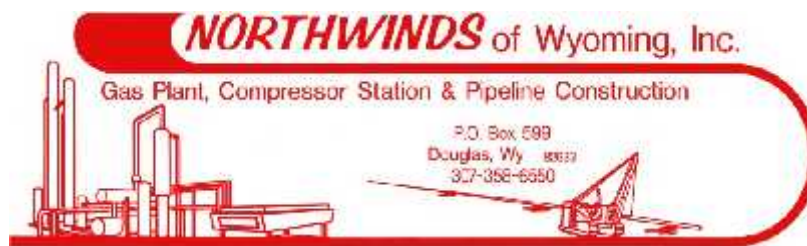


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# Safety Manual

## Introduction

The Safety Department of Northwinds of Wyoming, Inc. is dedicated to the protection of its employees', our customers, the public and the environment. It is our policy to consider accident prevention an integral part of every job and operation. So long as there is the concept of error then the thought of safety is of the greatest importance. Every effort shall be made to deserve the reputation,

**A Northwinds of Wyoming, Inc. Project is a Safe Project**

## Forward

The management of Northwinds has the responsibility for the safe work practices of its employees. As such we recognize that rules and regulations alone do not make for a safe and secure place of work, but all accidents can be prevented. It requires attention to detail, knowledge, teamwork, competence to the work at hand, communication and responsibility of each individual to ensure that the work is performed in a safe manner

This manual is a tool that has been carefully designed through years of experience to aid you in your work. Within these pages you will find some of the tools that will help prevent an accident, injury and/or property damage, as well as identify occupational hazards.

The information contained in this manual is the material with which Northwinds of Wyoming would have you build our vision of a working environment where lost time accidents and injury cease to occur.

## Safety Policy

The Northwinds of Wyoming management has a long commitment to providing a safe work force and work environment for its customers, and considers safety as the first part of the construction operation.

It is the policy of Northwinds to take all practical steps to eliminate exposure of its employees to accidental injury, or to conditions adversely affecting their health.

Our safety policies and goals are structured around the following principles:

**Safety is an equal partner with production, cost and quality of work.**

**Accident prevention is the responsibility and intent of the management and supervisors.**

**Feasible precautions to hazardous exposures are the rule.**

**Every injury can be prevented.**

**Training, motivation and discipline are keys to accident prevention.**

**You get the level of safety that you demonstrate you want.**

## **Objectives**

- ✓ Provide safe and healthy working conditions to the maximum extent possible.
- ✓ Achieve the lowest possible level of injuries.
- ✓ Abide by all applicable laws and regulations under federal, state and local safety and health laws and regulations.
- ✓ Foster self-motivation, self-discipline and awareness to employees the concept of "safety first." Each member of the management has a personal responsibility for the safety of all employees that are assigned to, or work under him. In this capacity of responsibility the safety department should be called upon for assistance whenever necessary. However, such assistance in no way reduces the responsibility of the supervisor for the safety of his workers.

## **Responsibilities**

The primary responsibility of safety rests with the Project Manager and the Field Superintendent. The Project Manager and Field Superintendent shall be responsible for the enforcement of safe working conditions and practices.

The Superintendents/ Foreman will:

1. Conduct regular on the job tailgate safety training with special attention given to new employees.
2. Conduct routine work site inspections.
3. Conduct equipment inspections to ensure all equipment is in a safe operating condition.
4. Ensure safe work practices/methods are being followed in their respective areas, and correct unsafe work habits/conditions as they occur and/or are discovered.
5. Investigate all accidents, prepare and submit accident reports and assist in implementing corrective action to prevent reoccurrence.
6. Investigate and report all incidents (near misses).
7. Conduct regular workplace safety meetings.
8. Ensure all safety and personal protective equipment is available and utilized for the job at hand.
9. Ensure that safety is given the same priority as their other responsibilities.
10. Report all job injuries immediately to the management and submit all injury-related documents to the safety department within 24 hours.

## **Employees**

Each employee is responsible to perform his/her job safely; therefore he is expected to work within the Company rules and policies

## Office Safety

### Introduction

An effective office safety program and the prevention of at risk behaviors and unsafe conditions are a crucial part of the office environment. Employees in the Douglas office and the field offices need to consider hazards present in any job environment and take a role in the prevention of injuries.

### Leading at Risk Behaviors in the Office Environment

- Slips, Trips, and Falls
- Improper Lifting
- Improper Ergonomics

### Fire Precautions

- Be familiar with the locations of the fire extinguishers located throughout the office.
- Become familiar with emergency procedures and appropriate evacuation routes.
- Keep all hallways unobstructed for immediate access to emergency exits and fire protection equipment.

### Housekeeping and Equipment Precautions

1. Safely stack materials/boxes to avoid creating a hazard
2. File drawers and desk drawers should not be left open.
3. Store all sharp objects in proper containers or with the blades/points covered or shielded.
4. When materials must be carried, use proper lifting and carrying techniques.
5. Use only stools or stepladders to reach or remove materials above eye level. Chairs are unacceptable for use as climbing devices.
6. When moving equipment, furniture or boxes, get assistance if needed.

### Ergonomics

1. Ergonomics is the study of how to fit the work place to people. This includes desks, tools, and other equipment in the office.
2. The main idea is that to avoid problems, you must be able to recognize them. Sore wrists after typing, a sore back, burning eyes may be a sign that something is wrong.
3. The easiest way to prevent these problems is to take a break, get up from your desk and stretch. Get away from the work and give yourself time to recover.

### Office Electrical

- Use of extension cords should be minimized and be arranged to avoid tripping hazards.
- Do not pull an electrical cord to disconnect or shut off power to a piece of equipment.
- Disconnect (unplug) the power source before trying to remove jammed materials from a machine.
- Only qualified personnel shall perform installation or repair of any electrical equipment.
- Office machines with moving parts, high temperature hazards, and electrical shock potential shall not be operated without the proper safeguards.
- Keep food, drink and excessive combustible materials away from electrical equipment, computers, etc.

# Safety Standards

## Behavior Based Safety

### Program Overview

A quick review of many corporate construction records, as well as data collected and reported by regulatory agencies, clearly indicates that the success or failure in managing construction performance is judged through use of indicators such as, number of regulatory or permit violations, number of spills or incidents, and the cost of fines/penalties assessed or paid. All of these being "lagging" or more simply a record of the incident after it has occurred. While these certainly indicate how well a company has performed - or more accurately not performed - it typically provides little information on how to best manage future actions in preventing the next construction incident.

One of the keys to prevention is managing the human behaviors and actions that result in construction incidents. Often these behaviors are not adequately identified and explored even when performing incident root cause analyses. There is ample anecdotal evidence to suggest that human behaviors whether positive or negative are the true root causes of the majority of incidents. If these behaviors and their associated actions (or inactions) can be identified, measured, and controlled it may be possible to proactively manage the follow-on work processes and prevent future construction incidents before they occur.

One of the often overlooked keys to preventing construction incidents is managing the human behaviors and actions that contribute to the probability and severity of an incident. The construction industry has utilized behavior based safety practices for many years to assess safe behaviors and prevent accidents from occurring. In some ways, behavior based safety has always included construction aspects that are intertwined with safety, specifically when they include use of hazardous materials and general good housekeeping practices. However, other behaviors that could lead to non-compliant construction practices are typically not included in such safety observation programs.

If these behaviors and their associated actions (or inactions) can be identified, measured, and controlled it may be possible to proactively manage the follow-on work processes and prevent future construction incidents before they occur. By leveraging two tools – behavior based safety and pre-task planning analysis, both proven successful in reducing accidents in the safety arena, preventing that next construction incident can become reality, not a dream.

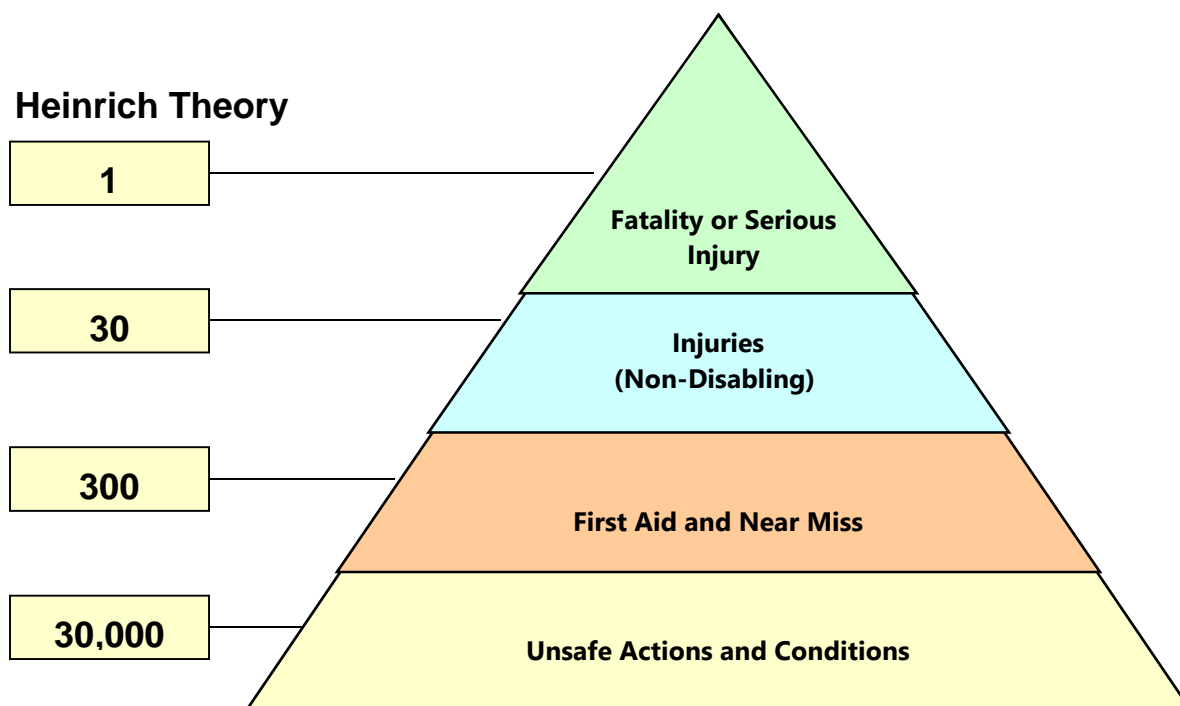
### Processes

However, there is no correlation between behavior (actions), which are leading indicators and construction consequences, which are lagging indicators. Additionally, records of other indicators such as non-reportable construction incidents are often not maintained and/or used to correlate such data.

### Behavior Based Observation Process

In the early 1990s, the concept of behavior based safety was being embraced by the construction industry<sup>1</sup>. However, the origin of behavior based safety actually dates back to 1931, when H.W. Heinrich, an assistant superintendent of engineering and inspection for the Travelers Insurance Company, in examining hundreds of thousands of accidents found that 88 percent were caused by workers' unsafe actions. Heinrich is the creator of the "safety triangle"<sup>2</sup>. Figure 1 is an example of a safety triangle with the ratios proposed by Heinrich.

**Figure 1: Accident Triangle**



The goal of a behavior based process from a safety perspective is to achieve 100% safe work behaviors. This is accomplished by using an observation feedback process (OFP) that provides data regarding safe and at-risk behaviors actually occurring on a work site [1] – the unsafe actions and conditions at the base of Heinrich’s “safety triangle”. By reducing the base of the triangle, the numbers of subsequent accidents are reduced.

Instead of simply focusing on the number and cost of construction incidents (lagging indicators) at the top of the “triangle”, we instead focus on the base where the more numerous potential non-compliant actions and conditions exist. These actions and conditions represent in large part the behaviors and actions of workers. In a sense they are the seeds of more potentially more serious incidents.

In learning to better control these actions and conditions, we can more effectively prevent the more serious incidents from occurring. The measured success of this control – minimizing the existence of potential non-compliant actions and conditions – can be viewed as a leading indicator for preventing incidents. The methodology proposed for this control is behavior based observation. By collecting and analyzing the data from a construction behavior based observation program, possible correlation between the reduction in potentially non-complaint actions and conditions and the elimination of construction incidents could be established.



## **Observation Process Training**

Appropriate personnel will be trained on the Observation Process established. [2]

The training program shall:

- Define who is trained and how much
- General employee awareness
- Ensure that all employees involved are trained in the classroom or on the job

Types of training shall include:

- Management training
- New employee training
- Refresher training

This training will include:

- Program objectives and incident metrics reviewed
- How to conduct the observation
- How to complete the observation form
- What do the behaviors mean
- Feedback training and role play (mentoring and coaching)
- Employees should be aware they may be observed at any time

## **Observation Feedback Process**

During the Observation Feedback Process (OFP), workers gain an understanding of how their behaviors, or lack of, contribute to sound or unsound construction conditions. Just as with safety, by identifying sound behaviors and positively reinforcing these with the worker, they are more likely to continue to practice such behaviors leading to improved construction performance. In contrast, the same feedback process allows for the identification of the behaviors that are unsound.

Upon completion of an observation, the observer is expected to have a discussion with the observed to get feedback. [3]

The observer will:

- Review the observation with observed employee
- Start with positive comments
- Reinforce safe behaviors observed first
- Describe and discuss what was unsafe
- Solicit explanation from the employee of the unsafe behavior with open-ended questions
- Re-emphasize no consequence to observed employee.

Open discussion with the worker regarding the potential adverse construction impacts of their behavior and engagement with them to identify their own ideas for how to alternatively perform their work in a sound manner again leads to improved performance. The focused behavior based process follows the same basic steps or activities as the safety process:

- Initial project engagement
- Team identification
- Team education (behavior observation team – BOT)
- Observation Feedback Process (OFP)
- Data analysis and reporting
- Process improvement identification and implementation

The team education would include the DO IT process, that is:

- Define behaviors to target
- Observe to collect baseline data
- Intervene to influence target behaviors
- Test to measure effectiveness of the interventions

## Pre-Task Planning to Reduce the Risk of Incidents

Risk in the sciences is typically defined as the product of the probability and consequences of harm. Therefore, the reduction of risk involves both reducing the probability that a harmful condition/event will occur and reducing the consequences or severity of the harmful condition/event if it was to occur. In the construction arena, risk reduction takes many forms focusing on either or both probability and consequences. One of the most basic construction risk reduction methodologies for new construction is the development of comprehensive pre-construction construction impact studies and plans. These studies and plans include measures taken to mitigate or eliminate the most significant unavoidable adverse impacts.

Individual departments, the Safety Manager, and Northwinds of Wyoming as a whole will compare these measurements and track these results by an acceptable method so that numerical and statistical comparisons can be made over time.

[4]

The conclusions reached by the studies are often used directly by regulatory agencies in determining both whether to issue permits for the work and to impose specific conditions when performing the work. In a way, the permits and associated conditions “acknowledge and anticipate” the adverse construction impacts of the work and strive to provide controls – administrative and field based - to minimize or eliminate the impacts.

## Action Plan

Once trend analysis is complete, appropriate action plans must be developed to address unsafe behaviors. [5]

Action planning will include:

- Evaluate unsafe behaviors from trend analysis and prioritize
- Develop action plan for unsafe behaviors based on comments and feedback from data
- Designate responsible parties and timeframes within the action plan
- Define who is responsible for action planning
- Ensure management support

Action Plans are carried out over the course of a set time period. Follow-up is necessary to ensure the closure of all actions listed within the Action Plan. [6]

- The follow-up process will include:
- Define a frequency for review of action plans
- Assign accountability for closeout of action plans within the organization
- Archive action plans

Pre-task planning is one follow-on method that can be used to reinforce this “acknowledge and anticipate” adverse impact control process. It can be used to identify and review the controls (i.e., requirements) imposed by permits and allow for the planning and implementation of measures to eliminate or minimize the risk of adverse construction impacts. By focusing attention on the required control measures and discussing in a systematic way the possible construction consequences of the activities to be performed, those managing and performing the work are better able to plan for and react to conditions that would cause adverse construction impacts. Simply put, pre-task planning involving supervision and employees directly performing the work, can reduce both the probability and the severity of harm (i.e., risk) resulting from the work.

## Summary

There is evidence that significant reductions in construction incidents can be achieved by some commonly used safety processes. Behavior based observations and pre-task planning can be utilized effectively as construction management tools to prevent that next construction incident. By focusing on the behaviors/activities and risks (leading indicators) rather than the result – an injury or fatality (lagging indicators), the possibility and more importantly the probability of being able to prevent that next construction incident improves dramatically. We need to continually collect construction behavioral observation data to capture the bottom three layers of the Heinrich triangle. Future collection of behavior based and pre-task planning data will show the relationship between utilizing these two tools to decrease the number and severity of non-reportable incidents, reportable incidents and regulatory infractions – making Zero Construction Incidents a reality.

## Blinding

### Purpose

This standard establishes blinding procedures for installing and removal of blinds

### Scope

Blinds shall be installed to isolate and prevent the release of combustible and toxic liquids, vapors or gases into the work area and to prevent pressurization of equipment isolated for maintenance. In addition, blinds should be installed at vessels, equipment or confined spaces scheduled for entry or "hot work".

### Definitions

**Blind (slip blind):** A properly rated and sized metal plate inserted between pipe flange gaskets to prevent flow of gas or liquid in either direction.

**Spectacle Blind:** A combination blind and spacer formed from the same piece of material. This item is frequently a permanent part of the line and is taken out and the other end inserted depending upon whether or not flow through that line is desired.

**Blind Flange:** A full-rated pipe fitting used to close the flanged end of an open pipe or valve

A blind must be of sufficient strength to withstand maximum possible pressure to which it can be subjected. Permanent blinds must meet applicable design piping standards and codes. Blinds should be properly identified. A blind is recommended to have a T handle long enough to extend at least two (2) inches beyond pipe flanges. One side of the "T" handle should have a hole for attachment of a tag or flag.

Purchased blinds from approved manufacturers shall be designed specifically for the size and rating of the flanges to assure proper thickness, flatness and smoothness of the gasket surface. If blinds for raised faced flanges must be fabricated on site, they shall be constructed using steel plate with yield strength of ASTM A-36 or better.

Slip blinds (blanks) for ring type joint (RTJ) flanges shall only be purchased from approved manufacturers and designed specifically for the size and rating of the flanges. Self-fabricated RTJ blinds are not allowed.

The use of other types of blinding devices such as tapped bull plugs may also be considered if these meet or exceed rating of other members of piping systems. Special attention should be considered for providing a means to bleed down the pressure before using these devices.

## Procedures

- A. Install blinds as close to the vessel or equipment as possible to ensure isolation. A blind provides the best method of guaranteeing that liquid or gas will be safely contained and not transferred through a process system. Install and/or remove blinds only at the direction of the project superintendent or designated foreman.
- B. A blind should be installed with three major considerations:
  1. Rating – Is blind properly rated?
  2. Location –
    - a. Will the blind effectively isolate the equipment in the location selected?
    - b. Is there access to the selected location?
    - c. Can the blind be safely removed at the time such removal is required?
- C. The BLIND LIST shall include size, pressure rating, location, date of installation and removal as well as the initials of the person(s) installing the blind. The project superintendent or designated foreman will maintain the list on-site at all times until the project is completed.
- D. Blinds shall be tagged for identification and numbered to correspond with the blind list.

When work is completed, using the BLIND LIST the superintendent or designated foreman must confirm that all blinds have been removed prior to start-up. The person(s) removing the blinds shall initial the BLIND LIST and the superintendent or the designated foreman shall confirm that the blinds have been removed and initial-off on the BLIND LIST.

## Confined Space Entry

### Purpose

This standard establishes procedures necessary for preparation, entry and restoration of a vessel and confined space to be entered by trained and qualified personnel. These procedures are designed to maintain a safe environment when personnel are required to enter a vessel or confined space.

### Scope

This standard addresses both permit-required and non-permit required confined space entries as defined below.

### Definitions

#### Confined Space:

A space that meets all three (3) of the following criteria:

1. Is large enough and so configured that a person can bodily enter and perform assigned work;
2. Has limited or restricted means for entry or exit; and
3. Is not a designed for continuous occupancy

These include, but are not limited to, storage tanks, frac tanks, process vessels, furnace boxes, manholes, valve boxes, pipelines, pits and excavations greater than four (4) feet deep. Whether these are permit-required or non-permit-required confined spaces depends primarily, although not exclusively, on their potential to contain a hazardous atmosphere.

Permit-required Confined Space:

A confined space as defined above that also meets any one of the following:

- Contains or has a potential to contain a hazardous atmosphere;
- Contains a material that has the potential for engulfing an entrant;
- Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward to a smaller cross-section;
- Contains any other recognized serious safety and health hazard.

**Non-Permit-required Confined Space:**

A confined space defined above which does not meet any of the four criteria that constitute a permit-required confined space.

**Entry**

Entry into a confined space occurs when any part of the entrant's body breaks the plane of an opening into a confined space. Entry can occur both during work and during preparation for work.

**Engulfment:**

The surrounding and effective capture of a person by liquid or finely divided solid substance that can be aspirated to cause death by filling or plugging the respiratory system or that can exert enough force on the body to cause death by strangulation, constriction, or crushing.

**Responsibilities**

**Authorized Entrant:**

- Knows the hazards that may be present during entry, including information on the mode, signs and symptoms, and the consequences of the exposure.
- Shall be trained in proper use of any equipment to be used.
- Shall be trained on the confined space entry procedures.

**Rescue Personnel:**

There are two options when arranging for rescue personnel to perform permit-required space rescue, each of which has specific requirements:

**Option 1** is to use company personnel with the following requirements. The personnel:

- Shall be trained to perform assigned rescue duties along with training required for authorized entrants.
- Shall be trained to properly use personal protective equipment and equipment necessary for making rescues.
- Shall be trained in basic First Aid and CPR. At least one member of the rescue group holding current certification shall be available.
- Shall have practiced making permit space rescues within the last 12 months, by means of simulated rescue operations in which they remove dummies, mannequins, or actual persons from the actual permit space or from a representative permit space.

**Option 2** implement the services of a professional rescue service to perform permitted confined space rescue.

**Attendant/Standby Person Requirements:**

- Knows the hazards that may be present during entry, including information on the mode, signs and symptoms, and the consequences of the exposure.
- Continuously maintains an accurate count and identification of authorized entrants in the permit space.
- Remains outside the permit space during entry operations.
- May also enter the space and perform a rescue operation if he/she meets qualifications of rescue personnel and has been relieved by an authorized attendant/standby.
- Communicates with authorized entrants as necessary to monitor and alert entrants of the need to evacuate.
- Summons rescue personnel and other emergency services as needed.
- Performs non-entry rescues.

**Entry Supervisor Requirements**

- Determines whether acceptable entry conditions are present.
- Authorizes entry and manages entry operations.
- Terminates entry as required.
- Knows the hazards that may be present during entry, including information on the mode, signs and symptoms, and the consequences of the exposure
- Verifies that the conditions outlined in the applicable safety standards are met.
- Removes unauthorized persons from the permit space.

**Procedures**

**Preparation**

The person in charge is responsible for proper preparation of the vessel or confined space to be entered. In preparation for entry, the checklist on the vessel and Confined Space Entry Permit shall be completed according to the following procedure.

1. The vessel and confined space must be properly isolated with blinding or disconnection. Every line connected to the vessel must be blinded or disconnected as close to the vessel as possible. A sketch or drawing is recommended for identifying lines. Sight glasses, level bridles, and gauges should be opened, drained and disconnected.
2. LOCK, TAG, CLEAR and TRY all sources of energy to the vessel/confined space.
3. The vessel must be purged, steamed, washed as necessary, to properly free the vessel of contaminants. Vent vapors to safe location.
4. Establish and maintain forced ventilation to ensure movement of fresh air in the vessel. Natural ventilation is unacceptable. Air driven or explosion-proof electric fans are required if flammable gas or vapors are present. An approved breathing air line and escape air cylinder may be used only as an additional precaution for entry after attempts to normalize the atmosphere are complete.

## Northwinds of Wyoming, Inc. Safety Manual - Confined Space Entry

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5. The confined space atmosphere shall be checked with a calibrated direct-reading instrument for the following conditions in the order listed and recorded on the permit.
  - a. Oxygen (shall be between 19.5% and 21%);
  - b. Flammable gases and vapors (shall be 0%);
  - c. Toxic gases (which may include, but are not limited to, hydrogen sulfide, carbon monoxide, carbon dioxide, mercaptans, and benzene), consult your local safety representative for assistance on appropriate permissible exposure limits.
6. One or more properly equipped and trained standby person(s) shall be posted outside the space to remain in direct communication with workers inside.
7. A self-contained breathing apparatus (SCBA) or an approved hose line unit with an escape feature shall be immediately available outside.
8. The entrants shall wear lifelines, harnesses and other appropriate equipment while in the confined space. A mechanical retrieving device for rescue shall be available for vertical lifts of five (5) feet or greater.
9. Equipment such as air movers and vacuum truck hoses shall be properly grounded and bonded to prevent static sparks.
10. Lighting conditions, temperature, the need for climbing, scaffolding or the presence of water should be considered.

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**NOTE: In hydrocarbon service, electrical equipment shall have a ground fault interruption device located outside of the confined space, and all electrical cords and devices must be inspected prior to use.**

11. Provide proper personal protective equipment, such as coveralls, goggles, gloves, and respirators, as required.
12. Supplied air respiratory protection should be worn until the confined space has been cleaned of materials that may produce a toxic and/or hazardous atmosphere.
13. Personnel trained in CPR and First Aid must be available on site, along with first aid kit,
14. Fire extinguishers and other firefighting equipment shall be available where needed.
15. A communication system (visual, hand signals, etc.,) shall be established between workers and standby personnel.
16. Signs and/or barricades shall be posted outside to notify personnel of entry and prohibit unauthorized entry.
17. Entrants and standby person(s) may become a rescue person if qualified; however, the person must not enter the confined space during an emergency without first ensuring that another standby person is present. Prior to entering a confined space for personnel rescue, additional backup personnel must be present.
18. Rescue and other services, which may be summoned in case of an emergency and the means of communication with those services shall be listed or attached to the permit.
19. A pre-entry safety meeting shall be held and documented for all personnel involved. Additional precautions and concerns, such as vessel coating, composition of previous contents, and iron sulfide should be discussed.

When the preparation steps on the checklist are complete and any additional precautions are taken, the permit to enter the vessel or confined space may be signed and issued.

## Entry

1. Entry may be made by personnel after preparation requirements have been met and a Vessel and Confined Space Entry Permit has been signed and issued.
2. The standby person must not leave the confined space with someone inside, without first ensuring another standby person is present. Unauthorized personnel shall not be allowed entry, and if the vessel or confined space is left unattended the entrance should be barricaded.
3. Atmosphere shall be continuously monitored during entry and instrument readings periodically recorded on the permit.

---

**NOTE: If subsequent repairs require hot work, a separate Hot Work Permit shall be issued in accordance with client's protocol.**

## Restoration of Vessel of Confined Space

When all work is complete and the vessel or confined space is ready to be returned to service, a site specific checklist should be used for proper restoration. In addition to items listed on the permit, questions to consider include:

- Are all personnel out of the confined space?
- Are all blinds removed using the blind list?
- Are all equipment and tools removed?
- Are all manways and flanges closed and sealed?
- Has the atmosphere been purged?
- Have start-up procedures been reviewed?

After entry, an entry completion meeting with everyone involved (Client representative and Northwinds personnel) shall be held and documented. The canceled permit shall be reviewed to ensure that any hazards found or created are documented to ensure that personnel participating in future entry operations are protected from previously unidentified hazards. The documentation shall be retained with permit for 5 years.



## Hazardous Energy Control Procedures

### Purpose

This operating procedure establishes lockout/tagout procedures for the safety of personnel working on equipment that must be locked out to prevent an unexpected release of energy such as electrical, hydraulic, pneumatic or mechanical.

### Scope

Electrical lock-out/tag-out procedures shall be used before commencing any work requiring personnel to work on or near de-energized circuit parts or equipment in any situation where there is danger of injury due to unexpected energization or start-up of equipment.

Other lock-out/tag-out procedures shall be used for safely isolating other energy sources such as process fluids, hydraulic, thermal, pneumatic, chemical and mechanical systems.

The lock-out/tag-out procedure does not apply to minor tool adjustments and servicing activities that are routine, repetitive and integral to production operations, such as timing adjustments.

This procedure shall be also be implemented immediately when equipment becomes unsafe to operate.

### General

Perform an initial evaluation to identify potential exposure(s) that must be isolated before safely working on equipment.

Notify affected personnel and shut down the equipment according to established shutdown procedures with the approval of the responsible supervisor or designated alternate.

