SW Angle Street (177 feet)
7. Turn left onto SW 9<sup>th</sup> Street (0.5 miles)
8. Turn left into hospital entrance



The trip from the site to the Samaritan Pacific Communities Hospital can take 15 to 20 minutes, depending on time of day and traffic conditions. Personnel should check road conditions on a map application immediately prior to transport to hospital. If possible, the route should be driven at least once early in the field sampling period to verify current conditions.

## 1.3 Emergency Procedures

In the event of emergency, personnel will be instructed to leave the area immediately and the Site Safety Officer (SSO) (or Field Director [FD] if the SSO is unavailable) will contact the appropriate emergency response providers listed in Table 1. Directions to the nearest medical facility are provided in Section 1.2.1. An Incident Report Form will be completed when there is an accident (see Section 15 and the GSI Portal).

Field personnel will be trained in first aid procedures (including cardiopulmonary resuscitation [CPR]) and will have access to a first aid kit. Consistent with U.S. Occupational Safety and Health Administration (OSHA) recommendations, an automated external defibrillator (AED) will be onsite if available. All field staff will be trained to administer the AED. The first aid kit and AED (if available) will be located close to sampling activities in an unlocked location. The AED will include a procedures diagram for use. The SSO will check the AED periodically for sufficient battery charge.

In the event of an occupational accident or incident, please indicate to the medical facility that this is a Workers' Compensation case, that your employer is GSI Water Solutions, Inc. (GSI), and that the insurance administrator for Workers' Compensation claims is State Accident Insurance Fund (SAIF) Corporation. Subcontractors should follow their company policies related to injury reporting. All subcontractors must follow company protocols for occupational injury and accident reporting.

## 1.4 Emergency Supplies and Equipment List

Table 1-2 lists needed equipment, locations, and notes for use.

**Table 1-2. Safety and Other Equipment Locations**

Equipment	Location and Notes
First aid kit	Required for all work.
Class ABC fire extinguisher	Required for all work. Fire extinguisher is the responsibility of the drilling contractor for shoreline work.
Whistle/air horn	Recommended for upland work.
Spill equipment (sorbent pads, booms, etc.)	Responsibility of the drilling contractor for shoreline work.
Eye wash station	Required for all work.
Wheel chocks	Required on vehicles parked in areas on steep slopes. Emergency brake must be used at all times.
Flashlights, head lamps	Required when working between dusk and dawn. Lighting support also required when visibility is less than 5 foot-candles within 3 feet of worker.
Automated external defibrillator (AED)	If available.

## 2 Organizational Structure

This site-specific Health and Safety Plan (HASP) has been developed for field and investigation activities at the former City Texaco Station Leaking Underground Storage Tank (LUST) Site (Project Site) on behalf of the Department of Environmental Quality in accordance with OSHA 29 Code of Federal Regulations (CFR) 1910 and 1926, and the GSI Health and Safety Policy (GSI, 2024a). The Project Site is shown on Figures 1 and 2. This HASP covers potential field hazards associated with the tasks necessary to complete the Scope of Work for all Project Site support activities, including sampling, technical field support to the client, and field reconnaissance.

<b>Project Site Address</b>	200 N Main Street, Toledo, Oregon 97391		
<b>Project Name</b>	Former City Texaco Station	<b>Project Number</b>	02060.016.003
<b>Date</b>	April 14, 2025	<b>Revision Number</b>	0

### 2.1 Project Team Organization and Authorities

Table 2-1 provides project roles and responsibilities for field staff members and subcontractors relative to this HASP.

**Table 2-1. Project Roles and Responsibilities**

Name	Role	Responsibility
Rick Ernst (GSI Water Solutions, Inc.)	Program Manager (PM)	<p>The PM has overall responsibility for the delivery of the project and management of all members of the team, including external advisors and subcontractors. The PM is the point of contact for the client and regulatory agencies with respect to implementation of this HASP.</p> <p>The PM is responsible for field operations and ensures the implementation of HASP requirements and procedures in the field..</p>
Braedon Warner (GSI Water Solutions, Inc.)	Field Director (FD)	<p>The FD has responsibility and authority to direct all work operations. The FD will work closely with the PM and is a point of contact for the client and regulatory agencies with respect to implementation of this HASP. The FD will coordinate safety and health functions with the Site Safety Officer (SSO), has the authority to oversee and monitor the performance of the SSO, and bears ultimate responsibility for the proper implementation of this HASP.</p>
TBD	Site Safety Officer (SSO)	<p>The SSO has full responsibility and authority to develop and implement this HASP and to verify compliance. The SSO is at the Project Site or readily accessible to the Project Site during all work operations and has the authority to halt work if unsafe conditions are observed or suspected.</p>

Name	Role	Responsibility
Subcontractors	Field Activities	Subcontractors will be responsible for their own HASPs and are required to maintain a corporate-level or site-specific HASP that covers field sampling and investigation activities. HASPs must meet or exceed the minimum requirements identified by OSHA 29 CFR 1910 and 1926. Subcontractors must ensure the developed HASP complies with the minimum requirements associated with this HASP, including using the proper personal protective equipment (PPE), reporting unsafe acts and conditions, and following the work and safety and health instructions of the PM, SSO, FD, and site-specific HASP and protocols

**Notes**

All personnel requiring access to controlled work areas must have completed the appropriate training. If field personnel change, substitutions will be made with similarly qualified personnel.

TBD = To be determined

CFR = Code of Federal Regulations

HASP = Health and Safety Plan

Project Site = Former City Texaco Station LUST Site

Any modifications to this HASP will be recorded in Table 2-2 of this HASP.

## 2.2 Stop Work Authority

All workers have “Stop Work Authority” to immediately stop work if they believe that a particular task is being performed in an unsafe manner. This authority may be exercised at any time by anyone working at the Project Site without repercussions or retribution. If individuals observe hazards for which they are unprepared, they will withdraw from the area to reevaluate the task and develop appropriate safety precautions before proceeding. The GSI Health and Safety Coordinator will be contacted to determine next steps and this HASP will be revised accordingly.

## 2.3 Limitations

This HASP was prepared exclusively for the Site and pertains to GSI’s field activities at the Site. The HASP was prepared in accordance with OSHA 29 CFR 1910 and 1926, and the GSI Health and Safety Policy (GSI, 2024a). This HASP covers known field hazards associated with the tasks necessary to complete the project scope of work. The quality of information herein is consistent with the level of effort required for GSI services and is based on (1) information available at the time of preparation; (2) data supplied by outside sources; and (3) the assumptions, conditions, and qualifications set forth in this HASP. This HASP is intended to be used by field personnel for sampling, technical field support to the client, and site reconnaissance only. Any other use of, or reliance on, this HASP by GSI or any third party is at that party’s sole risk.

The information contained herein is relevant to the Project Site known at the time of the HASP development. In the event that changes in the nature, usage, or layout of the Site or adjacent areas are made, the information contained in this HASP may not be valid. If additional information becomes available, it should be provided to GSI to modify the HASP as necessary.

## 2.4 Approvals and Modifications

Rick Ernst (PM) or a designated representative is responsible for the approval of this plan and any future modifications after preparation. Modifications will be documented in Table 2-2.

**Table 2-2. Record of Modifications and Version Control**

Section Revised	Page #	Description of Changes	Author	Date Issued	Reviewed By

## 3 Project Site Description and Scope of Work

### 3.1 Project Site Description

The Project Site, the former City Texaco Station, is located at 200 North Main Street in Toledo, Oregon, on the northeast corner of the intersection of North Main Street and NE 1<sup>st</sup> Street (Figure 2). The site property is currently a paved parking lot that services City Hall and the nearby neighborhood. A retaining wall with mural is present along the east side. The Texaco Master Service Station was built on the site property in 1936 and likely continued operations through the early 1980s. In 1992, the City of Toledo acquired the site property. In 1997, the station was demolished, and the property converted to a parking lot.

### 3.2 Scope of Work

This HASP covers actions to be taken to implement the sampling activities for the Project Site, which includes sub-slab vapor pin installation, sub-slab vapor sample collection and ambient air sampling.

### 3.3 Locations of Nearest Facilities

The locations of facilities such as restrooms are noted in Table 3-1.

**Table 3-1. Locations of Nearest Facilities**

Facility	Notes
Telephone	Employees should keep fully charged cell phones on-site. For remote sites or extended field days, it is recommended that a car charger or fully charged power block be available.
Water Source	Employees will be provided access to clean drinking water. The SSO will ensure that a sufficient water supply is maintained.
Restroom	Location will vary and will be identified in the field before work commences.
Personal Hygiene	Hand wash stations, hand washing water and soap, and/or hand wipes will be supplied at all times. Personnel must not eat food, drink, or smoke around work areas.

**Note**

SSO = Site Safety Officer

### 3.4 Project Site Access

Site activities will be limited to the Project Site consisting of the former City Texaco Station at the corner of N Main St and NE 1<sup>st</sup> Street in a commercial area (Figure 2).

#### 3.4.1 Operational Hours

Operations at the Project Site will be determined during the scheduling of work activities and in conjunction with representatives from the Oregon Department of Environmental Quality and the property owner of the Project Site. Operations will generally occur during daylight hours.

### **3.4.2 Non-Operational Hours**

Non-operational hours will be established upon prior approval by the Project Manager (PM) only.

### **3.4.3 Visitor Access and Safety**

All field employees and Project Site visitors must check in with the FD, participate in a brief safety overview (if new to the Project Site), sign off that they have received the safety overview, and sign in and out on the visitor log (or field notebook) before proceeding to the field.

## 4 Safe Work Practices

As much as possible, all field activities will be conducted during daylight hours. However, support lighting will be required when work is conducted between dusk and dawn. Work hours should be limited to no more than 60 hours per week with at least one day off per week and no more than 12 hours per day worked without pre-approval by the FD.

### 4.1 Accident Prevention

The SSO and all employees will inspect the work area and/or Project Site daily to identify and correct any unsafe conditions. Field personnel and subcontractors should inspect the work area thoroughly before leaving the Project Site. Adherence to the safe work practices and procedures outlined in this HASP and attachments will assist with accident prevention.

Access will be limited to all controlled areas via the prescribed administrative (certifications) and engineering (barricades) controls, as described above. All project-area staff and visitors will note arrival and departure times on a field log maintained by the SSO.

- All unsafe conditions will be corrected immediately. All unsafe conditions not in the scope of the project will be reported to the SSO and the condition corrected.
- Loose-fitting clothing and loose long hair are prohibited near moving machinery.
- Where portable electric tools and appliances can be used (where there is no potential for flammable or explosive conditions), they will be equipped with three-wire grounded power and extension cords to prevent electrical shock. Use of a ground-fault circuit interrupter (GFCI) to prevent electrical shock is required.
- Store tools in clean, secure areas so that they will not be damaged, lost, or stolen.
- All equipment, tools, and property will be secured, as needed, at the end of each day.
- Maintain good housekeeping practices to prevent slips, trips, and falls.

### 4.2 Personal Conduct

- Unauthorized personnel are not allowed at the Project Site.
- A high standard of personal hygiene will be observed. Smoking, eating, drinking, chewing gum or tobacco, taking medication, and applying cosmetics will not be permitted within the Exclusion Zone (EZ) or Contamination Reduction Zone (CRZ).
- Personnel under the obvious influence of alcohol or controlled substances are not allowed at the Project Site; those taking medications that could impact ability to safely perform work must notify the SSO before beginning work.
- All Project Site personnel will familiarize themselves with Project Site safe work practices and the emergency procedures during daily tailgate and pre-work safety meetings.
- No “horseplay” or unsafe actions or activities will be allowed.

## 4.3 Vehicular Use

The following requirements shall be observed when operating and in the vicinity of motor vehicles:

- On public roads, adhere to traffic regulations and speed limits.
- When parking on or alongside roads, park out of the way of traffic and as far off as safely possible.
- Within the Project Site boundaries, comply with site requirements for motor vehicles.
- Inspect the driving area for access, soft ground, and obstacles or sharp objects that may damage the vehicle.
- Where possible, move the vehicle to be close to the sampling location.
- If possible, drive in and out of the location, rather than reversing. If reversing is necessary, use a spotter as a guide.
- Use wheel chocks when parked on steep slopes.
- Before exiting a vehicle, shift into park, set the parking/emergency brake, and shut off the engine.
- Never leave a running vehicle UNATTENDED.
- Do not fuel engines while the vehicle is running.
- Install adequate signage, cones, lights, and devices, where applicable.
- Cell phone use while driving is not permitted.
- Employees who are passengers or drivers of vehicles will wear their seat belts any time the vehicle is in motion.

## 4.4 Slips/Trips/Falls

Good housekeeping practices should be used at all times to minimize trip hazards and falls. Extra caution should be taken when work on unstable surfaces, uneven terrain, steep grades, and elevated surfaces cannot be avoided. Fall protection must be provided when working on heights of 6 feet or more. Refer to OSHA fall protection requirements for varying heights and conditions. Refer to the Information on Slips, Trips, and Falls fact sheet for further information (Attachment 1).

## 4.5 Blood-borne Pathogens

First aid responders have the potential to be exposed to blood-borne pathogens. The potential for exposure to blood-borne pathogens exclusive of an emergency response is not anticipated. When rendering first aid in situations where exposure to bodily fluids or blood may occur, responders will wear, at a minimum, latex or nitrile gloves and a face shield or safety glasses. Employees are not required to administer first aid. Employees are required to immediately assess any emergency situation and seek professional assistance as appropriate.

## 4.6 Subsurface Utilities

Check for the location of underground services before beginning ground-penetrating work. OSHA regulations require the estimated location of utility installations (sewer, telephone, fuel, electric, water lines or any other underground installations that reasonably may be expected to be encountered during subsurface work) will be determined before subsurface work.

Use a service locator and the following cues to assist in identifying possible underground services: (1) signs of patched or missing of pavement; (2) service boxes, pits, and manholes (as they may indicate the presence or alignment of services); and (3) services coming into or out of the ground, such as power lines and downspouts. When possible, shut off utilities in the area while ground-penetrating work is taking place. Consider less-intrusive boring methods for shallow soil, such as using a vacuum truck/air knife or hand auguring to a given depth below surface for physical confirmation of absence/presence of utilities. Ensure upland drilling complies with the client's or adjacent property owner's intrusive work requirements, when policy exists.

## 4.7 Machinery/Mechanical Equipment/Heavy Equipment

Stand clear of operating machinery when in operation and be familiar with emergency stop devices, if applicable. No loose clothing shall be worn and all long hair (extending below the shoulders) shall be tied back. If safety vests are worn, they must be fastened at the front. Stay clear of hoisting operations (e.g., drill rod attachment and detachment). Be aware of all pinch points and provide guarding where possible. Be aware that heavy equipment activity may change daily or hourly, with differing potential hazards to be identified and addressed. Maintain eye contact with operator and wait for clearance before entering an active work zone.

## 4.8 Overhead Hazards

Look up to determine the location of hazard(s). If overhead hazards exist, change the location of the work to be performed where possible, otherwise, secure the overhead hazard(s) (e.g., de-energize live electrical lines). Stand clear of drill rig and facility operations. Do not walk under a raised load or a load supported by a winch. Stand uphill from drilling activities that use augers or large rods, as falling drill equipment may roll.

## 4.9 Manually Lifting Hazards

Assess the load to be lifted, loaded, pushed, or pulled. Solicit help if the load cannot be safely moved by one person or if handling the load is too awkward. Consider breaking loads into pieces and taking multiple trips. Lift with the knees and hold load close to body. Make sure footing is firm, the path is clear, and avoid twisting. Use these techniques when setting a load down.

## 4.10 Sharp Objects

Sharp objects are broadly defined; the potential hazards are specific to each work area. Sharp objects may include, but are not limited to, nails, exposed metal edges, metal shards, exposed rebar, broken glass, and sharps. Employees should look for and scan the work area for the presence of sharp objects to avoid contact (such as stepping or sitting on the sharp objects) and potential injury. Remove or protect other workers from exposure to hazards from sharps, where possible and safe to perform. Particular care should be taken in areas where debris is present. If sharps are present, steel-shanked boots should be considered where they provide increased worker protection. Leather gloves should be worn at all times when moving or coming into contact with materials that pose a cut or puncture risk. When possible, use tools such as rakes and shovels to avoid direct handling of debris when moving it.

## 4.11 Noise Reduction

Project-area activities in proximity to welding, construction, and heavy equipment often expose workers to excessive noise. It is anticipated that situations may arise in which noise levels may exceed the OSHA Action Level of 85 decibels (A-weighted scale) in an 8-hour time-weighted average. For example, working in close proximity to the subcontractor during drilling or trenching activities at the Site may pose this risk. If excessive noise levels occur, earplugs with the appropriate Noise Reduction Ratings will be issued to all personnel and a system of hand signals understood by all will be implemented (see Section 12).

## 4.12 Sanitation

Potable drinking water will be supplied in tightly closed containers and will be clearly marked for its intended use. If vehicles are available for use by field crews, restrooms and a field washing area with potable water will be available within a reasonable distance from the Project Site. If sanitary facilities are not located within a reasonable distance, portable facilities will be installed for use by field employees.

## 4.13 Illumination

When fieldwork is to be conducted before dawn or after dusk, or when light conditions are less than 5 foot-candles, illumination in all project areas and access pathways to those areas will be maintained with facility lighting, temporary light plants, equipment-mounted lighting systems, or similar equipment, such that illumination at 5 foot-candles or above is provided. When and where possible, walking and working surfaces should be cleared before engaging in low-light activities.

## 4.14 Weather Conditions

Weather is always a potential safety factor in performing work in outdoors. To ensure worker safety, the minimum safety rules outlined in this section will be implemented. Modification of work limitations due to weather can only be approved by the SSO or PM.

### 4.14.1 Lightning

The 30-30 rule is a common rule used for lightning safety and is defined as follows: If lightning is seen, count to 30 seconds. If thunder is heard within 30 seconds (assumes lightning is within 6 miles), workers will shelter in place. Workers in the uplands will shelter in buildings or vehicles. Weather apps such as Spark can also be used to determine whether lightning is within 6 miles of the Project Site. Refer to Lightning Safety When Working Outdoors (Attachment 2).

### 4.14.2 High Winds

Work will be stopped when sustained winds of more than 15 miles per hour (mph) and/or gusts of over 25 mph occur unless prior approval is provided by the SSO.

### 4.14.3 Heat Stress/Heat Stroke

Heat-related illnesses are avoidable if employees are trained and the right actions are taken before, during, and after working in hot conditions. High temperatures and humidity can stress the body's ability to cool itself, making heat illness a concern during hot weather. Working outdoors, especially during summer months, exposes employees to elevated heat conditions, creating the potential for heat illness. The three primary forms of heat illness are heat cramps, heat exhaustion, and heat stroke. Heat stroke can be a life-threatening condition. GSI's Heat Illness Prevention Program (HIPP) describes the three major forms of heat

illness, how to recognize them, and the actions to take to provide first aid before medical care is provided (see the HIPP on the GSI Portal).

Workers must drink plenty of fluids (not caffeinated), and wear clothing and sunblock as appropriate for the weather conditions. The SSO or designee will monitor workers for signs of heat stress. The heat index may be verified using a wet-bulb thermometer in high-humidity conditions. Remember that humidity on the water may be higher than weather station humidity reports. Refer to Protecting Workers from the Effects of Heat (Attachment 3).