### Electrical Lock-out/Tag-out Procedures

1. The person doing the work shall LOCK open the circuit breaker(s) or approved disconnect device using an approved lock.
2. TAG the lockout with a dated and signed "**Danger, Do Not Operate**" tag. The reason for the lockout will be written on the tag.
3. Other personnel doing work on this equipment or desiring it to remain inoperative shall insert a lock and danger tag in the same lock-out. Never install a lock without a tag.
4. There shall be only one (1) key per lock, or a set of locks, and that one key will be held by the locking party until the completion of the job.
5. If the circuit cannot be locked out, it must be de-energized and tagged. If the circuit requires disconnection or removal of a component to ensure isolation, a qualified technician must perform the work.
6. The area must be CLEAR of personnel and tools prior to attempting to start the equipment.
7. Before starting work, TRY to energize the piece of equipment locally to ensure that the proper circuit is de-energized and that an override does not exist
8. Only the person(s) originally attaching the lock and tag is authorized to remove the lock and tag unless the person (s) is not available or other circumstances make it impractical for the original party to remove the lock and tag. **Under these conditions the supervisor or designated alternate, after checking the equipment for complete repairs and assuming full responsibility, can remove the tag and lock and place the equipment in service.** The supervisor or designated alternate is responsible for notifying personnel that their lock(s) and tag(s) have been removed in these cases.
9. When personnel performing the work prepare to unlock the equipment, it is their responsibility to contact the person responsible for the area to determine that no one is working on the equipment and that no hazard to personnel or equipment would be created by energizing an electrical circuit or by placing the equipment in service.

## Processes, Pneumatic, Thermal, Chemical, and Hydraulic Lock-out/Tag-out Procedures

The same basic procedure used for electrical lockout must be used for isolating process, pneumatic, and hydraulic energy sources. The primary difference will be means of isolation. The recommended means of isolation for these energy sources, in order of preference, are as follows:

1. Blinding – This method is preferred for vessel entry or open flame work on process lines or vessels, and for long term maintenance on compressors, pumps, process lines or vessels, where leaks or improper opening of the isolation valves employed would re-pressure the equipment being serviced and/or release flammable, toxic or high pressure streams.
2. Disconnection – Physically disconnecting and off-setting the ends or removing part of the system, and properly isolating and tagging both open ends is an acceptable alternative when blinding is not feasible
3. Double block and bleed – This is the least preferred method of isolation and is not acceptable for vessel and confined space entry. Block valves should seal effectively and should be secured with a chain and lock. Automatic valves should not be used as isolation valves unless they are first rendered inoperable. Bleed valves should be, between the two block valves, full-open type, sized to pass the maximum leak rate when the block valves employed are closed, and remain open and monitored. Caution should be taken to route bleed valve gas to a safe location, away from personnel.
4. Single Block Valve – A single locked, closed and tagged block valve, as a minimum, may be used for certain routine maintenance operations, provided that none of the risk factors listed below are present:
  - a. The valve to be used has a history of leakage.
  - b. Pressure is in excess of 1480 psi and the valve is larger than 6”.
  - c. Caustic, acid, or other toxic fluids are present which pose extreme personnel exposure risks.
  - d. Line entry or blinding must be done in a confined space such as a small building or areas with limited egress (Especially if ignition sources might exist).
  - e. Piping will be open for extended periods.

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**NOTE: If alternative isolation methods are not possible, consideration should be given to de-pressuring or shutting down the whole system.**

## Mechanical Energy Lock-out/Tag-out Procedures

The means of isolation can be chains, blocks or disconnection.

1. If springs are involved, they shall be released or physically restrained when necessary to immobilize mechanical equipment.
2. The use of brakes, for example, on pumping units is not an acceptable means of energy isolation. The use of blocks and/or chains, in addition to the brake, is required.

## Periodic Inspection

At least annually, conduct and document an inspection of the lock-out/tag-out procedure to ensure that the requirements of the standard are being followed.

Safety manager shall perform the inspection. The inspection shall be conducted to correct any deviations or inadequacies identified and shall include a review between the safety manager and authorized employee of the employee's responsibilities under the lock-out/tag-out standard.

## Hot Work

### Purpose

This standard establishes proper safety precautions to be taken when any work within a classified area requires an open flame, welding, burning, grinding, blasting, or using spark-producing devices.

### Scope

A Hot Work Permit is required to be completed by the client representative/inspector for any Hot Work which is any work that requires an open flame, welding, hot tapping, burning, grinding, blasting, or portable spark producing devices including heaters, spark ignited engines, vehicles, heavy equipment, and electrical hand tools within a classified area, as determined by the client.

### Definitions

#### Classified Areas:

For purposes of this standard, classified areas shall consist of the following:

- Areas within plant boundaries except in designated areas
- Areas within 100 feet of hydrocarbon sources, if an open flame, welding or grinding is involved
- Areas within ten (10) feet of hydrocarbon sources when the use of portable spark producing devices such as vehicles or electrical hand tools is required

Hydrocarbon Sources:

Examples of equipment or facilities that have potential to release hydrocarbons such as, but not limited to:

- Compressors
- Flanged Connections
- Hydrocarbon Tanks
- Pumps
- Tanks or vehicles that transport hydrocarbons
- Valves
- Vessels

Fire Watch:

The person(s) and associated fire protection equipment assigned to stand by during welding, cutting, or open flame conditions.

Operator:

Person responsible for operations of a facility.

Designated Representative:

A person authorized in writing or verbally by a supervisor or operator to represent that person in completing the requirement of this standard.

LEL Meter:

An approved direct reading explosimeter, calibrated per manufacturer's recommendations.

## Supervisor Responsibilities

- ✓ Coordinates with client for a hot work permit to be issued
- ✓ Conducts a walk through with client representative of the area where the work will be done, and the type of work to be done. Completing necessary gas tests for explosiveness, toxicity, or other hazardous conditions
- ✓ Sets up a fire watch crew
- ✓ Continuously monitor the area with LEL meter when a fire watch is not required
- ✓ Fire Watch shall have no other duties other than the following:
  - ✓ Use of fire equipment if necessary
  - ✓ Continuously monitor the area with the LEL meter during hot work
  - ✓ Continue to monitor for 15 minutes after the hot work has been completed
  - ✓ Alerting personnel entering the area of hazard

## Lock-Out/Tag-Out Program

### Purpose

This standard establishes proper safety precautions to be taken to ensure that dangerous machines are properly shut off and not started up again prior to the completion of maintenance or servicing work.

### Scope

The accidental or unexpected starting of any machinery or electrical equipment can cause injury or death.

Before **any** inspections or repairs are made on electrical equipment, power should be turned off at the switch box and the switch locked in the **off** position (lockout). The switch or controls should be securely tagged to show that the equipment or circuits are being worked on (tagged-out).

Machinery being inspected or repaired must be isolated from all potentially hazardous sources, which must be locked-out and tagged-out. The machinery must also be free from all residual or accumulated energy before employees may perform any servicing or maintenance activities, if the unexpected release of stored energy could cause injury.

### Responsibilities

Appropriate employees will be instructed in the safety significance of the lock-out and/or tag-out procedures as well as how to use those procedures by the safety manager.

Only authorized personnel may lock-out or tag-out machines or equipment. Authorized personnel are identified on each Hazardous Energy Control Procedure form.

Affected personnel and any other employees whose work operations are, or may be, in the area will be instructed in the purpose and use of the lock-out or tag-out procedures by the safety manager. The authorized employees will notify them whenever a lock-out or tag-out will occur, as well as when the machine is being placed back into service.

## **Northwinds of Wyoming, Inc. Safety Manual - Lock-Out/Tag-Out Program**

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The customer representative can only approve Lock-Out/Tag-Out of their specific systems.

Training will be given on Lock-Out/Tag-Out for all equipment or machines by the safety department.

Authorized and affected employees will be trained in the following:

- ✓ Review of the requirements of 29 CFR 1910.147, Control of Hazardous Energy
- ✓ Types and magnitudes of energy sources
- ✓ Limitations of Tag-Out
- ✓ Lock-Out/Tag-Out procedure for the isolation of energy sources
- ✓ Procedures for removing locks and/or tags
- ✓ Procedures for restoring energy

Authorized employees will be given training before any involvement in Lock-Out/Tag-Out procedures.

Affected employees will be given training at the time of hiring.

Retraining will be provided whenever there is a change in job assignment, whenever there is a change in equipment or processes that would create a new hazard, or whenever a change would occur in this company's Hazardous Energy Control Procedures.

The safety department will maintain a list of trained personnel and the dates of their training.

Each year an authorized employee, who is not associated with the authorized employee, will inspect a machine, and conduct a review of the Hazardous Energy Control Procedures for all machines and equipment.

# Safety Requirements

## General Safety Rules

- Safety standards are expected to be maintained
- All accidents will be reported to the supervisor
- Be alert to any hazardous conditions, and report it to the supervisor
- No alcohol is allowed on any Northwinds worksites
- If given a specific task and feel unqualified to perform this task, please inform the supervisor
- If working alone, inform the supervisor of your location and nature of the job
- Know your limitations, never attempt to move or lift a heavy object that is beyond your ability; Use the "buddy system"
- Personal protective equipment such as hard hat, safety glasses will be worn at all times
- Horseplay is forbidden on the job
- If you feel you are given incorrect instructions/information, ask the supervisor
- Never take chances. Always take the time to do the task in a safe manner
- Employees must be familiar with the tools and equipment. If you feel that the equipment is unsafe it is his duty to report it to the supervisor for inspection or replacement
- Evaluate situations carefully; bad judgment can result in injuries
- Employees are expected to keep the job site clean. Place waste where it belongs
- Teamwork is essential. Help one another to achieve the goal
- Carelessness is dangerous. Prevent accidents by not hurrying

## Disciplinary Program

All Northwinds of Wyoming, Inc. salaried employees are responsible for administering the disciplinary program. This includes the Foremen, Superintendent, Project Managers, and Safety Manager. It is the intent that this program be administered fairly. Disciplinary actions should be administered evenly.

## Violations of Safety Policy

### Willful Violations

These are the most serious of violations. These types of violations show a disregard for the safety and wellbeing of employees. These violations can be described as acts that endanger people that are known to be direct violations of Company Safety Policies. These acts will not be tolerated. Immediate termination of employment will result from these types of violations.

### Negligence Induced Violations

This type of violation happens because of a lack of understanding of the Safety Rules. In many cases, the violations occur because a particular rule was misunderstood or forgotten. These violations are serious, but lack the intent of a willful violation. The affected employee will be educated about the rule(s), and the reason for the rule(s). If repeat violations occur, they should be considered willful violations.

## **Ignorance Induced Violations**

This type of violation occurs because the employee had no understanding of what was expected of him. These types of violations are the fault of the Foreman, Superintendent, Project Manager, and the Safety Manager. Both the employee and the boss will be educated about the rule(s) and the reason for the rule(s). If repeat violations occur, they should be considered willful violations. It is the job of the employee to abide by the Safety Policies and rules set forth. It is the job of the foreman, superintendent, project manager, and safety manager to effectively communicate, and enforce the rules.

Foreman, Superintendents, and Project Managers will routinely inspect their jobsites for compliance with Safety Policies, rules, and OSHA regulations.

The Safety Manager will periodically inspect jobsites to ensure that Foremen, Superintendents, and Project Managers are keeping the jobsite compliant. In addition, the Safety Manager will render assistance as needed.

## Abrasive Blasting

- A Hot work permit must be secured before sandblasting begins in a hazardous area.
- All personnel will wear the required Personal Protective Equipment, including Safety Glasses and respiratory protection. Respiratory protection will include an approved abrasive blasting respirator connected to a clean air supply.
- Personnel working in the general area of sandblasting operations must wear dust respirators and other protective equipment.
- To the best extent possible, avoid working downwind of sandblasting operations. If it is necessary to work downwind, it is recommended that workers wear approved dust respirators or air-supplied respirators. Wind may cause the hazard area to vary.
- Approved first aid kits and fire equipment must be on hand and crews must be familiar with the proper use of the equipment.
- Do not sandblast steel surfaces in the vicinity of flammable or explosive mixtures without proper procedures to eliminate the buildup of static electricity.

Before sandblasting begins, approval must be obtained from the company supervisor. This supervisor should inspect the area, the equipment to be sandblasted, and the sandblasting equipment to ensure proper conditions, adequate equipment and competent operating personnel.

- Tests for combustible gas must be made in the atmosphere of the intended sandblasting work area immediately before sandblasting operations begin. Sandblasting will not be permitted in an area where the combustible gas content of the atmosphere is greater than ten percent of the lower explosive limit. (LEL).
- Shut down and adequately protect equipment in the vicinity of sandblasting operations, whenever possible.
- All sandblasting equipment must be inspected and properly assembled, have approved safety devices and gauges, and be properly used.
- Sandblasting hoses must be static-dissipating type. Hose couplings must be bronze. Both the couplings and the nozzle holder should have no leaks. The sandblast nozzle must be equipped with a deadman operating valve. The manual control will not be tied or secured in any way that could prevent automatic cutoff.
- The air compressor, hose nozzle, sand hopper and the surface to be sandblasted will be properly grounded.
- The air compressor must be operated below 220 degrees and be equipped with spark arresters.



## **Accident Investigation and Reporting**

### **Policy**

Investigation of any accident is an important management tool for controlling accidents and their related costs. If something is not learned from an accident, it is a total loss. Something causes accidents. The reasons or basic root causes must be determined. The information that is learned can be used to improve the operation involved and make it more safe and efficient. It is, therefore, a policy of Northwinds of Wyoming that the foreman (or RSO, Chad Underwood) investigates all injuries requiring a visit to a physician, clinic or hospital and any property damage incidents involving \$500 or more or near misses that had the potential to result in an accident of this magnitude.

However, even if no report is submitted, all incidents, including "near misses," should be questioned using the same investigative techniques in order that corrective action may be taken to prevent a similar incident from occurring. [1] While all incidents should be investigated, the extent of such investigation shall reflect the seriousness of the incident utilizing a root cause analysis process or other similar method.

Accidents are usually the result of conditions or actions that the supervisors and employees are often in the best position to control. An accident is simply an unplanned event that interrupts operations and results in loss of time, property damage or bodily injury. They usually arise from one of four areas: equipment, material, people or environment.

### **The Purpose of Accident Investigations**

Millions of words have been written explaining the importance and purpose of accident investigations, but they can all be summarized in one word - prevention. There are many benefits from accident investigations, but one purpose - prevention.

This is how investigations will help prevent future accidents:

- Investigations uncover unknown factors which can lead to accidents. It develops why the employee operated in the way he did or why the physical condition developed.
- Investigations develop personal factors which the employee has which may also be involved with other employees and may contribute to the same or more serious accidents.
- By investigating for prevention of accidents, we communicate to employees our concern for the employee and desire to provide a safe workplace which improves morale and safety conscientiousness.
- Investigations usually uncover improvements in the way the job can be done - improved efficiency and reduction in exposures.

A simple, small accident may have potential to have been a major loss. We may have been just "lucky." Without investigations of these, we may be lulled into thinking our major exposures are under control until we have a major or serious loss. The purpose of investigations is not be "place blame" on anyone, but to determine what within the system went wrong so that it may be corrected. This attitude during an investigation produces an environment that will assist in obtaining more effective answers and facts.

Individual responsibilities for reporting and investigation must be pre-determined and assigned prior to incidents. For Northwinds of Wyoming that means each foreman should conduct these investigations using an accident /investigation form, along with the RSO if the RSO deems it necessary. The immediate supervisor is the most knowledgeable of the work area and thus, best able to determine most of the underlying causes of an accident. Depending on the nature and/or severity of the accident and/ or other conditions, accidents may also be investigated by the project manager/superintendent, Responsible Safety Officer, or even the Safety Committee. [4]

Personnel must be trained in their roles and responsibilities for incident response and incident investigation techniques. Training relative to incident investigation and reporting (Awareness, First Responder, Investigation, and training frequency) shall be conducted for all supervisors initially upon assignment, and every three (3) years thereafter. [5]

## How to Investigate an Accident

The first step in any accident investigation is to ensure that all injured parties have received emergency rescue and medical assistance, as needed. [2] Reporting of the incident must occur in a specified manner and the reporting sequence must be posted. For example, in the event of an incident, the following are contacted in order: 911, department supervisor, section manager, company physician, security, human resources, safety department, and other organizations as required. Northwinds of Wyoming must also verbally report required incidents to OSHA within 8 hours of their discovery. [3] OSHA requires reporting of work related incidents resulting in the death of an employee or the hospitalization of three or more employees arising from one incident. Site owners typically require all incidents to be reported including, but not limited to, injuries, spills, property damage, fires, explosions, and vehicle damage. Incidents will be reported to the site owner as soon as possible or in a timely manner (at least within 24 hours of incident). Once this is complete, a systematic approach to determining the facts surrounding the cause or causes of the accident should be initiated. A suggested approach to the accident investigation follows:

A. Neutralize, secure or isolate any hazardous conditions to prevent further injuries. This step may also require that an unsafe act(s) be halted or stopped. [7] Employees who could be first responders shall be trained and qualified in first aid techniques to control the degree of loss during the immediate post-incident phase. [8] After immediate rescue, actions to prevent further loss should occur. For example, maintenance personnel should be summoned to assess integrity of buildings and equipment, engineering personnel to evaluate the need for bracing of structures, and special equipment/response requirements such as safe rendering of hazardous materials or explosives employed.

B. Once the potential for further injury has been reasonably assured, the investigation should focus on determining the facts relating to the accident. [6] Equipment may include some or all of the following items; writing equipment such as pens/paper, measurement equipment such as tape measures and rulers, cameras, small tools, audio recorder, PPE, marking devices such as flags, equipment manuals, etc. Accident fact finding should be conducted using a logical step-by-step process. Following is a suggested method:

1. 1. Secure the accident scene using barricades or other methods, to protect evidence. [9] Initial identification of evidence immediately following the incident might include a listing of people, equipment, and materials involved and a recording of environmental factors such as weather, illumination, temperature, noise, ventilation, etc. Evidence such as people, positions of equipment, parts, and papers must be preserved, secured, and collected through notes, photographs, witness statements, flagging, and impoundment of documents and equipment. [10]
2. Make video of the site and/or take photographs from as many angles as possible to create a visual record of the scene. If needed, make sketches, diagrams, and/ or drawings of the site.
3. Collect and preserve evidence. Document where, when and how evidence was collected. Document the facts only, avoid opinions. A photographic record of evidence collection could be helpful and may be extremely valuable in the final analysis of the accident. Do not leave any stone unturned when collecting evidence. The scene will never be better for collecting evidence and determining facts than during the initial investigation immediately following the incident.
  - a. Look for hard evidence. This is factual information that is obvious and difficult to dispute, such as, equipment condition, building or structure condition, the existence or non-existence of personal protective equipment or engineering controls, broken parts or pieces, time logs, training logs, etc.
  - b. If a piece of evidence needs further analysis by an expert, such as a broken tool or damaged equipment, tag the item, document the circumstances surrounding it and send it for analysis.
  - c. An important step in any accident investigation is to interview the persons closely associated with the accident or incident. Witness interviews and statements must be collected. Locating witnesses, ensuring unbiased testimony, obtaining appropriate interview locations, and use of trained interviewers should be detailed. [11] The need for follow-up interviews should also be addressed. There are certain proven techniques for successful interviews, as follows:

- d. Put the person being interviewed at ease by pointing out the sole purpose is prevention of recurrence. Point out that the investigation is not for fault determination or finding out who can be blamed.
- e. Conduct the interview at the scene if at all practical. This helps put the person at ease and also helps in finding solutions.
- f. Conduct one-on-one interviews of all individuals involved or who witnessed the incident for their version of the accident, and do not make judgments until the facts are in. Do not conduct group interviews because important facts and details could be miss due to shy or non-participating group members.
- g. Ask any necessary questions. Ask only necessary questions and all questions should be asked in a friendly, constructive manner. Use the "W" questions - WHO, WHAT, WHERE, WHEN, WHY and HOW - questions that cannot be answered with a yes or no. These will give more descriptive answers and make development of the accident causes more effective.

The underlying cause may be either an "unsafe act" or an "unsafe condition" or a combination of the two. Studies have shown that the "unsafe act" is the major contributing factor in approximately eighty-five percent (85 percent) of all accidents while "unsafe condition" is the major factor in only about fifteen percent (15 percent). It should be remembered, however, that it is much easier to uncover "unsafe conditions" than "unsafe acts" unless the investigation is complete and thorough. Do not stop with the first answer received. Continue to question until all facts are determined. Close the interview on a positive note - prevention. Thank the person(s) for their assistance in developing the facts and discuss what actions can be taken to prevent recurrences. One way to secure the person's involvement and continued cooperation is to find out what they think would prevent recurrences.

Lastly, complete the accident investigation report. The report should be a summary of the facts, determined by evidence and interviews, gathered during the investigation. Do not offer opinions in the report and only draw conclusions that can be totally supported by the facts as determined by the investigation.

The investigation should be made as soon as practical after the injured person has received appropriate medical attention. The report shall be completed and submitted to Northwinds of Wyoming's Responsible Safety Officer within twenty-four (24) hours after the incident occurs.

The report should not only include the basic cause of the accident, but an overall review of methods, processes and controls. The accident facts should also include corrective action to be taken in order to eliminate or greatly reduce similar occurrences. Documentation on who will be responsible for implementing corrective actions, target dates for completing the corrective actions, assigning responsibility for follow-up to ensure that corrective actions have been implemented and notes on any interim or remedial action needed, should be included in the written report. A good incident investigation should result in corrective actions, individuals should be assigned responsibilities relative to the corrective actions, and these actions should be tracked to closure. [12] Written incident reports should be prepared and include an incident report form and a detailed narrative statement concerning the events. The format of the narrative report may include an introduction, methodology, summary of the incident, investigation board member names, narrative of the event, findings and recommendations. Photographs, witness statements, drawings, etc. should be included. [13] Lessons learned should be reviewed and communicated. Changes to processes must be placed into effect to prevent reoccurrence or similar events. [14]

Accidents involving serious injury such as fractures, severe lacerations, amputation, unconsciousness, etc. shall be reported immediately to the Responsible Safety Officer and their Project Manager/ Superintendent who, with the Supervisor, will conduct an immediate on-the-scene investigation of the accident.

## Asbestos

It is common to find asbestos in many of the Northwinds operations. Often, we perform jobs for customers that are in older facilities that were constructed long before the use of asbestos was discontinued.

Asbestos can be found in many forms and you should assume that there is asbestos unless a client representative has informed you or that tests have been performed on the material.

Asbestos was used as insulating material for piping and boilers, as strengthening material for concrete/cement, vinyl floors, siding, roofing, and in friction products used in heavy machinery.

During field work, it is very important that if you discover any material that is suspect, or if you are asked to work on something that looks like asbestos may be present (i.e. insulated pipe), contact your supervisor. Northwinds does not perform asbestos abatement or disposal. Our client will be asked to secure the services of a licensed professional asbestos abatement contractor to perform that work.

While performing maintenance work on our heavy equipment, asbestos may be encountered in the braking and clutch systems. The asbestos was used in the friction pad material that lines the brake pads and clutch plates. The pads and plates are solid, and do not pose much of a threat to your health. The dust that is left behind from the worn material poses a big threat to your health if inhaled. Taking precautions to keep the dust at a minimum will help in keeping the work area, equipment and most importantly you as safe as possible.

The following procedure must be followed in order to stay in compliance with OSHA Regulations:

1. Required personal protective equipment will be a disposable coverall, chemical resistant gloves, a half mask respirator and safety glasses.
2. While disassembling any piece of equipment take your time. Try to avoid using tools and methods that will stir up dust.
3. Once the equipment is apart, **DO NOT** use compressed air to clean the dust off or for any other purpose. This will expose not only yourself but contaminate your surroundings.
4. To clean your equipment, use a mixture of warm water (if available, but water) with a water-soluble solvent as a wetting agent in a spray bottle. A good degreasing soap will work very well. Spray all areas that you need to clean and wipe them off with a rag or towel. Use only this method to clean and dry the area.
5. After your work is complete, put all of the towels and contaminated material into an impermeable container for disposal.

## Benzene Program and Procedures

### General

These procedures provide guidelines for monitoring and minimizing employee exposure to Benzene, which has been determined to be a hazardous substance. They are applicable to all Northwinds employees and its vendors and contractors involved in any work process that may result in exposure or possible exposure to Benzene.

### Purpose

Northwinds has a General Policy that requires it to maintain an ongoing Safety and Health Program ("the Program") whose goal is the prevention of injuries and illnesses.

### Administrative Controls

#### Policy

Northwinds Safety and Health Policy commits itself to develop a program whose goal is the prevention of injuries and illnesses.

#### Qualified Supervision

The Management of Northwinds will ensure that a qualified person is present to properly supervise the job to which these procedures are applicable. Such person, through training and experience will be familiar with the following areas:

- Company policies and procedures relative to Benzene
- Tasks to be performed
- Potential hazards from benzene and the
- Proper methods for avoiding such hazards.

Supervisors, in particular, are trained to understand the role they play in job site safety to enable them to carry out their safety and health responsibilities effectively. Northwinds will maintain an ongoing training program that specifically targets Benzene because it considers such training to be an essential element of proper job performance and Safety.

### Exposure Minimization and Control

#### Permissible Exposure Limits (PELs)

Northwinds shall take all practical precautions to ensure that no employee is exposed to an airborne concentration of benzene in excess of 1 part of benzene per million parts of air (1ppm) as an 8hour time weighted average, hereinafter referred to as the Time Weighted Average Limit (TWA).

Northwinds shall take all practical precautions to ensure that no employee is exposed to an airborne concentration of benzene in excess of five (5) ppm as averaged over any 15 minute period, hereinafter referred to as the Short Term Exposure Limit (STEL).

## **Regulated Areas**

Benzene is a common element present in many of the company's operations. Wherever the airborne concentration of benzene exceeds or can reasonably be expected to exceed the PEL, such area will be designated a regulated area. The threat of exposure is greatest during turnarounds and other maintenance or operations procedures that require certain vessels, pumps and/or process pipelines to be opened. When these vessels or pipelines are opened, the surrounding area will be barricaded and posted. The area will be considered a regulated area requiring respiratory protection until such time as air sampling indicates the level of Benzene being released is below the OSHA Action Level (i.e.0.5 ppm). When the concentration of Benzene is determined to be below the OSHA Action Level (0.5 ppm), as indicated by air sampling, barricades will be taken down and personnel will be allowed to enter the area without respiratory protection.

Access to regulated areas shall be limited to authorized persons wearing respiratory protection devices only.

## **Engineering Controls and Work Practices**

Engineering Controls and Work Practices will be instituted to reduce and maintain employee exposure to benzene at or below the permissible exposure limits (PELs) where feasible. Wherever feasible engineering controls and work practices are not sufficient to reduce employee exposure to or below the PELs, they will be used to reduce employee exposure to the lowest levels reasonably achievable by these controls and they will be supplemented by the use of respiratory protection.

## **Compliance Program**

When, and if, any testing indicates exposures are or may be over the PEL, a written program will be established and implemented to reduce employee exposure to or below the PEL. The written compliance program shall include a schedule for development and implementation of engineering and work practice controls to be utilized in reducing employee exposure.

## **Bloodborne Pathogens Exposure Control Program**

### **Purpose**

To provide a healthy working environment by limiting occupational exposure to blood borne pathogens and other infections which could potentially result in transmission of blood borne pathogens to workers.

### **Applicability**

This procedure shall be used on Northwinds projects, permanent offices, and operating facilities where Northwinds has the responsibility for first aid, medical, and emergency medical responses. This shall include all employees who could "reasonably anticipate," as the result of performing their job duties, to come in contact with blood and other potentially infectious materials. (Note: OSHA has exempted "Good Samaritan" acts such as assisting a co-worker with a nosebleed. This type of assistance would not be considered an occupational exposure.)

### **Policy**

To familiarize Northwinds personnel with potentially infectious materials which they may handle and the proper safe controls that must be used to protect against transmissions of blood borne pathogens.

## **Definitions**

1. **Bloodborne Pathogens** - Pathogenic microorganisms that are present in human blood and can cause disease in humans. These pathogens include, but are not limited to, Hepatitis B Virus (HBV) and Human Immune-deficiency Virus (HIV).
2. **Decontamination** - The use of physical or chemical means to remove, inactivate or destroy blood borne pathogens on a surface or item to the point where they are no longer capable of transmitting infectious particles and the surface or item is rendered safe for handling, use or disposal.
3. **Exposure Incident** - A specific eye, mouth, other mucous membrane, non-intact skin, parenteral contact with blood or other potentially infective material.
4. **Infectious Materials** - This includes saliva, any body fluid visibly contaminated with blood and all body fluids in situations where it is difficult or impossible to differentiate between body fluids. They also include any unfixed tissue or organ other than intact skin from a human (living or dead) and human immunodeficiency virus (HIV) - containing cell or tissue cultures, organ cultures and HIV - or hepatitis B (HBV) - containing culture medium.
5. **Personal Protective Equipment (PPE)** - Specialized clothing or equipment such as gowns, gloves, respirators, etc., worn by an employee for protection against a hazard.
  - a. General work clothes are not intended to function as protection against a hazard and not considered to be personal protective equipment.
6. **Sharps** - Objects with sharp edges such as needles, knives, shards of glass or other sharp objects that can cut or penetrate the skin and transmit pathogens into the bloodstream.

## **Procedure**

1. The Safety Manager or designee shall be responsible for the administration of the Northwinds Blood borne Pathogens Program.
2. Supervisors shall contact the Safety Department when an employee is/could be exposed to any type of blood borne pathogen.
3. The Safety Department shall be responsible for awareness training for all employees.

## **Hazard Inventory and Exposure Levels**

### **Hazards commonly found are as follows:**

- Blood from lacerations and abrasions.
- Body fluids encountered during emergency medical response activities.
- Possible sharp punctures to medical/first aid emergency response personnel as well as housekeeping/maintenance employees.

### **Exposure Levels commonly found are as follows:**

- Individual job classifications at NOW do not have occupational exposure as part of the defined, normal duties.
- Employees involved in emergency medical response will have occupational exposure. These employees may be exposed to potentially infectious materials. Job tasks and procedures will include first aid for open wounds, application of direct pressure to open wounds, handling of injured personnel, and CPR.
- Other employees who are trained in standard first aid may have occupational exposure. Job tasks include administration of basic first aid and CPR.

## Methods of Compliance:

- Universal Precautions shall be used at all times in order to prevent contact with potentially infectious materials. **All body fluids shall be considered to be potentially infectious.**
- After any contact with injured personnel, employees shall wash their hands thoroughly. Contact with unprotected portions of the body shall be immediately (or as soon as feasible) washed with soap and water for skin contact. For contact with eyes, nose and other mucous membranes, flushing with water shall immediately (or as soon as feasible) take place.
- Needles, scalpels and other instruments considered as "sharps" shall not be used, nor will they be available for use. Bandage scissors and other necessary metal or plastic non-disposable instruments shall be decontaminated directly after use.
- Personal Protective Equipment:
  - At least one pair of single use latex examination gloves shall be in each first aid kit.
  - Ventilation devices such as face shields, resuscitation bags or pocket masks shall be available for use in each first aid kit.

## Use of Personal Protective Equipment

- **Gloves:** Always. No exceptions.
- Other protection as necessary.

## Housekeeping:

1. Normally, no work areas will be contaminated. After first aid is performed, the possibility of contamination exists. Cleaning of the area where first aid is performed shall be accomplished using impermeable gloves, eye and face protection, and body protection as appropriate. A cleaner capable of disinfection all areas shall be used.
2. Handling of contact lenses, application of make-up, eating, drinking and smoking shall not be allowed where first aid is performed
3. Disposal of all contaminated materials (gloves, mask, used bandages, etc.) will comply with all federal, state, and local regulations. Impermeable bags with a proper label shall be used to store all contaminated waste. A purchase order shall be set up for the proper disposal of all contaminated waste. Waste receptacles shall be properly labeled as well.

## Hepatitis B Vaccinations

1. NOW shall offer vaccinations for hepatitis B to all employees that have a potential for exposure to blood borne pathogens. There shall be no cost to the employees. The vaccination shall be given to these employees during their shift or on days off with overtime compensation as necessary.
2. The vaccinations shall be performed by or under the supervision of a licensed health care professional. This person shall be given a copy of 29 CFR 1910.1030.
3. The vaccinations provided shall be according to the latest recommendations of the U.S. Public Health Service.
4. Routine booster dose(s) (if necessary) of the vaccine shall be offered as in number 1 above.
5. Any employee who declines to accept the offer for vaccination must sign the Declination of Hepatitis B Vaccination form. The employee may accept the vaccination at a later date.



## **Exposure to Potentially Infectious Materials:**

**Any exposure incident (as defined in CFR 1910.1030 (b)) shall be reported to the SAFETY Department. The following steps shall be taken:**

- The exposed employee will immediately have available a confidential medical evaluation. Included in this medical evaluation shall be a blood test for HIV and HBV.
- The incident shall be investigated. Included in the investigation shall be the route(s) of exposure, and all circumstances surrounding the exposure. This will be accomplished through written statements, interviews and witness statements.
- The individual who is the source shall be identified:
- Consent shall be obtained to test the source individual's blood.
- The source individual's test results shall be made available to the exposed employee. The exposed employee shall be made aware of all applicable laws governing disclosure of the source individual and his/her infection status.
- Post exposure prophylaxis (when indicated), counseling and evaluation of reported illness shall be provided for exposed employees. All written medical opinions obtained from the health care professional shall be given (a copy) to the exposed employee.
- The health care professional evaluating the exposed employee shall be given the following:
  - A copy of 29 CFR 1910.1030,
  - A description of the exposed employee's duties as related to the exposure incident,
  - Documentation of the route and circumstances of exposure,
  - Results of the source individual's blood test, and
  - All medical records of the exposed employee that are relevant to the appropriate treatment.

## Chemical Safety

To protect yourself when working with chemicals you should always:

- Pay attention to all warning signs. They tell you what chemicals are present and what you should and shouldn't do.
- Read all labels carefully: if label is missing inform your supervisor.
- What is in the container
- Possible hazards and precautions you must take
- Symptoms of over-exposure
- What to do in case of over-exposure
- Where to find further information and instructions
- Safety equipment to use
- Get additional information from the MSDS, because labels do not always provide you with all the information you may need.
- When in doubt, ask your supervisor. If after reading the warning label and MSDS, you still have questions, ask your supervisor to explain.
- In case of eye contact, promptly flush eyes with water for a prolonged period of 15 minutes and seek medical attention.
- In case of skin contact, promptly flush the affected area with water for a prolonged period of 15 minutes, remove contaminated clothing and seek medical attention.
- Promptly clean-up "table-top" spills in the proper protective apparel and equipment. Dispose of all materials properly.
- Do not taste or smell chemicals.
- Keep containers closed when not in use.
- Check for adequate ventilation.
- Do not eat, drink or smoke while working with chemicals.

## Communication of Benzene Hazards to Employees

### Signs and Labels

- Appropriate signs will be posted at all regulated areas.
- Labels that comply with 29 CFR 1910.1200 Hazard Communications or other appropriate forms of warning will be provided for containers of liquid containing benzene.

### Material Safety Data Sheets

- Material Safety Data Sheets will be obtained or developed, access to that will be provided to employees which complies with 29 CFR 1910.1200.

## **Hazard Communication Information and Training**

- Employees will be provided with information and training at the time of their initial assignment to a work area where benzene is present.
- If exposures are above the OSHA action level, employees will be provided with information and training at least annually thereafter. The training program shall be in accordance with the requirements of 29 CFR 1910.1200 Hazard Communications and the Northwinds Hazard Communication Program and shall include specific information on benzene for each category of information included in that section.
- An explanation of 29 CFR 1910.1028 Benzene, including Appendices A and B, and an indication of where the Standard is available; and
- A description of the medical surveillance program and an explanation of the information contained in Appendix C of 29 CFR 1910.1028.

## **Compressed Gas Cylinder Safety**

### **Handling Cylinders**

- Do not move or store cylinders without protective cap over the valve. Always assume that the cylinder is full. When cylinders need to be moved use a cart or get help.
- The protective cap or valve assembly will not be used to pick up cylinders.
- Safety devices or valve equipment shall not be tampered with or bypassed.
- Cylinders should not be allowed to strike each other.

### **Using Cylinders**

- Never use oil or grease on valves, hose or gauge connections.
- Never transfer gas from one cylinder to another.
- Threads on a regulator or fitting must correspond to those on the cylinder valve outlet. Do not force or modify connections.
- Never use a cylinder of compressed gas without a pressure-reducing regulator connected to the cylinder valve.
- Never permit sparks, excessive heat, flames, electrical currents or molten metal to contact the cylinder or attachments.

### **Storing Cylinders**

- Properly secure cylinders with chain, rope, or bracket to prevent falling.
- Do not store oxygen and acetylene cylinders together.
- Minimum distance between stored oxygen cylinders and flammable and/or combustible gas cylinders/combustible materials shall be 20 feet.
- Compressed bottled gases shall not be used to clean clothing or personnel.
- Protective caps shall always be in place when the cylinders are not in use.
- Store empty and full cylinders separately, with empty cylinders plainly identified "EMPTY"

## Crane and Hoisting Safety

Cranes shall only be operated by:

- Certified or otherwise qualified operators as designated by the supervisor.
- Trainees under direct supervision of a certified/qualified operator.
- Maintenance personnel performing work on the crane.

Operator shall conduct a thorough visual inspection of the entire machine and fill out a daily operator's inspection report prior to the start of each shift.

Cranes must not be assembled or used unless ground conditions are firm, drained, and graded to a sufficient extent so that, in conjunction (if necessary) with the use of supporting materials, the equipment manufacturer's specifications for adequate support and degree of level of the equipment are met.

A standard hand signal system will be used on all crane operations. See attached for details.

A qualified spotter shall be designated prior to any picks being made.

The operation of the controls shall be made prior to making the first pick.

The operator is **NEVER TO EXCEED THE RATED CAPACITY**.

Whenever there is a concern as to safety, the operator must have the authority to stop and refuse to handle loads until a qualified person has determined that safety has been assured.

Use tag lines to control loads when necessary. Tag lines shall be electrically nonconductive.

Personnel shall be clear of loads before loads are picked up or landed and shall remain clear at all times. Personnel shall not stand/pass under suspended loads. Personnel shall not ride on a load.

Slings, fittings, and fastenings, when in use, shall be inspected daily. Slings found to be defective shall be removed from service and destroyed. The date the slings are placed in service shall be stamped on the metal connector.

Cranes shall have a load chart and boom angle indicator located at the operator position. The boom angle indicator can be located on the boom, but must be within the operators line of site at all times.

All cranes shall have an anti-two-blocking device such that the contact with the load block/hook and boom is prevented.

All cranes shall have load charts, recommended operating speeds, special hazard warnings, instructions, and an operator's manual stored in the cab at all times for use by the operator

All hooks shall have a safety-locking device.

The operator shall not operate the crane until persons involved in the operation have been instructed to the job at hand.

Always set parking brake before leaving the machine.

Do not reverse the swing control until the swinging motion of the boom has stopped.

Outriggers shall be fully extended.

The operator shall never use a boom with bent or damaged cord members.

Cables shall be replaced if the wear on outer wires is 25% of the wire diameter or if three wires are broken in one strand or six wires in one lay.

Rear-axle lockout must be engaged when the machine is swinging or lifting a load.

Crane operations shall be suspended during hazardous weather conditions.

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Assembly or disassembly of cranes must be directed by a competent and qualified person and all applicable manufacturer prohibitions and procedures must be followed.

Modifications or additions which affect the capacity or safe operation of the equipment are prohibited except where the following requirements are met:

1. The manufacturer approves the modifications/additions in writing
2. The load charts, procedures, instruction manuals and instruction plates/tags/decals are modified as necessary to accord with the modification/addition.
3. The original safety factor of the equipment is not reduced

### **Work Zones:**

Before beginning equipment operations:

1. The work zone must be identified by demarcating boundaries with flags
  - a. The Operator is prohibited from operating the equipment past the set boundaries
2. Warning lines need to be erected and maintained to mark the boundaries of hazard areas
  - a. Before an employee goes to a location in the hazard area that is out of view of the operator, the employee (or someone instructed by the employee) must ensure that the operator is informed that he/she is going to that location.
3. Determine if any part of the equipment, load line or load, if operated up to the equipment's maximum working radius in the work zone, could get closer than 20 feet to a power line
  - a. If so, the power line must be de-energized and visibly grounded

Cranes operating near energized high-voltage power lines shall maintain a clearance of TEN (10) FEET for power lines rated 50KV or less, and TEN (10) FEET plus FOUR (4) INCHES for each KV over 50KV.

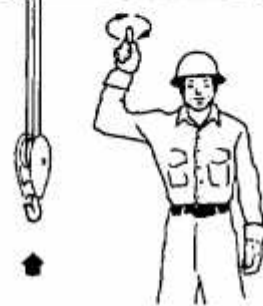
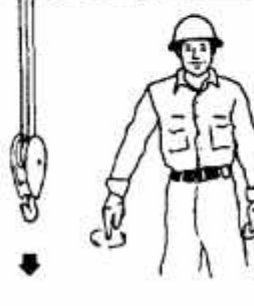
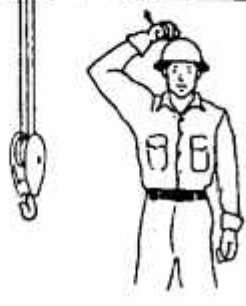
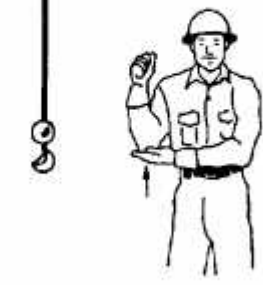


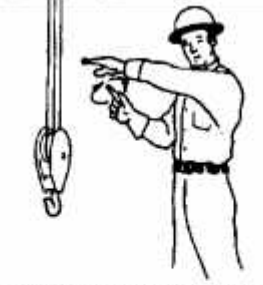

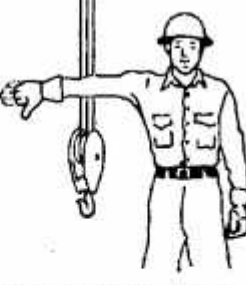
### **Personnel Hoisting:**

Hoisting of employees with a crane is prohibited except in cases where scaffolding, aerial lifts, or other means of access would present a greater safety hazard. If a suspended personnel platform must be used, the following requirements must be adhered to:

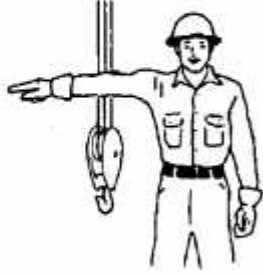
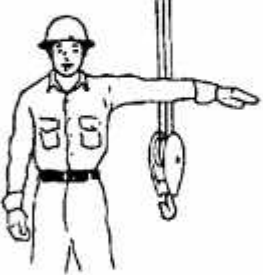
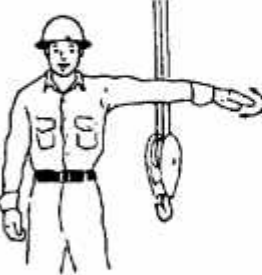



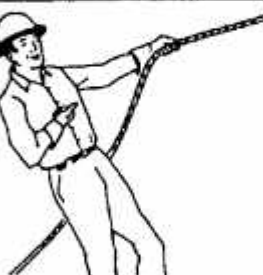
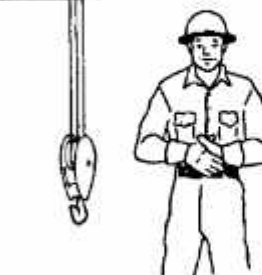
1. Platform requirements:
  - a. All platforms must have standard toeboards, midrails and guardrails and a grab bar around the entire perimeter. The platform shall be enclosed at least from the toeboard to the midrail.
  - b. A welder qualified and certified to do the work shall perform all welding on the platform.
  - c. A marking plate indicating the weight of the platform and the rated load capacity shall be permanently attached to the platform.
  - d. A qualified engineer or other person competent in structural design shall design the platform.
  - e. Rigging shall be such that the platform is balanced and all bridle legs are connected before placement on the hook. All rigging shall be able to support at least five times the maximum intended load.
  - f. A proof test shall be performed at each new location using 125% of the maximum intended load. The load shall be suspended for five minutes, after which the platform shall be inspected.

2. Making the lift:
  - a. The platform shall not be loaded beyond the intended rated load.
  - b. A trial lift without personnel shall be conducted with as much weight as would be in the platform with personnel. The breaking systems as well as other safety systems in the crane shall be tested at this time. The platform shall also be tested for balance and the crane inspected thoroughly before the lift of personnel begins.
  - c. The crane shall not travel or be moved when the platform is suspended.
  - d. No other lifting shall take place on other load lines during a personnel lift.
  - e. The crane operator shall remain at the controls when personnel are suspended.
  - f. Tag lines shall be in use at all times.

### STANDARD HAND SIGNALS

 <p><b>HOIST.</b> With forearm vertical, forefinger pointing up, move hand in small horizontal circle.</p>	 <p><b>LOWER.</b> With arm extended downward, forefinger pointing down, move hand in small horizontal circles.</p>	 <p><b>USE MAIN HOIST.</b> Tap fist on head; then use regular signals.</p>
 <p><b>USE WHIP LINE.</b> (Auxiliary Hoist) Tap elbow with one hand, then use regular signals.</p>	 <p><b>RAISE BOOM.</b> Arm extended, fingers closed, thumb pointing upward.</p>	 <p><b>LOWER BOOM.</b> Arm extended, fingers closed, thumb pointing downward.</p>
 <p><b>MOVE SLOWLY.</b> Use one hand to give any motion signal and place other hand motionless in front of hand giving the motion signal. (Hold Slowly shown as example).</p>	 <p><b>RAISE THE BOOM AND LOWER THE LOAD.</b> With arm extended thumb pointing up, flex fingers in and out as long as load movement is desired.</p>	 <p><b>LOWER THE BOOM AND RAISE THE LOAD.</b> With arm extended, thumb pointing down, flex fingers in and out as long as load movement is desired.</p>

### STANDARD HAND SIGNALS

 <p><b>SWING.</b> Arm extended point with finger in direction of swing of boom.</p>	 <p><b>STOP.</b> Arm extended, palm down, hold position rigidly.</p>	 <p><b>EMERGENCY STOP.</b> Arm extended, palm down, move hand rapidly right and left.</p>
 <p><b>EXTEND BOOM. (Telescoping Booms)</b> Both fists in front of body with thumbs pointing outward.</p>	 <p><b>EXTEND BOOM. (Telescoping Boom) One Hand Signal.</b> One fist in front of chest with thumb tapping chest.</p>	
 <p><b>RETRACT BOOM. (Telescoping Booms)</b> Both fists in front of body with thumbs pointing toward each other.</p>	 <p><b>RETRACT BOOM. (Telescoping Boom) One Hand Signal.</b> One fist in front of chest, thumb pointing outward and heel of fist tapping chest.</p>	 <p><b>DOG EVERYTHING.</b> Clasp hands in front of body.</p>



## Electrical Safety

This section provides practical guidance for safeguarding personnel and property from hazards arising from the use of electricity.

All applicable codes and regulations must be followed when installing, maintaining, or repairing electrical equipment.

### Definitions

#### Disconnecting means

A device used to isolate the conductors of a circuit from their source of supply. (e.g., circuit breakers, safety switches, or the disconnect on a motor starter.

#### Grounded effectively

Permanently connected to earth through a ground connection that has sufficiently low impedance (less than 25 OHMS) and sufficient ampacity to ensure that the ground fault current which may occur cannot build up to voltages dangerous to personnel.

#### Bonding

The joining of metallic parts to form an electrically conductive path that will ensure electrical continuity, and the capacity to conduct safely any current likely to be imposed.

#### Hazardous

Hazardous (classified locations are either Class I, Division 1 or Class I, Division 2, and are defined as follows:

- Class I, Division 1 – are locations in which ignitable concentrations of flammable gases or vapors are expected to exist under normal operating conditions, or faulty equipment might simultaneously release flammable gases or vapors and also cause failure of electrical equipment.
- Class I, Division 2 – are locations in which flammable gases or vapors may be present, but normally are confined within closed systems or flammable gases or vapors are prevented from accumulating by adequate mechanical ventilation, or they are adjacent to a Division 1 location.

#### Unclassified location

A location that is not classified as Division 1 or 2.

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**Reference: for more information refer to API RP 500 or the National Electric Code**

#### Overload

Describes the operation of equipment in excess of normal, full-load rating, or a conductor in excess of rated ampacity where the overload, if it persists for a sufficient length of time, would cause damage or dangerous overheating.

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**Note: a fault, such as a short circuit or ground fault, is not an overload.**

## **Qualified personnel**

Qualified personnel as defined for this section should – at a minimum – be trained and able to demonstrate the following;

- The skills and techniques necessary to distinguish between exposed energized parts of electrical equipment and non-energized parts.
- The skills and techniques necessary to determine the nominal voltage of exposed energized parts.
- Knowledge of safe approach distance and corresponding voltage when working near exposed energized parts.
- The proper use and maintenance of personal protective equipment at its corresponding voltage and kilovolt – ampere (KVA) level to protect against electrocution and flashburn (head, eye, face, hand, and body protection)
- The proper use and maintenance of insulating and shielding materials, insulated tools, and grounding devices.
- Lockout/tagout (energy isolation ) procedures
- Knowledge of the construction and operation of specific electrical equipment and hazards involved
- Proper use and maintenance of test instruments and knowledge of their rating limits, and appropriate alerting techniques, such as signs, tags, and barricades for warning and protecting other personnel or the public from electrical hazards.

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**Note: It is likely that individuals may be qualified with regard to certain electrical equipment, but unqualified as to other equipment.**

## **General**

### **Personnel Requirements**

Work on or near exposed energized parts of electrical equipment that operate at voltages of 50 volts or more to ground must be performed by qualified and authorized personnel. These personnel should be trained for the task at hand.

Only qualified and authorized personnel are allowed to make repairs to electrical equipment.

### **Hazards**

All electrical hazards should be immediately safeguard and reported to a supervisor. Safeguarding may include such actions as de-energizing, lockout, and/or placement of barricades.

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**Note: The assistance of a qualified person may be required to appropriately safeguard the hazard.**

### **Precautions**

Electrical equipment should be operated and maintained according to manufacturer's instructions.

Before touching any electrical equipment, personnel should;

- Visually inspect the grounding,
- Visually inspect the equipment for damage,
- Check for burnt odors,
- Listen for unusual noise, and
- Brush equipment with the back of the hand. Never use the inside of your hand. Electrical shock makes muscles contract, and could cause your hand to grasp the equipment.

Determine if lockout/tagout procedures are necessary.

Electrical circuits should be de-energized before repairs are made.

Personnel must stand directly in front of an electrical panel when operating the disconnecting means or operator switch.

All jewelry that might come in contact with circuits must be removed.

Hands, shoes, and clothing should be dry before handling any energized electrical equipment.

Avoid contact with electrical power lines. Even low voltage lines present a potential for shock or electrocution.

Electrical outlets should not be overloaded. Outlets should include an equipment grounding conductor.

## **Personal Protective Equipment**

### **General Rule**

Qualified persons performing tasks that present a potential hazard from shock, electrocution, and flash burn must wear the appropriate personal protective equipment that will protect their head, face, neck, eyes, ears, body, and extremities.

Qualified personnel must not approach or take a conductive object (without an approved insulating handle) closer to exposed energized parts than specified as follows;

### **Approach Distance for Qualified Personnel – Alternating Current**

<b>Voltage Range (Phase to Phase)</b>	<b>Minimum Safe Approach Distance</b>
<b>300V or Less</b>	Avoid Contact
<b>Over 300V, but not over 750V</b>	1 foot, 0 inches
<b>Over 750V, but not over 2kV</b>	1 foot, 6 inches
<b>Over 2kV, but not over 15kV</b>	2 feet, 0 inches
<b>Over 15kV, but not over 37kV</b>	3 feet, 0 inches
<b>Over 37kV, but not over 87.5kV</b>	3 feet, 6 inches
<b>Over 87.5kV, but not over 121kV</b>	4 feet, 0 inches
<b>Over 121kV, but not over 140kV</b>	4 feet, 6 inches

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**Exceptions: If the personnel are insulated from the energized part by the use of the appropriate personal protective equipment, or if the energized parts are insulated from the personnel who are using appropriate protective equipment, then the personnel may approach closer than indicated in the table.**

Qualified personnel must wear flash burn PPE whenever there is a potential exposure to arc flash burns. To determine the potential extent of exposure, consider the following factors:

- The distance to the exposed energized parts
- System voltage
- The fault current available at the point of contact
- The clearing time of the fault current, due to an overcurrent protection device

## Selecting the appropriate PPE

After the extent of the potential for electrocution and arc flash burn exposure has been determined, workers must select the appropriate PPE to protect the affected body part(s). In addition, they may choose to wear flame-resistant clothes for additional protection.

The listing below contains the standards for personal protective equipment:

- ANSI is the American National Standards Institute
- ASTM is the American Society for Testing and Materials, and
- NFPA is the National Fire Protection Association.

<b>Subject</b>	<b>Document</b>
<b>Head Protection</b>	ANSI Z89.1-1986, Requirements for Protective Headwear for Industrial Workers
<b>Eye/Face Protection</b>	ANSI Z87.1-1989, Practice for Occupation and Educational Eye and Face Protection
<b>Gloves</b>	ASTM D 120-1987, Standard Specification for Rubber Insulating Gloves
<b>Sleeves</b>	ASTM D 1051-87, Standard Specification for In-service Care of Rubber Insulating and Sleeves
<b>Leather Protectors</b>	ASTM F 1117-91, Standard Specifications for Leather Protectors for Rubber Insulating Gloves and Mittens
<b>Footwear</b>	ASTM F 1117-87, Standard Specification for Dielectric Overshoe Footwear ANSI Z41-1983, Personal Protective Footwear
<b>Visual Inspection</b>	ASTM F 1236-89, Standard Guide for Visual Inspection of Electrical Protective Rubber Products

## Standards for other Protective Equipment

The list below lists the documents that contain the standards for other protective equipment:

Subject	Document
<b>Ladders</b>	ANSI A14.1-1990, Safety Requirements for Portable Wood Ladders
<b>Safety Signs and Tags</b>	ANSI Z535, Series of Standards for Safety Signs and Tags
<b>Mats</b>	ASTM D178-88, Standard Specification for Rubber Insulating Matting
<b>Blankets</b>	ASTM D1048-88a, Standard Specification for Rubber Insulating Blankets ASTM F479-88a, Standard Specification for In-Service Care of Insulating Blankets
<b>Covers</b>	ASTM D1049-88, Standard Specification for Rubber Covers
<b>Fiberglass Tools/Ladders</b>	ASTM F711-89, Standard Specifications for Fiberglass Reinforced Plastic (FRP) Rod and Tube Used in Line Tools
<b>Plastic Guards</b>	ASTM F712-88, Test Methods for Electrically Insulated Plastic Guard for Protection of Workers
<b>Temporary Grounding</b>	ASTM F855-90, Standard Specification for Temporary Grounding Systems to be Used on De-energized Electric Power Lines and Equipment
<b>Insulated Hand Tools</b>	IEC 900, Specification for Insulated Hand Tools

## Test Instruments

All test instruments, including hand-held voltmeters, must be rated for the equipment or circuits they will be connected to, and the environment in which they will be used.

Personnel who use the test instruments must be properly trained in their application.

All test instruments must be visually inspected before use.

Defective or damaged test instruments must be removed from service.

## Grounding

### General

All noncurrent-carrying metal parts of enclosures, structures, and electrical equipment that could become energized must be effectively bonded and grounded.

Qualified personnel must maintain grounding. Ground wires must not be altered except by a qualified person performing repair or troubleshooting.

## Ground Fault Circuit Interrupters (GFCI)

A ground fault is simply defined as electrical current leakage to ground. This becomes dangerous when the leaking current can energize a tool or something else in the surroundings.

Ground fault circuit interrupters (GFCI) provide protection from fatal electrical shock. Methods of GFCI protection are;

- GFCI breaker
- GFCI receptacle, or
- GFCI portable cord set

The following must be GFCI-protected:

- All bathroom receptacles
- Counter top receptacles within six (6) feet of a water connection, and
- All 125 VAC, 15/20 amp single phase cord-and-plug-connected equipment used outside in wet locations (e.g., lights, fans, and other portable electric tools).

## Flexible Cord and Cables

Flexible cord and cables include extension cords, extension lights, flexible cable, and cord used on portable equipment.

The cords and cables should be:

- Listed and labeled (UL, FM, etc.)
- Inspected before each use
- Unplugged/de-energized before handling or rolling up
- Properly sized for application, including the ground wire
- Routed to minimize the potential for cord damage or for personnel walking on or tripping on them,
- Unplugged by pulling on the plug, not the cord, and
- De-energized when not in use

Flexible cords and cables should be stored when the job is completed, and destroyed and replaced, if detected.

## Fuses

### General

- All fuses, whether new or replacement, should be of the proper type and rating.
- A fuse must not be used to replace another type of fuse simply because it fits the fuse holder.
- Makeshift devices must not be used to replace fuses.
- Renewable-element fuses below 100 amperes must not be used.
- Fuse pullers must be clean, dry, and free from oil, grease to maintain their insulation.

## **Changing Fuses**

Changing fuses on greater than 50 volts must be changed by qualified and authorized personnel only. The following precautions must be taken:

- Review the manufacturer's recommendations and local procedures,
- Review the use of protective personal equipment and other required tools for the job,
- Turn the operator switch to "off",
- Stand to the side of the panel when operating the disconnecting means,
- Properly de-energize the circuit and consider whether lockout/tagout (energy isolation) procedures need to be followed.
- Close and latch the door before placing the disconnecting means in the "on" position.

## **Lighting Equipment**

Portable lamps (extension lights) used in hazardous locations must be suitable for the area's electrical classification.

Portable lamps should not be used unless the outside lens or globe is in place. They must have a guard in place and must be in good repair.

All portable lighting equipment shall be used in conjunction with GFCI protection.

When workers service lighting equipment, such as replacing bulbs or protective globes, they should:

- be sure to first de-energize the equipment,
- use proper eye protection in case a bulb or globe breaks,
- carefully handle any broken glass fragments, and
- properly dispose of glass fragments and lamps

## **Batteries**

The use, connecting, disconnecting, and charging of storage batteries should conform to Article 480 of the NEC and NFPA 30 codes.

Ensure the adequate ventilation prior to charging, connecting, or disconnecting batteries.

Corroded storage batteries should be cleaned with a mild solution of baking soda and water.

Connections should be tightened and the terminal areas should be coated with an approved compound.