#### **4.14.3.1 Training**

The SSO is responsible for implementing the HIPP, monitoring project- area heat conditions and worker physiological parameters, and for ensuring that employees are trained to recognize the signs and symptoms of heat stress illnesses or injury and understand what to do if these occur.

#### **4.14.3.2 Program Implementation Criteria**

Work activities will be limited, reduced, or halted when the heat index on the project equals or exceeds 80 degrees Fahrenheit (°F). When the heat index equals or exceeds 80°F, one or more cooling shelters (i.e., a location out of direct sunlight) shall be provided and additional rest cycles and personnel monitoring must be implemented. Final direction on work and work support will be provided by the SSO. Refer to Protecting Workers from the Effects of Heat (Attachment 3) and Key Requirements: Oregon OSHA's Permanent Rules for Heat Illness Prevention (Attachment 4).

#### **4.14.3.3 Heat Stress Management**

Work practices and exposure controls are used to reduce the risk of elevating an employee's core body temperature. These work practices and exposure controls include the following:

- Defining and adjusting employee work/rest intervals
- Monitoring for physiological signs of heat stress
- Providing cool liquids
- Establishing and implementing acclimatization schedules
- Using warm-weather cooling garments

#### **4.14.3.4 Employee Work/Rest Intervals**

Work/rest intervals are based on the personal protective equipment (PPE) worn, employee work loads, environmental conditions (temperature, humidity, air movement), and the results of physiological monitoring. Work/rest intervals are determined by the SSO and communicated to employees. Work/rest intervals are adjusted throughout the work shift as needed and communicated to each employee at the conclusion of an applicable rest period, prior to reentry into the work zone.

The rest interval and duration must not be less than a 10-minute break every two hours when the heat index is 90°F or greater; and a 15-minute break every hour when the heat index is 100°F or greater. Based on the assessment of the elements, the rest break and interval may need to be longer or more frequent than the base minimum requirements.

#### **4.14.3.5 Monitoring**

Physiological monitoring is conducted to alert employees and their supervisors to potential heat stress illness. Initial monitoring is conducted and documented by the SSO at the beginning of the work shift, prior to

entry into the work zone, when required. Additional physiological monitoring is performed at the beginning and end of each rest cycle. Reentry intervals and readjustment of the work/rest cycle are determined based on the state and federal guidelines. Physiological monitoring may include measuring the heart rate, recovery heart rate, oral or ear-canal temperature, or percentage water loss.

Physical signs and symptoms of heat stress are discussed with employees at the start of the project and reviewed as necessary. Employees monitor each other's actions, speech, and appearance for signs and symptoms of heat-related illnesses. Symptoms of heat-related illnesses are described in Protecting Workers from the Effects of Heat (Attachment 3) and Key Requirements: Oregon OSHA's Permanent Rules for Heat Illness Prevention (Attachment 4). Employees exhibiting signs or symptoms of heat exhaustion should be moved to shade or air conditioning, given cold water, and monitored by another employee. Heat stroke is a life-threatening emergency. If heat stroke is suspected, emergency services should be called immediately.

#### **4.14.3.6 Liquid Replacement Program**

Since dehydration is a primary cause of heat-related illness, employees should ensure regular hydration is performed prior to and during workdays with elevated temperature conditions as described in Section 4.15.3.2. A liquid replacement regime is not based on thirst. Employees need enough liquid and electrolytes to maintain their normal body weight throughout the day. Some sports drinks may exacerbate problems for some employees with certain medical conditions. Carbonated beverages are not recommended as a primary beverage for replacing body fluid because many contain caffeine and/or the carbonation makes the beverages difficult to drink in large quantities.

Employees are encouraged to drink as much water as possible throughout the day, but at least 1 quart per hour. Enough potable and cool drinking water will be available on the job site in sufficient quantities to provide at least 1 quart of water per hour per employee.

#### **4.14.3.7 Acclimatization Program**

Acclimatization increases physical tolerance to warm climates by improving the circulatory system and balance of salt in the body. Employees that are newly hired, have not worked in a comparable environment during the previous week, or have been away from the Site (due to vacation or sickness) should ensure they are properly acclimated prior to excessive exertion. Employees need time to become acclimatized—usually about 14 days. Acclimatization may start to decline in as little as 4 days. Alcohol or other drugs may affect the body's ability to acclimatize.

#### **4.14.4 Cold Stress/Hypothermia**

Drink plenty of fluids (not caffeinated), wear clothing appropriate for the weather conditions, and wear multiple layers. Avoid cotton clothing when possible. Monitor workers for signs of cold stress. Refer to Protecting Workers from Cold Stress (Attachment 5).

Freezing temperatures as defined as <35°F, as some areas freeze at higher air temperatures higher than 32°F. Check local weather for wind chill ("real-feel") conditions. If work occurs in conditions of below-freezing temperatures, salt or ice melt should be used and extreme care must be taken to prevent slips, trips, and falls. Upland work will be performed with pre-approval by the SSO only.

### **4.15 Hazardous Insects/Plants/Animals**

Depending on the time of year, Project-Area hazards may include snakes, spiders, ticks, and flying insects such as bees and wasps. Vegetation is present nearby which could harbor poison ivy or poison oak. Workers should do the following: (1) avoid contact or seek medical attention if necessary; (2) wear insect repellent, as

appropriate; and (3) survey the area for poisonous plants and use appropriate caution if needing to go into densely vegetated areas.

## 4.16 Electrical Hazards

Electrical equipment should be inspected to ensure it is in safe working order before use. Equipment should be grounded and operated under dry conditions. Where portable electric tools and appliances can be used (in areas where there is no potential for flammable or explosive conditions), they will be equipped exclusively with three-wire grounded power and extension cords to prevent electrical shock. Use of a GFCI is required to prevent electrical shock.

## 4.17 Unknown Chemical Exposure

Work will be stopped if visual or olfactory observations indicate unanticipated conditions. Worker PPE will be reassessed and the SSO will determine whether additional personnel monitoring is required before resuming work.

## 4.18 Hot Work

No hot work shall be performed in the Project Site. Contact the SSO or PM if hot work is required.

## 4.19 Lockout/Tagout

Lockout/tagout (LOTO) is a safety procedure to ensure that hazardous energy sources or machines are properly shut off and locked so they cannot be started again before maintenance or repair work are completed. Hazardous energy sources include electrical, mechanical, hydraulic, pneumatic, chemical, radioactive, and thermal.

If a worker encounters a hazardous energy source or machine that requires LOTO, they shall stop work and immediately notify the FD or PM (listed in Table 1-1). Further work should not proceed until energy sources are de-energized or the situation is deemed safe.

## 4.20 Trenches/Vaults/Confined Spaces

OSHA defines a confined space as (1) being large enough for an employee to enter and perform work (2) having limited or restricted means for entry or exit; and (3) not designed for continuous occupancy. This describes many areas that a worker may encounter on a daily basis, such as vaults or trenches.

**It is against GSI policy for field personnel to enter confined spaces. No field personnel shall enter a confined space or trench for any reason without prior approval and completion of an OSHA-compliant confined space entry training.**

## 5 Training Program

All GSI employees and subcontractors performing work under GSI's HASP or a HASP consistent with GSI requirements are required to have the following training to be working in the Project Site (Table 5-1). Copies of training certificates and training records will be kept at GSI's Portland office. Field projects will not be approved to take place in the absence of adequate documentation.

**Table 5-1. Training Requirements**

Type of Current Certificate	Yes	No	Trained Field Employees
HAZWOPER 40-Hour	X		Required for all GSI and other field personnel working on HAZWOPER projects. Any other subcontractors performing limited work efforts must be escorted by trained employees and/or avoid contact with potentially impacted materials. See the GSI SSO to determine minimum training for limited work efforts.
HAZWOPER Annual 8-Hour Refresher	X		Required for all GSI and other field personnel working on HAZWOPER projects. (The annual 8-hour training is required after a worker has had the 40-hour certification for one year). Same requirements as the 40-hour training for subcontractors performing limited work efforts.
HAZWOPER Supervisor Training	Employee-Specific		Supervisors, the SSO, and the FD will have completed the above and an additional 8 hours of OSHA Management and Supervisory Training.
First Aid/CPR/AED	X		Required for all field personnel. First aid/CPR/AED training is provided to allow employees to voluntarily administer first aid or medical assistance to family, friends, or coworkers as Good Samaritans. <sup>1</sup> Field employees are not required to administer first aid. Field employees are required to immediately assess any emergency situation and seek professional assistance as appropriate.

### Notes

<sup>1</sup> The "Good Samaritan" law in Oregon (Oregon Revised Statute 30.800) maintains that people who provide emergency medical assistance without the expectation of compensation (i.e., acting as Good Samaritans) are not liable for damages for providing the emergency medical assistance.

AED = automated external defibrillator

CPR = cardiopulmonary resuscitation

FD = field director

GSI = Groundwater Solutions, Inc.

HAZWOPER = Hazardous Waste Operations and Emergency Response

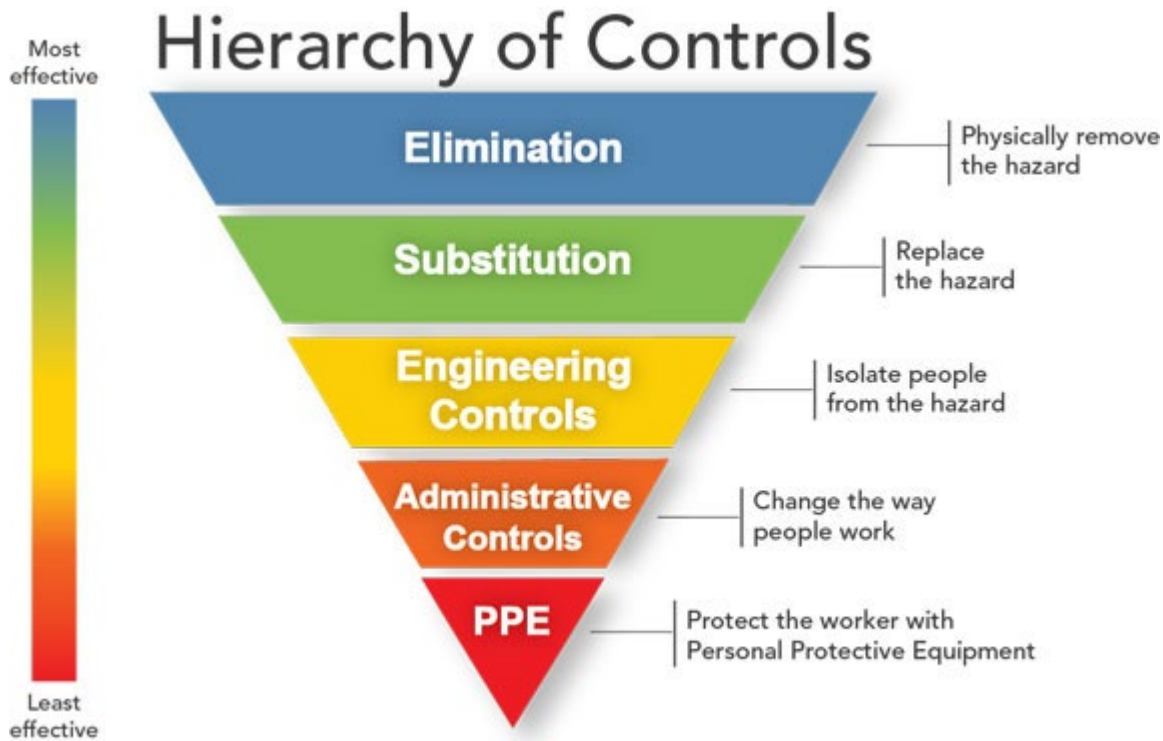
OSHA = U.S. Occupational Safety and Health Administration

SSO = Site Safety Officer

## 6 Project Site Controls

### 6.1 Hierarchy of Controls

Best practices for safe working environments include implementing a hierarchy of controls that, when used together, can provide redundant and/or complementary layers of protection for workers. Controls at the top of the hierarchy, such as elimination of the hazard, are potentially more effective and protective than controls at the bottom (see below).



In some cases, using controls closer to the top of the hierarchy may reduce the intensity of the controls at the bottom, thus reducing the possibility of corollary risks. For example, eliminating an exposure risk may reduce the requirement for a Tyvek<sup>1</sup> coverall—the use of which requires monitoring for thermal stress.

Because elimination or substitution of hazards may not be feasible at the Project Site, engineering controls (such as barriers and additional ventilation) may be needed to reduce exposure. Thermal control measures are an example of administrative control over how a task is done. PPE, while most common, is the least effective control in some cases and should be the LAST OPTION for minimizing exposure to hazards.

### 6.2 Management of Change

This HASP is intended to be site-specific and therefore responsive to actual site conditions, contract requirements, regulatory requirements, hazards, scope of work, and related conditions. For any number of reasons, it may be necessary to re-assess and revise plans. GSI detects changing, unrecognized, or new

<sup>1</sup> Tyvek is a registered trademark of DuPont.

conditions through key processes such as project-area monitoring, employee observations, and inspections. Routine changes in conditions are addressed through hazard analysis and revised plans.

## 6.3 Work Zones

Work zones are defined below. In the case of limited space, the CRZ and EZ may be combined. Work zones will be defined and labeled once work areas have been confirmed.

All Project-Area visitors (except OSHA inspectors) must receive prior approval from the FD and may do so only for the purposes of observing project-area conditions or operations.

### 6.3.1 Support Zone

The Support Zone (SZ) will be located away from the contaminated area.

### 6.3.2 Contamination Reduction Zone

No workers are allowed to cross between the EZ and “clean” support areas designated as the SZ without first passing through a designated CRZ and establishing that contaminants will not be tracked or carried off of the Project Site. Coolers in this zone will be protected from contamination as well as decontaminated before leaving the CRZ.

### 6.3.3 Exclusion Zone

The EZ is defined around intrusive activities or located in the immediate hazard area. The EZ is often identified by cones, caution tape, or other means to notify unauthorized individuals of the presence of potential hazards. Access should be restricted to field sampling crews and necessary equipment operators.

## 6.4 Barriers and Signs

Barricades, traffic cones, and/or markings or caution tape will be used at a safe distance from excavations, pits, hazardous areas, driller working areas, and moving equipment to prevent unauthorized access to work areas from vehicular and pedestrian traffic. Barriers will be appropriate for the level of work activity and anticipated traffic. Signage or work boundary delineation will be installed as necessary.

## 6.5 Potential Chemical Hazards and Controls

Based on potential activities to be conducted at the Project Site or adjacent to the Project Site, chemicals or classes of contaminants of concern (COCs) identified onsite or anticipated to be present onsite in sediments, soil, groundwater, and/or porewater may include the following:

- Gasoline/Diesel/Oil
- Petroleum volatile organic compounds (VOCs), trichloroethene (TCE), and vinyl chloride (VC)
- Polycyclic aromatic hydrocarbons (PAHs) – Benzo(a)pyrene (BaP)

Chemicals used on this project for decontamination purposes include:

- Liquinox detergent or similar (Attachment 8)

COCs that personnel may potentially contact are bound in soil or dissolved in groundwater. Soil vapor sampling may exhaust small amounts of soil vapor containing COCs during purging. However, personnel will be working in an open-air environment during sampling, reducing the potential for exposure. Nonetheless, these compounds are potentially hazardous and exposure by all routes should be minimized.

Hazardous material container(s) must be properly labeled with the identity of the hazardous chemical(s) and appropriate hazardous warning information. The SSO or FD will orient GSI employees and subcontractors to the potential hazards posed by chemicals used and present onsite.

## 6.6 Potential Chemical Exposure Pathways

The primary routes of exposure for Project Site chemicals include skin contact with contaminated materials and ingestion of materials from hand-to-mouth contact due to inadequate personal hygiene. To minimize these exposure pathways, all required PPE—as determined by the activity hazard analyses (AHAs)—will be worn and personal hygiene will be carefully monitored. Developed AHAs will be reviewed by the SSO prior to commencing work and any modifications shall be marked with red-line text in the official field hard copy or updated versions shall be printed and distributed. AHAs are attached to this HASP as Attachment 7. See Section 13.1 for more information.

## 7 Contaminants of Concern

The COCs listed in Table 7-1 are suspected or confirmed to be on-site and represent COCs that are typically found at LUST sites and which pose the greatest human health risks. The Summary of Toxicological and Chemical Data related to these COCs is also found in Table 7-1 and provides information such as the chemicals' characteristics, health hazards, protection, and exposure limits. For additional information, refer to ACGIH, OSHA, and NIOSH at the links below.

NIOSH website: <https://www.cdc.gov/niosh/npg/default.html>

ACGIH website: <https://www.acgih.org/data-hub/>

OSHA website: <https://www.osha.gov/annotated-pels/table-z-1>; <https://www.osha.gov/annotated-pels/table-z-2>; <https://www.osha.gov/annotated-pels/table-z-3>

The scope of work is to assess environmental media at the Project Site to determine the nature, extent, and magnitude of residual contamination that might remain after the previous removal of underground storage tanks and associated contaminated media. A summary of previous environmental activities and findings is provided in the Project Work Plan (GSI, 2024b) and the results of the most recent site investigation are provided in the Project Report (GSI, 2024c).