## **Excavations**

Before the work of construction or excavations begins:

- The underground cables and conduit must be located and marked, and
- The circuits in the immediate vicinity should be de-energized.

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**Note: Buried electrical circuits (especially those over 600 volts) are often encased in red concrete.**

## Overhead Power Lines

### Working Clearances for Vehicles

Vehicles and associated loads in transit must have a clearance of at least four (4) feet from the energized circuits. If this clearance cannot be maintained, the overhead circuits should be de-energized.

All overhead lines should have a clearance of 18.5 feet over lease roads, and 22 feet over highways, unless Federal, State, and local regulations, or NESC Section 232 dictates more stringent requirements.

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**Note: Clearances are based on the lowest point of the line span under the worst sag conditions.**

Before a structure can be built or equipment moved in the vicinity of a transmission or power line, qualified personnel must check the regulations for restrictive distances.

Temporary pipe-handling and storage areas should be located away from overhead power lines.

## Emergency Action Plan

### Purpose

This plan is for the safety and well-being of the employees of **Northwinds of Wyoming, Inc.**

It identifies necessary management and employee actions during fires and other emergencies.

Education and training are provided so that all employees know and understand our emergency action plan.

### Location of Plan

The Emergency Action Plan can be found at the station or office of each **Foreman and Superintendent.**

A copy is also maintained in the company office.

Upon request, an OSHA representative may obtain a copy of the plan from the **Safety Department.**

### Minimum Plan Requirements

The emergency action plan must be in writing. The plan designates employer and employee actions to ensure safety during fire and other emergencies. The plan is kept at the workplace and available for employee review.

The following must be in the plan:

- Emergency escape procedures and escape route assignments.
- Procedures for employees who remain behind to operate critical plant operations.
- Procedures to account for all employees after emergency evacuation
- Identification of employee rescue and medical duties
- Preferred means of reporting fires and other emergencies (manual pull box alarms, public address systems, radios, telephones, etc.)
- Types of evacuation to be used in emergency circumstances
- Names and job titles of persons or departments who can be contacted for further information about the emergency action plan

The employer must also post emergency telephone numbers near telephones and other conspicuous locations when telephones serve as the means of reporting emergencies.



## **Escape Procedures and Exit Routes**

All exits will remain unlocked during working hours. All employees must exit the facility in a quiet and orderly manner.

Escape routes, safe areas of refuge and gathering points will be posted on a job by job basis.

## **Critical Plant Operations**

OSHA requires that we establish procedures for personnel who remain behind for critical plant operations. To minimize damage from the emergency, personnel will be designated on a job by job basis and will be responsible for shutting down all critical operations:

As soon as shut down is completed, the employees who performed critical plant operations must take the nearest exit route in accordance with general emergency procedures.

## **Accounting for Employees**

After exiting the facility, all employees are to assemble for roll call at the designated location.

The following employees are responsible for ensuring that employees comply with this requirement:

- Project Superintendent
- Project Foreman

## **Emergency Procedures**

### **First Aid**

#### **Eye and Face Exposure**

If benzene is splashed in your eyes, wash it out immediately with large amounts of water. Contact the Safety Manager for further medical treatment. If irritation persists or vision appears to be affected you will be referred to a physician as soon as possible.

#### **Skin Exposure**

If benzene is spilled on your clothing or skin, remove the contaminated clothing and wash the exposed skin with large amounts of water and soap immediately. Contact the Safety Manager. Wash contaminated clothing before you wear it again.

#### **Breathing**

If you or any other person breathes in large amounts of benzene, get the exposed person to fresh air at once. Apply artificial respiration if breathing has stopped. Call the Safety Manager for further medical assistance

#### **Spill and Leak Procedures**

Remove all ignition sources; Ventilate enclosed spaces. A suitable material such as dry sand or earth should be used to absorb as much benzene as possible. Disposal methods must conform to applicable jurisdictional regulations. Contact the Safety Manager.

## Environmental

### **Fire Wall/Berms/Dike Walls**

Northwinds of Wyoming, Inc. personal should obtain permission before making any temporary opening in a fire wall(s), berm(s), or dike(s). A firewall, berm, or dike must not be left open overnight without permission unless Northwinds of Wyoming, Inc. personal obtain permission from the contractor representative.

### **Soil Conservation**

Northwinds of Wyoming, Inc. expects any excavation, earth moving, soil stripping, brush clearing, and other earth-work will be conducted in a manner that preserves the soil and allows for the segregation of soil types in order to facilitate land reclamation in the future. Where necessary, measures to prevent excessive soil erosion by wind or water must be taken.

### **Spill Response**

Northwinds of Wyoming, Inc. will be responsible for the cleanup of any spills it causes. All spills must be reported to the proper representative or EHS coordinator immediately, and must be managed in accordance with their regulatory requirements.

### **Vegetation Management**

Northwinds of Wyoming, Inc. expects all personnel to follow environmentally acceptable practices and meet regulatory requirements in its vegetation management program.

### **Waste Management**

Storage of wastes must be performed in a safe and environmentally responsible manner.

When waste materials are generated, they must be segregated in a way that minimizes the need and costs for disposal. Recyclable waste or materials should be separated from non-recyclable materials. Mixing may reduce disposal options and increase the disposal cost.

The amount of waste being generated will be estimated prior to performing work to determine the number of disposal containers needed for waste removal.

Hazardous wastes should only be shipped to approve facilities, accompanied by documentation, such as, a Hazardous Waste Manifest.

The Safety Manager is responsible for training employees in the proper procedures and guidelines for disposing and handling hazardous waste.

### **Water Diversion**

Northwinds of Wyoming, Inc. will obtain all necessary approvals, licenses and/or permits needed to divert water prior to performing work.

### **Wildlife Awareness**

Northwinds of Wyoming, Inc. employees working in wildlife areas will be trained on basic information and trained on specific operation procedures and risks associated with work performed in a wildlife area.

## Equipment Safety

### Air Compressors

1. Air intakes should be located to prevent hydrocarbon gas, exhaust gases, or any other flammable gases from entering the air compressor.
2. Air compressor discharges should be fitted to collect or remove oil and water from air lines.
3. Liquid must be drained from the air compressor daily. Water drains must be protected against freezing.
4. Air receivers must have a functioning pressure gauge, and a pressure relief valve located in a convenient location. The receiver should bear a marking plate to show normal and maximum operating pressures.
5. Synthetic (fire resistant) lubricants should be used with all compressors.
6. Never use chemical or solvent cleaning materials when cleaning air compressor intake systems.
7. Moving parts such as belts, shafts, coupling, and sheaves will be guarded.

### Engines and Pumps

1. Location should be well ventilated.
2. Gasoline engines should not be killed by use of the choke.
3. Auto-ignition systems will be posted.
4. A dry chemical fire extinguisher should be located within 100 feet of a stationary engine or on the service vehicle.
5. Never transfer gasoline from an open container to a carburetor.
6. Do not fill a fuel tank when the engine is running or hot.
7. When hand cranking an engine using a rope, never wrap the rope around your hand or lose object. The rope should have an adequate handle.
8. Make sure all spark plugs connections are tight.
9. Immediately clean up any spilled fuel.
10. Drive belts must not be tightened when the engine is running.

## Backhoe Operations

1. The operator must be fully qualified and become thoroughly familiar with the backhoe before using it and must read the operators manual carefully.
2. The unit should be equipped with a rollover protection system, and a seat belt.
3. Operators will use hand holds and step plates when getting on or off the unit. NEVER enter the unit from the rear.
4. Do not start the engine unless seated in the driver's seat.
5. Operate the backhoe controls only when properly seated at the controls.
6. Seat belts must be worn when the machine is in operation if the machine is equipped with rollover protection. Do not use the seat belt if the machine is not equipped with rollover protection.
7. Passengers are not permitted.
8. Keep bystanders clear while operating the backhoe or moving the stabilizers. No one is allowed in the bell hole when the backhoe is excavating.
9. Locate utility lines and overhead power lines before starting to dig. Do not operate a backhoe within 15 feet of an overhead electric line.
10. Never attempt to lift loads that exceed the load capacity of the unit.
11. Personnel will not pass, stand or work under the bucket or lift arms when in the raised position.
12. Use care at all times to maintain stability. Drive at a safe speed over rough ground or slopes, when crossing ditches, and when turning.
13. To prevent upsets when operating on a slope, avoid using the full reach and swinging a loaded bucket to the downhill side.
14. Always center and raise the boom before engaging or disengaging the transport.
15. Mechanical repairs and lubrication will not be performed when the unit is running.
16. Hydraulic repairs will not be done when the system is under pressure.
17. Park the unit on level ground whenever possible. When parking on an incline, lower the bucket so that the cutting lip contacts the ground, apply the parking brake and securely block the wheels.
18. Use care in attaching tow lines to the backhoe.
19. Observe proper maintenance, and perform an inspection of all pivot pins, hydraulic cylinders, hoses, snap rings, and main attaching bolts daily.

## Ditching Machines

1. The Operator must be fully qualified and become familiar with the ditching machine before using it and must read the operator's manual carefully.
2. A rollover protection system should be installed on riding machines.
3. Use the crawl gear when loading the unit on a trailer.
4. When the ditcher is being stored or transported on a trailer, lower the boom and leave in gear.
5. Personnel must stand clear of an operating machine and its load.
6. Use the handhold and steps provided to mount or dismount the machine.
7. Passengers are not permitted.
8. Locate utility lines, power lines and buried pipelines before starting to dig. Manually dig across lines.
9. Seat belts will be worn.
10. Do not add fuel to the ditcher when it is running or hot.
11. Do not get off the ditcher while the machine is in operation.

## **High Pressure Pumping**

A safety meeting will be held before the start of any job. All personnel will be instructed in the procedures, precautions, hazards, and work signals. Establish the chain of command for personnel. Designate a "Safe Zone" for emergency evacuation procedures.

1. High pressure operations should be conducted during the day, and never during an electrical or dust storm.
2. Smoking materials will not be permitted in the work area.
3. Only the minimum necessary personnel will be permitted in the work area.
4. Supervisors will insure that adequate portable fire extinguishers or an approved system are available.
5. Stay away from discharge lines that are under pressure.

## **Paint Equipment**

1. Areas where personnel may be exposed to harmful vapors, gases or fumes should be well ventilated to prevent personnel injury, explosion and combustion. Since many of these products are flammable, fire prevention rules will be observed.
2. Hot work permits may be required when painting is conducted in operations involving ignition sources.
3. Respiratory protection equipment, safety goggles, and protective clothing should be worn during paint spraying operations.
4. Barrier cream should be worn to protect exposed skin from contact with materials.
5. Caustic Soda (Lye) will not be used to remove old paint. Disposal of waste paint and materials will be performed using a drum marked "Waste Paint".
6. "No Smoking" signs will be posted in the area of painting.
7. Barricades will be used to mark the perimeter of a painting operation.
8. Painters will be informed by M.S.D.S (Material Safety Data Sheets) of the hazards and precautions required.
9. Test the safety valves on equipment before each shift.
10. Appropriate grounding will be performed.

## **Pressurized Paint Equipment**

1. Only pressurized paint vessels that have been fabricated and certified in accordance with the requirements of the American Society of Mechanical Engineers (ASME) Pressure Vessel Code should be used.
2. Test the safety valves on pressurized equipment daily.
3. The spray nozzles or guns should be equipped with deadman valves or switches. These valves must not be tied down or secured in any way that would prevent their use.
4. Nozzle, tank and pressure equipment must be grounded and periodically checked by an electrician to ensure that the ground connection is operative.

## Airless Paint Equipment

1. Ensure that all fluid connections are tight before starting the pump and that the gun is effectively grounded through the connection and hose.
2. All equipment must be fitted with high-pressure fittings. Never allow the use of standard-pressure fittings or equipment.
3. High pressure fluid hoses should be checked for kinking, bending or abrasion before work begins and throughout the job.
4. The spray gun should be handled with care. Spray from the gun should not be directed at any portion of the body, especially when the nozzle of the gun has removed.
5. Personnel should not attempt to change the paint nozzle without first disengaging the trigger of the gun or relieving its fluid pressure.
6. Personnel should not be allowed to disconnect the hose of the gun with first relieving fluid pressure.
7. The spray gun must be checked before and during use to ensure proper automatic cutoff control when the gun is released. If the gun does not shut off, the valve should be checked for dirt, wear or improper adjustment.

## Exposure Monitoring

### General

Certain employees will be selected to participate in a monitoring program to be conducted during randomly selected activities considered typical of operations or maintenance procedures that may reasonably be expected to expose employees to concentrations of Benzene that exceed the PELs.

Determinations of employee exposure shall be made from breathing zone air samples that are representative of each employee's average exposure to airborne benzene. Representative 8 hour Time Weighted Average (TWA) exposures shall be determined on the basis of one sample or samples representing the full shift exposure for each job classification in each work area.

Determinations of compliance with the OSHA mandated Short Term Exposure Limit (STEL) shall be made from 15 minute breathing zone samples measured at operations where there is reason to believe exposures may be high.

### Periodic Monitoring and Monitoring Frequency

Each of the Northwinds work places and operations that can reasonably be expected to present exposure to Benzene will be tested and monitored to determine exposure levels.

If monitoring reveals employee exposure at or above the OSHA action level but at or below the TWA, monitoring for such employee will be repeated at least once every year.

If monitoring reveals employee exposure above the TWA, monitoring for each such employee will be repeated at least once every six months.

The monitoring schedule may be altered from every six months to annually for any employee for whom two consecutive measurements taken at least seven (7) days apart indicate that the employee exposure has decreased to the TWA or below, but is at or above the OSHA action level.

Monitoring for the STEL shall be repeated as necessary to evaluate exposures of employees subject to short-term exposures.

## **Termination of Monitoring**

If the initial monitoring conducted as stated above reveals employee exposure to be below the action level, monitoring for that employee may be discontinued, except as may be required for the STEL.

## **Additional Monitoring**

Additional exposure monitoring will be instituted when there has been a change in the production process, control equipment, personnel, or work practices which may result in new or additional exposures to benzene or whenever there is any reason to suspect a change which may result in new or additional exposures.

Whenever spills, leaks, ruptures or other breakdowns occur that may lead to employee exposure, monitoring (using area or personal sampling) shall be implemented after the cleanup of the spill or repair of the leak, rupture or other breakdown to ensure that exposures have returned to the level that existed prior to the incident.

## **Accuracy of Monitoring**

Monitoring will be accurate to a confidence level of 95 percent, to within plus or minus 25 percent for airborne concentrations of benzene.

## **Employee Notification of Monitoring Results**

Each employee will be notified in writing, either individually or by posting of results in an appropriate location, of the results of any monitoring within 15 working days after the receipt of results. Whenever Personal Exposure Limits (PELs) are exceeded, the written notification will contain the corrective action being taken to reduce exposure to or below the PEL, or shall refer to a document available to the employee which states the corrective action being taken.

## **Fall Protection**

### **Introduction**

Climbing and fall protection is provided in the work place to minimize the risk of falls. Protection may be accomplished through the design of the facility and/or provision of personal gear.

Fall protection equipment includes:

- Safety harness with appropriate lanyard(s),
- Personnel lifts,
- Scaffolding, and or
- Safety climbs.

Working surfaces that are more than four (4) feet above ground or more than four (4) four feet above an adjacent platform or work surface;

- Must be equipped with protective handrails/guardrails, OR
- Another means of fall protection must be provided.

Appropriate fall protection must be used at all times while personnel are working at elevations greater than six (6) feet above the ground or an adjacent platform/working surface (measured by the level of the workers' feet).

Personnel climbing to or from such working surfaces should use:

- A ladder,
- Stairs, or
- An appropriate means of fall protection (i.e. safety climbs).

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**Exception: This rule does not apply to personnel on portable or fixed ladders less than 20 feet in length when performing tasks that can be accomplished with only one hand, allowing the other hand to grasp the ladder at all times.**

Fixed ladders that are more than 20 feet in length must have:

- A fixed climbing cage, or
- A climbing device, or
- Some other appropriate means of fall protection used by the individual climbing or working on the ladder

## **Personal Protective Equipment (PPE)**

A full body harness shall be worn whenever fall protection is required. Belts or other positioning equipment are not allowed.

Safety harnesses should fit snugly and comfortably.

When safety harnesses are used for fall protection, they must use lanyards with shock absorber systems.

When working at elevations where it is necessary to disengage a lanyard to move around equipment or obstacles, a double lanyard must be utilized to assure fall protection.

All equipment must be inspected for excessive wear or damage prior to each use.

Modifications to any fall protection equipment, other than those performed by the manufacturer, may result in premature failure of the equipment and are strictly prohibited.

All equipment shall be worn in accordance with the manufacturer's recommendations.

## **Maintenance**

Any fall protection equipment that is worn or damaged must be destroyed so that it is no longer usable, and then discarded.

Safety belts, harnesses, and lanyards that have been used to stop a fall shall be destroyed and discarded.

## **Storage**

Equipment must be stored properly to prevent damage. Avoid storage where chemicals, sharp tools/implements, or the weather will affect your equipment. Inspect your harness before each time it is used. Any tears, frays or other deformities will require that the harness be destroyed.



## **Fatigue Management**

### **Purpose**

To ensure our employees recognize the effect of fatigue as related to safely being able to perform work and to establish guidelines for work hours and equipment to reduce fatigue in our business and at our client locations.

### **Scope**

This program applies to all Northwinds of Wyoming, Inc. projects and operations.

### **Policy**

The guiding principles of fatigue management shall be incorporated into the normal management functions of the business and include the following:

- Employees must be in a fit state to undertake work
- Employees must be fit to complete work
- Employees must take minimum periods of rest to safely perform their work

These principles will be managed through:

- The appropriate planning of work tasks, including driving, vehicle and equipment maintenance, loading and unloading and other job related duties and processes
- Providing appropriate equipment to help reduce stress and fatigue
- Regular medical checkups and monitoring of health issues as required by legislation
- The provision of appropriate sleeping accommodations where required
- Ongoing training and awareness of employee health and fatigue issues

### **Roles and Responsibilities**

The following addresses the roles and responsibilities of workers to report tiredness/fatigue to supervision and that supervision take appropriate action to assist the worker.

#### **Northwinds of Wyoming, Inc. Management**

- Management accepts responsibility for the implementation of this fatigue management policy.

#### **Site Manager**

- Responsible for the implementation and maintenance of this program for their site and ensuring all assets are made available for compliance with the program.

## Roles and Responsibilities Employees in Safety Critical Positions

- Employees must present in a fit state free from alcohol and drugs;
- Employees must not chronically use over-the-counter, prescription drugs and any other product which may affect an employee's ability to perform their work safely, including fatigue that sets in after the effects of the drug wear off.
- Employees shall report tiredness/fatigue and lack of mental acuity to supervision and supervisory personnel shall make safety critical decisions and take appropriate actions to prevent loss including replacement of tired employees, changing schedules or forcing work stoppages.
- Employees need to be rested prior to starting work.
- Employees need to monitor their own performance and take regular periods of rest to avoid continuing work when tired.

## Work Hour Limitations and Rest Breaks to Control Fatigue and Increase Mental Fitness

Northwinds of Wyoming, Inc. has set the following procedures limiting work hours and controlling job rotation schedules, also known as staff/work balance, to help control worker fatigue. Northwinds of Wyoming, Inc. will set work hour limitations and will control job rotation schedules to control fatigue, allow for sufficient sleep and increase mental fitness in an effort to control employee turnover and absenteeism.

1. Every Employee shall have necessary work breaks in order to avoid fatigue. These scheduled breaks will apply to both driving and on site hours. The following shall be a minimum:
  - 15 Minutes each 2.5 hours
  - 30 Minutes after 5 Hours
  - 30 Minutes after 10 Hours
2. No Workers shall work more than:
  - 12 hours per day
  - 24 Days Continuous
3. Unfamiliar or irregular work should be avoided.
4. Chairs will be provided for workers to sit periodically and Northwinds of Wyoming, Inc. will provide periodic rest breaks for personnel.

## Use of Ergonomic Friendly Equipment

Ergonomic equipment will be used to improve workstation conditions such as anti-fatigue mats for standing, lift assist devices for repetitive lifting, proper lighting and controls of temperature and other ergonomic devices as deemed appropriate. Equipment to be used will be determined in the work task analysis.

## Analysis of Work Tasks to Control Fatigue

Work tasks to control fatigue must be analyzed and evaluated periodically. Northwinds of Wyoming, Inc. will make any necessary changes to equipment, training or procedures based on the evaluation.

## Incident Analysis

If there is an incident there shall be an initial identification/assessment of evidence. Initial identification of evidence immediately following the incident might include a listing of people, equipment, materials involved and a recording of environmental factors such as weather, illumination, temperature, noise, ventilation, etc. and physical factors such as fatigue, age and medical condition.

## **Initial and Annual Training for Workers on Fatigue and Controlling Fatigue**

Northwinds of Wyoming, Inc. is committed to ensuring that all employees are competent to perform their tasks including:

- Fatigue management and health issues.
- Northwinds of Wyoming, Inc. must provide initial and annual training on how to recognize fatigue, how to control fatigue through appropriate work and personal habits and reporting of fatigue to supervision.

A record of individual fatigues training and competency will be maintained.

## **First Aid**

### **General**

First Aid is the immediate and temporary emergency care administered to an injured person until professional medical assistance can be obtained.

In the event of an accident, what occurs in the first few minutes are the most critical. Proper First Aid or the absence thereof can mean the difference between temporary or permanent disability or between life and death.

Knowledge and training in first-aid is very important when medical care is not immediately available, and becomes everyone's responsibility to effectively assist until professional medical assistance is made available. Effective first aid requires knowledge and training in applying basic step by step principles to some general rules.

In a serious accident the following steps shall be taken immediately.

- Assess the situation; make sure that the scene is safe for you to enter. Always protect yourself by wearing gloves, safety glasses and other PPE.
- Set the priorities/ call for help or have someone do it for you.
- Check the ABC's (**A**irway, **B**reathing, and **C**irculation).
- Administer first aid as necessary
- Treat for shock.

### **Shock**

Shock is a life-threatening condition, and any serious accident/injury can cause shock. Shock can occur suddenly or gradually and if it is severe, death may result.

#### **Signs and Symptoms of Shock**

- Cold, clammy skin
- Rapid, weak pulse
- Profuse sweating
- Mental Confusion
- Rapid, shallow breathing

#### **What to Do**

- Seek medical assistance
- Lie victim down comfortably on his back
- Elevate lower extremities (legs) a minimum of 8 inches above head level.
- Loosen all tight clothing
- Turn head to one side in case of vomiting

## Bleeding

The two most important things to remember about bleeding are 1) don't panic and 2) try to stop the bleeding as quickly as possible.

Bleeding may be apparent (external) or inapparent (external)

### Types of Bleeding

- **Arterial bleeding** - bright red spurting blood
- **Venous bleeding** - dark red flowing blood
- **Capillary bleeding** - oozing blood
- **Internal bleeding** - large bruising or bulges in skin

Any wounds with arterial or heavy venous bleeding should be treated with a dry sterile dressing, direct pressure, elevation, treat for shock and should receive medical help immediately.

### Methods of Control

- **Direct Pressure**

Using a clean cloth or bandage apply gentle, firm, direct pressure to the wound. Elevate the wound if the wound is on one of the extremities and there is no sign of a fracture. Apply direct pressure for 15-20 minutes or until bleeding stops. Never remove the bandage. If the bandage becomes blood soaked apply additional bandages and continue direct pressure.

- **Pressure Points**

Pressure point is the method of applying finger or hand pressure on the artery between the wound and heart. Compression of the artery against the bone and surrounding tissue by the fingers/hands restricts blood flow to that region.

### Nosebleed

- Have person sit down leaning slightly forward so blood does not run down his throat.
- Have person pinch his nose firmly with thumb and forefinger for 10 full minutes. Apply a cold compress, if available.
- If pinching does not work, gently pack the nostril with absorbent cotton or sterile gauze.
- Instruct person not to blow nose.
- Make sure the person is not swallowing blood.

## Rescue Breathing

Rescue breathing also known as mouth-to-mouth resuscitation is the most common technique used in first-aid. Rescue breathing is the passage of air from the rescuers to the victim via the mouth. The exchange of air in the victim's lungs prevents the brain from dying and the heart from stopping.

## **What to Do**

1. Roll victim on his back (if necessary), keeping length of body aligned. If neck or back injury is suspected, minimal movement is very important, makes sure neck and back are kept straight to avoid further injury to spine.
2. Open the airway using the chin-lift method. Place one hand on the victim's forehead and put the fingers of your other hand under the bony part of the chin. Pressing down on the forehead and lift up on the chin so that the mouth is slightly open.
3. Examine the mouth for foreign matter. If an obstruction is visible, remove the object with your index finger.
4. Pinch the victim's nose to close nostrils, keeping the airway open by the chin-lift maneuver.
5. Take a deep breath and seal your lips around the outside the victim's mouth, creating a tight seal.
6. Blow into the victim's mouth, watching for the chest to rise, take your lips off victim's mouth to inhale between each breath. The rising and falling of the victim's chest during your exhalations indicates the effectiveness of your ventilations.
7. Repeat ventilations every 5 seconds, until breathing is restored, professional medical assistance arrives, you're relieved by another certified individual or you are too exhausted to continue.

## **Unconsciousness**

Countless number of reasons cause unconsciousness, some of them will be apparent while others will not. Treatment will always be the same.

1. Confirm unconsciousness. Tap firmly on person's shoulder and shout "Are you OK?" If there is no response **Call for Help**
2. Check breathing
  - a. Secure person's airway if you are trained in CPR.
  - b. Check for injuries; if unconsciousness is related to injuries refer to specific page for further information.

## **Heart Attack**

### **Signs and Symptoms**

- Pain
- Usually lasting more than 2 minutes
- Described as "tight" or "crushing"
- Usually in center of chest, sometimes spreading to left shoulder or arm,
- Upper abdomen, neck, or jaw
- Gasping or shortness of breath that improves while sitting/resting, but worsens when lying flat.
- Severe anxiety
- Heavy sweating, even without exercise.
- Pale or bluish skin or lips
- Irregular pulse

### **What to Do**

1. Call 911
2. Have person sit up or lie semi-reclined (whatever is comfortable to him).
3. Loosen all tight clothing.
4. Keep person comfortable and calm
5. If person is taking prescription medicine for the pains, assist him in taking medicine.
6. If breathing stops and you are trained in CPR begin rescue breathing. If no pulse (heartbeat) begin CPR.

## Electrical Shock

### Do: The Most Critical Step is to De-Energize the Scene

1. Turn off the current, or
2. Remove the victim from the contact with the current, using a non-conductive material such as a rope or dry wooden board or pole.
3. Seek medical assistance.
4. Once the current is off or the victim is in a safe location, begin First-Aid, Rescue breathing/CPR as needed. Remember to look for both an entry and exit burns and treat as third degree burns.
5. Treat for shock.
6. Monitor victim until help arrives.

### Don't: Touch the Victim until they are separated from the Current

## Burns

There are three major kinds of burns: 1) thermal (from fire), electrical and chemical. There are also three degrees of burns: first, second, and third.

### Signs and Symptoms

- First Degree: red skin with mild swelling and pain, mild sunburn is an example.
- Second degree: blisters, red weeping (oozing) skin swelling and pain. A severe sunburn is an example
- Third degree: white or charred skin, may include fat, muscle and bone.

## What to Do

### First Degree Burn

1. Place the burn in or under cold water, or apply ice or cold-water compresses until pain decreases.
2. Cover burn with dry clean bandage.
3. If pain continues or becomes infected seek medical assistance.

### Second and Third Degree Burns

1. Treat for shock
2. Cover the burned area with sterile/clean cloths.
3. Apply a loose dressing.
4. Seek medical assistance **Immediately**

## Chemical Burns

### Skin

1. Flush the affected area with cold water immediately. If necessary use a shower or hose to speed the process and cover all affected body parts.
2. Remove any clothing that has been in contact with the solvent or even in close proximity.
3. Cover the burn with a moist dressing.
4. Even if the burn is not large, seek medical attention.

## **Eyes**

2. Flush the eye immediately and thoroughly. The water may be from hose, faucet, or container.
3. Seek medical assistance immediately.
4. Patch both eyes.
5. **Do not** contaminate the uninjured eye.
6. **Do not** allow the person to rub his eye.

## **Electrical Burns**

- See Electrical Shock

## **Choking**

### **Signs and Symptoms**

- The victim cannot speak.
- The victim will clutch at his throat to show something is wrong.
- Inhaling will be difficult and sometimes noisy.
- Lips, tongue, or face may turn a bluish color.

### **What to Do (Conscious Person)**

1. Identify yourself as willing to help, and stand behind the person. Support his chest with one hand and bend him forward so that his head is lower than his chest. Using the heel of your hand give 4 blows to his back between the shoulder blades.
2. If the person continues to choke, put both arms around him and perform the "Heimlich Maneuver":
  - a. Press the thumb side of one fist against his abdomen, halfway between his navel and the bottom of his ribs.
  - b. Grasp your fist with the other hand and give 4 quick, hard inward and upward thrusts. Adjust the force of your thrusts to the person's size.
  - c. Repeat steps 1 (back blows) and 2 (abdominal thrusts) until airway is cleared and normal breathing begins, or person begins coughing forcefully or loses consciousness.

### **What to Do (Unconscious Person)**

1. Open the AIRWAY, using the chin-lift technique.
2. Check for BREATHING, Look, Listen and Feel. If not breathing, attempt to ventilate using mouth-to-mouth method, if unable to ventilate readjust airway and attempt to ventilate. If unable to ventilate victim airway is obstructed administer back blows:
  - a. With yourself in position, raise victim's arm closest to you over his head and roll victim towards you onto your knees and deliver 4 back blows.
  - b. Roll victim back onto his back, straddle victim and deliver 4 abdominal thrusts.
  - c. Insert your index inside the victim's mouth along the cheek, deep into the throat to the base of the tongue. Sweep your finger from side to side; withdraw your finger and any foreign material.
  - d. Open airway and attempt to ventilate.
  - e. If airway is still obstructed repeat step 2a through 2d, until obstructed airway is cleared, medical assistance arrives, another certified individual can assist you or you are too exhausted to continue.

## Heat Stroke

**Heat Stroke is a MEDICAL EMERGENCY.**

### Signs and Symptoms

- Hot, red, dry skin No sweating.
- Rapid, strong pulse.
- Headaches, Dizziness and nausea.
- Confusion or unconsciousness.
- Convulsions.

### What to Do

**Get victim to a hospital or doctor immediately!**

While in route, attempt to cool victim's body by applying cool, wet compresses or sponging victim's body with cold water or by fanning victim. Be careful not to overdo the cooling process.

## Heat Exhaustion

### Signs and Symptoms

- Skin pale and clammy
- Profuse sweating
- Dizziness or fainting
- Fatigue, weakness, headache or nausea
- Muscle cramps

### What to Do

1. Move the person to cool place out of the sun.
2. Lie the person down in the shock position.
3. Loosen his clothing
4. Attempt to cool him with wet cloths or by fanning him.
5. If conscious, give him plenty of water to drink
6. Seek medical assistance

## Frostbite

Frostbite is literally the freezing of skin tissue resulting from excessive exposure to cold temperatures. It usually involves the extremities and frequently affects the nose, cheeks, ears, fingers and toes. In advanced stages, frostbite can be serious, even fatal.

### Signs and Symptoms

- Skin red and painful. (early stage)
- Skin turns white or grayish-yellow, firm, waxy, and numb.

### Treatment

The treatment of frostbite is rapid warming by immersion in a water bath. **Medical Supervision is required.**



<b>Dos</b>	<b>Don'ts</b>
Place the frostbitten part(s) inside the person's clothing	Rub the frostbitten part, even with snow
Move person indoors quickly	Use hot water bottles, heat lamps, nor place the frostbitten part near a hot stove radiator, or open fire
Apply additional blankets or clothing on frostbitten parts	Give person alcoholic beverages or allow smoking
Seek medical care immediately	Break blisters that may have formed

## Hypothermia

### **Hypothermia is a MEDICAL EMERGENCY.**

Hypothermia is the reduction of body core temperature, caused by the body's insufficient generation of heat. Hypothermia if left untreated is often fatal.

### **SIGNS AND SYMPTOMS**

<b>Mild Hypothermia</b>	<b>Severe Hypothermia</b>
Shivering	No longer shivering
Loss of coordination	Stumbling
Confusion	Irrational behavior
Urge to urinate	Slow, irregular heartbeat
	Unconsciousness and rigid muscles

### **Treatment**

<b>Dos</b>	<b>Don'ts</b>
Move person to someplace warm	Leave victim alone
Replace wet clothing with dry blankets, clothing, or towels	Use hot water to warm victim
Monitor ABC's and seek medical attention <b>Immediately!</b>	Give victim alcohol or caffeinated beverages
If conscious, give warm fluids	Assume that a "lifeless" person found in the cold is dead. He may be deeply unconscious

## Eye Injuries

Injuries to the eye(s) are serious and need prompt medical attention.

### Signs and Symptoms

- Pain, and or stinging, especially when blinking.
- Excessive blinking.
- Tearing.
- Redness or "bloodshot" appearance.
- Visual problems.
- Sensitivity to light.

### What to Do

#### OBJECT IN EYE (Loose or unseen)

- Examine the eye in good light, if you see a foreign object resting on the surface of the eye or inner eyelid, or you cannot see the object then:
- Flush the eye with water, or sterile eyewash.
- If irritation continues, cover both eyes with sterile eye pads, and bandage or tape loosely in place and take person to a doctor or hospital.

#### OBJECT IN EYE (Embedded)

- Have person close his eyes. Cover both eyes with sterile or clean eye pads and bandage or tape them loosely in place and take person to a doctor or hospital.
- **If embedded object is large and prevents the eye from closing**, cover the protruding object without touching either the eye or the object, using a paper cup or similar object that won't disturb the imbedded object.
- Cover the other eye with clean eye pad and secure it loosely in place.
- **Seek medical assistance IMMEDIATELY!**
- Lay the person flat on his back, provide reassurance.

## Cuts and Blunt Eye Injuries

### Cuts to Eye/Eyelid

- Cover both eyes with clean eye pads, and secure them loosely in place.
- Keep person in semi-reclining position.
- Seek medical attention

### Blunt Injuries

- Have person lie on his back with eyes closed.
- Apply cold compresses gently on eye.
- Seek medical attention

## Fractures or Suspected Fractures

A fracture is a break (or crack) of a bone. There are two types of fractures open (compound) and closed (simple). With open fractures the skin over the suspected fracture is broken (cut). With closed fractures the skin is not broken. Complications such as nerve/tissue damage or internal bleeding are common with fractures if they are not treated promptly and properly.

### Signs and Symptoms

- Pain or tenderness over bone or joint.
- The person heard or felt a "snap".
- Inability to move the affected area normally.
- Numbness, tingling or loss of pulse in an injured limb.
- A grating sound or feeling.
- Swelling or bluish discoloration over a bone or joint.
- Abnormal shape (deformity), position or movement of a bone or joint.

### What to Do

<b>Dos</b>	<b>Don'ts</b>
Treat any life-threatening condition	Attempt to straighten the injured part
<b>Do not move an individual</b> with a suspected fracture	<b>Move a person with a suspected neck or spine injury,</b> unless there is an immediate threat or danger
Immobilize the fracture following the <i>Golden Rule</i> . <b>Splint it as it lies!</b>	Attempt to transport the victim if fracture cannot be completely and correctly immobilized or if splinting equipment is not available
Avoid contamination of broken skin, apply a sterile dressing or clean cloth over the open wound	
Treat for shock	
Seek medical attention <b>Immediately!</b>	

Detailed instructions for Splinting Techniques are given in Company First Aid Training.

## Poisoning

### Swallowed Poisons

#### Signs and Symptoms

- Presence of container or a statement that pills, chemicals, etc. were swallowed.
- Burns around lips or mouth.
- Vomiting.
- Sudden onset of pain or illness.
- Chemical odor on breath.
- Pupils of eyes may be unusually dilated or pinpoint size.
- Unconsciousness.
- Convulsions.

#### What to Do

- Identify the poison, or substance ingested, if possible.
- Professional advice should be obtained IMMEDIATELY in all cases, Contact the Poison Control Center 1-800-955-9119, 911, or Emergency Room closest to you.
- Induce vomiting if instructed to do so by physician or Poison Control.
- Seek medical attention IMMEDIATELY!!!

### Plant Poisoning

#### Signs and Symptoms

- Red skin, often with blisters. Itching and/or burning in the affected area.
- Headache.
- Fever.
- Respiratory difficulty in allergy sensitive individuals.

#### What to Do

- Know how to identify poison ivy, poison oak, and poison sumac.
- Put on rubber gloves, if available.
- Remove all contaminated clothing and set it aside to be washed later.
- Wash affected area with soap and water.
- If available apply rubbing alcohol with cloth or tissue.
- If rash is severe or blisters have formed, seek medical assistance.

## Animal and Insect Bites

### Venomous Snake Bites

- Attempt to identify the snake if possible, try and kill the snake and take to hospital for exact identification
- Avoid panic. Have person lie still, with the bitten part lower than his heart.
- Get to the nearest hospital quickly. Have someone phone ahead to alert hospital.

### Animal and Human Bites

- Control any serious bleeding.
- Get name and address of the owner of the animal. Carefully capture or kill a wild animal that has bitten the person.
- Wash the bite thoroughly with soap and water for a full 5 minutes.
- Control any minor bleeding, apply thick clean cloth or gauze to wound and apply direct pressure, and elevate.
- Apply sterile bandage or clean cloth over wound and secure in place.
- Seek medical attention.

### Spider Bites

#### Signs and Symptoms

- Swelling and pain at bite site.
- Sweating.
- Nausea, stomachache and muscle cramps.
- Difficulty breathing.
- Joint pain.
- Blisters

#### What to Do

- Have person lie still.
- Apply an ice pack or cold compresses to the bite if possible.
- Observe for signs of shock or difficulty breathing.
- Seek medical attention immediately.

### Insect Stings

#### Bee stings can be fatal to hypersensitive individuals

- Wash the affected area thoroughly with soap and water.
- Pain and swelling at the site is common for insect stings.
- Relieve itching with cold wet compresses, or if available apply calamine lotion.
- Seek medical attention if signs of infection begin.
- Individuals allergic to bee stings should see their physician to obtain an Emergency Bee Sting Kit.
- Employees should notify the management of their condition

## Flammable and Combustible Liquids/Fire Safety

### Handling and Storage

- Keep flammable/combustible liquids away from fire and sparks.
- Storage shall be in approved locations only and with compatible chemicals only.
- Use only in well ventilated areas.
- Do not mix chemicals, unless instructions call for mixing.
- **Use only approved containers that are properly labeled.**
- Use bonding wires to prevent static electricity while transferring flammable materials from one container to another.
- Try to avoid free falling liquids when transferring. The free falling liquids can generate static electricity

### Fire Safety

The following Fire Safety Program has been developed in accordance with the OSHA Fire Safety Standard, 29 CFR 1910.38

#### Responsibility

- The SAFETY MANAGER is solely responsible for all facets of this program and has the full authority to make necessary decisions to ensure the success of this program.
- The SAFETY MANAGER will develop detailed written instructions where required by this program and will amend these instructions when necessary.
- The SAFETY MANAGER and PROJECT FOREMAN are responsible for training employees in the use of fire extinguishers and the use of the evacuation plan, and for providing any other training required by this program.

#### Fire Exits

- Each work place building must have at least two means of escape remote from each other to be used in a fire emergency.
- Fire doors must not be blocked or locked to prevent emergency use when employees are within the buildings. Delayed opening of fire doors is permitted when an approved alarm system is integrated into the fire door design.
- Exit routes from buildings must be clear and free from obstructions and properly marked with signs designating exits from the building.
- The SAFETY MANAGER is responsible for inspecting fire exits. Inspections will be performed monthly.

#### Portable Fire Extinguishers

- Each workplace building must have a full complement of the proper type of fire extinguisher for the fire hazards present.
- Employees expected or anticipated to use fire extinguishers must be instructed in the hazards of fighting fire, how to properly operate the fire extinguishers available, and what procedures to follow in alerting others to the fire emergency. The person responsible for training, who is named on the first page of this program, will provide training.
- The SAFETY MANAGER (or designee) will maintain and inspect fire extinguishers at least monthly. All fire extinguishers will be inspected annually by an outside fire extinguisher company.
- In those situations where the employer wishes to evacuate employees instead of having them fight small fires, there must be written emergency plans and employee training for proper evacuation.

## **Emergency Evacuation Planning**

Each workplace must have a written emergency action plan for evacuation of employees that includes:

- Evacuation routes and procedures for all employees
- Procedures for accounting for all evacuated employees
- Special procedures for evacuating physically impaired employees
- Procedures for those employees who must remain behind temporarily to shut down critical plant equipment
- The means of alerting employees to a fire emergency.
- The means for employees to report emergencies
- The written plan must be available for employee review.

An employee alarm system must be available throughout the workplace complex and must be used for emergency alerting for evacuation. The alarm system may be voice communication or sound signals such as bells, whistles, or horns.

### **Employees must be trained in:**

- Recognizing the evacuation signal
- Knowing their role in the emergency evacuation plan.
- All new employees must be trained in the emergency evacuation program when beginning their job duties. All employees must be trained in any changes in the plan.
- The Developer, who is the responsible for developing detailed written instructions, and the Trainer, who is responsible for training employees about the plan, is named on the first page of this program.

## **Fire Prevention Plan**

Stopping unwanted fires from occurring is the most efficient way to handle them. The SAFETY MANAGER will draft a written Fire Prevention Plan to complement the Fire Evacuation Plan to minimize the frequency of evacuation. The plan must include:

- Housekeeping procedures for storage of flammable materials
- Cleanup procedures for flammable waste
- Handling and packaging procedures for flammable waste, including recycling
- Safety rules regarding smoking, welding, and other burning within the workplace
- This written plan is available for employee review.

Heat producing equipment such as burners, heat exchangers, boilers, ovens, stoves, fryers, etc., must be properly maintained and kept clean of accumulations of flammable residues. Heat producing sources will be inspected monthly.

Flammables are not to be stored close to these pieces of equipment.

All employees must be trained in potential fire hazards of their jobs and in the procedures listed in the Fire Prevention Plan. All new or transferred employees must be trained in any changes in the plan.

The Developer, whose is responsible for developing detailed written instructions, as well as the Trainer, who is responsible for training employees about the plan, are named on the first page of this program.

## Hazard Communication Program

### General Requirements

1. In order to comply with 29 CFR 1910.1200, the following written Hazard Communication Program (HCP) is to be implemented for personnel use for Northwinds of Wyoming, Inc.
2. The originals will be kept on file by the safety department at the main office.
3. All personnel will use this program.
4. The safety manager will be responsible for ensuring that the program is current and enforced.
5. A copy of this program must be available to employees on hiring, and a copy will be supplied to any employees on request.
6. The safety department will be contacted when a copy of the program is needed.
7. The program will be updated when new chemicals or hazards are introduced into the working environment and will be reviewed annually.

### Purchases

The safety department will check all chemical purchase requests (PR) and verify that a statement requesting a Material Safety Data Sheet (MSDS) appears on each purchase request before it is processed.

### Container Labeling

1. The safety department will be responsible for monitoring all containers of hazardous chemicals entering the workplace. The safety manager will ensure that the chemical containers are properly labeled with:
  - a. Chemical name
  - b. Hazard warning
  - c. Name and address of manufacturer, importer, or responsible party.
2. No chemical will be used until the safety department has checked it.
3. If chemicals are to be transferred to a separate container the person transferring the material will ensure that the new container is properly labeled and that all secondary containers are labeled. Secondary labels can be an extra copy of the manufacturer's label or a generic label. All secondary labels must list Chemical Identity, Hazard Warning, and Manufacturer.
4. For help with labeling contact the safety department, project superintendent, crew foreman, or use the safety manual.
5. The Safety Manager will review the labeling system annually and update it as required.
6. The safety department will ensure that pipes are labeled properly.
7. The site safety coordinator will also inform employees associated with the chemicals contained in the pipes within the work area.



## **Material Safety Data Sheets (MSDS)**

1. The safety manager will be responsible for obtaining and maintaining the MSDS system for the company
2. The safety manager will review incoming data sheets for new and significant health and safety information.
3. The safety department will ensure that the new information is given to the affected employees.
4. Copies of all MSDSs will be kept by the safety department and reviewed annually for the accuracy and completeness of each MSDS.
5. **The MSDS system includes the following requirements:**
  - a. A current master inventory list of all MSDSs will be maintained. The number to MSDS referenced on the inventory list will index the list.
  - b. The chemical name or identity used on each MSDS will be the same as that used on the container label.
  - c. The chemical and common name of all ingredients determined to present a hazard will appear on all MSDSs.
6. **The information on the MSDS includes:**
  - a. Physical and chemical characteristics of the chemical, including vapor pressure, flash point, etc.
  - b. Fire, explosion, and reactivity hazards of the chemical, including boiling point, flash point, and auto-ignition temperature.
  - c. Health hazards of the chemical mixture, including signs and symptoms of exposure, medical conditions recognized as aggravated by exposure, and primary routes of entry
  - d. Permissible exposure limit (PEL) or any other exposure limit used or recommended by the manufacturer, importer, or employer
  - e. Whether the chemical is listed as a carcinogen by the National Toxicology Program (NTP) or has been found to be a potential carcinogen by the American Conference of Governmental Industrial Hygienists (ACGIH) or OSHA.
  - f. Control measures for the chemical, including fire, engineering, and personal protective equipment.
  - g. General precautions for safe handling and use, including protective measures during repair and maintenance of equipment involving the chemical.
  - h. Procedures for clean-up of spills and leaks
  - i. Emergency first aid procedures
  - j. Date the MSDS was prepared or revised
  - k. Name, address, and telephone numbers of manufacturer, importer, or responsible party to call in an emergency.
7. The MSDS originals will be kept on file by the safety department.
8. The MSDS will also be part of the program for use by employees.
9. Each superintendent and foreman will keep a current copy of the program on file.
10. A new chemical will not be used until its MSDS has been obtained.

## Employee Information and Training

Before a new employee starts work, the employee's supervisor or foreman will go over the employee's copy of the Hazard Communication Program (HCP) and each MSDS applicable to the employee's job.

Before any new chemical is used, all employees will be informed of its use. Each affected employee will be instructed on safe use and trained on the hazards of the new chemical.

New chemicals will be addressed at the weekly safety meeting and affected personnel will be informed of its use at a job-specific tailgate meeting.

All employees will attend additional training, as appropriate, to review the HCP and MSDS.

Appropriate library reference material will also be discussed during the training sessions.

The minimum orientation and training for new employee contains the following:

- An overview of the requirements contained in the Hazard Communication Standard, 29 CFR 1910.1200
- The chemicals present in the workplace operations and this office.
- Location and availability of the written HCP
- The physical and health effects of the hazardous materials listed on the inventory list of this program.
- Methods and observation techniques used to determine the presence or release of hazardous chemicals in the work area.
- How to lessen or prevent exposure to these hazardous chemicals through use of control/work practices and personal protective equipment.
- Steps taken by Northwinds of Wyoming, Inc. to lessen exposure to the chemicals listed on the inventory list.
- Emergency procedures to follow if exposed to any chemicals
- Location of MSDS file
- Location of the hazardous chemical inventory list
- Before a new chemical hazard is introduced into any section of the workplace, each new employee will be given information and training as outlined above and/or as outlined on the attached Employee Training Guidelines by the job superintendent/foreman.
- This person is also responsible for ensuring that the MSDS on each new chemical is available before the chemical is used.
- After attending the training class, each employee will sign a form to verify that he or she attended the training. Each employee will sign a form to verify that the written Hazard Communication Program was or is made available for review and that he/she understands the HCP.
- Before entering an establishment, **each employee will** ascertain what hazards he/she may be exposed to and then take appropriate action to be protected. If an employee has any questions about what protection he/she will need, the employee will immediately contact his immediate supervisor.

## Inventory List of Hazardous Chemicals

The list of the hazardous chemicals in this work place is with the MSDS file. Further information can be obtained from the MSDS itself or from the safety department at the main office. Each jobsite will be required to keep a list of all hazardous chemicals in use or storage.

The original (master list) will be kept on file by the safety department at the main office.

## **Non-Routine Tasks**

Before any non-routine task is performed, the employee will be advised of special precautions to follow. If the employee receives no instruction, the employee should contact his immediate supervisor or the project foreman/superintendent. In addition, any other personnel who could be exposed will be informed of this potential exposure by his immediate supervisor.

In the event such tasks are required, the project superintendent/foreman will provide the activity as it relates to the specific chemicals expected to be encountered:

- Specific chemical names
- Hazards of the chemicals
- What personnel protective equipment is required
- What safety measures are to be taken
- Emergency procedures
- Measures that have been taken to lessen the hazards, including ventilation, respirators and the presence of other employees

## **Outside Contractors**

It will be the responsibility of the safety manager to provide other personnel or outside contractors with the following information:

- Hazardous chemicals to which they may be exposed while in the workplace
- Measures to lessen the possibility of exposure
- Location of MSDSs for all hazardous chemicals
- Procedures to follow if they are exposed.

The safety department will also be responsible for contacting each contractor before work is started and finding out what chemicals the contractor is bringing into the workplace. If employees will be exposed to these chemicals, the safety manager/project foreman will inform those employees who may be affected.

## **Hazard Identification and Risk Assessment Program**

### **Program Overview**

Hazard identification (HAZID) and risk assessment involves a critical sequence of information gathering and the application of a decision-making process. These assist in discovering what could possibly cause a major accident (hazard identification), how likely it is that a major accident would occur and the potential consequences (risk assessment) and what options there are for preventing and mitigating a major accident (control measures). These activities should also assist in improving operations and productivity and reduce the occurrence of incidents and near misses.

### **Hazard identification**

Northwinds of Wyoming, in consultation with its employees and subcontractors, [2] through JSA's will identify all reasonably foreseeable hazards at the jobsite that may cause a major accident; and the kinds of major accidents that may occur at the jobsite, the likelihood of a major accident occurring and the likely consequences of a major accident.

[1]

## **The Importance of Getting the Hazard Identification right**

Major accidents by their nature are rare events, which may be beyond the experience of many employers. These accidents tend to be low frequency, high consequence events, however, the circumstances or conditions that could lead to a major accident may already be present, and the risks of such incidents should be proactively identified and managed. Therefore, the hazard identification process should be used for routine and non-routine activities as well as new processes, changes in operation, products or services as applicable. [3]

## **Features of HAZID**

Northwinds of Wyoming will expect:

- a clear method statement or description of the HAZID process, defining when it was conducted, how it was planned and prepared, who was involved and what tools and resources were employed;
- that the HAZID process was based on a comprehensive and accurate description of the facility, including all necessary diagrams, process information, existing conditions and modifications; and
- that the overall HAZID process did not rely solely on data that was historical or reactive and that employers ensured that predictive methods were also used.

The HAZID process must identify hazards that could cause a potential major accident for the full range of operational modes including normal operations, start-up, shutdown, and also potential upset, emergency or abnormal conditions. Employers should also reassess their HAZID whenever a significant change in operations has occurred or a new substance has been introduced.

## **Past, present and future hazards**

To identify all hazards, the HAZID will need to consider past, present and future conditions, hazards and potential incidents. Past incidents, at the jobsite or similar facilities, provide an indication of what has gone wrong in the past and what could go wrong in the future.

A wide range of hazards and potential incidents will be present in the facility. New hazards and incidents could be created in the future as a result of planned or unplanned changes. The management of change process described in the SMS should identify new conditions during the planning of modifications or new activities. This should then trigger further HAZID studies and risk assessments, with the identification of control measures as appropriate.

## **HAZOP**

Hazard and Operability Study (HAZOP) is a highly structured and detailed technique, developed primarily for application to chemical process systems. A HAZOP can generate a comprehensive understanding of the possible 'deviations from design intent' that may occur. However, HAZOP is less suitable for identification of hazards not related to process operations, such as mechanical integrity failures, procedural errors, or external events. HAZOP also tends to identify hazards specific to the section being assessed, while hazards related to the interactions between different sections may not be identified. Therefore, HAZOP may need to be combined with other hazard identification methods, or a modified form of HAZOP used, to overcome these limitations.

## **Checklists**

There are many established hazard checklists which can be used to guide the identification of hazards. Checklists offer straightforward and effective ways of ensuring that basic types of events are considered. Checklists may not be sufficient on their own, as they may not cover all types of hazards, particularly facility-specific hazards, and could also suppress lateral thinking. Again, this technique should only be used in combination with other techniques for jobsite purposes.

## **Jobsite Hazard Analysis (JHA's)**

This is a technique developed to address human factors, procedural errors and 'man-machine interface' issues. This type of hazard identification is useful for identifying potential problems relating to procedural failures, human resources, human errors, fault recognition, alarm response, etc.

Jobsite Hazard Analysis can be applied to specific jobs such as lifting operations, moving equipment off-line or to specific working environments such as control rooms. Jobsite Hazard Analysis is particularly useful for looking at areas of a facility where there is a low fault-tolerance, or where human error can easily take a plant out of its safe operating envelope.

## **Risk assessment**

The aims of risk assessment are to:

provide a basis for identifying, evaluating, defining and justifying the selection of control measures for eliminating or reducing risk, and to therefore lay the foundations for demonstrating the adequacy of the standards of safety proposed for the facility; identify hazards that are classified, prioritized and addressed based on the risk associated with the task (Risk analysis matrix outlining severity and probability). [4]

Provide the employer and employees with sufficient objective knowledge, awareness and understanding of the risks of major accidents at the facility; capture knowledge of risk of a major accident at the facility so it can be managed, disseminated and maintained. The management of knowledge generated in the risk assessment will also greatly assist the efficient development of a safety report for the facility, for example by handling assumptions and actions arising; and provide practical effect to the employer's safety report philosophy. For example, if the employer intends to base the safety report largely on the facility's compliance with specific codes or standards, the risk assessment should address corresponding issues such as the basis of the codes and standards and their applicability to the facility.

## **Control measures**

The previous sections discussed key elements for the range of control measures that should be in place at a jobsite. This section provides more detailed guidance on how to select and judge the effectiveness of specific control measures. Choosing the best control measures and being able to demonstrate their effectiveness is a critical feature of compliance with the Regulations.

## **Using a risk control hierarchy to determine control measures**

In an occupational health and safety context, risk control is often categorized according to an effectiveness hierarchy; often simply called the "risk control hierarchy". The hierarchy lists the type of control measures in a priority order, based on the extent each measure has an impact on risk. Once control measures are assessed, countermeasures shall be employed to mitigate or reduce the hazards. This shall be determined by the Supervisor, RSO, Chad Underwood, or designated representative. Typically, this is performed by dedicated assignment of task, appropriate documentation of completion of task, and implemented controls. [5]

In the context of jobsites, a useful effectiveness hierarchy of control measures is as follows:

- eliminate hazards;
- prevent incidents;
- reduce consequences; and
- mitigate the harm.
- The different categories are defined below.

## Selecting and rejecting control measures

There are several factors to consider when selecting or rejecting control measures. These factors have a bearing on the fundamentally important requirement to:

- justify the adequacy of control measures (where “adequacy” means “adequate to eliminate risk or reduce it so far as practicable”);
- identify potential common mode failures; and
- define performance indicators for the control measures.

The text below sets out a series of core questions that the employer may consider using when selecting or rejecting control measures:

### Involving employees in control measures

The Regulations require employers to consult with employees and contractors (where practicable) in all decision-making processes associated with controlling risks. The employer should consider defining roles for employees in relation to adopting or reviewing control measures. Through this involvement, employees are able to provide their knowledge of how the facility is operated in practice and assist in identifying the control measures actually in place. The employees’ knowledge may also assist in providing an understanding of how control measures function in practice, and how they may fail or be defeated. Employees will be aware of issues such as compatibility and maintainability of alternative control measures and are vital to the process of selecting or rejecting control measures. The objective is to make use of employees’ knowledge and experiences in the working of the facility.

In practice, only particular employees are involved in this way, however, all employees must be provided with information, instruction and training on the adopted control measures. In addition, employees will be trained in the hazard identification process [6] including the use and care of proper PPE regardless of their involvement in the review and assessment activities. This ensures that all individuals understand the control measures to the extent necessary to perform their work safely. Evidence of genuine participation by employees in all aspects of selecting control measures will make an important contribution to the quality of the safety report.

### Reviewing and revising control measures

Control measures must remain valid or effective for the conditions at the jobsite. Ordinarily, it is improbable that all control measures will always remain valid or effective, given changes at the facility and new knowledge about hazards, risks and control measure options.

Reviews of control measures should be triggered whenever a situation arises that would indicate that control measures are no longer valid or effective, for example if there is a proposal to modify the facility, if there has been a major accident or if a control measure fails to meet the set performance standard.

In addition, a periodic review process helps avoid creating new hazards derived from the corrective measures. [7]

### Investigating and analyzing control measures

Throughout the above steps, the employer will be reflecting upon existing or potential new control measures in the determination of causes, likelihood, consequence and risk. It is essential to be explicit about what control measures are being included and how they are considered to affect risk levels.

## **Hearing Conservation Program**

1. All Northwinds employee hearing conservation training and instruction, as detailed in this procedure, will be provided by or under the supervision of the Safety Department.
2. The Safety Department's staff shall perform periodic audits of operations in order to ensure compliance with the requirements of this procedure among employees, supervisors and contractors. The results of such audits shall be formally documented, reported to management for action and retained on file.
3. The Safety Department shall periodically review this procedure and make the revisions and modification necessary to ensure the protection of employees and contractors.
4. The Safety Department will provide assistance to engineering and maintenance personnel in order to assure that reasonable consideration is given to the use of engineering concepts and principles, to control noise at the source for equipment installation, or during equipment or process maintenance.
5. All hearing protection devices (e.g., ear muffs or plugs etc.) to be used by Northwinds employees shall be selected and approved by the Safety Department. The criteria for the selection of hearing protection shall include the level of protection offered by the device (i.e., Noise Reduction Rating or NRR), employee acceptance of the device(s) under consideration, and cost effectiveness relative to performance and employee acceptance.
6. The Safety Department shall be responsible for ensuring that the records for employee training and medical surveillance are retained on file.