**Table 7-1. Summary of Toxicological and Chemical Data for COCs Potentially Present at the Site**

Materials Present or Suspected at Site	Exposure Limit (specify units)	IDLH Level (specify units)	Primary Hazards of the Material (explosive, flammable, corrosive, toxic, volatile, radioactive, biohazard, oxidizer, or other)	Symptoms and Effects of Acute Exposure	Ionization Potential (eV)
Benzene	PEL = 1 ppm REL = 0.1 ppm TLV = 0.5 ppm Skin Hazard ☒	500 ppm	Not compatible with strong oxidizers, many fluorides & perchlorates, nitric acid.	Contact can cause irritation in eyes, skin, nose, respiratory system; dizziness; headache, nausea, staggered gait; anorexia, lassitude (weakness, exhaustion); dermatitis; bone marrow depression; [potential occupational carcinogen].	9.24
Toluene	PEL = 200 ppm REL = 100 ppm TLV = 20 ppm Skin Hazard ☒	500 ppm	Not compatible with strong oxidizers.	Contact can cause irritation in eyes, nose; lassitude (weakness, exhaustion), confusion, euphoria, dizziness, headache; dilated pupils, lacrimation (discharge of tears); anxiety, muscle fatigue, insomnia; paresthesia; dermatitis; liver, kidney damage.	8.82
Ethylbenzene	PEL = 100 ppm REL = 100 ppm TLV = 20 ppm Skin Hazard ☒	800 ppm	Not compatible with strong oxidizers.	Contact can cause irritation in eyes, skin, mucous membrane; headache; dermatitis; narcosis, coma.	8.76
Xylenes (o, m, p)	PEL = 100 ppm REL = 100 ppm TLV = 20 ppm Skin Hazard ☒	900 ppm	Not compatible with strong oxidizers, strong acid.	Contact can cause irritation in eyes, skin, nose, throat; dizziness, excitement, drowsiness, incoordination, staggering gait; corneal vacuolization; anorexia, nausea, vomiting, abdominal pain; dermatitis.	8.44 to 8.56
Naphthalene	PEL = 10 ppm REL = 10 ppm TLV = 2 ppm Skin Hazard ☒	250 ppm	Not compatible with chromic anhydride and oxidizing agents.	Contact can cause irritation and burns to eyes and skin; nose and throat irritation with coughing and wheezing; headache, fatigue, confusion, tremor, nausea, and vomiting.	8.1

Materials Present or Suspected at Site	Exposure Limit (specify units)	IDLH Level (specify units)	Primary Hazards of the Material (explosive, flammable, corrosive, toxic, volatile, radioactive, biohazard, oxidizer, or other)	Symptoms and Effects of Acute Exposure	Ionization Potential (eV)
MTBE	PEL = 40 ppm REL = NA TLV = 50 ppm Skin Hazard ☒	NA	Highly flammable.	Contact can irritate the skin and eyes; vapors can irritate the nose and throat; difficulty concentrating, headache, nausea, dizziness, weakness and lightheadedness.	NA
EDB	PEL = 20 ppm REL = 0.13 ppm TLV = NA Skin Hazard ☒	46 ppm	Decomposition gases are toxic and irritating.	Local inflammation, blisters and ulcers on skin; irritation in lungs and organic injury to liver and kidneys; may be absorbed through skin.	9.45
EDC	PEL = 50 ppm REL = 1 ppm TLV = 10 ppm Skin Hazard ☒	50 ppm	Carcinogen, flammable, poisonous gases are produced in fire, containers may explode in fire.	Contact can irritate and burn skin and eyes. Inhalation can irritate nose and throat and lungs, causing coughing and shortness of breath or pulmonary edema. Can cause nausea, vomiting, diarrhea, and abdominal pain, headaches, dizziness, weakness, lightheadedness, confusion, tremor, loss of memory, and passing out.	11.05
Lead	PEL = 50 µg/m <sup>3</sup> REL = 50 µg/m <sup>3</sup> TLV = 50 µg/m <sup>3</sup> Skin Hazard ☒	100 mg/m <sup>3</sup>	Carcinogen, tetragen, poisonous fumes	Contact can irritate the eyes; headaches, irritability, reduced memory, disturbed sleep, and mood and personality changes; upset stomach, poor appetite, weakness and fatigue.	7.6
Cadmium	PEL = 5 µg/m <sup>3</sup> REL = 5 µg/m <sup>3</sup> TLV = 0.01 mg/m <sup>3</sup> Skin Hazard ☒	9 mg/m <sup>3</sup>	Carcinogen, tetragen, flammable dust or powder, poisonous gases produced in fire, containers may explode in fire.	Inhalation can cause pulmonary edema, dyspnea (breathing difficulty), cough, chest tightness, substernal (occurring beneath the sternum) pain; headache; chills, muscle aches; nausea, vomiting, diarrhea; emphysema, proteinuria, anosmia (loss of the sense of smell), mild anemia.	8.9
Chromium	PEL = 1 mg/m <sup>3</sup> REL = 0.5 mg/m <sup>3</sup> TLV = 0.5 mg/m <sup>3</sup> Skin Hazard ☒	250 mg/m <sup>3</sup>	Flammable powder, poisonous gases are produced in fire, containers may explode in fire.	Contact may irritate and burn the skin and eyes with possible eye damage. Inhalation can irritate the nose and throat causing coughing and wheezing. Fumes can cause flu-like symptoms with metallic taste in mouth, headache, fever and chills, aches, chest tightness, and cough.	6.77
Gasoline	PEL = as low as possible REL = as low as possible TLV = 300 ppm Skin Hazard ☒	10,000 ppm	Incompatible with strong oxidizers.	Contact can irritate and burn the skin and eyes with possible eye damage. Inhalation can irritate the nose, throat, and lungs, and cause coughing, wheezing, and shortness of breath. High exposure can cause headache, nausea, weakness, dizziness, blurred vision, irregular heartbeat, poor coordination, lightheadedness, and passing out.	NA
Diesel	PEL = 0.2-100 ppm <sup>a</sup> REL = 0.2-100 ppm <sup>a</sup> TLV = 100 mg/m <sup>3</sup> Skin Hazard ☒	NA	Flammable, incompatible with strong oxidizers.	Eye pain or irritation, watering, redness; loss of memory, loss of intellectual capacity, and loss of coordination; skin contact causes irritation, redness, dryness, and cracking; stomach pain, nausea, and vomiting.	NA

Materials Present or Suspected at Site	Exposure Limit (specify units)	IDLH Level (specify units)	Primary Hazards of the Material (explosive, flammable, corrosive, toxic, volatile, radioactive, biohazard, oxidizer, or other)	Symptoms and Effects of Acute Exposure	Ionization Potential (eV)
Oil <sup>b</sup>	PEL = 0.2-100 ppm <sup>a</sup> REL = 0.2-100 ppm <sup>a</sup> TLV = 100 mg/m <sup>3</sup> Skin Hazard ☒	NA	Flammable, incompatible with strong oxidizers.	Eye pain or irritation, watering, redness; loss of memory, loss of intellectual capacity, and loss of coordination; skin contact causes irritation, redness, dryness, and cracking; stomach pain, nausea, and vomiting.	NA
PAHs (as benzo[a]pyrene)	PEL = 0.2 mg/m <sup>3</sup> REL = 0.1 mg/m <sup>3</sup> TLV = 0.2 mg/m <sup>3</sup> Skin Hazard ☒	80 mg/m <sup>3</sup>	Carcinogen and poisonous gases are produced in fire.	Contact can irritate and burn the eyes; irritate the skin causing a rash or burning feeling; effects are increased in sunlight.	7.56
TCE	PEL = 25 ppm REL = 2 ppm TLV = 10 ppm Skin Hazard ☒	1,000 ppm	Not compatible with strong caustics & alkalis; chemically active metals (such as barium, lithium, sodium, magnesium, titanium & beryllium).	Contact can cause irritation in eyes, skin; headache, visual disturbance, lassitude (weakness, exhaustion), dizziness, tremor, drowsiness, nausea, vomiting; dermatitis; cardiac arrhythmias, paresthesia; liver injury; [potential occupational carcinogen].	9.45
VC	PEL = 1 ppm REL = Limited to lowest feasible concentration TLV = 1 ppm Skin Hazard ☐	No Data	Not compatible with copper, oxidizers, aluminum, peroxides, iron, steel [Note: Polymerizes in air, sunlight, or heat unless stabilized by inhibitors such as phenol. Attacks iron & steel in presence of moisture.].	Contact can cause lassitude (weakness, exhaustion); abdominal pain, gastrointestinal bleeding; enlarged liver; pallor or cyanosis of extremities; liquid: frostbite; [potential occupational carcinogen].	9.99

**Notes**

EDB = ethylene dibromide; EDC = ethylene dichloride; PAHs = polycyclic aromatic hydrocarbons; PEL = OSHA Permissible Exposure Limit; REL = NIOSH Recommended Exposure Limit; TLV = ACGIH Threshold Limit Value; IDLH = Immediately Dangerous to Life or Health; MTBE = methyl tertbutyl ether; ppm = parts per million; TCE = trichloroethene; VC = vinyl chloride; NA = not available

<sup>a</sup> Range for major constituents

<sup>b</sup> Values shown are for Diesel, as diesel and oil include similar hydrocarbon ranges.

## 8 Medical Monitoring

Field employees anticipated to spend 30 days or more at Hazardous Waste Operations and Emergency Response (HAZWOPER) sites or required to wear an air-purifying respirator are enrolled in a HAZWOPER Medical Monitoring Program. The use of air-purifying respirators is not anticipated. If required, field personnel must be fit-tested and approved by an occupational health physician for respirator use prior to donning in the field.

### 8.1 Periodic Comprehensive Exam

All personnel requiring access to controlled work areas will have completed a baseline medical examination and a periodic (usually annual) medical examination before assignment, in accordance with the OSHA 29 CFR 1910.120(f). The exam must be performed by an occupational health physician, who will provide written clearance for air-purifying respirator usage and hazardous waste site work. Protocols for the baseline, periodic, and exit exams must be at least as stringent as those defined in the GSI's Medical Monitoring Program.

### 8.2 Medical Clearance Record Keeping

Medical clearance documents are on file at GSI's office in Portland, Oregon. To ensure confidentiality, results of the medical exams or treatment records are maintained at the medical care provider's clinical offices.

### 8.3 Exposure Monitoring

No specific personnel exposure monitoring is required at this time. This HASP will be modified, as needed to discuss exposure monitoring.

## 9 Personal Protective Equipment

### 9.1 Levels of Protection

Initial levels of protection for the Project Site may vary depending on the task. All personnel entering controlled work zones initially will be required to wear the U.S. Environmental Protection Agency (EPA)/OSHA-approved level of protection as specified in this plan in Table 9-1.

Protection may be upgraded or downgraded depending on monitoring data (compared with action levels) and project-area conditions, as determined by the SSO. Table 9-1 and the following sections outline the minimum guidelines for each level of protection that is assigned or potentially assigned.

**Table 9-1. PPE to be Used at the Site**

Personal Protective Equipment <sup>1</sup>	Soil Vapor Sampling Activities
Steel-toed boots (leather or neoprene safety, slip- and chemical-resistant, waterproof)	X
Gloves (such as leather or nitrile depending on activity)	X
Eye/face protection (safety glasses, goggles, or face shield)	X
Hard hat	X (if near drilling/heavy equipment)
Splash protection (polyvinyl chloride [PVC] bibs/aprons, or Tyvek coverall)	As necessary
Hearing protection	As necessary
Standard Clothing (long pants and short or long-sleeve shirts)	X
Cold-weather gear	As necessary
Heavyweight rain gear (if raining)	As necessary

**Note**

<sup>1</sup>During sampling activities, workers will wear gloves and personal protective equipment (PPE) appropriate for the expected contaminants that may be encountered. When selecting PPE, consider potential exposure routes associated with the contaminant (e.g., inhalation, ingestion, skin contact).

### 9.2 Chemical Splashing

Care should be taken during sample collection activities to prevent liquids from splashing onto skin, clothing, and face. Sampling equipment should be handled carefully (e.g., placed, opened, moved) to prevent splashing. If splashing occurs, the area should be rinsed with clean water and dried, when possible. Safety glasses should be worn during sampling activities and during any activities with splash potential. Consider goggles or face shields and aprons where hazardous liquids are used, if applicable.

### 9.3 PPE Failure/Chemical Exposure

In the event of PPE failure, the worker and/or buddy will cease work, perform personal decontamination procedures (Section 10.1), and exit to the SZ/CRZ. Refer to the SDS (Attachment 6) and Section 1 if emergency medical response is needed. If chemicals contact the eyes, irrigate for 15 minutes and consult a physician.

### 9.4 PPE Inspection, Storage, and Maintenance

Reusable PPE will be decontaminated, inspected, and maintained, as necessary after each use. Personal equipment (e.g., hard hat, steel-toed boots) will be properly stored by the employee/subcontractor. The SSO will periodically inventory the disposable and reusable PPE at the Project Site and will replenish stocks in a timely manner.

# 10 Decontamination and Disposal Procedures

Procedures for the decontamination of sampling tools and other related equipment will be specified in Field Sampling Plans (FSPs) and/or Quality Assurance Project Plans developed. General procedures are summarized in Table 10-1. Note that separate areas should be established for personnel, sampling, and heavy equipment decontamination (discussed in Section 6.3).

## 10.1 Personnel Decontamination Procedures

Field personnel will wash hands and face after removing PPE. Steps for personnel decontamination in defined EZs and CRZs are listed in Table 10-1.

**Table 10-1. Equipment and Procedures for Personnel Decontamination**

Equipment	Decontamination Solution	Procedures	
		Intermediate <sup>1</sup>	Final <sup>2</sup>
<ul style="list-style-type: none"> <li>▪ Long-handled, soft-bristled brushes</li> <li>▪ Galvanized wash tubs or equivalent</li> <li>▪ Pump-activated sprayer</li> <li>▪ Garbage cans with plastic liners and drums with liners</li> <li>▪ Plastic sheeting</li> <li>▪ Paper towels</li> <li>▪ Duct tape</li> </ul>	<ul style="list-style-type: none"> <li>▪ Detergent (Liquinox) or similar (Attachment 8)</li> <li>▪ Tap water for rinsing</li> </ul>	<ol style="list-style-type: none"> <li>1. Dispose of or wash outer boots and gloves with detergent solution.</li> <li>2. Rinse outer boots and gloves.</li> <li>3. Remove outer gloves.</li> <li>4. Enter CRZ for sample management.</li> <li>5. Return to EZ wearing new or cleaned outer gloves.</li> </ol>	<ol style="list-style-type: none"> <li>1. Segregate equipment (for instruments and equipment requiring special decontamination; see the FSP).</li> <li>2. Dispose of or wash outer boots and gloves with detergent solution.</li> <li>3. Rinse outer boots and gloves.</li> <li>4. Remove and dispose of outer boots.</li> <li>5. Remove and dispose of outer gloves (if not cleaned to “like new” condition).</li> <li>6. Remove and dispose of coverall.</li> <li>7. Remove and dispose of inner gloves in designated receptacle.</li> <li>8. Field wash for personal hygiene.</li> <li>9. Exit to SZ.</li> </ol>

**Notes**

<sup>1</sup>Intermediate decontamination is for periodic exits from the EZ during sample transport and management or for short breaks.

<sup>2</sup>Final decontamination is performed before eating, when taking cool-down breaks, and when exiting the Project Site.

CRZ = Contamination Reduction Zone

FSP = Field Sampling Plan

EZ = Exclusion Zone

SZ = Support Zone

## 10.2 Equipment Decontamination

All equipment that will potentially contact samples will be decontaminated before and after sampling events according to procedures specified in the FSP. Heavy equipment in direct contact with sediments, soil, and/or water, such as the drill rig augers and backhoe buckets, will be decontaminated by the subcontractor.

## 10.3 Emergency Decontamination

In the event of an accident or incident in which work must cease and staff must exit the EZ, emergency decontamination should be performed to the greatest extent feasible. In an emergency, the primary concern is to prevent the loss of life or severe injury. If immediate medical attention is required to save a life, decontamination should be delayed until the victim is stabilized. If the decontamination can be performed without interfering with essential life-saving techniques or first aid, or if a worker has been contaminated with an extremely toxic or corrosive material that could cause severe illness or loss of life, decontamination must be performed immediately. If an emergency resulting from a heat-related illness develops, protective equipment should be removed carefully from the victim as soon as possible.

Any time emergency decontamination methods must be used, an incident report (see Attachment 1) must be completed by the SSO and submitted to GSI's Safety Committee.

## 10.4 Disposal Procedures

Waste PPE and supplies will be contained in garbage bags and disposed of as solid waste in a municipal trash receptacle. Investigation-derived waste (IDW) will consist of soil cuttings, purged groundwater, and decontamination water) generated from sampling events will be contained in 55-gallon drums. Soil and water IDW will be placed in separately labeled, Department of Transportation-approved, 55-gallon steel drums. IDW will be stored in an inconspicuous location at the Project Site until waste profiling and approvals from the disposal facilities are received. Associated samples collected from the investigation activities will be used to profile the IDW for disposal. As a contingency, however, IDW samples may be collected from the drummed soil and water. Upon receipt of the results, the IDW will be appropriately disposed of at a permitted disposal or treatment facility.

# 11 Spill and/or Discharge of Hazardous Materials

## 11.1 Training

Responses to incidental releases or spills of hazardous substances that can be absorbed, neutralized, or otherwise controlled at the time of release by employees in the immediate release area are not considered to be emergency responses under 29 CFR 1910.120(l) and do not require additional specialized training.

## 11.2 Spill Control and Response

There is a potential for incidental spillage/leakage of hazardous materials, if present. Store these materials properly and maintain the appropriate spill response equipment in the area where the materials are used/stored. In case of incidental spills or leaks, follow these steps:

1. Notify the SSO as soon as possible.
2. Select appropriate PPE and response equipment.
3. Contain the spill to the extent possible.
4. Neutralize or solidify the liquid per the SDS.
5. Transfer the material to an appropriate compatible container.
6. Document with an incident report (see Attachment 1).
7. PM or FD will notify the client.

## 11.3 Spill Response Reporting

Although spills in reportable quantities are not anticipated, field personnel will be instructed on the requirements and procedures for reporting to state emergency response agencies and the National Response Center (NRC) (contact information is in Table 1-1). Spills will be reported immediately after the safety of onsite personnel has been secured. Potentially reportable spills include any amount of oil/diesel/gas spilled in water, or more than 42 gallons of oil spilled on land. When reporting to the NRC, include the following information:

1. Your name and company
2. Your telephone number
3. Type of incident and the materials involved
4. Location/time of incident
5. Background/how the incident occurred
6. On-scene contact and how to reach them
7. Severity of incident—threat to people, property, or the environment
8. Actions taken, such as containment and/or evacuation
9. Responsible party and telephone number

## 11.4 Evacuation Procedures

Expeditious evacuation routes to the SZ will be established daily for all work areas. Evacuation notification will be one long blast on a canned siren, vehicle horn, or direct verbal communication (see Table 12-1 below)

for nonverbal communication signals). Any additions to evacuation procedures require an update to this HASP.

In the unlikely event that an evacuation is necessary, all personnel will immediately proceed to the SZ, decontaminating to the extent possible for personal safety based on the emergency.

## 12 Communications

### 12.1 Kickoff Meeting

A project kickoff meeting will be conducted prior to the start of any project work.

### 12.2 Daily Tailgate Safety Meetings

Tailgate safety meetings will be conducted by the SSO (or FD if SSO not present) each morning before work begins, or before the following:

- A change of work tasks or conditions
- When new employees join the crew
- If project-area conditions change unexpectedly
- When a specific task or location poses a safety hazard
- To review proper use of PPE

Topics of discussion will include work tasks and designated PPE, emergency procedures, evacuation routes, instruction in the use of safety equipment (as required), prior safety problems, and similar topics. These meetings must be documented in the field notebook or a Tailgate Safety Meeting Checklist (to be developed based on field efforts planned).

### 12.3 Buddy System

The “buddy system” will be used during field activities to reduce the risk of certain tasks by ensuring another person is capable of assisting in someone becomes injured or incapacitated. Each person will observe his/her buddy for symptoms of chemical exposure, cold stress/hypothermia, or heat stress, and will assess any emergency situation and seek professional assistance as appropriate. A cell phone will be maintained at the Site for emergency use.

Working alone in the field should be avoided if at all possible and mitigated if not. The dynamic nature of field environments presents increased risks, and these risks are heightened when working alone because help may not be readily available. If working alone is required, employees should notify their Supervisor and follow procedures and guidelines detailed in the Working Alone Standard Operating Procedure (SOP) (located on the GSI Portal).

### 12.4 Emergency Communications

Table 12-1 presents emergency hand and horn signals that will be used, as necessary, where verbal communication is limited.