## **Noise Surveys**

1. All noise surveys of NOW facilities and operations will be coordinated by the Safety Department.
2. Preliminary surveys will be conducted to identify all work areas, processes, operations, or crafts where noise sources are of a level of magnitude that may result in potential employee over exposures.
3. All employees, or a representative number of employees in each craft, identified in the preliminary survey, as having the potential for over exposure, must be included in a more detailed noise survey. These surveys consist of a noise dosimeter analysis to determine the employee's time-weighted average exposure.
4. All Survey results are to be reported to and/or retained by the NOW Safety Department for the appropriate action. Employees must be notified, in writing, of their results for all dosimetry analysis/sampling.
5. Once these surveys have been completed, additional monitoring must be performed when processes, operations or equipment changes increase the noise exposure of employees whose previous exposures were within acceptable limits. Additional monitoring must also be performed when such noise level increases render the hearing protection devices used by employees, ineffective in lowering perceived sound levels to within acceptable limits.
6. When monitoring surveys identify specific areas as a source of high noise exposure, these areas shall be posted with signs that warn of potential noise over exposure and that require hearing protection for entry.

## Medical Surveillance

1. All NOW employees who must enter areas that have been identified as "high noise areas" will be required to participate in the medical surveillance program for hearing conservation.
2. New employees who will work in high noise areas must receive a baseline audiometric evaluation prior to beginning work in such areas.
3. All employees working in high noise areas must receive annual audiometric evaluations.
4. All physical examinations and testing performed as part of the hearing conservation medical surveillance program shall be in accordance with the requirements of the OSHA standard. A licensed or certified audiologist, otolaryngologist, or other physician must perform all audiometric evaluations, or by a technician certified by the Council of Accreditation in Occupational Hearing Conservation.
5. All employee audiograms are to be preceded by at least fourteen hours without exposure to high noise levels. Each employee shall be informed to avoid all occupational and non-occupational high noise sources for fourteen hours prior to their audiogram. If avoiding such noise sources is not feasible, employees should be advised to use hearing protection when exposed to high noise levels prior to the audiometric evaluation.
6. Each employee's annual audiogram must be evaluated to determine if he/she has developed a significant loss of hearing when compared to his or her previous baseline audiogram. Employees with a Standard Threshold Shift (STS) in their hearing perception (See 29 CFR 1910.95(g)(10) for the definition of STS) shall be retested within thirty days of their last annual audiogram. If the results of this audiogram reveal an STS, an audiologist, otolaryngologist, or physician shall review the audiogram to determine if there is a need for further evaluation. Individuals reviewing such problem cases shall be provided with the following information:
  - a. The baseline audiogram and the most recent audiogram of the employee to be evaluated;
  - b. Measurements of background sound pressure levels in the audiometric test room where employee audiograms are performed; and
  - c. Records of audiometer calibration.

**Unless the physician or audiologist concludes that the employee's hearing loss is non-occupational in origin, the following steps must be followed when an employee STS occurs:**

- The affected employee must be notified, in writing of the physician's conclusions relative to their hearing loss within 21 days of the determination.
- Employee work practices shall be reviewed to determine that hearing protection is used properly.
- The employee shall be refitted with hearing protection and shall be retrained in the proper use of hearing protection devices. Employees will be provided with protection that offers a higher NRR.



## **Noise Exposure Control**

### **Engineering Controls**

1. Whenever possible, existing high noise sources shall be attenuated through the use of engineering controls. The implementation of such controls will be considered the primary means of preventing employee noise over exposure.
2. The feasibility of limiting refinery process noise through the application of known principles of noise control will be given consideration whenever designing new plant facilities or when modifying or redesigning existing facilities.
3. Vendors supplying machinery and equipment should be advised that noise levels would be considered in the selection process. In addition, engineering specifications for new equipment should include a requirement for noise performance and feasible cost-effective noise controls.

### **Personal hearing Protection**

1. In the event that engineering controls prove to be infeasible or ineffective in reducing noise levels within acceptable limits, employees with potential over exposure must use an approved hearing protective device.
2. All employees and contractors entering any area that has been identified and is posted as a high noise area must use hearing protection.
3. The Safety Department will be responsible for the selection of hearing protection. The devices selected for use shall provide protection that is sufficient to lower employee exposures to a level that is within acceptable limits.
4. The Safety Department shall approve a variety of hearing protection devices for use. Employees may select the type of protection that they wish to use during the hearing conservation-training program.
5. Hearing protection will be provided at no cost to the employee. If hearing protection is in need of replacement, the employee may obtain new devices from their supervisor or the Safety Department.

### **Hearing Conservation Training**

1. All employees whose work requires them to enter designated high noise areas must participate in an annual hearing conservation training program.
2. Employee participation in such training must be formally documented and retained on file.
3. Employees participating in this training must be provided access to a copy of this policy and procedure and supplied with a copy of the reference OSHA noise standard.
4. The following information and training must be provided to all training program participants:
  - a. The potential adverse physiological effects to noise over exposure;
  - b. An explanation of LPM's policy and procedure for hearing conservation and their commitment to employee protection;
  - c. A detailed review of the areas and situation that will require the use of hearing protection, a description of the hearing protection devices available for use at LPM, and instruction on the selection, fitting, use, care and limitations of these devices; and
  - d. The purpose of the hearing conservation medical surveillance program and of audiometric test procedures.

## Hoses

- Leaks and bruises in hoses should be repaired immediately.
- No attempts shall be made to transfer gas from one cylinder to another.
- Should a hose catch fire, close the valve if possible. No attempts should be made to extinguish the fire by pinching the hose.
- When not in use the Oxy-Acetylene welding units should be racked. The master valves should be closed and the pressure bled from the regulators after they have been used.

## Hydrogen Sulfide (H<sub>2</sub>S) Safety

### Introduction

H<sub>2</sub>S occurs in a variety of natural and industrial settings. It is generated as an unwanted by-product in industrial operations. Bacterial action and decomposition of organic matter also produce it. Regardless of the origin, H<sub>2</sub>S is very dangerous due to its explosive nature and toxicity. The principal concern from inhalation of H<sub>2</sub>S is acute toxicity. H<sub>2</sub>S causes paralysis of the respiratory center in the brain and can result in immediate collapse and death.

### Properties of H<sub>2</sub>S

- It is highly toxic, colorless gas.
- H<sub>2</sub>S can travel some distance close to the ground and may accumulate in low areas
- H<sub>2</sub>S has an offensive odor like rotten eggs at low concentrations. However, the sense of smell is a poor indicator of H<sub>2</sub>S since the olfactory nerve (sense of smell) quickly becomes desensitized and can no longer detect the H<sub>2</sub>S odor.
- The explosive range for H<sub>2</sub>S is extremely wide, from 4.3% to 46% by volume. The auto ignition temperature of H<sub>2</sub>S is 500° F.
- H<sub>2</sub>S is soluble in water and liquid hydrocarbons and will come out of solution as a gas.
- H<sub>2</sub>S burns with a blue flame and produces sulfur dioxide (SO<sub>2</sub>), another toxic gas.
- H<sub>2</sub>S is highly corrosive to metals and causes hydrogen embrittlement and sulfide stress cracking.

### Health Effects of H<sub>2</sub>S

Low levels of exposure may cause the following symptoms or a combination of these symptoms

- Skin Irritation, Eye Irritation
- Dizziness, Irrational behavior
- Fatigue, Loss of appetite
- Dryness in nose, throat
- Nausea
- Coughing
- Headache
- Loss of consciousness or death

## Concentration

In Parts Per Million (PPM)	Effect
0.003 - .02	Odor threshold
Above 10	Toxic to personnel, <b>wear respiratory protection</b>
Below 100	Quickly deadens the sense of smell
Above 300	Considered Immediately Dangerous to Life or Health (IDLH). Air supplying respiratory equipment required for this level
Above 500	Attacks the respiratory center in brain causing loss of consciousness within 15 minutes
Above 700	Rapid loss of consciousness and death
Above 1000	Immediate unconsciousness and death if not revived promptly

## Detection Devices

**Personal Monitors** – Portable electronic units designed to alert personnel who may encounter H<sub>2</sub>S levels beyond permissible exposure levels.

**Fixed Monitors** – In areas where H<sub>2</sub>S is present in high concentrations and can affect personnel or the public, fixed or stationary monitor systems can be used to detect H<sub>2</sub>S.

**Colorimetric tube detectors** – Generally used for screening purposes, but (if used in conjunction with the proper respiratory equipment) can be used to test atmospheres for safe entry or work.

## Respiratory Equipment

- **Escape units** – designed strictly for escape from an H<sub>2</sub>S atmosphere.
- **Supplied air unit** – Generally used as work unit. Such units must have a positive pressure feature and must be equipped with an escape cylinder, in case the air supply is interrupted.
- **Self Contained Breathing Apparatus (SCBA)** – Can be used as a work unit and is the preferred standby and rescue unit.

## Safety Precautions

### Do Not Rely on Your Sense of Smell to Detect H<sub>2</sub>S

- Use detection equipment when working in an area where there is a possibility of H<sub>2</sub>S gas, especially in enclosed or below-grade areas.
- Do not enter an H<sub>2</sub>S area without the proper training (including CPR) and authorization.
- In an atmospheres immediately dangerous to life or health (IDLH level of 300 ppm or greater), a standby person(s) with suitable self-contained breathing apparatus, must be available for purposes of rescue.
- Never attempt to rescue an H<sub>2</sub>S victim without the proper respiratory protection in the form of a SCBA or an approved hose line unit. All rescue personnel must be properly trained.
- Personnel working in H<sub>2</sub>S areas are required to be clean shaven to ensure a proper respirator mask-to-face seal.
- Iron Sulfide – During any service operation where suspect iron sulfide scale is deposited, it is necessary to prevent spontaneous combustion. This can be accomplished by keeping the iron sulfide wet, removing the scale, or by complete coverage with soil.

## Ladders

### General

- Inspect before each use.
- Do not paint ladders except for numbering purposes.
- Do not use ladder for any other purpose than for climbing.
- Do not carry anything that will prevent holding on with both hands, while ascending or descending a ladder.
- Keep both feet on the ladder rungs. Do not reach out too far, or place one foot on a line or piece of equipment. Change the position of the ladder as often as necessary.
- Face a ladder when working from it. A safety harness is required if it is necessary to work backwards from a ladder.
- Only one worker on a ladder at all times.
- Do not use metal ladders around electrical activities or near electrical lines or services.
- Ladders may be used on scaffolding only if, secured and the user is tied off with safety harness and lanyard.

### Straight and Extension Ladders

Place ladder so base is out one-fourth the vertical distance from the ground to the object against which the ladder is leaning.

- The top of the ladder shall exceed at least three (3) feet beyond supporting object when used as access to an elevated work area, and shall be securely tied off.
- When extension section is raised to desired height, check to ensure that the safety latches are engaged and extension rope is secured to a rung on the base section of ladder.
- Do not take extension ladders apart to use either section separately.

### Stepladders

- Always open, set level on all four feet, and lock spreaders in place.
- Do not use them like an extension ladder.
- Never stand on the platform or top step of a stepladder.
- Do not place tools or material on steps or platform.
- Tie off when on insecure footing.

## **Lead Awareness**

Most lead over-exposures in the construction industry are found in the trades such as plumbing, welding and painting. In building construction, lead is frequently used for roofs, cornices, tank linings and electrical conduits. In plumbing, an alloy of lead/tin had been used extensively for soldering tin-plate and pipe joints. Use of lead solders in plumbing systems is now prohibited by law. Lead-based paint had also been used extensively for residential and commercial applications but has been banned for residential use by the Consumer Product Safety Commission. Lead-based paint may still be used on metal structures (bridges, railways, beams, etc.) to prevent corrosion, although substitute coatings are now available. In other industries, lead may be found in batteries, circuit boards, cathode ray tubes, and leaded glass.

Significant lead exposures can arise during stripping or demolition/ salvage of structures containing lead-based paint. The types of work with the greatest potential for lead exposure include iron work, demolition, painting, plumbing, electrical, lead-based paint abatement, heating/air conditioning and carpentry/renovation activities. <3>

Unless working in a relatively new building (built since 1980), all paint should be treated as lead containing unless sampling shows otherwise.

Disturbance is defined as scraping, washing, limited wet sanding, grinding, welding, drilling, small surface cutting for installation of equipment, repainting activities, cleaning activities, and minor surface modifications.

On Multi-Employer worksites, if our employees who are working immediately adjacent to a lead abatement activity are exposed to lead due to the inadequate containment of such job, Northwinds of Wyoming shall either remove the employees from the area until the enclosure breach is repaired or perform an initial exposure assessment. <7>

Employees are prohibited from disturbing lead-containing or presumed lead-containing materials. If an employee should accidentally contact such materials, the employees' hands and faces should be washed immediately. <6>

Employees must abide by any signs/labels/assessment reports indicating the presence of lead containing materials. Appropriate work practices should be followed to ensure the lead containing materials are not disturbed. <5>

All employees with potential exposure to lead must receive training. Northwinds of Wyoming's employees shall be informed of Appendices A & B of the regulation. All affected employees are required to attend initial and annual training programs. The employees should be informed of the specific nature of the operations which could result in exposure to lead above the action level, the purpose, proper selection, fitting, use, and limitation of respirators, engineering controls, purpose & a description of the medical surveillance program & the medical removal program.

## **Health Hazards**

Health effects from lead exposure continue to be a concern both at the workplace and in the home. Since the ban on lead in gasoline, lead levels detected in areas near roadways have decreased dramatically; however, lead based paint used in buildings and housing prior to 1980 continue to serve as significant sources of exposure.

Some common symptoms of acute lead poisoning are loss of appetite, nausea, vomiting, stomach cramps, constipation, difficulty in sleeping, fatigue, moodiness, headache, joint or muscle aches, and anemia. Long term (chronic) overexposure to lead may result in severe damage to the blood-forming, nervous, urinary, and reproductive systems. <4>

Lead poisoning can result from a single high level (acute) exposure or through a number of smaller repetitive (chronic) exposures. Most adults are exposed to lead through occupational sources, while children and infants are exposed primarily through surface dust and soil. Floors, chewable surfaces and soil contaminated with lead serve as primary exposure sources for children.

Lead has no beneficial effect on humans. Once it has been ingested into the body, lead is distributed in the bloodstream to red blood cells, soft tissues and bone. Lead in the body is eliminated very slowly, mainly by the kidneys and digestive tract. Irreversible kidney damage may have already developed by the time high blood lead levels are identified and treated, making avoidance to exposure and medical surveillance extremely important.

Acute lead poisoning symptoms usually include abdominal pain as in a gall bladder attack or appendicitis. Other non-specific complaints include irritability, fatigue, weakness, and muscle pain. In rare instances, damage to the brain and central nervous system also may occur. Chronic lead poisoning may result after lead has accumulated over time in the body and has been deposited mostly in the bone.

Stored lead in the bone may be released to the blood stream to produce health effects such as defective hemoglobin synthesis, nervous system abnormalities, hypertension, effects in the reproductive system (including impotency) and damage to a developing fetus.

The measurement of blood lead level is the most reliable method of evaluating lead exposure. It indicates the amount of lead in the bloodstream, which is often a measure of recent exposure to lead. The present "level of concern" in children is ten micrograms of lead per deciliter of blood (10 µg/dl). The level of concern for adult workers, as established by OSHA, is 40 µg/dl.

## **Health Hazard Data**

### **A. Ways in which lead enters your body.**

When absorbed into your body in certain doses lead is a toxic substance. The object of the lead standard is to prevent absorption of harmful quantities of lead. The standard is intended to protect you not only from the immediate toxic effects of lead, but also from the serious toxic effects that may not become apparent until years of exposure have passed.

Lead can be absorbed into your body by inhalation (breathing) and ingestion (eating). Lead (except for certain organic lead compounds not covered by the standard, such as tetraethyl lead) is not absorbed through your skin. When lead is scattered in the air as a dust, fume or mist it can be inhaled and absorbed through your lungs and upper respiratory tract. Inhalation of airborne lead is generally the most important source of occupational lead absorption. You can also absorb lead through your digestive system if lead gets into your mouth and is swallowed. If you handle food, cigarettes, chewing tobacco, or make-up which have lead on them or handle them with hands contaminated with lead, this will contribute to ingestion.

A significant portion of the lead that you inhale or ingest gets into your blood stream. Once in your blood stream, lead is circulated throughout your body and stored in various organs and body tissues. Some of this lead is quickly filtered out of your body and excreted, but some remains in the blood and other tissues. As exposure to lead continues, the amount stored in your body will increase if you are absorbing more lead than your body is excreting. Even though you may not be aware of any immediate symptoms of disease, this lead stored in your tissues can be slowly causing irreversible damage, first to individual cells, then to your organs and whole body systems.

### **B. Effects of overexposure to lead**

**(1) Short term (acute) overexposure.**

Lead is a potent, systemic poison that serves no known useful function once absorbed by your body. Taken in large enough doses, lead can kill you in a matter of days. A condition affecting the brain called acute encephalopathy may arise which develops quickly to seizures, coma, and death from cardiorespiratory arrest. A short term dose of lead can lead to acute encephalopathy. Short term occupational exposures of this magnitude are highly unusual, but not impossible. Similar forms of encephalopathy may, however, arise from extended, chronic exposure to lower doses of lead. There is no sharp dividing line between rapidly developing acute effects of lead, and chronic effects which take longer to acquire. Lead adversely affects numerous body systems, and causes forms of health impairment and disease which arise after periods of exposure as short as days or as long as several years.

**(2) Long-term (chronic) overexposure.**

Chronic overexposure to lead may result in severe damage to your blood-forming, nervous, urinary and reproductive systems. Some common symptoms of chronic overexposure include loss of appetite, metallic taste in the mouth, anxiety, constipation, nausea, pallor, excessive tiredness, weakness, insomnia, headache, nervous irritability, muscle and joint pain or soreness, fine tremors, numbness, dizziness, hyperactivity and colic. In lead colic there may be severe abdominal pain.

Damage to the central nervous system in general and the brain (encephalopathy) in particular is one of the most severe forms of lead poisoning. The most severe, often fatal, form of encephalopathy may be preceded by vomiting, a feeling of dullness progressing to drowsiness and stupor, poor memory, restlessness, irritability, tremor, and convulsions. It may arise suddenly with the onset of seizures, followed by coma, and death. There is a tendency for muscular weakness to develop at the same time. This weakness may progress to paralysis often observed as a characteristic "wrist drop" or "foot drop" and is a manifestation of a disease to the nervous system called peripheral neuropathy.

Chronic overexposure to lead also results in kidney disease with few, if any, symptoms appearing until extensive and most likely permanent kidney damage has occurred. Routine laboratory tests reveal the presence of this kidney disease only after about two-thirds of kidney function is lost. When overt symptoms of urinary dysfunction arise, it is often too late to correct or prevent worsening conditions, and progression to kidney dialysis or death is possible.

Chronic overexposure to lead impairs the reproductive systems of both men and women. Overexposure to lead may result in decreased sex drive, impotence and sterility in men. Lead can alter the structure of sperm cells raising the risk of birth defects. There is evidence of miscarriage and stillbirth in women whose husbands were exposed to lead or who were exposed to lead themselves. Lead exposure also may result in decreased fertility, and abnormal menstrual cycles in women. The course of pregnancy may be adversely affected by exposure to lead since lead crosses the placental barrier and poses risks to developing fetuses. Children born of parents either one of whom were exposed to excess lead levels are more likely to have birth defects, mental retardation, behavioral disorders or die during the first year of childhood.

Overexposure to lead also disrupts the blood-forming system resulting in decreased hemoglobin (the substance in the blood that carries oxygen to the cells) and ultimately anemia. Anemia is characterized by weakness, pallor and fatigability as a result of decreased oxygen carrying capacity in the blood.

### **(3) Health protection goals of the standard.**

Prevention of adverse health effects for most workers from exposure to lead throughout a working lifetime requires that worker blood lead (PbB) levels be maintained at or below forty micrograms per one hundred grams of whole blood (40  $\mu\text{g}/100\text{g}$ ). The blood lead levels of workers (both male and female workers) who intend to have children should be maintained below 30  $\mu\text{g}/100\text{g}$  to minimize adverse reproductive health effects to the parents and to the developing fetus.

The measurement of your blood lead level is the most useful indicator of the amount of lead being absorbed by your body. Blood lead levels (PbB) are most often reported in units of milligrams (mg) or micrograms ( $\mu\text{g}$ ) of lead (1 mg=1000  $\mu\text{g}$ ) per 100 grams (100g), 100 milliliters (100 ml) or deciliter (dl) of blood. These three units are essentially the same. Sometime PbB's are expressed in the form of mg% or  $\mu\text{g}\%$ . This is a shorthand notation for 100g, 100 ml, or dl. PbB measurements show the amount of lead circulating in your blood stream, but do not give any information about the amount of lead stored in your various tissues.

PbB measurements merely show current absorption of lead, not the effect that lead is having on your body or the effects that past lead exposure may have already caused. Past research into lead-related diseases, however, has focused heavily on associations between PbBs and various diseases. As a result, your PbB is an important indicator of the likelihood that you will gradually acquire a lead-related health impairment or disease.

Once your blood lead level climbs above 40  $\mu\text{g}/100\text{g}$ , your risk of disease increases. There is a wide variability of individual response to lead, thus it is difficult to say that a particular PbB in a given person will cause a particular effect. Studies have associated fatal encephalopathy with PbBs as low as 150  $\mu\text{g}/100\text{g}$ . Other studies have shown other forms of diseases in some workers with PbBs well below 80  $\mu\text{g}/100\text{g}$ . Your PbB is a crucial indicator of the risks to your health, but one other factor is also extremely important. This factor is the length of time you have had elevated PbBs. The longer you have an elevated PbB, the greater the risk that large quantities of lead are being gradually stored in your organs and tissues (body burden). The greater your overall body burden, the greater the chances of substantial permanent damage.

The best way to prevent all forms of lead-related impairments and diseases-both short term and long term- is to maintain your PbB below 40  $\mu\text{g}/100\text{g}$ . The provisions of the standard are designed with this end in mind. Northwinds of Wyoming has prime responsibility to assure that the provisions of the standard are complied with both by the company and by individual workers. You as a worker, however, also have a responsibility to assist your employer in complying with the standard. You can play a key role in protecting your own health by learning about the lead hazards and their control, learning what the standard requires, following the standard where it governs your own actions, and seeing that your employer complies with provisions governing his actions.

#### **(4) Reporting signs and symptoms of health problems.**

You should immediately notify your supervisor or RSO if you develop signs or symptoms associated with lead poisoning or if you desire medical advice concerning the effects of current or past exposure to lead on your ability to have a healthy child. You should also notify your supervisor or RSO if you have difficulty breathing during a respirator fit test or while wearing a respirator. In each of these cases Northwinds of Wyoming must make available to you appropriate medical examinations or consultations. These must be provided at no cost to you and at a reasonable time and place.



## **Training**

All Northwinds of Wyoming employees involved in the disturbance of lead-containing materials or lead based paint as part of regular work activities must have at least a lead awareness training class. Northwinds of Wyoming may provide an introductory level lead awareness class for employees involved in non-abatement activities. <1> Northwinds of Wyoming may also choose to cover lead hazards during their Worker Right to Know training. Typical job classifications needing awareness training would include painters, carpenters, welders, electricians, plumbers and general maintenance personnel. Documentation of training shall include at a minimum: dates of training, employee name, and trainer name. <2> Employees involved in lead abatement activities must receive more extensive EPA approved lead abatement worker and/or supervisor level training.

## **Personal Protective Equipment (PPE) and Hazard Assessment Program**

### **General Requirements**

OSHA requires employers to assess their workplace to determine if any hazards require the use of personal protective equipment (PPE). Protective equipment must be used whenever hazards or processes of the environment, chemical hazards, radiological hazards, or mechanical irritants could cause injury or impairment through absorption, inhalation, or physical contact.

The employer must identify hazards that are either actually present or likely to be present. If such hazards exist, the employer must:

- Select the types of PPE that will protect against the identified hazards
- Verify the hazard assessment in writing
- Inform employees of the PPE that is selected by the employer
- Require the employees to use the selected PPE
- Ensure that any PPE provided to employees is of correct type and properly fits each employee
- Provide training to each employee who is required to use PPE
- Not use damaged or defective PPE

### **Reassessment of Hazards**

The safety manager is required to reassess the work place hazard situation as necessary by:

- Identifying and evaluating new equipment and processes;
- Reviewing accident records; and
- Reevaluating the suitability of previously selected PPE.

### **Controlling Hazards – In General**

PPE devices alone should not be relied on to provide protection against hazards. They should be used in conjunction with guards, engineering controls, and sound manufacturing practices.

## Assessment and Selection – In General

General guidelines should be followed for assessing the foot, head, eye, face, and hand hazards that exist in an operation or process and for matching the protective devices to the particular hazard. The safety manager has the responsibility to exercise common sense and appropriate knowledge to make the assessment and selection. To assess the need for the PPE, the following guidelines should be followed.

**Conduct Survey:** A walk-through survey of the areas in question should be conducted. The survey helps identify sources of hazards to workers. Consideration should be given to the following basic hazard categories:

- Impact
- Penetration
- Compression (roll-over)
- Chemical
- Heat
- Harmful dust
- Light (optical) radiation

## Observe Sources of Hazards

During the walk-through survey, the safety manager should observe:

- Sources of motion (e.g., machinery or processes where any movement of tools, elements or particles could exist or movement of personnel could result in collision with stationary objects)
- Sources of high temperatures that could result in burns, eye injury, ignition of protective equipment, etc.
- Types of chemical exposure
- Sources of harmful dust
- Sources of light radiation i.e., welding, brazing, cutting, furnaces, heat treating, high intensity lights, etc.
- Sources of falling objects or potential for dropping objects
- Sources of sharp objects that might pierce the feet or cut the hands
- Sources of rolling or pinching objects that could crush the feet
- Layout of work place and location of workers
- Any electrical hazards

## Review Injury/Accident Data

- In addition to the walk-through survey, injury/accident data should be reviewed to help identify problem areas.

## Organize Data

- Following the walk-through survey and review of injury / accident data, the information must be organized for the hazard assessment. Organization of the information aids in the analysis of the hazards in the environment. This in turn helps ensure proper selection of protective equipment.

## Analyze Data

- After workplace data has been gathered and organized, an estimate of the potential for injuries should be made. Each of the basic hazards should be reviewed and a determination made for each of the hazards found in the areas as to: The type; Level of risk; and Seriousness of potential injury. The possibility of exposure to several hazards simultaneously must be considered.

## **Guidelines for Selection and Use of PPE – In General**

- Become familiar with the potential hazards and the type and effectiveness of protective equipment available
- Be sure to recognize the possibility of multiple and simultaneous exposure to a variety of hazards. For example operations involving heat may also involve light radiation (e.g., welding)
- Select the protective equipment that ensures a level of protection that is greater than the minimum required to protect employees from hazards. Adequate protection against the highest level of the hazards should be provided. Protective devices do not provide unlimited protection, however.
- Compare the hazards associated with the environment with the capabilities of the available PPE.
- Fit the user with the protective device and give instructions on care and use of the PPE. It is very important that end users are made aware of all warning labels for and limitations of their PPE.

## **Fitting the Device**

- Careful consideration must be given to comfort and fit. PPE that fits poorly will not afford the necessary protection. In addition, continued wearing of the devices by employees is more likely if they fit the wearers comfortably.
- Protective devices are generally available in a variety of sizes. Care must be taken to make sure that the right size is selected.

## **Devices with Adjustable Features**

- Individual adjustments should be made to provide a comfortable fit and maintain the protective device in the proper position. Particular care must be taken in fitting devices for eye protection against dust and chemical splash to ensure that they are sealed to the face. In addition, proper fitting helmets help insure that they will not fall off during work operations. In some cases, a chin strap may be necessary to keep the helmet on the employee's head. Where manufacturer's instructions are available, they must be followed carefully.

## **Eye and Face Protection – General Guidelines**

1. Employees must use appropriate eye and/or face protection when exposed to hazards from:
  - a. flying particles
  - b. molten metal
  - c. liquid chemicals
  - d. acids or caustic liquids
  - e. chemical gases or vapors
  - f. potentially injurious light radiation.
2. Protective eye and face devices purchased on or after July 5, 1994, must comply with ANSI Z87.1-1989 or be equally effective. Devices purchased before that date must comply with ANSI Z87.1-1968 or be equally effective.
3. Face shields should be worn only over primary eye protection (safety glasses or goggles).
4. Persons whose vision requires the use of prescription lenses must wear either protective devices fitted with prescription lenses or protective devices designed to be worn over regular prescription eyewear.
5. Wearers of contact lenses must also wear appropriate eye and face protection devices in a hazardous environment. Dusty and chemical environments may represent an additional hazard to contact lens wearers.
6. Some of the occupations (but not limited to) for which eye and face protection should be routinely considered are: carpenters, electricians, mechanics, pipefitters, welders, laborers, operators, chemical handlers, concrete workers

**Northwinds of Wyoming, Inc. Safety Manual - Personal Protective Equipment (PPE) and Hazard Assessment Program**

The following chart provides general guidance for the selection of eye and face protection to protect against hazards associated with the listed hazard "source" operations.

<b>Eye and Face Selection Chart</b>		
<b>Source of Hazard</b>	<b>Hazard Assessment</b>	<b>Protection Required</b>
<b>Impact</b> – chipping, grinding, machining, concrete work, woodworking, sawing, drilling, chiseling, powered fastening, riveting, sanding	Flying fragments, objects, large chips, particles, sand, dirt, etc.	Spectacles with side protection, goggles, and face-shields: for severe exposure, use face-shield
<b>Heat</b> – furnace operations, pouring, casting, hot dripping and welding/cutting	Splash from molten metals hot sparks High temperature exposure	screen face-shields, reflective face-shields, welding helmets or welding shields
<b>Chemicals</b> – acid and chemicals handling, degreasing, plating	Splash, irritating mists	goggles, eyecup and cover types; for sever exposure, use face-shield
<b>Dust</b> – woodworking, buffing, general dusty conditions	nuisance dust	special-purpose goggles, goggles, eyecup and cover types
<b>Light and/or Radiation</b> – welding: electric arc Welding, sunlight,	Glare, optical radiation, poor vision	welding goggles or welding face-shield w/proper shade of lens, spectacles with shaded or special-purpose lenses, as suitable

**Northwinds of Wyoming, Inc. Safety Manual - Personal Protective Equipment (PPE) and Hazard Assessment Program**

The chart below provides general guidance for the selection of eye protection to protect against radiant energy:

<b>Filter Lenses for Protection Against Radiant Energy</b>			
<b>Operations</b>	<b>Minimum Electrode Size of 1/32 in.</b>	<b>Arc Current</b>	<b>Protective Shade</b>
<b>Shielded Metal Arc Welding</b>	Less than 3	Less than 60	7
	3-5	60-160	8
	5-8	160-250	10
	More than 8	250-500	11
<b>Gas Metal Arc Welding and Flux Cored Arc Welding</b>		Less than 60	7
		60-160	10
		160-250	10
		250-500	10
<b>Gas Tungsten Arc Welding</b>		Less than 50	8
		50-150	8
		150-500	10
<b>Air Carbon Arc Cutting</b>	(Light)	Less than 500	10
	(Heavy)	500-1000	10
<b>Plasma Arc Welding</b>		Less than 20	6
		20-100	8
		100-400	10
		400-800	11
<b>Plasma Arc Cutting</b>	(Light)	Less than 300	8
	(Medium)	300-400	9
	(Heavy)	400-800	10
<b>Torch Brazing</b>			3
<b>Torch Soldering</b>			2
<b>Carbon Arc Welding</b>			14

<b>Operations</b>	<b>Plate Thickness (in.)</b>	<b>Plate Thickness (mm.)</b>	<b>Protective Shade</b>
<b>Gas Welding</b>			
<b>Light</b>	Under 1/8 inch	Under 3.2 mm	4
<b>Medium</b>	1/8 to 1/2 inch	3.2 to 12.7 mm	5
<b>Heavy</b>	Over 1/2 inch	Over 12.7 mm	6
<b>Oxygen Cutting</b>			
<b>Light</b>	Under 1 inch	Under 25 mm	3
<b>Medium</b>	1-6 inches	25 to 150 mm	4
<b>Heavy</b>	Over 6 inches	Over 150 mm	5

An assessment has been completed in accordance with the above Eye and Face Protection – Guidelines, including the applicable ANSI standards. Employees are required to wear eye and face protection.

Required PPE will be used in the specific situations and locations listed below.

- Safety spectacles with side shields will be worn at all Northwinds work sites
- Full face-shields will be worn over spectacles with side-shields when performing grinding operations (welders' helper).
- Safety spectacles with side-shields will be worn while performing any maintenance operation in the shop or in the company yard.

## Head Protection – General Guidelines

1. Protective helmets (hardhats) purchased on or after July 5, 1994, must comply with ANSI Z89.1-1986 or be equally effective. Hardhats purchased before that must comply with ANSI Z89.1-1969 or be equally effective.
2. Employees must wear hardhats when working in areas where there is a potential for a head injury from falling objects. All hardhats must be designed to provide this protection.
3. Some examples include:
  - a. Working under other workers who are using tools and materials that could fall
  - b. Working around or under conveyor belts that are carrying parts or materials
  - c. Working below machinery or processes that might cause material or objects to fall
  - d. Working on exposed energized conductors
  - e. When a client has policies requiring such use.
4. Examples (but not limited to ) of occupations for which some form of head protection should be routinely considered are:
  - a. Carpenters
  - b. Electricians
  - c. Mechanics
  - d. Pipefitters
  - e. Welders
  - f. Laborers
  - g. Equipment operators
5. When selecting head protection, electric shock and burn hazards must be guarded against as well as dangers from falling objects. Each effected employee must wear protective headgear designed to reduce electrical shock hazards when near electrical shock conductors that could contact the head or other electrical hazard. In selecting head protection, knowledge of potential electrical hazards is essential.
6. **Type A hardhats** – in addition to impact and penetration resistance, provide electrical protection from low-voltage conductors (they are proof tested to 2,200 volts)
7. **Type B hardhats** – in addition to impact and penetration resistance, provide electrical protection from high-voltage conductors (they are proof tested to 20,000 volts)
8. **Type C hardhats** – provide impact and penetration resistance, but they are usually made of aluminum, which conducts electricity. They should not be used around electrical hazards or when there is a possibility of a flammable atmosphere (the hard hat may conduct a static charge).

## Head Protection - Selection

An assessment has been completed in accordance with the above Head Protection – General Guidelines, including the applicable ANSI standards. Employees of Northwinds Of Wyoming, Inc. are required to wear head protection.

PPE of the type specified will be used in the specific situations and locations listed below:

- All employees will wear hardhats at all work sites. No aluminum hardhats will be allowed.

## **Foot Protection – General Guidelines**

- Employees must wear protective footwear (safety shoes and boots) when working in areas where there is a danger of foot injuries from:
  - Falling or rolling objects
  - Objects piercing the sole
  - Exposure of employees' feet to electrical hazards
- Protective footwear must provide both impact and compression protection. Safety shoes or boots with impact protection would be required, for example, for workers carrying or handling materials such as packages, objects, parts, or heavy tools that could be dropped, and for other workers performing activities during which objects might fall onto the feet. Safety shoes or boots with compression protection would be required, for example, for work activities involving skid trucks (manual material handling carts), around bulk rolls, and heavy pipes, all of which could potentially roll over an employee's feet.
- When necessary, safety shoes must also provide puncture protection. An example would be the situation where sharp objects (such as nails, wire, tacks, screws, large staples etc.) could be stepped on by employees and cause a foot injury.
- In some special situations, metatarsal protection is required. In others, electrical conductive or insulating safety shoes would be necessary.
- Some occupations (Not limited to) for which foot protection should be routinely considered are:
  - Carpenters
  - Electricians
  - Mechanics
  - Pipe fitters
  - Equipment operators
  - Welders
  - Laborers

## **Foot Protection - Selection**

An assessment has been completed in accordance with the above Foot Protection – General Guidelines, including the applicable ANSI standards. Employees of Northwinds Of Wyoming, Inc. are required to wear foot protection.

PPE of the type specified will be used in the all situations listed below.

- All employees will wear steel-toed boots for impact and compression rated at 75ft pounds.



## **Hand Protection – General Guidelines**

- Employers must require employee use of appropriate hand protection whenever employees' hands are exposed to hazards from:
  - skin absorption of harmful substances
  - severe cuts or lacerations
  - severe abrasions
  - punctures
  - chemical burns
  - thermal burns
  - harmful temperature extremes
- Employers will select appropriate hand protection based on an evaluation of:
  - The performance of the hand protection relative to the tasks to be performed;
  - The conditions present;
  - The duration of use; and
  - The actual and potential hazards identified.
- Gloves are often relied on to prevent cuts, abrasions, burns, and skin contact with chemicals that can cause local or systemic effects following skin exposure. We unaware of any gloves that provide complete protection against all potential hand hazards. Commonly available glove materials provide limited protection against many chemicals. It is important:
  - To select the most appropriate glove for a particular application;
  - To determine how long it can be worn; and to determine whether it can be reused.

An assessment has been completed in accordance with the above Hand Protection – General Guidelines, including applicable standards. Employees of Northwinds Of Wyoming, Inc. are required to wear hand protection.

### **PPE of the type specified will be used in the specific situations at all work sites:**

- ✓ Leather or leather-palmed gloves when handling wire or wire rope.
- ✓ Cloth made gloves when handling pipe.
- ✓ Rubber gloves approved for electrical work.
- ✓ Chemical gloves when handling hazardous chemicals.
- ✓ Welder will wear heat resistant leather gloves.

## Required Training – In General

The employer must provide training to each employee required to use PPE. Training will include:

- ✓ When PPE is necessary
- ✓ What PPE is necessary
- ✓ How to wear PPE
- ✓ The limitations of PPE
- ✓ Proper care, maintenance, useful life, and disposal of PPE

The employer must certify in writing that the employee has received and understands the training. The certification record will identify:

- ✓ Each employee trained
- ✓ The dates of training
- ✓ The document that establishes Certification of Training in the use of PPE
- ✓ When an employee who is already trained no longer has the understanding or skill to be protected from hazards, the employer must retrain the employee. Circumstances requiring retraining include:
  - ✓ Changes in the work place that render previous training obsolete,
  - ✓ Changes in the types of PPE that render previous training obsolete, or
  - ✓ The employee's failures to continue to correctly use the assigned PPE.

## Process Safety Management

The major objective to process safety management of highly hazardous chemicals is to prevent unwanted releases of hazardous chemicals especially in locations that could expose employees and others to serious hazards.

The company safety department will conduct a **pre-job safety analysis** to establish a policy and procedure for developing site specific rules and practices to maintain the health and safety of our employees, the client and the environment.

The safety department will then conduct a **safety and health risk analysis for each task and operation in the work plan.**

Upon completion of the safety and health risk analysis the following safe work practices will be implemented:

## Employee Training Assignments

- ✓ Safety awareness
- ✓ Lockout/Tagout
- ✓ Blinding
- ✓ Confined Space Entry
- ✓ First Aid/CPR

Personal Protective Equipment for Each Task and Operation being conducted,

Medical facilities, equipment and materials

## **Air Monitoring**

- ✓ frequency,
- ✓ types, and
- ✓ types of monitors,

## **Site Control Measures**

- ✓ Site map
- ✓ Site work zones
- ✓ Site communication
- ✓ Safe work practices
- ✓ Emergency phone numbers

## **Emergency Response Plan**

- ✓ Personnel roles
- ✓ Chain of command
- ✓ Communication procedures
- ✓ Pre-emergency planning
- ✓ Emergency recognition and prevention
- ✓ Emergency medical first-aid treatment
- ✓ Alarm procedures
- ✓ Safe distances and places of refuge

## **Compliance Audits**

- ✓ Sub-Contractor safety performance and program evaluations.

## Medical Surveillance

Initial medical examinations for those personnel exposed to benzene as required by 29 CFR 1910.1028 shall include the following:

- A history of renal or liver dysfunctions;
- A history of medicinal drugs routinely taken;
- A history of previous exposure to ionizing radiation; and
- Exposure to marrow toxins outside of the current work situations.
- A complete physical examination.
- A complete blood count including a leukocyte count with differential, quantitative thrombocytes count, hematocrit, hemoglobin, erythrocyte count, and erythrocyte indices.
- Additional tests as necessary in the opinion of the examining physician.

### Periodic Examinations

Each employee assigned to work in areas in which they may be exposed to Benzene will be required to undergo additional examinations, annually following the previous examination. Such periodic examination is to include the following elements:

- A brief history regarding any new exposure to potential marrow toxins, changes in medicinal drug use, and the appearance of physical signs relating to blood disorders.
- A complete blood count including a leukocyte count with differential, a quantitative thrombocyte count, hematocrit, hemoglobin, erythrocyte count and erythrocyte indices.
- Additional tests as necessary in the opinion of the examining physician.

### Emergency Examinations

If an employee is exposed to benzene in an emergency situation at levels exceeding the PELs, the employee will be instructed to report at the end of his or her shift to provide a urine sample. A urinary phenol test is to be performed on the sample within 72 hours. If the result is below 75 mg phenol/L of urine, no further testing is required.

If the result is equal to or greater than 75 mg phenol/L of urine, a complete blood count including an erythrocyte count, leukocyte count with differential, and thrombocyte count at monthly intervals for a duration of three (3) months following the emergency exposure.

### Additional Examinations and Referrals

Where the results of the complete blood count required by this program indicate any of the following abnormal conditions exist, then the blood count will be repeated within two (2) weeks.

- The hemoglobin level or the hematocrit falls below the normal limit as determined by the laboratory for this geographic area and/or these indices show a persistent downward trend from the individual's pre-exposure norms; provided these findings cannot be explained by other medical reasons.
- The thrombocyte (platelet) count varies more than 20 percent below the employee's most recent values or falls outside the normal limit as determined by the laboratory.
- The leukocyte count is below 4,000 per mm or there is an abnormal differential count.

If the abnormality persists, the examining physician shall refer the employee to a hematologist or an internist for further evaluation unless the physician has good reason to believe such referral is unnecessary.

The hematologist or internist will be provided with the information required to be provided to the physician, as set forth below, and the medical record required to be maintained by this program. The hematologist's or internist's evaluation shall include a determination as to the need for additional tests.

Northwinds will assure that these tests are available to the employee.

## **Information Provided to the Physician**

Northwinds will provide the following information to the examining physician:

- A copy of 29 CFR 1910.1028 and its appendices;
- A description of the affected employee's duties as they relate to the employee's exposure;
- The employee's actual or representative benzene exposure levels;
- A description of any personal protective equipment used or to be used; and
- Information from previous employment related medical examinations
- The occupationally pertinent results of the medical examination and tests;
- The physician's opinion concerning whether the employee has any detected medical conditions which would place the employee's health at greater than normal risk of material impairment from exposure to benzene;
- The physician's recommended limitations upon the employee's exposure to benzene or upon the employee's use of protective clothing or equipment and respirators; and
- A statement that the employee has been informed by the physician of the results of the medical examination and any medical conditions resulting from benzene exposure which require further explanation or treatment.

## **Medical Removal Plan and Protection Benefits**

When a physician makes a referral to a hematologist or internist, the employee shall be removed from areas where exposures may exceed the action level. Following the examination and evaluation by the hematologist/internist, a decision to remove an employee from areas where benzene exposure is above the action level or to allow the employee to return to areas where benzene exposure is above the action level shall be made by the physician in consultation with the hematologist/internist. This decision shall be communicated in writing to Northwinds and the employee. In the case of removal, the physician shall state the required probable duration of removal and the requirements for future medical examinations to review the decision. A follow-up examination will be provided to any employee who is removed.

The physician, in consultation with the hematologist/internist, shall make a decision within six (6) months of the date the employee was removed whether the employee shall be returned to the usual job or whether the employee should be removed permanently. Whenever an employee is temporarily removed from benzene exposure, the employee will be transferred to a comparable job for which the employee is qualified (or can be trained for in a short period) and where benzene exposures are as low as possible, but in no event higher than the OSHA action level.

The employee will maintain his or her current wage rate, seniority, and other benefits. If there is no such job available, the Refinery will provide medical removal protection benefits until such a job becomes available or for six months, whichever comes first. If an employee is removed permanently from benzene exposure based on a physician's recommendation, the employee will be given the opportunity to transfer to another position which is available or later becomes available for which the employee is qualified (or can be trained in a short period) and where benzene exposures are as low as possible, but in no event higher than the OSHA action level. The employee will maintain his or her current wage rate, seniority, and other benefits.

### **Medical Removal Protection Benefits**

Employees will be provided with six months of medical removal protection benefits immediately following each occasion an employee is removed from exposure to benzene because of hematological findings unless the employee has been transferred to a comparable job where benzene exposures are below the OSHA action level. The Medical Protection Benefits will be that the company will maintain the current wage rate, seniority, and other benefits of an employee as though that employee had not been removed. The Medical Protection Benefits will be reduced to the extent that the employee receives compensation for earnings lost during the period of removal either from a publicly or employer funded compensation program, or from employment with another employer made possible by virtue of the employee's removal.

## **Radiation Safety**

On most Northwinds job locations at least some amount of radiation will be present, usually in the form of X-Ray sources and equipment. Some locations that are or have been in service may have some Naturally Occurring Radioactive Materials (NORM) present.

### **Naturally Occurring Radioactive Materials (NORM)**

NORM is radiation that occurs along with some oil and gas production. NORM refers to materials that are present throughout the environment that are radioactive in their natural state. NORM is present in the earth's crust and thus can be present in some formations that produce oil and gas.

In most cases, the radioactive level of NORM is very small and will not present an external exposure hazard. Some oil and gas production does contain significant amounts of low level NORM.

NORM can concentrate in scale, sludge, produced water, and in the heavier portions of hydrocarbon gas (ethane, propane, etc.). When these materials collect in pipelines, vessels, and other equipment, NORM may be present in concentrations where long-term exposures could cause health problems. Radiation becomes a concern when equipment is opened for maintenance and/or repair.

When entering a vessel, opening pipelines, or performing other activities where NORM is present, the following work practices are required:

- ✓ Purge equipment prior to opening and/or entry
- ✓ Use breathing air respirators while working
- ✓ Use proper PPE (for face and eyes) for performing grinding and chipping operations
- ✓ Use protective clothing (disposable coveralls, etc.)
- ✓ Eating, drinking, smoking, and chewing are prohibited
- ✓ Keep the number of personnel in the area to a minimum
- ✓ If necessary, use wet methods to keep the dust to a minimum

When handling NORM, personal hygiene is essential. Avoid skin contact, eating, drinking, smoking and chewing while handling NORM. Always wash your hands and face after working in a NORM area, and discard any disposable clothing.

### **X-Ray Testing**

In most of the work performed by Northwinds, welding of fluid or gas carrying pipelines and associated equipment is performed. Specifications of the client as well as national organizations require that the welds be X-Ray tested to ensure quality of the weld. A specialized subcontractor performs this work on site with equipment that uses radioactive sources to produce the X-Rays.

All Northwinds personnel are not allowed to be in any area that is undergoing an X-Ray examination.

The testing subcontractor is required to provide barriers and warning signs that provide not only a notice to all personnel, but provide a boundary to keep unnecessary personnel clear of the area. In addition, testing subcontractors are also required to have emergency response plans, monitoring equipment, and other safe guards to ensure that radiation exposure is kept to a minimum.

The testing subcontractors are fully licensed by the state and federal government to perform this sort of work. All of their plans, procedures and safety precautions are approved before they can begin work.

## Recordkeeping

### Exposure Measurements

An accurate record of all measurements will be established, maintained, and retained for 30 years. Such record will include:

- The dates, number, duration, and results of each of the samples taken, including a description of the procedure used to determine representative employee exposures;
- A description of the sampling and analytical methods used;
- A description of the type of respiratory protective devices worn, if any; and
- The name, social security number, job classification, and exposure levels of the employee monitored and all other employees whose exposure the measurement is intended to represent.
- Environmental (workplace) monitoring or measuring of a toxic substance or harmful physical agent, including personal, area, grab, wipe, or other form of sampling, as well as related collection and analytical methodologies, calculations, and other background data relevant to interpretation of the results obtained and/or
- Biological monitoring results which directly assess the absorption of a toxic substance or harmful physical agent by body systems (e.g., the level of a chemical in the blood, urine, breath, hair, fingernails, etc.) but not including results which assess the biological effect of a substance or agent or which assess an employee's use of alcohol or drugs;

### Medical Surveillance

**“Employee medical record”** means a record concerning the health status of an employee which is made or maintained by a physician, nurse, or other health care personnel, or technician.

An accurate employee medical record shall be established, maintained, and retained for the duration of employment plus 30 years for each employee subject to medical surveillance in accordance with 29 CFR 1910.20. This record shall include:

- The name and social security number of the employee;
- Northwinds copy of the physician's written opinion including the results of all medical examinations and all tests, opinions and recommendations;
- Any employee medical complaints related to exposure to benzene;
- A copy of the information provided to the physician; and
- A copy of the employee's medical and work history related to exposure to benzene or any other hematologic toxins.

### Employee Information

Upon an employee's first entering into employment, and at least annually thereafter, Northwinds shall inform current employees of the following:

- The existence, location, and availability of any records covered by this section;
- The person responsible for maintaining and providing access to records; and
- Each employee's rights of access to these records.



## **Availability**

Employee exposure monitoring and medical records required to be maintained shall be made available upon request for examination and copying to employees and employee representatives as required under 29 CFR 1910.20.

Upon request, access to records is provided to employees and employee representatives within 15 working days at no cost. If access cannot be provided within 15 working days the employee or designated representative requesting the record will be informed of the reason for the delay and the earliest date when the record can be made available.

Whenever access is requested to an analysis which reports the contents of employee medical records by either direct identifier (name, address, social security number, payroll number, etc.) or by information which could reasonably be used under the circumstances indirectly to identify specific employees (exact age, height, weight, race, sex, date of initial employment, job title, etc.), Northwinds shall assure that personal identifiers are removed before access is provided. If removal of personal identifiers from an analysis is not feasible, access to the personally identifiable portions of the analysis need not be provided.

## **Transfer of Records**

If Northwinds is ceasing to do business, all records subject to this section shall transfer to the successor employer. The successor employer shall receive and maintain these records. If there is no successor employer to receive and maintain the records subject to this standard, Northwinds shall notify affected current employees of their rights of access to records at least three months prior to the cessation of the company.

## **Respirator Program**

### **Purpose**

The purpose of this operating procedure is to ensure the protection of all employees from respiratory hazards through proper use of respirators.

Respirators are to be used only where engineering control for respirator hazards is not feasible, while engineering controls are being installed, or in emergencies.

### **Responsibility**

The safety manager is solely responsible for all facets of this program and has full authority to make necessary decisions to ensure success of this program. The safety manager will develop written detailed instructions covering each of the basic elements in this program and will amend these instructions when necessary.

Northwinds Of Wyoming, Inc. has expressly authorized:

- ✓ Safety Manager
- ✓ Safety Coordinator
- ✓ Superintendent
- ✓ Foreman

To halt any operation of the company where there is danger of serious personal injury. This authority includes halting operation because of respiratory hazards.

## **Program Elements**

### **Developing a Written Program**

The safety manager will develop detailed written standard operating procedures governing the selection and use of respirators using the NIOSH Respirator Decision Logic as a guideline. Outside sources, manufacturers, and other recognized authorities will be consulted if there is any doubt regarding proper selection and use. These detailed procedures will be included as appendices to this Respirator Program. Only the Safety Department may amend these procedures.

### **Selection of Respirator**

Respirators will be selected on the basis of hazards to which the worker is exposed. The safety department will make all selections.

Only MSHA/NIOSH-certified respirators will be selected and used.

### **Training**

Users will be instructed and trained in the proper use of respirators and their limitations. The safety department will instruct both supervisors and workers. Training should provide the employee with the opportunity to:

- Handle the respirator
- Have it fitted properly
- Test its face-piece for face-seal
- Wear it in normal air for a long familiarity period
- Wear it in a test atmosphere

Every respirator wearer will receive fitting instructions. These instructions will include a demonstration of the respirator's use, practice in how the respirator should be worn, practice in adjusting the respirator, and instruction in how to determine if it fits properly.

Respirators should not be worn when conditions prevent a good face-seal. Such conditions may include a growth of beard or sideburns, a skullcap that projects under the face-piece or temple pieces on glasses. Also, the absence of one or both dentures can seriously affect the fit of a face-piece. Employees of Northwinds Of Wyoming, Inc. who are required to wear respirators may not wear beards.

The workers' diligence in observing these requirements will be evaluated through periodic checks. To ensure proper protection, the wearer each time the wearer puts on the respirator will check the face-piece. Following the manufacturer's face-piece instructions will do this.

### **Assigning Respirators**

Where practicable, respirators will be assigned to individual workers for their exclusive use.

### **Cleaning and Disinfecting Respirators**

Respirators will be regularly cleaned and disinfected. Those issued for the exclusive use of one worker will be cleaned after each day's use or more often if necessary. Those used by more than one worker will be thoroughly cleaned and disinfected after each use. The safety department will establish a cleaning and maintenance facility. Cleaning instructions will be those published by the respirator manufacturer in the instructions for the respirator.

## **Storage of Respirators**

There is a central respirator cleaning and maintenance facility. Respirators will be stored in a clean and sanitary location and stored such that the face piece, head gear and other parts of the respirator are not stretched, crushed, or otherwise distorted from their original shape.

## **Inspection of Respirators**

Respirators used routinely will be inspected during cleaning. Worn or deteriorated parts will be replaced. Respirators available for emergency use, such as self-contained devices, will be thoroughly inspected at least once per month and after each use. Inspection for SCBA (Self-Contained Breathing Apparatus) breathing gas pressure will be performed weekly.

## **Surveillance**

Appropriate surveillance of work area conditions, including the degree of employee exposure or stress, will be maintained.

## **Evaluation**

There will be regular inspections and evaluations to determine the continued effectiveness of the program. The safety manager will make frequent inspections of all areas where all respirators are used to ensure compliance with Respirator Program.

## **Physical Ability of Employee**

An employee will not be assigned to a task requiring the use of a respirator unless it has been determined that the employee is physically capable to perform the work at hand while using the equipment. The company physician will determine what health and physical conditions are pertinent. Each respirator user's medical status will be reviewed annually.

## **Certified Respirators**

Only certified respirators will be used.

## **Respiratory program Evaluation Checklist**

In general, the Respirator Program should be evaluated for each job at least annually. Program adjustments (as appropriate) should be made to reflect the evaluation results. The evaluations of program functions are separated into the administration and operation. Yes answers indicate that the program is functioning properly.

## Respirator Program Administration

- Is there a written policy that acknowledges employer responsibility for providing a safe and healthful work place?
- Is there a written program that assigns program responsibility, accountability, and authority?
- Is program responsibility vested in one individual?
- Is the Program Administrator knowledgeable about respirators and the program?
- Can the Administrator coordinate all aspects of the program at the job site?
- Can realistic engineering controls or work practices eliminate the need for respirators?
- Are there written procedures or statements covering the various aspects of the Respirator Program, including:
  - Designation of an Administrator
  - Respirator selection (including purchase of MSHA/NIOSH-certified equipment)
  - The medical aspects of respirator use
  - The issuance of equipment, fitting, and training
  - The maintenance, storage, and repair of respirators
  - The inspection of the equipment and its use under special conditions
  - Work area surveillance

## Respiratory Protective Equipment Selection

- Are work area conditions and worker exposures properly surveyed?
- Are respirators selected on the basis of the actual hazards to which the worker is exposed?
- Are only certified respirators purchased and used?
- Do the respirators provide adequate protection for the specific hazard?
- Are the respirators effective for the concentration levels of the contaminant?
- Have the prospective users been medically evaluated?
- Did the medical evaluation of each user include the user's physical and psychological ability to wear the selected respiratory protective equipment?
- Have the respirators been issued to the users for their exclusive use?
- Are there records covering issuance of respirators?

## Respiratory Protective Equipment Fitting

- Is each user given the opportunity to try on several respirators to determine whether the respirator he/she will be wearing is the best-fitting one?
- Is the fit of the respirator tested at appropriate intervals?
- Are those users who require corrective lenses properly fitted?
- Is the face-piece-to-face seal tested in a test atmosphere?
- Are workers prohibited from wearing respirators in contaminated work areas if they have facial hair or other characteristics that may cause face-seal leakage?

## Respirator Use in the Work Area

- Are respirators being worn correctly?
- Are workers keeping respirators on all the time while in the work area?

## Cleaning and Disinfecting of Respiratory Equipment

- Are respirators cleaned and disinfected after each use when several people use the same device?
- Are respirators that are issued to individuals users cleaned as frequently as necessary?
- Are proper cleaning and disinfecting methods used?

### **Storage of Respiratory Equipment**

- Are respirators stored in a manner that protects them from:
  - Dust
  - Sunlight
  - Heat
  - Excessive cold
  - Moisture
  - Damaging chemicals
- Are respirators stored in a storage facility in a way to prevent them from becoming deformed?
- Is storage in lockers or tool boxes permitted only if the respirator is in its own carrying case or carton?

### **Inspection of Respiratory Equipment**

- Are respirators inspected before and after each use?
- Are respirators inspected during cleaning?
- Are qualified individuals instructed in inspection techniques?
- Is respiratory protective equipment designated for emergency use inspected at least once a month?
- Are SCBA breathing gas containers inspected weekly for breathing gas pressure?
- Is a record kept of the inspection of emergency-use respiratory protective equipment?

### **Repair of Respiratory Equipment**

- Are the replacement parts used to repair respirators made by the manufacturer of the respirator?
- Are repairs made by that manufacturer or by manufacturer trained technicians?

### **Special Use of Conditions for Respiratory Equipment**

- Is there a procedure for using respiratory protective equipment in atmospheres that are immediately dangerous to life or health?
- Is a procedure available for using equipment to enter into confined spaces?

### **Training for the Use of Respiratory Equipment**

- Are the users trained in proper use, cleaning, and inspection?
- Are users trained in the basis for selecting respirators?
- Is competency-based evaluation of users made before and after training?