**Table 12-1. Emergency Signals**

Hand and Horn Signal	Meaning
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Thumbs up	OK; understand
Thumbs down	No; negative
Grasping buddy's wrist	Leave Project Site now
Hands on top of head	Need assistance
Horn - one long blast	Evacuate Project Site
Horn - two short blasts	All clear; return to Project Site

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## 13 Safety Planning and Observation

### 13.1 Activity Hazard Identification and Analysis

GSI's AHA focuses on the relationship between the worker, the task, the tools, and the work environment. Once those relationships have been identified, project controls are implemented to eliminate or reduce job hazards to an acceptable risk level.

The AHA begins with an assessment of the environment in which the work will be performed and the tasks to be conducted. Tasks are reviewed or observed to identify hazards. Hazard identification is the product of a root cause analysis combined with a risk analysis. GSI's AHA examines the problems that could occur and assesses the likelihood that the problem will occur. The AHAs for the planned upcoming efforts will be attached to this HASP.

All employees will be expected to assess emergency conditions and have the authority to issue stop-work or evacuation instructions based on the situation and their best professional judgment. Emergency procedures will be discussed during daily safety briefings. Emergency evacuation may occur as the result of a medical emergency (life-threatening) or site condition (e.g., seismic event, spills, nearby train derailment).

### 13.2 Behavior-Based Safety

The purpose of GSI's behavior-based safety observation procedure is to build the company's safety culture by exercising a process of making observations, reinforcing exemplary behaviors, and correcting unsafe conditions and at-risk behaviors.

## 14 Accident Reporting and Record Keeping

### 14.1 In Case of Emergency Injury or Illness

**IN CASE OF EMERGENCY: CALL 911 AS SOON AS POSSIBLE**

### 14.2 In Case of Non-Emergency Injury or Illness

**At the onset of a non-emergency employee work-related injury or illness, GSI employees should first notify the supervisor on duty, then notify WorkCare at (888) 449-7787.** GSI management will be contacted by WorkCare following the initial report. The employee is required to report (to the GSI SSO) all work-related and all non-work-related injuries that may affect their ability to safely perform their job.

After the initial report, the SSO or other designated GSI employee will immediately contact the PM, SSO, or GSI Safety Committee to conduct an investigation jointly with the PM. The SSO or PM will complete the electronic Incident Report Form (available on the GSI Portal). These completed reports will automatically be transmitted to the Safety Committee chair person upon completion. The Safety Committee will submit the appropriate reports to GSI's Human Resources Manager (for Workers' Compensation), and OSHA (as applicable).

### 14.3 In Case of Near-Miss Incident

All "near-miss" incidents (incidents with high likelihood of resulting in injury, illness, significant spill, or property damage), even in the absence of a resultant incident, should be reported to GSI management using the electronic Near-Miss Report Form (available on the GSI Portal). This provides safety tracking metrics to improve project safety in the future.

### 14.4 Subcontractor Accident Reporting

The foreman or field supervisor of subcontracting crews will investigate and complete an injury/illness report in accordance with their internal company policy. This report must be transmitted to GSI within 24 hours of an incident.

### 14.5 Environmental Incidents and Property Damage

In case of environmental incidents or property damage, an Environmental Incident or Property Damage Report Form (available on the GSI Portal) will be prepared by the SSO. Any damage, loss, or theft of property (items/tools/equipment) will be reported to the PM.

## 15 References

- GSI. 2024a. Health and Safety Policy. Prepared by the GSI Safety Committee for GSI Water Solutions, Inc. July 2024.
- GSI. 2024b. Former City Texaco Station Project Work Plan LUST #21-97-4123. Prepared for Oregon Department of Environmental Quality by GSI Water Solutions, Inc. January 23, 2024.
- GSI. 2024c. Former City Texaco Station Project Report LUST #21-97-4123. Prepared for Oregon Department of Environmental Quality by GSI Water Solutions, Inc. July 2, 2024.

## 16 GSI Safety Committee Members and Contact Information

**Table 16-1. GSI Oregon Safety Committee Members**

Person	Role	Contact Information
Ronan Igloria	<b>Chair</b> , Management Representative, Health and Safety Coordinator, and Health and Safety Plan Administrator	Work: 971.200.8510 Cell: 503-901-6897
Katie Lippard	Safety Committee Member – Environmental Practice Representative	Cell: 919-632-5872
Paige Blagg	Safety Committee Member – Portland Office Representative	Work: 805.234.8832 Cell: 971.200.8507








PROJECT LOCATION

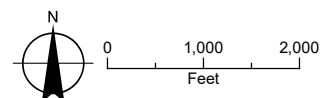
O R E G O N

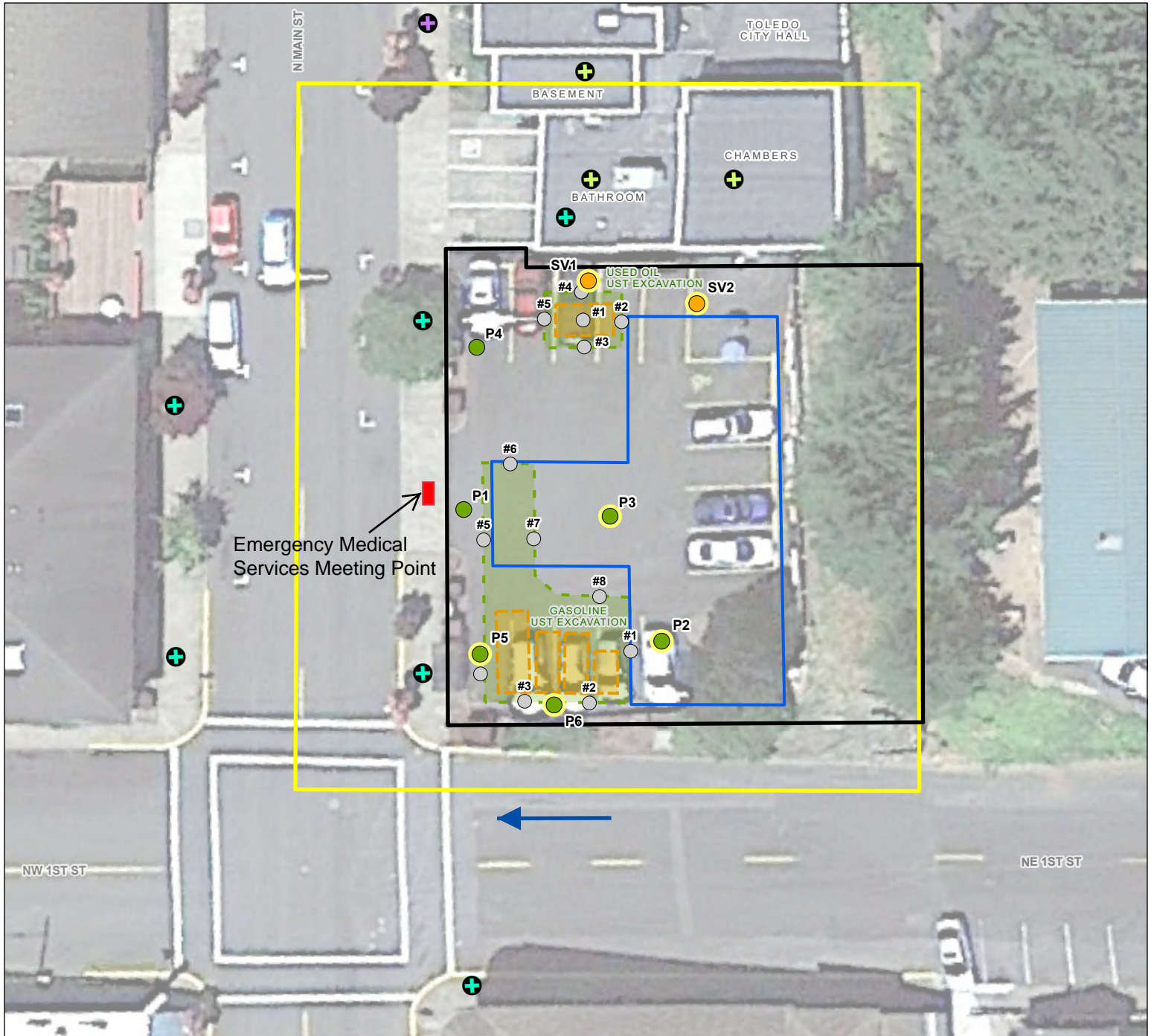
**LEGEND**

-  Site Location
-  City Boundary
-  Major Road

**FIGURE 1**  
**Site Vicinity Map**  
 Former City Texaco Station

Date: December 7, 2023  
 Data Sources: BLM, ESRI, ODOT, USGS, Aerial Photo 2020





**FIGURE 2**  
**Site Plan**  
 City Texaco  
 Site Investigation Work Plan

- LEGEND**
- Indoor Air Sample
  - Proposed Sub-Slab Vapor Point
  - Background Air Sampling<sup>1</sup>
  - Previous Push Probe Location
  - Previous Soil Vapor Sample Location
  - Soil Sample (1997)
  - VI Exceedance
  - Former UST
  - Excavation Area (1997)
  - Former Service Station
  - Locality of the Facility
  - Property Boundary
  - Assumed Groundwater Flow Direction

**NOTE**  
<sup>1</sup> The exact sampling location will depend on the local wind direction on the day of sampling.



**ATTACHMENTS**

## ATTACHMENT 1

Information on Slips, Trips, and Falls

# FactSheet

# Slip, Trip, and Fall Prevention

**S**lips, trips, and falls account for a majority of general industry accidents. These accidents often cause lasting problems with daily activities, while 15% of these accidents are fatal. These incidents can be prevented through knowledge of common risk factors and the maintenance of a clean, safe work environment.

## STEP 1: Be aware of the common risk factors for these injuries.

• Doorways	• Unsecured cables/cords in walkways
• Ramps	• Unguarded heights
• Cluttered hallways	• Unstable work surfaces
• Uneven surfaces	• Unsecured mats
• Areas prone to wetness or spills	• Smoke, steam, or dust obscuring your view
• Poor lighting	• Ladders
• Inattention to detail	• Stairs

### What I need to do...

Notify my supervisor if or when I:

- Have problems walking or moving around.
- Experience frequent disorientation.
- Have vision problems that could prevent me from seeing hazards.
- Take medications that can cause dizziness.

## STEP 2: Follow these tips to prevent slips, trips, and falls, and resultant injury.

1. Clean up spills immediately.	8. Remove tripping hazards from stairs and walkways.
2. Stay off freshly mopped floors.	9. Keep frequently used items in easily reachable areas.
3. Secure any cords out of walkways.	10. Check walkways and steps for obstructions.
4. Use non-skid mats for slippery surfaces.	11. Do not text while walking.
5. Adjust gutter downspouts to drive water away from pathways.	12. When using a ladder, always have at least three points of contact with the ladder.
6. Wear shoes with good support and slip-resistant soles appropriate for the job task.	13. Never stand on chair, table, or other surface on wheels.
7. Ensure adequate lighting in work areas and hallways.	14. Keep drawers/cabinet doors closed when not in use.



Inspect work areas monthly to identify hazards that could cause slips, trips, or falls. It is important that the indicated problems are addressed immediately.

### References

National Safety Council: Slips, Trips, and Falls  
[http://www.nsc.org/NSCDocuments\\_Advocacy/Fact%20Sheets/Slips-Trips-and-Falls.pdf](http://www.nsc.org/NSCDocuments_Advocacy/Fact%20Sheets/Slips-Trips-and-Falls.pdf)

OSHA Safety & Health Topics: Walking/Working Surfaces  
<https://www.osha.gov/SLTC/walkingworkingsurfaces/index.html>

For more information on slip, trip, and fall prevention, contact the Office of Environmental Health & Safety at [injuryprevention@usc.edu](mailto:injuryprevention@usc.edu) or (323) 442-2200.

## ATTACHMENT 2

OSHA Fact Sheet: Lightning Safety When Working Outdoors

# Lightning Safety When Working Outdoors

Lightning strikes can severely injure or kill workers whose jobs involve working outdoors. Lightning is often overlooked as an occupational hazard, but employers need awareness about lightning hazards to ensure their workers' safety. This fact sheet provides employers and workers at outdoor worksites with lightning safety recommendations from the Occupational Safety and Health Administration (OSHA) and the National Oceanic and Atmospheric Administration (NOAA).

## Introduction

Lightning is a dangerous natural force. Annually in the United States, cloud-to-ground lightning occurs 20 to 25 million times and over 300 people are struck by lightning. During the past 30 years, about 50 people, on average, have been killed by lightning strikes every year, and many more suffer permanent disabilities.

Precautions should be taken to prevent worker exposure to lightning. Employers should recognize lightning as an occupational hazard. Supervisors and workers at outdoor worksites should take lightning safety seriously.

Workers whose jobs involve working outdoors in open spaces, on or near tall objects, or near explosives or conductive materials (e.g., metal) have significant exposure to lightning risks. Worker activities at higher risk for lightning hazards include:

- Logging
- Explosives handling or storage
- Heavy equipment operation
- Roofing
- Construction (e.g., scaffolding)
- Building maintenance
- Power utility field repair
- Steel erection/telecommunications
- Farming and field labor
- Plumbing and pipe fitting
- Lawn services/landscaping
- Airport ground personnel operations
- Pool and beach lifeguarding



Photo: NOAA

Figure 1: Lightning strikes tall tree.

## Reducing Lightning Hazards When Working Outdoors

Employers, supervisors, and workers should understand lightning risks, characteristics, and precautions to minimize workplace hazards. Lightning is unpredictable and can strike outside the heaviest rainfall areas or even up to 10 miles from any rainfall.

Many lightning victims are caught outside during a storm because they did not act promptly to get to a safe place, **or they go back outside too soon after a storm has passed**. If signs of approaching thunderstorms occur, workers should not begin any task they cannot quickly stop. Proper planning and safe practices can easily increase lightning safety when working outdoors.

### When thunder roars, go indoors!

If you hear thunder, even a distant rumble, get to a safe place immediately.

Thunderstorms always include lightning. Any thunder you hear is caused by lightning!

NOAA advises that nowhere outside is safe when thunderstorms are in your area.

OSHA and NOAA recommend that employers and supervisors follow these lightning safety best practices for workers whose jobs involve working outdoors:

**Check NOAA Weather Reports:** Prior to beginning any outdoor work, employers and supervisors should check NOAA weather reports ([weather.gov](http://weather.gov)) and radio forecasts for all weather hazards. OSHA recommends that employers consider rescheduling jobs to avoid workers being caught outside in hazardous weather conditions. When working outdoors, supervisors and workers should continuously monitor weather conditions. Watch for darkening clouds and increasing wind speeds, which can indicate developing thunderstorms. Pay close attention to local television, radio, and Internet weather reports, forecasts, and emergency notifications regarding thunderstorm activity and severe weather.



Photo: NOAA

Figure 2: Lightning strikes a communications tower.

**Seek Shelter in Buildings:** Employers and supervisors should know and tell workers which buildings to go to after hearing thunder or seeing lightning. NOAA recommends seeking out fully enclosed buildings with electrical wiring and plumbing. Remain in the shelter for at least **30 minutes** after hearing the last sound of thunder.

**Vehicles as Shelter:** If safe building structures are not accessible, employers should guide workers to hard-topped metal vehicles with rolled up windows. Remain in the vehicle for at least **30 minutes** after hearing the last sound of thunder.

**Phone Safety:** After hearing thunder, do not use corded phones, except in an emergency. Cell phones and cordless phones may be used safely.

### Emergency Action Plan

Employers should have a written Emergency Action Plan (EAP), as outlined in 29 CFR 1910.38 or 29 CFR 1926.35. The EAP should include a written lightning safety protocol for outdoor workers. This lightning safety protocol should:

- Inform supervisors and workers to take action after hearing thunder, seeing lightning, or perceiving any other warning signs of approaching thunderstorms.
- Indicate how workers are notified about lightning safety warnings.
- Identify locations and requirements for safe shelters.
- Indicate response times necessary for all workers to reach safe shelters.
- Specify approaches for determining when to suspend outdoor work activities, and when to resume outdoor work activities.
- Account for the time required to evacuate customers and members of the public, and the time needed for workers to reach safety.

Employers should also post information about lightning safety at outdoor worksites. All employees should be trained on how to follow the EAP, including the lightning safety procedures.



Photo: NOAA

Figure 3: Cranes are especially vulnerable to lightning.

## What is lightning?

Lightning is a giant spark of electricity in the atmosphere between clouds or between a cloud and the ground.

Lightning can occur:

- Between the cloud and the ground (cloud-to-ground lightning)
- Within and between thunderstorm clouds (intra- and inter-cloud lightning)

For more information, see:

[www.weather.gov/safety/lightning-faqs](http://www.weather.gov/safety/lightning-faqs)

## Lightning Safety Training

Employers should adequately train all workers on lightning safety. Training should be provided for each outdoor worksite, so that supervisors and workers know in advance where a worksite's safe shelters are and the time it takes to reach them. Employers should train supervisors and workers to provide lightning safety warnings in sufficient time for everyone to reach a worksite's safe shelters and take other appropriate precautions.

## Lightning Warning Systems

An employer's EAP may include lightning warning or detection systems, which can provide advance warning of lightning hazards. However, no systems can detect the "first strike," detect all lightning, or predict lightning strikes. NOAA recommends that employers first rely on NOAA weather reports, including NOAA Weather Radio All Hazards: [www.weather.gov/nwr](http://www.weather.gov/nwr).



Figure 4: Preparedness reduces lightning risks.

(For NOAA toolkits for organizations and large venues see: [www.weather.gov/safety/lightning-toolkits](http://www.weather.gov/safety/lightning-toolkits))

Commercial lightning detection and notification services are available to monitor for lightning activity. These notification services can send alerts when lightning activity develops or moves to within a certain range of a work site. In addition, these commercial systems can provide mapped locations of lightning strikes from an approaching storm. However, these systems cannot predict the first lightning strike. Consequently, it is important to watch the sky for storms developing overhead or nearby and get to a safe place prior to the first lightning strike.

Portable and hand-held lightning detectors function by detecting the electromagnetic signal from a nearby lightning strike and then processing the signal to estimate the distance to the lightning strike. These devices typically do not detect all strikes, cannot predict the first strike, cannot provide the location of a strike, and are less accurate than the commercial detection and notification systems. In some cases, simply listening for thunder or watching the sky may be a better indication of a developing or nearby storm.

For situations which require advance notice of thunderstorms, NOAA recommends monitoring forecasts and radar observations from either commercial weather services or NOAA to stay informed of changing weather conditions.

## If Caught Outside in a Thunderstorm

If you find yourself caught outside during a thunderstorm, there may be nothing you can do to prevent being struck by lightning. There simply is no safe place outside in a thunderstorm. This is why it is very important to get to a safe place at the first signs of a thunderstorm. If you are caught outside follow NOAA's recommendations to decrease the risk of being struck.

- Lightning is likely to strike the tallest objects in a given area—you should not be the tallest object.
- Avoid isolated tall trees, hilltops, utility poles, cell phone towers, cranes, large equipment, ladders, scaffolding, or rooftops.
- Avoid open areas, such as fields. Never lie flat on the ground.
- Retreat to dense areas of smaller trees that are surrounded by larger trees, or retreat to low-lying areas (e.g., valleys, ditches) but watch for flooding.
- Avoid water, and immediately get out of and away from bodies of water (e.g., pools, lakes).

Photo: NOAA

Water does not attract lightning, but it is an excellent conductor of electricity. For boating safety see [NOAA PA 200252](#).

- Avoid wiring, plumbing, and fencing. Lightning can travel long distances through metal, which is an excellent conductor of electricity. Stay away from all metal objects, equipment, and surfaces that can conduct electricity.
- Do not shelter in sheds, pavilions, tents, or covered porches as they do not provide adequate protection from lightning.
- Seek fully-enclosed, substantial buildings with wiring and plumbing. In modern buildings, the *interior* wiring and plumbing will act as an earth ground. A building is a safe shelter as long as you are not in contact with anything that can conduct electricity (e.g., electrical equipment or cords, plumbing fixtures, corded phones). Do not lean against concrete walls or floors (which may have metal bars inside).

### OSHA Standards

Under the General Duty Clause, [Section 5\(a\)\(1\)](#) of the *Occupational Safety and Health Act of 1970* (OSH Act), employers are required to provide their employees with a place of employment that “is free from recognizable hazards that are causing or likely to cause death or serious harm to employees.” The courts have interpreted OSHA’s general duty clause to mean that an employer has a legal obligation to provide a workplace free of conditions or activities that either the employer or industry recognizes as hazardous and that cause, or are likely to cause, death or serious physical harm to employees

when there is a feasible method to abate the hazard. This includes lightning hazards that can cause death or serious bodily harm.

During storms or high winds, OSHA prohibits:

- work on or from scaffolds ([29 CFR 1926.451\(f\)\(12\)](#));
- crane hoists ([29 CFR 1926.1431\(k\)\(8\)](#)); and
- work on top of walls ([29 CFR 1926.854\(c\)](#)).

In these situations, scaffold work may continue only if a qualified person determines it is safe and personal fall protection or wind screens are provided. Crane hoists may continue only if a qualified person determines it is safe.

### Helpful Resources

- [Lightning Safety on the Job](#) (weather.gov)
- National Fire Protection Association (NFPA):
- *NFPA 780: Standard for the Installation of Lightning Protection Systems*, 2014 Edition, [www.nfpa.org/codes-and-standards/document-information-pages?mode=code&code=780](http://www.nfpa.org/codes-and-standards/document-information-pages?mode=code&code=780)
- National Lightning Safety Institute, [lightningsafety.com](http://lightningsafety.com)
- Transportation Research Board of the National Academies, *Protecting Airport Personnel from Lightning Strikes*, [onlinepubs.trb.org/onlinepubs/acrp/acrp\\_iop\\_004.pdf](http://onlinepubs.trb.org/onlinepubs/acrp/acrp_iop_004.pdf)

### Contact NOAA

For information on lightning safety, or to obtain data, educational and outreach materials, and posters, visit NOAA’s lightning safety website: [Lightning Safety Tips and Resources](#) (weather.gov). Contact NOAA at [wrn.feedback@noaa.gov](mailto:wrn.feedback@noaa.gov). Examples of data available from NOAA are provided below.

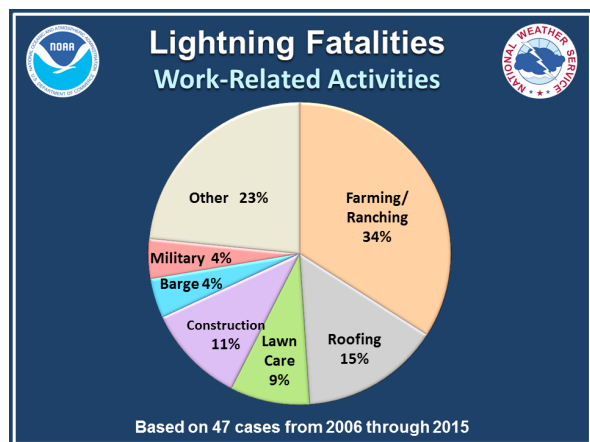


Figure 5: Work-related lightning fatalities

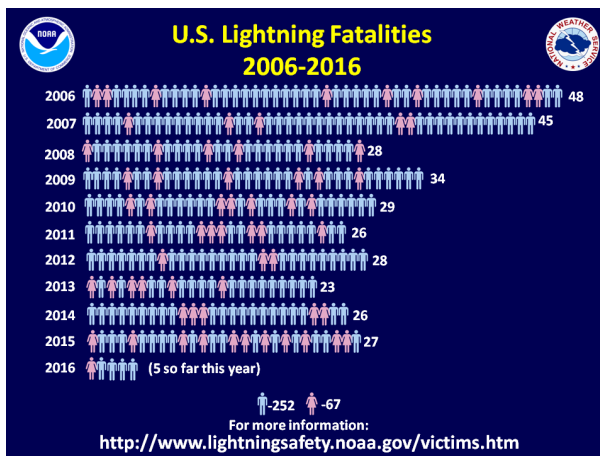


Figure 6: Annual lightning fatalities

## Contact OSHA

For more information, to report an emergency, fatality, inpatient hospitalization, amputation, or loss of an eye, or to file a confidential complaint, or to request OSHA's free On-site Consultation Program services for small and medium-sized businesses, contact your nearest OSHA office, visit [www.osha.gov](http://www.osha.gov), or call OSHA at 1-800-321-OSHA (6742), TTY 1-877-889-5627.

## Workers' Rights

Workers have the right to:

- Working conditions that do not pose a risk of serious harm.
- Receive information and training (in a language and vocabulary the worker understands) about workplace hazards,

methods to prevent them, and the OSHA standards that apply to their workplace.

- Review records of work-related injuries and illnesses.
- File a complaint asking OSHA to inspect their workplace if they believe there is a serious hazard or that their employer is not following OSHA's rules. OSHA will keep all identities confidential.
- Exercise their rights under the law without retaliation, including reporting an injury or raising health and safety concerns with their employer or OSHA. If a worker has been retaliated against for using their rights, they must file a complaint with OSHA as soon as possible, but no later than 30 days.

For more information, see [OSHA's Workers page](#).



U.S. Department of Labor



## ATTACHMENT 3

OSHA Fact Sheet: Protecting Workers from the Effects of Heat

## Protecting Workers from the Effects of Heat

Every year, dozens of workers die and thousands more become ill due to heat exposure in the workplace. Hazardous heat exposure can occur indoors or outdoors and during any season, not only during heat waves. **Heat exposure may result in serious illness or even death, both of which are preventable.**

This fact sheet provides information on how to recognize and respond to symptoms of heat illness, the risk factors for heat illness, and methods to mitigate heat hazards in both indoor and outdoor workplaces.



# What is Heat Illness?

As outdoor and indoor temperatures rise, a worker's core body temperature may also begin to rise. The body's natural way to regulate temperature is to increase its heart rate and sweat. This helps keep the body's core temperature from rising to unhealthy levels. Heat illness develops when these mechanisms are not enough to keep the core body temperature from rising.

## Recognizing and Responding to Heat Illness

There are several types of heat illnesses. These illnesses are on a spectrum and conditions and symptoms can range from minor heat cramps to life-threatening heat stroke. Addressing symptoms early helps reduce the likelihood of a medical emergency. It is important to learn how to recognize symptoms and know how to respond to emergency situations. Workers should receive training on heat illness and recognizing heat illness symptoms, how to monitor themselves and each other, and what actions to take at the first sign of heat illness. **It is the employer's responsibility to ensure workers are safe from hazardous heat at work.**

## Heat-Related Medical Emergencies Require Immediate Action

Addressing early signs of heat illness is critical to preventing medical emergencies. Heat illness can be fatal if not treated quickly. Act immediately if you recognize the symptoms below. The following are signs of a medical emergency:

### If a worker experiences:

- Abnormal thinking or behavior
- Slurred speech
- Seizures
- Fainting
- Heavy sweating or hot, dry skin



### Take these actions:

- Call 911 immediately.
- Cool the worker right away with water or ice.
- If possible, move the person to a cooler or shaded area. Stay with the worker until help arrives.



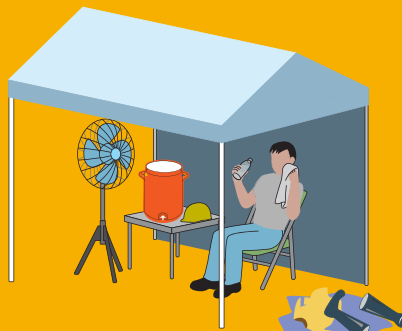
# Risk Factors for Heat Illness

## Watch for Signs of Heat Illness

The symptoms of heat illness will intensify with time if actions are not taken to hydrate, rest, and cool down. If not treated promptly, minor symptoms of heat illness could quickly lead to a life-or-death situation.

### If a worker experiences:

- Headache or nausea
- Weakness or dizziness
- Elevated body temperature
- Thirst
- Decreased urine output



### Take these actions:

- Give cool water to drink.
- Remove unnecessary clothing.
- Move to a cooler area.
- Cool with water, ice, or a fan.
- Do not leave alone.
- Seek medical care if needed.

## Occupational Risk Factors

Occupational risk factors include both the work environment and the work you are doing. The temperature, humidity, length of time close to heat sources, and direct sunlight are all factors to pay attention to in the work environment. In addition, the physical exertion or workload required for your job, being unaccustomed to or not used to working in the heat, and the clothing or protective equipment you wear can contribute to your risk for heat illness.



## Personal Risk Factors

Workers should pay attention to their lifestyle, habits, and body when working in the heat.

### Medications:

such as antihistamines, diuretics, blood pressure medications, and others

### Physical Characteristics:

older age, lower levels of physical fitness, pregnancy, acclimatization status, (i.e., if you have built tolerance to working in heat), and others

### Health Conditions:

diabetes, obesity or overweight, high blood pressure, heart disease, and others



### Behavioral Characteristics:

recent alcohol use, use of illicit drugs such as opioids, methamphetamine, and cocaine, a low intake of water, and others

# 12 Elements of a Heat Illness Prevention Program

A heat illness prevention program is an ongoing system that plans for and ensures workplace heat safety. Employers conduct routine workplace inspections to identify heat hazards, control the identified hazards, and monitor and evaluate the hazard controls to verify they are effective. Use the following elements in your heat illness prevention program.

## Create a Plan and Provide Training



### 1. Have a Heat Plan

Develop a plan that includes monitoring, acclimatization, work/rest schedules, a buddy system, and protocols for emergencies and first aid. Communicate the plan to supervisors and workers.



### 2. Designate Someone to Oversee the Heat Safety Program

Identify someone trained or to-be-trained in heat hazards, heat illness symptoms, and heat controls. If possible, select or train multiple people to always have a designated Heat Safety Representative on-site. The Heat Safety Representative can develop, implement, and manage the program.



### 3. Provide Training on Heat Illness

Provide training on a regular basis (at least annually) for all workers on heat illness risks, symptoms, and response procedures, as well as prevention methods. Train workers in a language and format they understand.

## Plan Work Schedules

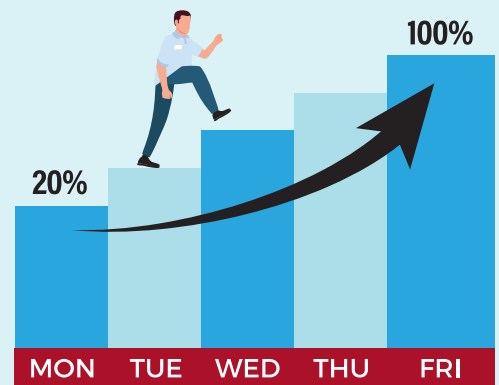
**Nearly 3 out of 4 fatalities from heat illness occur in the first week of work.**



### 4. Acclimatize Workers

Acclimatization is a physical change that allows the body to build tolerance to working in the heat. Acclimatize new and returning workers by gradually increasing workload and exposure by following the 20% Rule.

Allow new or returning workers to gradually increase duration of exposure and take more frequent breaks during the first week of work as they build a tolerance to working in the heat. Begin with a 20% exposure on the first day, increasing by no more than 20% each following day. Full acclimatization may take up to 14 days or longer.



### 5. Modify Work Schedules to Reduce Heat Exposure

There are several ways employers can modify schedules to address heat risks:

- Reschedule non-essential outdoor or indoor work for days with a reduced heat index.
- Shift physically demanding work to cooler times of the day.
- Rotate workers, add extra workers, or split shifts to reduce exposure to heat and ease workloads.
- Stop work if needed due to heat risk.

Employers should be aware that early morning start times may increase fatigue if schedules shift significantly. Monitor accordingly, as morning temperatures may also have higher humidity levels.



### 6. Allow Frequent Rest Breaks

Breaks should be long enough to allow workers enough time to recover from heat given the temperature, humidity, activity level, and other conditions.

## Set Controls and Monitor On-Site Activity



### 7. Identify Heat Hazards

Hazard identification is recognizing heat hazards and the risk of heat illness due to high temperature, humidity, sun and other thermal exposures, work demands, clothing or PPE, and personal risk factors. Use this [checklist](#) to identify potential sources of heat hazards.



### 8. Check the Temperature in the Space Before Work

Use apps and tools to track heat hazards.

- For outdoor work, use the OSHA-NIOSH Heat Safety Tool App ([Apple Store](#) or [Google Play](#)) to plan activities based on how hot it feels throughout the day. Consult the National Weather Service Heat Index and watch for high temperature weather alerts.
- For indoor work, use a combination thermometer and hygrometer to identify the heat index in the work area. Post signage of actions to take based on the work area's heat index.



### 9. Monitor for Heat Illness Symptoms

Establish a monitoring system for the signs and symptoms of heat illness. Also train workers to monitor each other. A buddy system can help supervisors watch for signs of heat illness.

More robust heat illness prevention programs establish a medical monitoring program. This should include medical evaluations before a worker starts (pre-placement) and periodic medical evaluations. The program should also include a plan for monitoring worker heat strain (e.g., core temperature, hydration, pulse, and/or blood pressure) on the job.



### 10. Designate a Break Area and Encourage Hydration

Remember: Water, Rest, Shade. Designate a shady or cool area for breaks and provide cool drinking water. Portable tents and shelters can be a solution for areas without natural shade. Ensure drinking water is available and accessible and encourage workers to drink 1 liter per hour (about 1 cup every 15 to 20 minutes). Remind workers to not drink more than 48 oz (1½ quarts) per hour! Drinking too much water or other fluids (sports drinks, energy drinks, etc.) can cause a medical emergency because the concentration of salt in the blood becomes too low.



### 11. Have Workers Dress for the Heat

Workers should wear a hat outside and loose-fitting, breathable clothing where possible.



### 12. Be prepared for an Emergency

Have an emergency plan in place for each worksite and communicate it to supervisors and workers.

This should include:

- What to do when someone is showing signs of heat illness.
- How to contact emergency services.
- How long it takes for emergency services to arrive.
- Appropriate first-aid measures until medical help arrives.

## Personal Protective Equipment

In most cases, heat stress should be reduced by engineering controls or work practice modifications. However, in some limited situations, special cooling devices can protect workers in hot environments, such as reflective clothing or cooling vests.

Workers should be aware that use of certain personal protective equipment (e.g., certain types of respirators, impermeable clothing, and head coverings) can increase the risk of heat illness. Frequently communicate with these workers to ensure they are not experiencing symptoms of heat illness.

## Controls Specific to Indoor Heat Stress

Indoor workers may also be exposed to heat hazards that could result in heat illnesses. For example, workers may be at risk if they work where there are indoor heat-generating appliances such as in bakeries, kitchens, and laundries, in manufacturing with heat sources such as furnaces. Other workers may conduct physical labor in a building that is not cooled properly or retains heat easily, such as the warehousing industry. Workplaces with indoor workspaces should include reducing indoor heat stress in their heat illness prevention program.

### Reduce indoor heat stress with the following practices:

- Use air conditioning.
- Ventilate the space to bring in cooler air and create air flow.
- Redirect radiant heat with reflective shields.
- Insulate hot surfaces.
- Reduce humidity by sealing steam leaks and keeping floors dry.
- Use fans for personal cooling and to increase air circulation.





## Additional Information

Workers have the right to working conditions that do not pose a risk of serious harm, to receive information and training about workplace hazards and how to prevent them, and to file a complaint with OSHA to inspect their workplace without fear of retaliation.

For more information about workers' rights, visit [www.osha.gov/workers](https://www.osha.gov/workers).

To file a complaint, visit [www.osha.gov/workers/file-complaint](https://www.osha.gov/workers/file-complaint) or call 800-321-OSHA (6742).

For more information on this and other issues affecting workers or heat stress, visit:

[www.osha.gov/heat](https://www.osha.gov/heat) | [www.cdc.gov/niosh/topics/heatstress](https://www.cdc.gov/niosh/topics/heatstress)

(800) 321-OSHA (6742)



[osha.gov/heat](https://www.osha.gov/heat)

## ATTACHMENT 4

Key Requirements: Oregon OSHA's Permanent Rules for Heat Illness Prevention

## Key requirements: Oregon OSHA's permanent rules for heat illness prevention

On May 9, 2022, Oregon adopted two permanent rules – 437-002-0156 and 437-004-1131 – following direction from Oregon Gov. Kate Brown to protect workers from heat-related illnesses.

The rules' key requirements are identical and apply to any workplace where extreme heat caused by weather can expose workers to heat-related illnesses – medical conditions resulting from the body's inability to cope with a particular heat load; 437-004-1131 applies to agricultural workplaces and 437-002-0156 applies to all other workplaces. The rules do not apply to buildings and structures that have mechanical ventilation that keep the indoor heat index less than 80 degrees Fahrenheit.

The key requirements are based on a set of numbers called the heat index – sometimes called the apparent temperature – published by the National Oceanic and Atmospheric Administration's National Weather Service. There is a direct relationship between air temperature and relative humidity; the heat index indicates what the temperature feels like to the human body when relative humidity and the air temperature are combined.

Oregon OSHA's rules for preventing heat illnesses apply to workplaces whenever an employee is working and the heat index equals or exceeds 80 degrees Fahrenheit. More requirements apply (see High heat



practices, below) when the heat index exceeds 90 degrees Fahrenheit.

## Exemptions – There are both full and partial exemptions in the rules

**Full exemptions:** Incidental heat exposures, exposures to heat generated from the work process, emergency operations, and buildings and structures that have a mechanical ventilation system that keeps the heat index below 80 degrees Fahrenheit.

**Partial exemptions:** Employers whose employees perform either “rest” or “light” workloads, associated support activities for wildland firefighters, and employees who work from home.

## KEY REQUIREMENTS

### Access to shade

Establish one or more shade areas when the heat index equals or exceeds 80 degrees Fahrenheit. Shade may be provided by natural or artificial means that do not expose employees to unsafe or unhealthy conditions and that do not discourage access or use.

Those performing “rest” or light” work, as defined by the rules, are exempt from the provisions for shade when the heat index is less than 90 degrees Fahrenheit. Shade must:

- Be open to the air or have mechanical ventilation for cooling.
- Be located as close as practical to the areas where employees are working.
- Accommodate at least the number of employees on recovery, rest, or meal periods so they have room to sit.

When an employee’s access to shade is not possible in a particular situation – during high winds or when an

employee is walking through range land, for example – the employer must identify and implement cooling measures that provide equivalent protection to shade.

### Drinking water

Other rules require water to be provided at all times, but the specific requirements for these rules are described below.

- Enough drinking water must be available so that each employee can consume 32 ounces per hour.
- Drinking water must be cool (66 to 77 degrees Fahrenheit) or cold (35 to 65 degrees Fahrenheit).
- Drinking water packaged as a consumer product and electrolyte-replenishing drinks that do not contain caffeine – sports drinks, for example – are acceptable substitutes, but should not completely replace the required water.

Employers are not required to supply the entire quantity of drinking water for employees at the beginning of a shift; employers may begin the shift with smaller quantities of water if they have a procedure that ensures any water consumed during the shift will be replaced.

Those performing “rest” or light” work, as defined by the rules, are exempt from the specific quantities of water when the heat index is less than 90 degrees Fahrenheit - but still required in other Oregon OSHA provisions.

### Supervisor and employee annual training

Employers must ensure that all employees – including new, supervisory, and nonsupervisory employees – are trained **annually** in the following topics, in a language they can readily understand, before they begin work at sites where the heat index will be 80 degrees Fahrenheit or higher:

- The environmental and personal risk factors for heat illness, including the extra burden of heat caused by exertion, clothing, and personal protective equipment.
- The procedures for complying with the requirements of this standard, including the employer's responsibility to provide water, daily heat index information, shade, cool-down rests, how to report symptoms of heat-related illness, and access to first aid, as well as the employees' right to exercise their rights under this standard without fear of retaliation.
- How to adapt to working in a hot environment.



- The importance of employees immediately reporting symptoms or signs of heat illness – in co-workers or themselves.
- The effects of nonjob factors – such as medications, alcohol, and obesity – on tolerance to heat stress.
- The main types of heat-related illnesses – heat cramps, heat exhaustion, heat syncope, and heat stroke – and their signs and symptoms.
- The importance of frequent consumption of small quantities of water, up to 32 ounces per hour.

Those performing “rest” or light” work, as defined by the rules, are exempt from the training requirements when the heat index is less than 90 degrees Fahrenheit.

### High heat practices

When the heat index exceeds 90 degrees Fahrenheit, employers must implement the following additional high heat practices:

- Ensure that effective communication by voice, observation, or electronic means is maintained so that employees working at the site can contact a supervisor when necessary. Cellphones and text messaging may be used for this purpose only if reception in the area is reliable.
- Ensure that employees are monitored for signs of heat illness, and whether medical attention is necessary, using one or more of the following:
  - Regular communication with employees working alone – by radio, cellphone, or other alternative means.
  - A mandatory buddy system.
  - Other equally effective means of observation or communication
- Designate and equip one or more employees at each site who can call for emergency medical

services and allow other employees to call for emergency services when designated employees are not immediately available.

- Ensure that each employee takes heat illness prevention rest breaks, based upon one of the three options in the rules, regardless of the length of the shift.
  - The rest break can take place with any other meal or rest period required by policy, rule, or law if the timing of the break coincides with the required meal or rest period.
  - The preventive cool-down rest break is a work assignment.

## Emergency medical plan

When the ambient temperature at a site exceeds the heat index of 80 degrees Fahrenheit, employers must implement an emergency medical plan that complies with 437-002-0161, Medical and first aid (agricultural

employers must implement, per [437-004-1305\(4\)](#)), and includes procedures for:

- Responding to employees' signs and symptoms of possible heat illness, including the use of first aid and how emergency medical services will be provided. If a supervisor observes or an employee reports signs or symptoms of heat illness, the supervisor must take immediate action appropriate to the severity of the illness.
  - If a supervisor observes signs or an employee reports symptoms of heat illness, the employee must be relieved from duty and provided with a means to reduce body temperature.
  - If the signs or symptoms indicate severe heat illness – such as decreased consciousness, staggering, vomiting, disorientation, irrational behavior, or convulsions – immediately implement the emergency response procedures.



- An employee exhibiting signs or symptoms of heat illness must be monitored and must not be left alone or sent home without being offered on-site first aid or provided with emergency medical services.
- Contacting emergency medical services and, if instructed to do so by medical professionals, transporting employees to a place where they can be reached by an emergency medical provider.
- Ensuring that clear and precise directions to the site are provided to emergency responders so they can quickly find the affected employee.

### Acclimatization

Employers must develop effective acclimatization practices that allow employees to gradually adapt to working at sites where the ambient temperature heat exceeds the heat index of 80 degrees Fahrenheit. Employers may either develop their own acclimatization plan or follow guidance from the National Institute for Occupational Safety and Health (NIOSH).

More heat-related illness resources can be found at [osha.oregon.gov/pages/topics/heat-stress.aspx](https://osha.oregon.gov/pages/topics/heat-stress.aspx)



Visit **Oregon OSHA**

### WORKERS

Your employer cannot retaliate against you for reporting any workplace health or safety concern or violation, for more information on your rights visit Oregon OSHA.



## ATTACHMENT 5

OSHA Quick Card: Protecting Workers from Cold Stress

## Protecting Workers from Cold Stress

Cold temperatures and increased wind speed (wind chill) cause heat to leave the body more quickly, putting workers at risk of cold stress. Anyone working in the cold may be at risk, e.g., workers in freezers, outdoor agriculture and construction.

### Common Types of Cold Stress

#### *Hypothermia*

- Normal body temperature (98.6°F) drops to 95°F or less.
- **Mild Symptoms:** alert but shivering.
- **Moderate to Severe Symptoms:** shivering stops; confusion; slurred speech; heart rate/breathing slow; loss of consciousness; death.

#### *Frostbite*

- Body tissues freeze, e.g., hands and feet. Can occur at temperatures above freezing, due to wind chill. May result in amputation.
- **Symptoms:** numbness, reddened skin develops gray/white patches, feels firm/hard, and may blister.

#### *Trench Foot (also known as Immersion Foot)*

- Non-freezing injury to the foot, caused by lengthy exposure to wet and cold environment. Can occur at air temperature as high as 60°F, if feet are constantly wet.
- **Symptoms:** redness, swelling, numbness, and blisters.

### Risk Factors

- Dressing improperly, wet clothing/skin, and exhaustion.

### For Prevention, Your Employer Should:

- Train you on cold stress hazards and prevention.
- Provide engineering controls, e.g., radiant heaters.
- Gradually introduce workers to the cold; monitor workers; schedule breaks in warm areas.

For more information:



U.S. Department of Labor

[www.osha.gov](http://www.osha.gov) (800) 321-OSHA (6742)

# WORKPLACE SOLUTIONS

From the National Institute for Occupational Safety and Health

## Preventing Cold-related Illness, Injury, and Death among Workers

### Summary

Workers, both indoors and outdoors, in services, transportation, agriculture, construction, and other industries may be exposed to environmental cold stress that can lead to thermal discomfort and in some cases even severe injuries, illnesses, or death. The National Institute for Occupational Safety and Health (NIOSH) recommends that employers implement a cold-related illness and injury prevention program that includes preventive measures such as using engineering controls, establishing work/rest schedules, training workers about the hazards of working in cold environments, and providing appropriate cold-weather gear.

### Description of Exposure

Workers who work in cold environments may be at risk of cold stress. Exposure to cold can be an uncomfortable and potentially dangerous situation. Health emergencies can occur in people who work outdoors or in an area

that is purposefully kept cold, poorly insulated, or without heat. People who have previously experienced frostbite, sedentary workers, and those with poor circulation may be especially susceptible. For indoor workers, work in cold, damp conditions can be uncomfortable and may lead to declining work performance (i.e., a decline in cognitive function and dexterity) or result in cold-related illness or injury. Cold-related conditions can also worsen musculoskeletal injuries and vascular disorders. For outdoor workers, what constitutes cold stress can vary across different areas of the country. In regions where workers are unaccustomed to winter weather, near freezing temperatures are considered factors for cold stress. Whenever outdoor temperatures drop substantially and wind speed increases, heat leaves the body more rapidly. According to the American Conference of Governmental Industrial Hygienists (ACGIH<sup>®</sup>) Threshold Limit Values (TLV<sup>®</sup>), workers should be protected from exposure to cold so that the deep core temperature does not fall below 96.8°F (36°C) and to prevent frostbite to body extremities [ACGIH 2019]. Serious health problems can occur when the body is unable to stay warm enough.



Photo by MarianVejcik/Getty Images

### Cold-related Illnesses and Injuries

Cold-related illnesses and injuries include chilblains, trench foot, frostbite, and hypothermia.

**Chilblains.** Chilblains are the painful inflammation of small blood vessels in the skin that occur in response to repeated exposure to cold but nonfreezing temperatures. Small blood vessels in the skin may become permanently damaged by cold temperatures, resulting in redness and itching during additional exposures. Symptoms of chilblains include redness, itching, possible blistering, inflammation, and possible ulceration in severe cases.



Centers for Disease Control  
and Prevention  
National Institute for Occupational  
Safety and Health

**Trench Foot.** Trench foot is an injury of the feet after prolonged exposure to wet and cold-related conditions. Trench foot occurs because wet feet lose heat faster than dry feet. To prevent heat loss, the body constricts blood vessels in the feet, and then the skin tissue begins to die. Symptoms of trench foot include reddening of the skin, numbness, leg cramps, swelling, tingling pain, blisters or ulcers, bleeding under the skin, and gangrene (e.g., foot turns purple, blue, or gray).

**Frostbite.** Frostbite is an injury caused by freezing of the skin and deeper tissues, resulting in the loss of feeling and color in the affected areas. Frostbite can permanently damage body tissues, and severe cases can lead to amputation. Examples of risk factors for frostbite include contact with metal or water, dehydration, diabetes, smoking, alcohol abuse, sedating or judgment impairing medications, and prior history of frostbite. Symptoms of frostbite include numbness; tingling or stinging; aching; and bluish or pale, waxy skin. During treatment of frostbite and trench foot, avoid rubbing or putting pressure on affected areas, since that can damage tissue.

**Hypothermia.** When exposed to cold temperatures, the body loses heat faster than it can be produced. Prolonged exposure to cold causes internal body temperature to drop, resulting in a condition called hypothermia. Hypothermia affects brain function, making the victim unable to think clearly or move well (i.e., they may be unable to protect themselves from hazards, or experience slips, trips, and falls). This makes hypothermia particularly dangerous because a person may not recognize the symptoms and will be unable to make life-preserving decisions. Symptoms of hypothermia can depend on how long a person has been exposed to cold temperatures and individual variability.

## Hypothermia Symptoms and First Aid

Early symptoms include shivering, fatigue, loss of coordination, confusion, and/or disorientation.

Late symptoms include no shivering, blue skin, dilated pupils, slowed pulse and breathing, and/or loss of consciousness.

If hypothermia is suspected, medical assistance should be requested immediately (e.g., call 911). Begin first aid by:

1. moving the worker to a warm room or vehicle,
2. removing wet clothing,
3. covering their body with loose, dry blankets, clothing, or towels (may use skin-to-skin contact or warm bottles or hot packs in armpits, sides of chest, and groin to increase body's temperature), and
4. providing warm, non-alcoholic beverages if the worker is conscious.

If the worker has no pulse, cardiopulmonary resuscitation (CPR) should be provided and continued during the warming attempts, until the person responds or medical aid becomes available. Chest compressions should not be performed for patients who manifest an organized rhythm on a cardiac monitor (e.g., automated external defibrillator [AED]), even if they have no palpable pulses and no other signs of life. The worker should be handled very gently and kept horizontal, because when cold, the heart is prone to ventricular fibrillation with any disturbance. Severely hypothermic patients have been known to survive neurologically intact after long periods (over an hour) in a state of “suspended animation” [State of Alaska DHSS 2014].



Photo by ilkercekk/Getty Images

## Case Reports

### Indoor Environment: Airline Catering Facility

In an airline catering facility cold room (approximately 40°F), meals were assembled at workstations in shifts lasting 3–8 hours [Ceballos et al. 2015; NIOSH 2014]. Because preparations sometimes required fine manual dexterity (e.g., thinly slicing fish, decorating with small garnishes), the workers preferred wearing thin gloves instead of thicker, better insulated gloves. The frozen food they handled caused their hands to become cold and numb. Drafts inside the cold room made some areas feel colder than others, and air velocities exceeded the recommended guidelines of 200 feet per minute (FPM) [ACGIH 2019]. In addition, the workers felt that their breaks were not long enough to warm up, or to change out of wet or sweat-dampened clothing. An evaluation of the cold room concluded that thermal comfort concerns perceived by workers might have resulted from workstation air drafts, insufficient use of personal protective equipment (e.g., better insulated gloves) due to dexterity concerns, work practices, and lack of knowledge about good health and safety practices. In an evaluation of a second airline catering facility where the temperature was approximately 40°F, workers reported that they

felt discomfort working in cold temperatures, particularly in the freezer or coolers [NIOSH 2015]. The reported findings suggest that language was a barrier to effective training and communication regarding workplace safety and health because employees came from 18 countries.

## Outdoor Environment: Long Haul Driving Along Highway

In the winter of 2009, a 56-year-old male truck driver went to the emergency room seeking care [Alaska Trauma Registry]. He had come to Alaska after a long haul drive through Canada. Along his route, he had stopped to change a fuel filter. He accidentally splashed diesel fuel on his gloves, which froze to his hands as he worked outside along the highway. After arriving at his destination, he had to spend a night at the hospital receiving treatment for his frostbitten hands.

## Outdoor Environment: Sheep Ranch

At 3:00 p.m., a 58-year-old woman (who was wearing tennis shoes, blue jeans, sweater, jacket, and gloves) and her husband left their sheep ranch headquarters to round up their animals and bring them in for protection from a major snow storm that was developing [NIOSH 1990]. The woman separated from her husband to chase down a second flock of sheep. Shortly afterward, a high wind arose and created whiteout conditions in the area. The husband was unable to locate the woman and returned to the ranch to obtain additional help. At 10:00 p.m., the sheriff's department, local volunteer fire department, emergency medical service, and search and rescue units became involved in the search. The search continued until 3:00 a.m., when it was decided to wait for daylight. At 7:45 a.m., the body of the woman was found. Autopsy results showed she had died from hypothermia.

## Recommendations

Whether in an indoor or outdoor environment where cold stress conditions are possible, employers and workers should be aware of symptoms of cold-related illness and injury, not only in themselves but also in their coworkers, and be prepared to immediately notify their supervisor, provide first aid, and seek prompt medical assistance (e.g., call 911).

Prevention is the best way to avoid cold-related illness and injury. Employers and workers should follow the NIOSH recommendations below to reduce the risk of cold-related illness and injury.

### All Cold Environments

Employers should:

- Train supervisors and workers to prevent, recognize, and treat cold-related illness and injury.

- Provide training in a language and vocabulary that the workers understand.
- Reduce workers' time spent in the cold environment.
- Reduce the physical demands of workers (e.g., use relief workers or rotate extra workers in and out of work for long, demanding jobs).
- Ensure access to warm areas and a place to change out of wet clothes.
- Encourage employees to take breaks to warm up when needed.
- Monitor workers in cold conditions and initiate a buddy system.
- Include a medical and environmental thermometer and chemical hot packs in first aid kits.
- Participate in joint management/employee safety committees.
- Provide appropriate cold weather gear such as hats, gloves, and boots for work in cold environments.
- Provide wind protective clothing based on air velocities.
- Provide prompt medical attention to workers who show signs of cold-related illness or injury.

Workers should:

- Take regular breaks to warm up.
- Monitor their physical condition and that of coworkers.
- Stay hydrated by drinking lots of water; warm beverages may help increase body temperature.
- Stay well nourished by snacking on high carbohydrate foods.
- Avoid touching cold metal or wet surfaces with bare skin.



Photo by sorn340/Getty Images

- Report signs and symptoms of cold-related illness and injury to supervisors and medical staff immediately.
- Participate in joint management/employee safety committees.
- Carry extra cold weather gear, such as a change of clothes, in case work clothing gets wet.
- Wear several layers of loose clothing for better insulation; take layers off if you begin to sweat and put them back on when you cool down. Inner layers should be wool or synthetic fabrics to wick away moisture; outer layers should be wind and water-resistant.
- Avoid wearing wet clothes.
- Protect the ears, face, hands, and feet by wearing hats, gloves, socks, and boots.

## Indoor Environments

Employers should:

- Install equipment to reduce drafts and condensation.
- Provide warm water or dry air heaters outside cold rooms for workers to warm their hands.
- Minimize air velocity and not exceed 200 FPM.
- Perform preventative maintenance on a regular schedule and make repairs if heating systems are not working properly.
- Rotate employees to different tasks after every break.
- Minimize work requiring manual dexterity in cold rooms.
- Provide glove alternatives for workers inside cold rooms (e.g., glove liners or fingerless gloves to wear under plastic gloves).



Photo by wabeno/Getty Images

## Outdoor Environments

Employers should:

- Create a plan for assessing and acting on workplace hazards posed by sudden weather changes, such as dropping temperatures or increasing wind speeds.

- Schedule normal maintenance and repairs in cold areas for warmer months when possible.
- Schedule cold jobs for the warmer part of the day.
- Ensure that workers traveling through or working in remote areas have appropriate cold-weather survival equipment (e.g., emergency communications equipment such as a personal locator beacon or satellite phone).

## Acknowledgments

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## For More Information

Information about *Cold Stress* can be found on the following website:

<https://www.cdc.gov/niosh/topics/coldstress/>

1-800-CDC-INFO (1-800-232-4636)

TTY: 1-888-232-6348

CDC/NIOSH INFO: [cdc.gov/info](http://cdc.gov/info) | [cdc.gov/niosh](http://cdc.gov/niosh)

Monthly *NIOSH eNews*: <https://www.cdc.gov/niosh/eNews>.

Mention of any company or product does not constitute endorsement by NIOSH. In addition, citations to websites external to NIOSH do not constitute NIOSH endorsement of the sponsoring organizations or their programs or products. Furthermore, NIOSH is not responsible for the content of these websites.

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As part of the Centers for Disease Control and Prevention, NIOSH is the federal agency responsible for conducting research and making recommendations to prevent work-related illness and injuries. All *Workplace Solutions* are based on research studies that show how worker exposures to hazardous agents or activities can be significantly reduced.

**DOI: <https://doi.org/10.26616/NIOSH PUB2019113>  
DHHS (NIOSH) Publication No. 2019-113**

September 2019

## How to Protect Yourself and Others

- Know the symptoms; monitor yourself and co-workers.
- Drink warm, sweetened fluids (no alcohol).
- Dress properly:
  - Layers of loose-fitting, insulating clothes
  - Insulated jacket, gloves, and a hat (waterproof, if necessary)
  - Insulated and waterproof boots

## What to Do When a Worker Suffers from Cold Stress

### *For Hypothermia:*

- Call 911 immediately in an emergency.
- To prevent further heat loss:
  - Move the worker to a warm place.
  - Change to dry clothes.
  - Cover the body (including the head and neck) with blankets, and with something to block the cold (e.g., tarp, garbage bag). Do **not** cover the face.
- If medical help is more than 30 minutes away:
  - Give warm, sweetened drinks if alert (no alcohol).
  - Apply heat packs to the armpits, sides of chest, neck, and groin. Call 911 for additional rewarming instructions.

### *For Frostbite:*

- Follow the recommendations “**For Hypothermia**”.
- Do not rub the frostbitten area.
- Avoid walking on frostbitten feet.
- Do not apply snow/water. Do not break blisters.
- Loosely cover and protect the area from contact.
- Do not try to rewarm the area unless directed by medical personnel.

### *For Trench (Immersion) Foot:*

- Remove wet shoes/socks; air dry (in warm area); keep affected feet elevated and avoid walking. Get medical attention.

For more information:



U.S. Department of Labor

[www.osha.gov](http://www.osha.gov) (800) 321-OSHA (6742)

## ATTACHMENT 6

Safety Data Sheets

# Safety Data Sheet

Effective date: 11 May 2020

Revision : 11 May 2020

Trade Name: Liquinox®

## I Identification of the substance/mixture and of the supplier

### I.1 GHS Product identifier

Trade Name: Liquinox®

Product number: 1201, 1201-1, 1205, 1215, 1230, 1232, 1232-1, 1255

### I.2 Application of the substance / the mixture: Cleaning material/Detergent

**I.2.1 Recommended dilution ratio: 1 - 2% in water**

### I.3 Details of the supplier of the Safety Data Sheet

**Manufacturer:**

Alconox Inc.  
30 Glenn St  
White Plains, NY 10603  
(914) 948-4040

**Supplier:****Emergency telephone number:**

ChemTel Inc  
North America: 1-888-255-3924  
International: +1 813-248-0573

## 2 Hazards identification

### 2.1 Classification of the substance or mixture:

In compliance with EC regulation No. 1272, 29CFR1910/1200 and GHS requirements.

**Hazard-determining components of labeling:**

Alcohol ethoxylate  
Sodium alkylbenzene sulfonate  
Sodium xylenesulphonate  
Lauramine oxide

### 2.2 Label elements:

Eye damage, category 1.  
Skin irritation, category 2.

**Product at recommended dilution:**

Eye irritation, category 2B

**Hazard pictograms:****Signal word:** Danger**Hazard statements:**

H315 Causes skin irritation.  
H318 Causes serious eye damage.

**Precautionary statements:**

P264 Wash skin thoroughly after handling.  
P280 Wear protective gloves/protective clothing/eye protection/face protection.

## Safety Data Sheet

**Effective date:** 11 May 2020

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**Trade Name: Liquinox®**

P302+P352 If on skin: Wash with soap and water.

P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.

P332+P313 If skin irritation occurs: Get medical advice/attention.

P501 Dispose of contents and container as instructed in Section 13.

**Hazardous Elements at Use Dilution:**

Hazard pictograms:



**Signal word:** Warning

**Hazard statements:**

H320 Causes eye irritation

**Precautionary statements:**

P302+P352 If on skin: Wash with soap and water.

P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.

P501 Dispose of contents and container as instructed in Section 13

**Additional information:** None.

**Hazard description**

**Hazards Not Otherwise Classified (HNOC):** May cause surfaces to become slippery. Use caution in areas of foot traffic if on floors.

**Information concerning particular hazards for humans and environment:**

The product has to be labelled due to the calculation procedure of the "General Classification guideline for preparations of the EU" in the latest valid version.

**Classification system:**

The classification is according to EC regulation No. 1272, 29CFR1910/1200 and GHS, and extended by company and literature data. The classification is in accordance with the latest editions of international substances lists and is supplemented by information from technical literature and by information provided by the company.

**3 Composition/information on ingredients**

**3.1 Chemical characterization:** None

**3.2 Description:** None

**3.3 Hazardous components (percentages by weight)**

Identification	Chemical Name	Classification	Wt. %
<b>CAS number:</b> 68081-81-2 or 68411-30-3	Sodium Alkylbenzene Sulfonate	Acute Tox. 4; H303 Skin Irrit. 2 ; H315 Eye Dam. 1; H318	10-25
<b>CAS number:</b> 1300-72-7	Sodium Xylenesulphonate	Eye Irrit. 2;H319	2.5-10
<b>CAS number:</b> 84133-50-6	Alcohol Ethoxylate	Skin Irrit. 2 ; H315 Eye Dam. 1; H318	2.5-10
<b>CAS number:</b> 1643-20-5	Lauramine oxide	Skin Irrit. 2 ; H315 Eye Dam. 1; H318	1-2

## Safety Data Sheet

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**Trade Name:** Liquinox®

At use dilution:			
<b>CAS number:</b> 68081-81-2 or 68411-30-3	Sodium Alkylbenzene Sulfonate	Eye Irr. 2B; H319	0.1-0.25

**3.4 Additional Information:** None.

### 4 First aid measures

#### 4.1 Description of first aid measures

**General information:** None.

**After inhalation:**

Maintain an unobstructed airway.  
Loosen clothing as necessary and position individual in a comfortable position.

**After skin contact:**

Wash affected area with soap and water.  
Seek medical attention if symptoms develop or persist.

**After eye contact:**

Rinse/flush exposed eye(s) gently using water for 15-20 minutes.  
Remove contact lens(es) if able to do so during rinsing.  
Seek medical attention if irritation persists or if concerned.

**After swallowing:**

Rinse mouth thoroughly.  
Seek medical attention if irritation, discomfort, or vomiting persists.

#### 4.2 Most important symptoms and effects, both acute and delayed

None

#### 4.3 Indication of any immediate medical attention and special treatment needed:

No additional information.

#### First aid measure at recommended dilution:

**General information:** None.

**After inhalation:**

Maintain an unobstructed airway.  
Loosen clothing as necessary and position individual in a comfortable position.

**After skin contact:**

Wash affected area with soap and water.

**After eye contact:**

Rinse/flush exposed eye(s) gently using water for 15-20 minutes.  
Remove contact lens(es) if able to do so during rinsing.

**After swallowing:**

Rinse mouth thoroughly. Seek medical attention if irritation, discomfort, or vomiting develops.

## Safety Data Sheet

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Revision : 11 May 2020

Trade Name: Liquinox®

### 5 Firefighting measures

#### 5.1 Extinguishing media

**Suitable extinguishing agents:**

Use appropriate fire suppression agents for adjacent combustible materials or sources of ignition.

**For safety reasons unsuitable extinguishing agents:** None

#### 5.2 Special hazards arising from the substance or mixture:

Thermal decomposition can lead to release of irritating gases and vapors.

#### 5.3 Advice for firefighters

**Protective equipment:**

Wear protective eye wear, gloves and clothing.

Refer to Section 8.

#### 5.4 Additional information:

Avoid inhaling gases, fumes, dust, mist, vapor and aerosols.

Avoid contact with skin, eyes and clothing.

### 6 Accidental release measures

#### 6.1 Personal precautions, protective equipment and emergency procedures

Ensure adequate ventilation.

Ensure air handling systems are operational.

#### 6.2 Environmental precautions:

Should not be released into the environment.

Prevent from reaching drains, sewer or waterway.

#### 6.3 Methods and material for containment and cleaning up:

Wear protective eye wear, gloves and clothing.

#### 6.4 Reference to other sections: None

### 7 Handling and storage

#### 7.1 Precautions for safe handling:

Avoid breathing mist or vapor.

Do not eat, drink, smoke or use personal products when handling chemical substances.

#### 7.2 Conditions for safe storage, including any incompatibilities

Store in a cool, well-ventilated area.

#### 7.3 Specific end use(s):

No additional information.

### 8 Exposure controls/personal protection



#### 8.1 Control parameters :

25322-68-3, Poly(ethylene oxide), AIHA TWA 10 mg/m<sup>3</sup> (<0.15% present in concentrate)

## Safety Data Sheet

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**Trade Name:** Liquinox®

### 8.2 Exposure controls

**Appropriate engineering controls:**

Emergency eye wash fountains and safety showers should be available in the immediate vicinity of use or handling.

**Respiratory protection:**

Not needed under normal conditions.

**Protection of skin:**

Select glove material impermeable and resistant to the substance.

**Eye protection:**

Safety goggles or glasses, or appropriate eye protection.

**General hygienic measures:**

Wash hands before breaks and at the end of work.

Avoid contact with skin, eyes and clothing.

#### Exposure Control and Personal Protective Equipment at recommended dilution:

Under normal use and operational conditions, no special personal protective equipment or engineering controls will be necessary. Handle with care.

### 9 Physical and chemical properties

<b>Appearance (physical state, color):</b>	Pale yellow liquid	<b>Explosion limit lower: Explosion limit upper:</b>	Not determined or not available. Not determined or not available.
<b>Odor:</b>	Not determined or not available.	<b>Vapor pressure at 20°C:</b>	Not determined or not available.
<b>Odor threshold:</b>	Not determined or not available.	<b>Vapor density:</b>	Not determined or not available.
<b>pH-value:</b>	8.5 (as is)	<b>Relative density:</b>	Not determined or not available.
<b>Melting/Freezing point:</b>	Not determined or not available.	<b>Solubilities:</b>	Not determined or not available.
<b>Boiling point/Boiling range:</b>	Not determined or not available.	<b>Partition coefficient (n-octanol/water):</b>	Not determined or not available.
<b>Flash point (closed cup):</b>	Not determined or not available.	<b>Auto/Self-ignition temperature:</b>	Not determined or not available.
<b>Evaporation rate:</b>	Not determined or not available.	<b>Decomposition temperature:</b>	Not determined or not available.
<b>Flammability (solid, gaseous):</b>	Not flammable	<b>Viscosity:</b>	a. Kinematic: Not determined or not available. b. Dynamic: Not determined or not available.
<b>Density at 20°C:</b>	1.08 g/mL		

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Trade Name: Liquinox®

### 10 Stability and reactivity

- 10.1 Reactivity:** Not determined or not available.
- 10.2 Chemical stability:** Not determined or not available.
- 10.3 Possibility hazardous reactions:** Not determined or not available.
- 10.4 Conditions to avoid:** Not determined or not available.
- 10.5 Incompatible materials:** Not determined or not available.
- 10.6 Hazardous decomposition products:** Not determined or not available.

### 11 Toxicological information

#### 11.1 Information on toxicological effects:

##### Acute Toxicity:

###### Oral:

: LD50 >5000 mg per kg (Rat, Oral) - product.

**Chronic Toxicity:** No additional information.

##### Skin corrosion/irritation (raw materials):

Alcohol Ethoxylate: May cause mild to moderate skin irritation.

Sodium Alkylbenzene Sulfonate: Causes skin irritation.

Lauramine oxide: Causes skin irritation.

##### Serious eye damage/irritation (raw materials):

Sodium Alkylbenzene Sulfonate: Causes serious eye damage.

Alcohol Ethoxylate: Causes moderate to severe eye irritation and conjunctivitis.

Sodium xylenesulphonate: irritating to eyes.

Lauramine oxide: Causes serious eye damage.

#### Product information at recommended dilution:

Eye irritation may occur upon direct contact with eyes. No specific hazards for skin contact, inhalation, or chronic exposure are expected within normal use parameters.

**Respiratory or skin sensitization:** No additional information.

**Carcinogenicity:** No additional information.

**IARC (International Agency for Research on Cancer):** None of the ingredients are listed.

**NTP (National Toxicology Program):** None of the ingredients are listed.

**Germ cell mutagenicity:** No additional information.

**Reproductive toxicity:** No additional information.

**STOT-single and repeated exposure:** No additional information.

**Additional toxicological information:** No additional information.

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**Trade Name:** Liquinox®

### 12 Ecological information

**12.1 Toxicity:**

Sodium Alkylbenzene Sulfonate: Fish, LC50 1.67 mg/l, 96 hours.  
 Sodium Alkylbenzene Sulfonate: Aquatic invertebrates, EC50 Daphnia 2.9 mg/l, 48 hours. Sodium Alkylbenzene Sulfonate: Aquatic Plants, EC50 Algae 29 mg/l, 96 hours.  
 Lauramine oxide: Fish, LC50 24.3 mg/l, 96h [Killifish (Cyprinodontidae)]  
 Lauramine oxide: Aquatic invertebrates, (LC50): 3.6 mg/l 96 hours [Daphnia (Daphnia)].  
 Lauramine oxide: Aquatic plants, EC50 Algae 0.31 mg/l 72 hours [Algae]  
 Alcohol Ethoxylate: Aquatic invertebrates, (LC50): 4.01 mg/l 48 hours [Daphnia (daphnia)].

**12.2 Persistence and degradability:** No additional information.

**12.3 Bioaccumulative potential:** No additional information.

**12.4 Mobility in soil:** No additional information.

**General notes:** No additional information.

**12.5 Results of PBT and vPvB assessment:**

**PBT:** No additional information.

**vPvB:** No additional information.

**12.6 Other adverse effects:** No additional information.

### 13 Disposal considerations

**13.1 Waste treatment methods (consult local, regional and national authorities for proper disposal)**

**Relevant Information:**

It is the responsibility of the waste generator to properly characterize all waste materials according to applicable regulatory entities. (US 40CFR262.11).

### 14 Transport information

<b>14.1 UN Number:</b> ADR, ADN, DOT, IMDG, IATA	None
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<b>14.2 UN Proper shipping name:</b> ADR, ADN, DOT, IMDG, IATA	None
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<b>14.3 Transport hazard classes:</b> ADR, ADN, DOT, IMDG, IATA	<table style="width: 100%;"> <tr> <td style="width: 50%;"><b>Class:</b></td> <td style="width: 50%;">None</td> </tr> <tr> <td><b>Label:</b></td> <td>None</td> </tr> <tr> <td><b>LTD. QTY:</b></td> <td>None</td> </tr> </table>	<b>Class:</b>	None	<b>Label:</b>	None	<b>LTD. QTY:</b>	None
<b>Class:</b>	None						
<b>Label:</b>	None						
<b>LTD. QTY:</b>	None						

<b>US DOT Limited Quantity Exception:</b>	None
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<b>Bulk:</b> <b>RQ (if applicable):</b> None <b>Proper shipping Name:</b> None <b>Hazard Class:</b> None <b>Packing Group:</b> None <b>Marine Pollutant (if applicable):</b> No additional information. <b>Comments:</b> None	<b>Non Bulk:</b> <b>RQ (if applicable):</b> None <b>Proper shipping Name:</b> None <b>Hazard Class:</b> None <b>Packing Group:</b> None <b>Marine Pollutant (if applicable):</b> No additional information. <b>Comments:</b> None
<b>14.4 Packing group:</b> ADR, ADN, DOT, IMDG, IATA	None
<b>14.5 Environmental hazards:</b>	None
<b>14.6 Special precautions for user:</b>	None
<b>Danger code (Kemler):</b>	None
<b>EMS number:</b>	None
<b>Segregation groups:</b>	None
<b>14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code:</b> Not applicable.	
<b>14.8 Transport/Additional information:</b>	
<b>Transport category:</b>	None
<b>Tunnel restriction code:</b>	None
<b>UN "Model Regulation":</b>	None

### 15 Regulatory information

#### 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture.

##### North American

###### SARA

**Section 313 (specific toxic chemical listings):** None of the ingredients are listed.  
**Section 302 (extremely hazardous substances):** None of the ingredients are listed.

###### CERCLA (Comprehensive Environmental Response, Clean up and Liability Act)

**Reportable Spill Quantity:** None of the ingredients are listed.

###### TSCA (Toxic Substances Control Act):

**Inventory:** All ingredients are listed as active.  
**Rules and Orders:** Not applicable.

###### Proposition 65 (California):

**Chemicals known to cause cancer:** None of the ingredients are listed.  
**Chemicals known to cause reproductive toxicity for females:** None of the ingredients are listed.  
**Chemicals known to cause reproductive toxicity for males:** None of the ingredients are listed.  
**Chemicals known to cause developmental toxicity:** None of the ingredients are listed.

###### Canadian

###### Canadian Domestic Substances List (DSL):

All ingredients are listed.

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### Asia Pacific

#### Australia

**Australian Inventory of Chemical Substances (AICS):** All ingredients are listed.

#### China

**Inventory of Existing Chemical Substances in China (IECSC):** All ingredients are listed.

#### Japan

**Inventory of Existing and New Chemical Substances (ENCS):** All ingredients are listed.

#### Korea

**Existing Chemicals List (ECL):** All ingredients are listed.

#### New Zealand

**New Zealand Inventory of Chemicals (NZOIC):** All ingredients are listed.

#### Philippines

**Philippine Inventory of Chemicals and Chemical Substances (PICCS):** All ingredients are listed.

#### Taiwan

**Taiwan Chemical Substance Inventory (TSCI):** All ingredients are listed.

### EU

**REACH Article 57 (SVHC):** None of the ingredients are listed.

**Germany MAK:** Not classified.

### 16 Other information

**Abbreviations and Acronyms:** None

#### Summary of Phrases

##### Hazard statements:

- H315 Causes skin irritation.
- H318 Causes serious eye damage.

##### Precautionary statements:

- P264 Wash skin thoroughly after handling.
- P280 Wear protective gloves/protective clothing/eye protection/face protection.
- P302+P352 If on skin: Wash with soap and water.
- P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
- P332+P313 If skin irritation occurs: Get medical advice/attention.
- P501 Dispose of contents and container as instructed in Section 13.

#### Manufacturer Statement:

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

NFPA: 1-0-0  
HMIS: 1-0-0

At recommended dilution:

NFPA: 1-0-0  
HMIS: 1-0-0

**Safety Data Sheet**

according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), 29CFR1910/1200 and GHS Rev. 3

**Effective date:** 12.08.2015**Revision :** 12.10.2015**Trade Name:** Alconox**1 Identification of the substance/mixture and of the supplier****1.1 Product identifier****Trade Name:** Alconox**Synonyms:****Product number:** Alconox**1.2 Application of the substance / the mixture :** Cleaning material/Detergent**1.3 Details of the supplier of the Safety Data Sheet**

<b>Manufacturer</b>	<b>Supplier</b>
Alconox, Inc. 30 Glenn Street White Plains, NY 10603 1-914-948-4040	Not Applicable

**Emergency telephone number:****ChemTel Inc**

North America: 1-800-255-3924

International: 01-813-248-0585

**2 Hazards identification****2.1 Classification of the substance or mixture:**

In compliance with EC regulation No. 1272/2008, 29CFR1910/1200 and GHS Rev. 3 and amendments.

**Hazard-determining components of labeling:**Tetrasodium Pyrophosphate  
Sodium tripolyphosphate  
Sodium Alkylbenzene Sulfonate**2.2 Label elements:**Skin irritation, category 2.  
Eye irritation, category 2A.**Hazard pictograms:****Signal word:** Warning**Hazard statements:**H315 Causes skin irritation.  
H319 Causes serious eye irritation.**Precautionary statements:**P264 Wash skin thoroughly after handling.  
P280 Wear protective gloves/protective clothing/eye protection/face protection.  
P302+P352 If on skin: Wash with soap and water.  
P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.  
P321 Specific treatment (see supplemental first aid instructions on this label).  
P332+P313 If skin irritation occurs: Get medical advice/attention.  
P362 Take off contaminated clothing and wash before reuse.  
P501 Dispose of contents and container as instructed in Section 13.

**Safety Data Sheet**

according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), 29CFR1910/1200 and GHS Rev. 3

**Effective date:** 12.08.2015**Revision :** 12.10.2015**Trade Name:** Alconox**Additional information:** None.**Hazard description****Hazards Not Otherwise Classified (HNOC):** None**Information concerning particular hazards for humans and environment:**

The product has to be labelled due to the calculation procedure of the "General Classification guideline for preparations of the EU" in the latest valid version.

**Classification system:**

The classification is according to EC regulation No. 1272/2008, 29CFR1910/1200 and GHS Rev. 3 and amendments, and extended by company and literature data. The classification is in accordance with the latest editions of international substances lists, and is supplemented by information from technical literature and by information provided by the company.

**3 Composition/Information on ingredients****3.1 Chemical characterization :** None**3.2 Description :** None**3.3 Hazardous components (percentages by weight)**

Identification	Chemical Name	Classification	Wt. %
<b>CAS number:</b> 7758-29-4	Sodium tripolyphosphate	Skin Irrit. 2 ; H315 Eye Irrit. 2; H319	12-28
<b>CAS number:</b> 68081-81-2	Sodium Alkylbenzene Sulfonate	Acute Tox. 4; H303 Skin Irrit. 2 ; H315 Eye Irrit. 2; H319	8-22
<b>CAS number:</b> 7722-88-5	Tetrasodium Pyrophosphate	Skin Irrit. 2 ; H315 Eye Irrit. 2; H319	2-16

**3.4 Additional Information :** None.**4 First aid measures****4.1 Description of first aid measures****General information:** None.**After inhalation:**

Maintain an unobstructed airway.

Loosen clothing as necessary and position individual in a comfortable position.

**After skin contact:**

Wash affected area with soap and water.

Seek medical attention if symptoms develop or persist.

**After eye contact:**

Rinse/flush exposed eye(s) gently using water for 15-20 minutes.

Remove contact lens(es) if able to do so during rinsing.

Seek medical attention if irritation persists or if concerned.

**After swallowing:**

Rinse mouth thoroughly.

Seek medical attention if irritation, discomfort, or vomiting persists.

**Safety Data Sheet**

according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), 29CFR1910/1200 and GHS Rev. 3

**Effective date:** 12.08.2015**Revision :** 12.10.2015**Trade Name:** Alconox**4.2 Most important symptoms and effects, both acute and delayed**

None

**4.3 Indication of any immediate medical attention and special treatment needed:**

No additional information.

**5 Firefighting measures****5.1 Extinguishing media****Suitable extinguishing agents:**

Use appropriate fire suppression agents for adjacent combustible materials or sources of ignition.

**For safety reasons unsuitable extinguishing agents :** None**5.2 Special hazards arising from the substance or mixture :**

Thermal decomposition can lead to release of irritating gases and vapors.

**5.3 Advice for firefighters****Protective equipment:**Wear protective eye wear, gloves and clothing.  
Refer to Section 8.**5.4 Additional information :**Avoid inhaling gases, fumes, dust, mist, vapor and aerosols.  
Avoid contact with skin, eyes and clothing.**6 Accidental release measures****6.1 Personal precautions, protective equipment and emergency procedures :**Ensure adequate ventilation.  
Ensure air handling systems are operational.**6.2 Environmental precautions :**Should not be released into the environment.  
Prevent from reaching drains, sewer or waterway.**6.3 Methods and material for containment and cleaning up :**

Wear protective eye wear, gloves and clothing.

**6.4 Reference to other sections :** None**7 Handling and storage****7.1 Precautions for safe handling :**Avoid breathing mist or vapor.  
Do not eat, drink, smoke or use personal products when handling chemical substances.**7.2 Conditions for safe storage, including any incompatibilities :**

Store in a cool, well-ventilated area.

**7.3 Specific end use(s):**

No additional information.

**Safety Data Sheet**

according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), 29CFR1910/1200 and GHS Rev. 3

Effective date: 12.08.2015

Revision : 12.10.2015

**Trade Name:** Alconox**8 Exposure controls/personal protection****8.1 Control parameters :**7722-88-5, Tetrasodium Pyrophosphate, OSHA TWA 5 mg/m<sup>3</sup>.**8.2 Exposure controls****Appropriate engineering controls:**

Emergency eye wash fountains and safety showers should be available in the immediate vicinity of use or handling.

**Respiratory protection:**

Not needed under normal conditions.

**Protection of skin:**

Select glove material impermeable and resistant to the substance.

**Eye protection:**

Safety goggles or glasses, or appropriate eye protection.

**General hygienic measures:**

Wash hands before breaks and at the end of work.

Avoid contact with skin, eyes and clothing.

**9 Physical and chemical properties**

<b>Appearance (physical state, color):</b>	White and cream colored flakes - powder	<b>Explosion limit lower:</b> <b>Explosion limit upper:</b>	Not determined or not available. Not determined or not available.
<b>Odor:</b>	Not determined or not available.	<b>Vapor pressure at 20°C:</b>	Not determined or not available.
<b>Odor threshold:</b>	Not determined or not available.	<b>Vapor density:</b>	Not determined or not available.
<b>pH-value:</b>	9.5 (aqueous solution)	<b>Relative density:</b>	Not determined or not available.
<b>Melting/Freezing point:</b>	Not determined or not available.	<b>Solubilities:</b>	Not determined or not available.
<b>Boiling point/Boiling range:</b>	Not determined or not available.	<b>Partition coefficient (n-octanol/water):</b>	Not determined or not available.
<b>Flash point (closed cup):</b>	Not determined or not available.	<b>Auto/Self-ignition temperature:</b>	Not determined or not available.
<b>Evaporation rate:</b>	Not determined or not available.	<b>Decomposition temperature:</b>	Not determined or not available.

**Safety Data Sheet**

according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), 29CFR1910/1200 and GHS Rev. 3

**Effective date:** 12.08.2015**Revision :** 12.10.2015

<b>Trade Name:</b> Alconox			
<b>Flammability (solid, gaseous):</b>	Not determined or not available.	<b>Viscosity:</b>	a. Kinematic: Not determined or not available. b. Dynamic: Not determined or not available.
<b>Density at 20°C:</b>	Not determined or not available.		

**10 Stability and reactivity**

- 10.1 Reactivity :** None
- 10.2 Chemical stability :** None
- 10.3 Possibility hazardous reactions :** None
- 10.4 Conditions to avoid :** None
- 10.5 Incompatible materials :** None
- 10.6 Hazardous decomposition products :** None

**11 Toxicological information****11.1 Information on toxicological effects :****Acute Toxicity:****Oral:**

: LD50 &gt; 5000 mg/kg oral rat - Product .

**Chronic Toxicity:** No additional information.**Skin corrosion/irritation:**

Sodium Alkylbenzene Sulfonate: Causes skin irritation. .

**Serious eye damage/irritation:**

Sodium Alkylbenzene Sulfonate: Causes serious eye irritation .

Tetrasodium Pyrophosphate: Rabbit - Risk of serious damage to eyes .

**Respiratory or skin sensitization:** No additional information.**Carcinogenicity:** No additional information.**IARC (International Agency for Research on Cancer):** None of the ingredients are listed.**NTP (National Toxicology Program):** None of the ingredients are listed.**Germ cell mutagenicity:** No additional information.**Reproductive toxicity:** No additional information.**STOT-single and repeated exposure:** No additional information.**Additional toxicological information:** No additional information.**12 Ecological information**

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**Trade Name:** Alconox**12.1 Toxicity:**

Sodium Alkylbenzene Sulfonate: Fish, LC50 1.67 mg/l, 96 hours.  
 Sodium Alkylbenzene Sulfonate: Aquatic invertebrates, EC50 Daphnia 2.4 mg/l, 48 hours.  
 Sodium Alkylbenzene Sulfonate: Aquatic Plants, EC50 Algae 29 mg/l, 96 hours.  
 Tetrasodium Pyrophosphate: Fish, LC50 - other fish - 1,380 mg/l - 96 h.  
 Tetrasodium Pyrophosphate: Aquatic invertebrates, EC50 - Daphnia magna (Water flea) - 391 mg/l - 48 h.

**12.2 Persistence and degradability:** No additional information.**12.3 Bioaccumulative potential:** No additional information.**12.4 Mobility in soil:** No additional information.**General notes:** No additional information.**12.5 Results of PBT and vPvB assessment:****PBT:** No additional information.**vPvB:** No additional information.**12.6 Other adverse effects:** No additional information.**13 Disposal considerations****13.1 Waste treatment methods (consult local, regional and national authorities for proper disposal)****Relevant Information:**

It is the responsibility of the waste generator to properly characterize all waste materials according to applicable regulatory entities. (US 40CFR262.11).

**14 Transport information**

**14.1 UN Number:** None  
 ADR, ADN, DOT, IMDG, IATA

**14.2 UN Proper shipping name:** None  
 ADR, ADN, DOT, IMDG, IATA

**14.3 Transport hazard classes:**  
 ADR, ADN, DOT, IMDG, IATA

<b>Class:</b>	None
<b>Label:</b>	None
<b>LTD. QTY:</b>	None

**US DOT**  
**Limited Quantity Exception:** None

**Bulk:**  
**RQ (if applicable):** None  
**Proper shipping Name:** None  
**Hazard Class:** None  
**Packing Group:** None  
**Marine Pollutant (if applicable):** No additional information.

**Non Bulk:**  
**RQ (if applicable):** None  
**Proper shipping Name:** None  
**Hazard Class:** None  
**Packing Group:** None  
**Marine Pollutant (if applicable):** No additional information.

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<b>Trade Name:</b> Alconox	
<b>Comments:</b> None	<b>Comments:</b> None
<b>14.4 Packing group:</b> ADR, ADN, DOT, IMDG, IATA	None
<b>14.5 Environmental hazards :</b>	None
<b>14.6 Special precautions for user:</b> <b>Danger code (Kemler):</b> <b>EMS number:</b> <b>Segregation groups:</b>	None None None None
<b>14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code:</b>	Not applicable.
<b>14.8 Transport/Additional information:</b>  <b>Transport category:</b> <b>Tunnel restriction code:</b> <b>UN "Model Regulation":</b>	  None None None

**15 Regulatory information****15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture.**  
**North American****SARA****Section 313 (specific toxic chemical listings):** None of the ingredients are listed.**Section 302 (extremely hazardous substances):** None of the ingredients are listed.**CERCLA (Comprehensive Environmental Response, Clean up and Liability Act) Reportable****Spill Quantity:** None of the ingredients are listed.**TSCA (Toxic Substances Control Act):****Inventory:** All ingredients are listed.**Rules and Orders:** Not applicable.**Proposition 65 (California):****Chemicals known to cause cancer:** None of the ingredients are listed.**Chemicals known to cause reproductive toxicity for females:** None of the ingredients are listed.**Chemicals known to cause reproductive toxicity for males:** None of the ingredients are listed.**Chemicals known to cause developmental toxicity:** None of the ingredients are listed.**Canadian****Canadian Domestic Substances List (DSL):**

All ingredients are listed.

**EU****REACH Article 57 (SVHC):** None of the ingredients are listed.

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**Effective date:** 12.08.2015**Revision :** 12.10.2015**Trade Name:** Alconox**Germany MAK:** Not classified.**Asia Pacific****Australia****Australian Inventory of Chemical Substances (AICS):** All ingredients are listed.**China****Inventory of Existing Chemical Substances in China (IECSC):** All ingredients are listed.**Japan****Inventory of Existing and New Chemical Substances (ENCS):** All ingredients are listed.**Korea****Existing Chemicals List (ECL):** All ingredients are listed.**New Zealand****New Zealand Inventory of Chemicals (NZOIC):** All ingredients are listed.**Philippines****Philippine Inventory of Chemicals and Chemical Substances (PICCS):** All ingredients are listed.**Taiwan****Taiwan Chemical Substance Inventory (TSCI):** All ingredients are listed.**16 Other Information****Abbreviations and Acronyms:** None**Summary of Phrases****Hazard statements:**

H315 Causes skin irritation.

H319 Causes serious eye irritation.

**Precautionary statements:**

P264 Wash skin thoroughly after handling.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

P302+P352 If on skin: Wash with soap and water.

P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.

P321 Specific treatment (see supplemental first aid instructions on this label).

P332+P313 If skin irritation occurs: Get medical advice/attention.

P362 Take off contaminated clothing and wash before reuse.

P501 Dispose of contents and container as instructed in Section 13.

**Manufacturer Statement:**

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

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**Trade Name:** Alconox

**HMIS:** 1-0-0

## ATTACHMENT 7

Activity Hazard Analyses



## ACTIVITY HAZARD ANALYSIS

**ACTIVITY:** Soil Vapor Sampling

**PROJECT:** Former City Texaco Station

**DATE:** 4/14/2025

**WORK DESCRIPTION:** Soil vapor pin installation and sampling

**PROJECT MANAGER:** Joe Sherrod

**SITE SAFETY OFFICER:** Braedon Warner

Work Activity Sequence Describe the steps and sequence.	Potential Health and Safety Hazards Analyze each step for potential hazards.	Hazard Controls Develop controls for each potential hazard.
Soil Vapor Pin Installation/Sample Collection	Hand and power tool use	<ul style="list-style-type: none"> <li>▪ Be aware of sharp edges.</li> <li>▪ Be aware of electrical connections and water hazards when working with tools.</li> <li>▪ Ensure that all tools are working properly.</li> <li>▪ Keep guards on power tools when not in use.</li> <li>▪ Inspect electrical connections (if applicable). Do not use devices with exposed insulation, tears, or fraying in cords. Plug connections must be original plugs or the device must be replaced. Use Ground Fault Circuit Interrupters devices in electrical connections for powered plug-in tools.</li> <li>▪ Inspect tools periodically to ensure dry and clean operation.</li> <li>▪ Repair tools only when unplugged.</li> </ul>
	Pinch points	<ul style="list-style-type: none"> <li>▪ Keep hands clear of closing mechanisms and moving parts.</li> </ul>

<b>Work Activity Sequence</b> Describe the steps and sequence.	<b>Potential Health and Safety Hazards</b> Analyze each step for potential hazards.	<b>Hazard Controls</b> Develop controls for each potential hazard.
	Exposure to contaminants, ingestion, skin/eye contact with contaminants	<ul style="list-style-type: none"> <li>▪ Ensure that decontamination procedures are on hand and are reviewed.</li> <li>▪ Ensure that PPE and rinsing water are available.</li> <li>▪ Wear appropriate personal protective equipment (PPE) (i.e., uniform/coveralls, work boots, safety glasses, and/or gloves) to prevent or reduce exposure.</li> <li>▪ Contact 911, as necessary.</li> <li>▪ Move exposed person away from source of contamination and rinse mouth if contaminant has been ingested.</li> <li>▪ If exposure to skin occurs, promptly wash contaminated skin using soap or mild detergent and water.</li> <li>▪ Rinse eyes with large amounts of water.</li> <li>▪ Follow decontamination procedures as outlined in the Health and Safety Plan.</li> </ul>
Decontamination	Exposure to contaminants	<ul style="list-style-type: none"> <li>▪ Avoid Spills</li> <li>▪ Wear the appropriate PPE to prevent or reduce exposure.</li> <li>▪ Remove PPE after decontamination and wash hands.</li> </ul>
	Slips, trips, and falls	<ul style="list-style-type: none"> <li>▪ Be aware that the decontamination area may become slippery.</li> <li>▪ Visually inspect work areas and mark, barricade, or eliminate slip, trip, and fall hazards as feasible.</li> <li>▪ Maintain proper illumination in the decontamination area.</li> <li>▪ If decontaminating on plastic sheeting, use caution since plastic sheeting is extremely slippery.</li> <li>▪ Wear boots with good traction.</li> </ul>
General Operations	Slips, trips, and falls	<ul style="list-style-type: none"> <li>▪ Be aware of slippery surfaces and tripping hazards on uneven landfill terrain.</li> <li>▪ Use handrails where available.</li> <li>▪ Wear appropriate footwear.</li> <li>▪ Maintain good housekeeping practices.</li> <li>▪ Clean up all spills immediately.</li> <li>▪ Maintain proper illumination in the work area.</li> <li>▪ Routinely inspect work area for unsafe conditions.</li> </ul>
	Muscle strain or injuries	<ul style="list-style-type: none"> <li>▪ Utilize appropriate tools needed to access water well to prevent back/muscle strain.</li> <li>▪ Use proper lifting techniques or ask for assistance with heavy objects.</li> <li>▪ Evaluate weight and center of gravity of heavier items prior to lifting or moving.</li> <li>▪ If present, avoid contact with electric fences, and barbed wire, and grazing animals.</li> </ul>

<b>Work Activity Sequence</b> Describe the steps and sequence.	<b>Potential Health and Safety Hazards</b> Analyze each step for potential hazards.	<b>Hazard Controls</b> Develop controls for each potential hazard.
	Weather	<ul style="list-style-type: none"> <li>▪ When a potential for lightning exists, nearby work should be shut down until risk passes. See Lightning attachment to HASP.</li> </ul>
	Noise exposure	<ul style="list-style-type: none"> <li>▪ Wear hearing protection in high noise environments or when around heavy machinery or equipment.</li> <li>▪ Ensure that hearing protection is available.</li> </ul>
	Cold Stress	<ul style="list-style-type: none"> <li>▪ Wear proper clothing for cold, wet, and windy conditions.</li> <li>▪ Schedule work for the warmest parts of the day</li> <li>▪ Take frequent, short breaks in warm, dry shelters or vehicles.</li> <li>▪ Avoid exhaustion or fatigue.</li> <li>▪ Stay dry. Keep extra clothing handy in case clothing gets wet.</li> <li>▪ Drink warm beverages and avoid caffeine and alcohol.</li> <li>▪ Use buddy-system if possible, so that one worker can recognize danger signs.</li> </ul>
	Driving Hazards	<ul style="list-style-type: none"> <li>▪ Wear seatbelts when in a moving vehicle.</li> <li>▪ Obey traffic laws.</li> <li>▪ Consider traction and slope conditions while driving on gravel roads and parking.</li> <li>▪ Utilize a spotter if backing maneuvers pose a risk for collision.</li> </ul>

## Task-Specific Inspections

Equipment to be Used	Required Inspections	Required Training
Modified Level D—Standard work uniform/coveralls, work boots (ASTM F2412-05), traffic safety vest (ANSI 107), safety glasses (ANSI Z87.1) with permanently installed side shields, hard hat (ANSI Z89), and hearing protection.	Inspect critical PPE for punctures and rips prior to use, including chaps, hardhat, boots, gloves, and face shield. Inspect tools for proper functionality, fuel/oil levels, and sharpness.	All personnel working on hazardous waste sites must receive appropriate training as required by 29 CFR 1910.120(e), including but not limited to initial 40-hour, 8-hour supervisor, and annual 8-hour refresher trainings.
Depending on activity, the following PPE may also be required: N95 dust mask, PFD, rain and cold weather/water clothing, disposable chemical coveralls, inner and outer gloves		Medical clearance must be received on an annual basis as required by 29 CFR 1910.120(f).
		All assigned employees are required to familiarize themselves with the contents of this AHA before starting a work activity and review it with their supervisor during their daily safety meeting.