## Respiratory Protection Program

Northwinds has a current and effective Respiratory Protection Program to be used with this program.

### Respirator Selection

Where respirators are required, employees shall select the appropriate respirator as specified below.

- **Half mask air purifying respirator with organic vapor cartridge:**  
Less than or equal to 10 ppm
- **Full-face piece respirator with organic vapor cartridges.**  
Less than or equal to 50 ppm
- **Full face piece gas mask with chin style canister.**  
Less than or equal to 100 ppm.
- **Full-face piece powered air purifying respirator (PAPR) with organic vapor canister.**  
Less than or equal to 1000 ppm.
- **Supplied air respirator with full-face piece in positive pressure mode.**  
Less than or equal to 1000 ppm
- **Self contained breathing apparatus with full-face piece in positive pressure mode or Full-facepiece positive pressure supplied air respirator with auxiliary self-contained air supply.**  
Greater than 1000 ppm or unknown concentration.
- **Any organic vapor gas mask or self-contained breathing apparatus with full face piece.**  
Escape
- **Full-face piece self-contained breathing apparatus in positive pressure mode.**  
Fire Fighting

### Respirator Usage

Respirators shall be used in the following circumstances:

- During the time period necessary to install or implement feasible engineering and work practice controls.
- In operations for which compliance with either the TWA or STEL through the use of engineering and work practice controls is not feasible.
- In work situations where feasible engineering controls and work practice controls are not yet sufficient to reduce exposure to or below the PEL
- In emergencies which may have the potential for exposure to Benzene.

## **Responsibilities**

### **General**

Employees are responsible for selecting and using the proper respirators and other personal protective equipment, in accordance with these procedures. Respirators must be worn for those operations in which engineering controls or work practice controls are not feasible to reduce exposure to the permissible level.

All employees must wear appropriate personal protective equipment, including protective clothing such as gloves, sleeves, aprons, etc., over any parts of the body that could be exposed to liquid benzene.

All employees must wear splash proof safety goggles if it is possible that benzene may get into your eyes. In addition, you must wear a face shield if your face could be splashed with benzene liquid.

### **Management**

Northwinds Management, through the Safety Department is to ensure that all personnel clearly understand these and other safety procedures in their day to day work.

### **Supervisors**

Supervisors are responsible for ensuring that their employees select and use the proper respirators and other personal protective clothing and equipment, in accordance with these procedures. Supervisors will ensure that all containers of benzene are appropriately labeled. Supervisors will ensure that all areas that are suspected of having airborne concentrations of Benzene that exceeds the OSHA Action Level are roped off and designated.

### **Safety Department**

The Safety Department shall be responsible for: The availability and maintenance of appropriate personal and respiratory protective equipment; Posting all hazard warning signs, as may be required; obtaining and filing all material safety data sheets; all necessary training and information required hereunder; and accurate record keeping of exposure and medical data.

## **Respiratory Protection Standards Operating Procedure**

### **Scope**

This Program provides guidelines for the proper selection, usage, and maintenance of Respiratory Protective Devices. They are applicable to all Northwinds employees and its contractors involved in any work process that may require such protection.

### **Purpose**

Northwinds has a program relative to Personal Protective Equipment that commits Northwinds to maintain a comprehensive and effective program that will ensure appropriate personal protective equipment is provided, used, and maintained in a sanitary and reliable condition wherever it is necessary.

## **Qualified Supervision**

The Management of Northwinds will ensure that a qualified person is present to properly supervise the job to which these procedures are applicable. Such person, through training and experience, will be familiar with the following areas:

- Company policies and procedures on Respiratory Protection;
- Tasks to be performed;
- Potential hazards and methods for their control; and
- The appropriate types of Respiratory Protective Devices to be used.

## **Training**

Employee training programs are designed not only to ensure proper job performance, but also to ensure that all personnel understand and are aware of hazards to which they may be exposed and the proper methods for avoiding such hazards. Supervisors are trained to understand the role they play in job site safety to enable them to carry out their safety and health responsibilities effectively. NOW will maintain an on-going training program in the proper selection, usage, fit, and maintenance of personal protective equipment, including respiratory protective devices.

## **Employee Medical Surveillance**

### **Initial Medical Surveillance**

Upon initial assignment, all employees required to work in those areas that may require the use of a respirator shall undergo sufficient medical examinations to determine whether that employee is physically able to perform their assigned task under such conditions.

- The examining physician will be consulted to determine the pertinent medical factors, tests to be performed and ultimately whether or not an employee may wear a respirator.
- The examining physician will also consider the existence of any facial deformities that may interfere with a proper respirator face piece- to-face seal.

### **Additional Surveillance**

- Employees will undergo additional medical examinations at least annually, as part of their annual physical, to assure their continued ability to perform under conditions which may require the usage of respiratory devices.
- If an employee exhibits difficulty in breathing during the administration of fit check tests, as described below, he or she shall be referred to a physician trained in respiratory disease or pulmonary medicine to determine whether the test subject can wear a respirator while performing his or her duties.



## **Comfort and Fit Testing**

### **Comfort**

- The test subject shall be allowed to pick the most comfortable respirator from a selection including respirators of various sizes from different manufacturers.
  - The selection shall include at least three sizes of elastomeric face pieces of the type of respirator that is to be tested.
- The test subject shall be shown how to put on a respirator, how it should be positioned on the face, how to set strap tension and how to determine a comfortable fit.
- The test subject shall be informed that he/she is being asked to select the respirator that provides the most comfortable fit.
- The test subject shall hold each face piece up to the face and eliminate those, which obviously do not give a comfortable fit.
- The most comfortable mask is to be donned and worn at least five minutes to assess comfort.
- In assessing comfort, the test subject shall be allowed adequate time to consider the following points:
  - Position of the mask on the nose;
  - Room for eye protection;
  - Room to talk; and
  - Position of mask on face and cheeks.

### **Fit**

- To help determine the adequacy of the respirator fit, the following criteria shall be used:
  - Chin properly placed;
  - Adequate strap tension, not overly tightened;
  - Fit across Nose Bridge;
  - Respirator of proper size to span distance from nose to chin;
  - Tendency of respirator to slip; and
  - Self-observation in mirror to evaluate fit and respirator position.
- The test subject shall conduct negative and positive pressure fit checks.

### **Fit Check Testing**

- Prior to the commencement of the fit test, the test subject shall be given a description of the fit test and the test subject's responsibilities during the test procedure.
- The mask shall be properly seated on the face of the test subject by moving the head from side-to-side and up and down slowly while taking in a few slow deep breaths.
- Positive pressure tests
  - Close off the exhalation valve.
  - Exhale gently onto the face piece.
  - If a slight positive pressure can be built up inside the face piece without any evidence of outward leakage of air at the seal, the face fit is to be considered satisfactory.
- Negative pressure tests
  - The inlet opening of the canister or cartridge(s) shall be closed off by covering with the palm of the hand(s) or by replacing the filter seal(s).
  - Inhale gently so that the face piece collapses slightly and hold the breath for ten seconds.
  - If the face piece remains in its slightly collapsed condition and no inward leakage of air is detected, the tightness of the respirator is to be considered satisfactory.
- Another face piece shall be selected and tested if the test subject fails the fit check tests.

## **Fit Testing**

- The respirator to be tested shall be worn for at least five minutes prior to the start of the fit test.
- Test Exercises
  - Normal Breathing
    - In a normal, standing position, without talking, the subject shall breathe normally.
  - Deep Breathing
    - In a normal standing position, the subject shall breathe slowly and deeply, taking caution so as to not hyperventilate.
  - Turning Head from Side-to-side
    - Standing in place, the subject shall slowly turn his/her head from side to side between the extreme positions on each side. The head shall be held at each extreme position momentarily so the subject can inhale at each side.
  - Moving Head Up and Down
    - Standing in place, the subject shall slowly move his/her head up and down. The subject shall inhale in the up position.
  - Talking
    - The subject shall talk out loud slowly and loud enough so as to be heard clearly by the test conductor.
  - Grimace
    - The test subject shall grimace by smiling or frowning.
  - Bending Over
    - The test subject shall bend at the waist as if he/she were touching his/her toes.
  - Each test exercise shall be performed for one minute except for the grimace exercise that shall be performed for 15 seconds.
  - Upon completion of the fit tests described above, the test conductor shall question the test subject regarding the comfort of the respirator.
    - If it has become uncomfortable, another model of respirator shall be used.

## **Qualitative Fit Testing**

- An irritant fume shall be used to conduct tests.
- The test conductor shall direct a stream of irritant smoke towards the face seal area of the test subject.
- The test exercises described above shall be performed while the respirator seal is being challenged by the smoke.
- Each test subject passing the smoke test without evidence of a response shall be given a sensitivity check of the smoke once the respirator has been removed to determine whether he/she reacts to the smoke.
  - Failure to evoke a response shall void the fit test.
- The fit test shall be performed in a location with exhaust ventilation sufficient to prevent general contamination of the testing area by the test agent.

## **Quantitative Fit Testing**

All approved and accepted methods of quantitative fit testing will be allowed to fit test NOW employees.

## Distribution and Supply of Respiratory Protection Devices

### Distribution

- Northwinds will supply respiratory protective devices to its employees working in operations where an employee may potentially be exposed to hazardous airborne contaminants.
- Supervisors will provide respirators when needed and will inform the safety department of the types and amounts of respirators required.
- The safety department will keep a supply of the appropriate respirators on hand.

### Usage

- Respiratory protective devices shall be worn at all times by all employees involved in any work process that may require such protection.
- Employees before and after each use must inspect all respirators.
  - Respirator inspection shall include a check of the face piece, valves, connecting tubes, tightness of connections and the filters or cartridges.
  - The regulator and warning device on all SCBAs must also be inspected.
- All employees who must wear respiratory protective devices must perform positive and negative pressure tests before entering a work area that requires respiratory protection.
- All employees who are or may be required to wear respiratory protective devices and who also wear dentures must have their dentures in place when wearing any type of respiratory protective device.
- In the event that dentures must be removed, the employee must notify his/her supervisor or the Safety Manager of the circumstances in order that a determination can be made as to whether the employee can obtain a proper respirator seal. Such determinations must be made prior to the employee performing any task that requires the use of a respirator.
- The use of contact lenses in work environments that require the use of respiratory protective devices **is strictly prohibited.**
  - Northwinds will provide employees with corrective lenses that will ensure a proper respirator fit in the event such corrective lenses are required to work safely.
  - If corrective lenses are required, they shall be worn in a manner that will not affect the fit of the respirator face piece.
- Employees that are or may be required to wear a respiratory protective device shall not have facial hair (e.g. beards, sideburns, moustaches, etc.) that extends between the face and respirator face piece.
  - In the event an employee cannot shave due to medical reasons, a quarter inch of facial hair will be permitted.
  - Written documentation from a physician that describes the individual's medical condition and that recommends the employee not shave must be provided.

## **Maintenance and Inspection**

### **Maintenance**

- Employees that are assigned respirators (i.e. half mask and full-face canister filter respirators) for their personal use shall be responsible for cleaning and inspection of the device. The methods for cleaning and inspection are as follows:
  - Each respirator must be disassembled for inspection and cleaning in accordance with the manufacturer's recommendations;
  - Any damaged or defective parts must be replaced prior to reassembling and use. Replacement parts shall be obtained from the employee's immediate supervisor or the Safety Department. Only parts approved by the manufacturer for use on the respirator in question shall be used; and
- All respiratory protection that is not assigned to one specific employee (i.e. emergency escape devices, airline respirators and SCBAs) must be returned to the Safety Department for cleaning and inspection after each use. Such devices and its parts must be thoroughly cleansed in a disinfecting solution and rinsed prior to redistribution.
- All respiratory protection distributed for use shall be stored in a manner that prohibits respirator contact with contaminants found at the work site (e.g. in designated storage containers, plastic bags, etc.).

## **Inspection**

- Those respirators not used routinely (i.e. emergency escape and rescue devices) shall be inspected after each use and at least monthly to assure that they are in proper working order.
- Records of respirator inspections will be kept on file in the Safety Department.
  - Such records must indicate the date of inspection and findings for needed repairs.
- Any emergency or rescue respiratory protective device removed from service for cleaning, inspection or repair must be replaced with a spare unit during this process.
- Routinely used air-purifying respirators should be checked as follows before and after each use:
  - Examine the face piece for:
    - Excessive dirt.
    - Cracks, tears, holes or physical distortion of shape.
    - Inflexibility of rubber face piece (stretch and knead to restore flexibility).
    - Cracked or badly scratched lenses in full face pieces.
    - Cracked or broken air-purifying element holder(s), badly worn threads or missing gasket(s) if required.
  - Examine the head straps or harness for:
    - Breaks.
    - Loss of elasticity.
    - Broken or malfunctioning buckles and attachments.
    - Excessively worn serration on head harness, which might permit slippage (full face pieces only).
  - Examine the exhalation valve for the following after removing its cover:
    - Foreign material, such as detergent residue, dust particles, etc.
    - Cracks, tears or distortion of the valve material.
    - Improper insertion of the valve body in the face piece.
    - Cracks, breaks or chips in the valve body, particularly in the sealing surface.
    - Missing or defective valve cover.
    - Improper installation of the valve in the valve body.
  - Examine the air-purifying element for:
    - Incorrect cartridge, canister or filter for the hazard.
    - Incorrect installation, loose connections, missing or worn gasket(s) or cross threading in the holder.
    - Expired shelf date on the cartridge or canister filter.
    - Cracks or dents in the outside of the filter, cartridge or canister, indicated by the absence of sealing material, tape, foil, etc., over the inlet.
  - If the device has a corrugated breathing tube, examine it for:
    - Broken or missing end connectors.
    - Missing or loose hose clamps.
    - Deterioration determined by stretching the tube and looking for cracks.
  - Examine the harness of a front or back-mounted gas mask for:
    - Damage or wear to the canister holder, which may prevent its being held in place.
    - Broken harness straps for fastening.

- Air-Supplied Respirators
  - If the device is a tight fitting face piece, use the procedures outlined under air-purifying respirators, except those pertaining to the air-purifying elements.
  - If the device is a hood, helmet, blouse or full suit use, the following procedures:
    - Examine the hood, blouse or suit for rips, tears, and seam integrity, etc.
    - Examine the protective headgear, if supplied, for general condition with emphasis on the suspension inside.
    - Examine the protective face shield, if any, for cracks, breaks or impaired vision.
    - Make sure the protective screen is intact and secured correctly over the face shield of abrasive blasting hood and blouses.
  - Examine the air supply system for:
    - Integrity and good condition of air supply lines and hoses, including fittings.
    - Correct operation and condition of all regulators, or other air flow regulators.
- Self-Contained Breathing Apparatus (SCBA)

In addition to the previous applicable inspection requirements, the following should be determined for SCBA units:

- The high pressure cylinder of compressed breathing air is fully charged.
- On a closed circuit SCBA, a fresh canister of carbon dioxide sorbent is installed and the make-up oxygen cylinder is full.
- All SCBAs are required to have a warning device that indicates when the 25% level is reached. However, it is recommended that an open circuit SCBA be fully charged before use.

## **Training and Instruction**

### **Supervisor Training**

- Supervisors must have an adequate knowledge of respirators and respiratory protection practices in order to effectively implement this policy. Their training shall include, but not necessarily be limited to, the following:
  - The structure and operation of this program;
  - The nature and extent of the respiratory hazards to which employees may be exposed;
  - Basic respiratory protection practices; and
  - Selection and proper use of devices to protect NORTHWINDS and contractor employees against hazards to which they may be exposed in the work place.

### **Employee Instruction and Training**

- Employee instruction and training will, at a minimum, include the following elements:
  - Instruction on the nature of the potential hazard(s) to which they may be exposed and which may require respiratory protection;
  - An appraisal of the results of inadequate respiratory protection practices;
  - Discussion of the engineering and/or administrative controls in use and why respirators are needed;
  - Explanation of why a particular type of respirator has been selected;
  - Explanation of the respirator's capabilities and limitations;
  - Proper fitting, including demonstrations and practice in wearing, adjusting and determining the fit of the respirator in a test atmosphere where necessary;
  - Discussion of how to recognize and handle emergency situations where respiratory protection is required;
  - The procedure for obtaining proper respiratory protection; and
  - Methods to be used in the cleaning, inspection and maintenance of respiratory protective devices.

## **Responsibilities**

### **Employees**

- Employees are required to be cognizant of their work environment and the associated hazards that may require respiratory protection, at all times.
- Employees that are required to utilize respiratory protection must actively participate in training and educational programs as required by and described in this procedure.
- Employees shall not use respiratory protective devices until they have received formal training and appropriate medical examinations as required by this procedure.
- Each employee is required to properly store respiratory protection after each use.
- Employees that are assigned individual respirators are responsible for the inspection and cleaning of the device at the end of the day in which it is used.
- Employees that use a respirator that may be subsequently used by other employees (e.g. emergency self-contained breathing apparatus) must deliver the used equipment to the Safety Department for inspection and cleaning after each use.
- Any respiratory protective equipment that is discovered to be in improper working order or defective must be reported and delivered to the immediate supervisor or the Safety Department.
  - The Safety Department shall affect the necessary repairs.

### **Managers and Supervisors**

- Northwinds Management, through the Supervisors is ultimately responsible for the administration and implementation of this program and procedures.
- Supervisory Personnel are to ensure that employees required to wear respiratory protection adhere to the requirements of this program.
- Supervisors securing the services of contractors or vendors are responsible for ensuring that these individuals understand and comply with the requirements of this program.

## **Safety Department**

- The Safety Department shall make available the appropriate type(s) of respiratory protection for use by Northwinds employees.
  - Consideration shall be given to the level of protection (i.e. protection factors) offered by the device, employee acceptance and cost effectiveness.
  - The methods used to select any respiratory protective device are to satisfy the criteria established in the American National Standard Practices for Respiratory Protection Z88.2-1980.
  - Only respirators that have been approved by the National Institute of Occupational Safety and Health (NIOSH) will be considered for use.
- The Safety Department in conjunction with appropriate technical consultants shall determine the proper applications and guidelines for the use of approved respiratory protection.
- The Safety Department shall conduct all respirator comfort and fit tests.
- The Safety Department shall arrange all physical examinations to be conducted hereunder.
- The Safety Coordinator will clean and inspect those respiratory devices not assigned to an individual.
- The Safety Coordinator will conduct routine, periodic inspections of all respiratory protective devices to ensure that they are cleaned and are in proper working condition.
  - The results of such inspections will be formally documented, reported to management and retained on file.
  - The Safety Department will conduct routine, periodic audits of NOW operations for the purpose of determining compliance with the requirements of this procedure.
  - The results of such audits will be formally documented, reported to management and retained on file.
- All record keeping relative to the requirements of this procedure (e.g. certification of employee medical examination, employee training and fit testing, etc.) shall be formally documented and maintained on file.
- The Safety Department shall conduct all training required hereunder.



## Rigging and Material Handling

### General

This section addresses safe rigging practices and material handling procedures.

- Inspect the machine used for the lift, unloading, and placement of materials
- Fill out required inspection reports
- Check area carefully for hazards. Examples would be: power lines, utilities, buildings, other equipment, un-level ground, etc. The operator of the equipment is responsible for the safe unloading of the materials, and has stop work authority. Consult or construct a JSA to help identify hazards.
- Use approved lifting devices with ratings attached. If the lifting device or slings, chains, or cables does not have attached tags, **do not use**

Inspection of the machine shall occur before the first use of the day. Inspection of the lifting rigging shall occur before each lift. The rigging may have sustained damage from the previous lift. Damaged cables, chains, or slings shall be removed from service immediately, tagged, and turned over to the supervisor for repair or replacement.

All lifting chains, cables, and slings shall be stored in designated areas. They are not to be left outside where the elements may damage them. Sunlight and moisture are to be avoided during storage.

### Working Load Limits

Working load limits are not to be exceeded. The machine used for loading or unloading will have a load limit rating on the machine or in the operator's manual. It is the operator's responsibility to adhere to the load rating of the machine.

All rigging materials shall have the rating tags attached. The tagged load limits of the rigging shall not be exceeded. It is the operator's responsibility to adhere to the load rating of the machine.

All rigging materials shall have the rating tags attached. The tagged load limits of the rigging shall not be exceeded. It is the operator's responsibility to ensure limits are not exceeded. Any un-rated rigging shall not be used. It shall be removed from service, tagged and turned in to your supervisor for inspection, re-tagging, or replacement.

### Safety Rules for Unloading or Moving Loads

- **Under no circumstances are employees or bystanders allowed under suspended loads.** This shall be communicated to everyone involved in the material handling process before un-loading begins. A short safety meeting shall be held. The JSA should be consulted for information to be talked about in the safety meeting. Document the meeting.
- Tag lines shall be used to control the load, if necessary. Employees shall not be in direct contact with the load until it has been lowered. Employees shall remain at a safe distance while the load is being moved.
- Hooks used for lifting shall be inspected before use. Hooks that are designed with safety clips shall have functional safety clips in place. Hooks that are not designed with safety clips, (i.e. mat hooks, etc.) should not be used for material transfer.
- Equipment operators shall be certified. A certification of training document will be filled out and filed with the main office before operators are allowed to operate equipment for Northwinds of Wyoming, Inc.
- Riggers shall be experienced, or supervised by an experienced rigger.

## Aerial Lifts

Aerial lifts purchased or rented shall conform to ANSI 92.2. Company personnel shall not perform modifications to aerial lifts. Modification may only be performed and certified by the manufacturer.

A thorough inspection shall be conducted before each use. The operator shall fill out an equipment inspection sheet. Particular attention should be directed toward control operation, and load limit tags. Aerial lifts shall have load limit tags affixed and in legible condition. Load limits shall be strictly adhered to. Back up alarms are required. Spotters shall be employed in congested areas.

Only trained and certified personnel are allowed to operate aerial lifts. A standard Northwinds of Wyoming, Inc. certification document must be on file for the operator. During operation, the man basket should be lowered to a safe area before the unit is propelled. The aerial lift shall not be operated in the immediate vicinity of a live high voltage power line. A minimum of 10' of clearance shall be maintained. Employees in the man basket shall have an uncluttered area to stand. Climbing of the man basket railings is prohibited. Fall protection shall be employed and fastened to an approved site. At no time will the fall protection bungee be unhooked. In the event that it becomes necessary to hook outside of the basket, two lines shall be employed. The first line shall not be unhooked until the secondary line is secure. At no time will an employee be unprotected.

Reasonable care shall be exercised to ensure that the aerial lift remains on solid, level surfaces during operation. Unleveled or uneven ground should be graded before lift operation.

Diagrams of escape routes will be posted as applicable.

## Rescue and Medical Duties

Company personnel are certified and trained in both CPR and general first aid. These persons are to be contacted, as specified in our general emergency training:

## Reporting Emergencies

The most senior employee on the job site has the duty of contacting public responders to come to the emergency scene.

## Alarm Systems and Notification of Emergencies

1. In a facility emergency, employees will be notified as per the client system
2. The employee Alarm System provides warning for:
  - a. Necessary emergency action as called for in the emergency action plan
  - b. Reaction time for safe escape of employees from the workplace or the immediate work area
3. The employee alarms must be:
  - a. Distinctive and recognizable as a signal to evacuate the work area or perform other required action
  - b. Perceptible above ambient noise or light levels by employees in affected portions of the workplace
4. If the employee alarm system is used for alerting fire brigade members, or for other purposes, a distinctive signal for each purpose must be used

## Types of Evacuation

OSHA requires this company to establish a system of types of evacuation to follow for different emergency circumstances. The following listing represents our policy for various emergency situations:

- Partial evacuation
- Full evacuation (this will most likely be the case in most emergency situations.)

## **Training**

Before implementing the emergency action plan, the employer must identify and train sufficient personnel to assist in the safe and orderly evacuation of employees.

On each employee's initial assignment, the employer will review those parts of the plan that the employee needs to know in an emergency. A record of this training will be kept in the company office.

The employer must review the plan with each employee whenever:

- the plan is first developed;
- the employee's responsibilities or actions change; or
- the plan is changed.

## **Further Information**

For further information or explanation about any duties under the emergency action plan, contact the Safety Department.

## **Scaffolding**

Before starting work on a scaffold, inspect it visually to determine:

- Handrails, midrails, toeboards, and decking are in place.
- All wheels are locked on moveable scaffolds; and,
- Locking pins are in place at each joint.

Do not change or remove scaffold members unless authorized.

All scaffolds shall be erected level and plumb, on a firm base.

Scaffolds shall be tied off or stabilized with outriggers when the height is more than three (3) times the smaller base dimension.

All scaffold platforms (space permitting) shall be equipped with:

- Standard 42 inch high handrails, rigidly secured (NOT WIRED),
- Standard 21-inch high midrails,
- Completely decked with safety plank or manufactured scaffolding decking, and
- Rigidly secured toeboards on all four sides.

Know the safe working loads on all scaffolding.

Do not climb across, or work from, any scaffold, handrail, midrail, or brace member, Use a ladder to get on scaffolding.

Do not alter any scaffold member by welding, burning, cutting, drilling, or bending.

No worker shall work or pass under a scaffold.

## Short Service Employee Program

### General Policy

The purpose of the Short-Service Employee policy of Northwinds of Wyoming is to assure that workers with less than six months experience are identified, adequately supervised, trained, and managed so as to prevent injury to themselves or others, property damage, or environmental harm.

Any worker with less than six months service in the same job/position with Northwinds of Wyoming will be considered a short-service employee (SSE). [1] Experienced workers who are new to a location will be considered by the Supervisor or the RSO, Chad Underwood, for inclusion in the SSE program based on the specifics of their assignment.

Factors to consider would include significant differences in:

- Job responsibilities/duties from previous assignments/employers
- Work processes/practices from previous assignments/employers
- Equipment/tools from previous assignments/employers
- Their Skill level, and
- Their Familiarity with co-workers

### Short-Service Employee Requirements

All Northwinds of Wyoming SSEs, regardless of job function, shall participate in any necessary site-specific orientations before performing work on project locations. These employees must also complete any additional specific training required by their job assignment that is being visited. SSE requirements may also include the following:

Northwinds of Wyoming SSEs will wear a hard hat with a distinctive difference in appearance (color, Stripe, Decal, etc.) whenever they are in the field that will allow quick and sure identification of the SSE by other team members. The method used to identify SSEs should be communicated to the Owner Client. [4] This also serves as a reminder of each person's responsibility for the safety of others.

All SSE personnel must be assigned an experienced mentor to assist the employee during his/her SSE period. It is the mentor's responsibility to closely supervise the assigned SSE and prevent him/her from performing tasks for which he/she is not properly trained. A mentor may only be assigned to one crew that includes Short Service Employees, and he/she must remain on site with them. [6] Each SSE's mentor must be designated on the daily Jobsite Hazard Analysis (JSA) forms.

Formal meetings between the SSE, his/her supervisor and mentor will take place one month and three months after the hire or transfer date (more frequently if necessary). The purpose of these meetings is to provide performance feedback to the SSE and evaluate his/her progress in understanding workplace hazards and Northwinds of Wyoming health, environmental, and safety (HES) policies. [5]

A final meeting is held at the six-month point to make a formal determination whether the SSE can work without posing a hazard to himself/herself or others. When the supervisor and mentor have agreed to this, employees are removed from the SSE program.

If concerns remain about the employee's ability to work safely after six months, the supervisor evaluates the situation and develops a forward plan for the employee in consultation with Human Resources. To be removed from SSE status, an employee must exhibit safe behavior for six months (i.e., incident-free performance, proactive participation in HES programs such as incident reporting including near misses, Behavior-Based Safety (BBS), Job Safety Analysis (JSA) development, safety meetings) and have a general awareness and working knowledge of Northwinds of Wyoming's HES policies. Release from SSE status requires the approval of both the employee's mentor and the supervisor. Documentation should be maintained for a period of one year after an employee has been removed from SSE status.

## Working with Experienced Crews

Prior to starting work, the contractor shall notify the Owner Client (project coordinator, contractor contact, and/or on-site supervisor) if Short Service Employees are present on work crews. [3]

Because of the nature of SSE status, a single person "crew" cannot be an SSE. Working multiple SSEs on a crew has the potential to increase the risk of crew injuries; therefore:

Two to five-person crews can have only one SSE per crew [2] , and crews with six to ten persons or more should not exceed 2 SSEs. Exceptions to these requirements require a plan to mitigate the risks and written approval of the RSO. Exceptions for crews with more than 50% SSEs require the approval of the RSO, and supervisor. For purposes of this policy, a crew is defined as those workers working at a single location who are employed by Northwinds of Wyoming.

Any subcontractors employed by Northwinds of Wyoming must manage their Short Service Employees in accordance with the requirements of the above Short Service Employee program. [7]

## Slips, Trips, and Falls

Falls occur whenever you move too far off your center of balance. Slips and trips often push you off your center of balance far enough to cause a fall. Falls are not often thought of as serious, but next to traffic accidents, falls kill more people than any other kind of accident. Occupational falls cause more than 1500 deaths per year, along with approximately 300, 000 injuries.

- ✓ Practice safe walking skills. Avoid walking on wet surfaces if possible, but if you can't avoid it, take short steps to keep your center of balance.
- ✓ Clean up any spilled liquid from working surfaces immediately. Even minor spills can be hazardous.
- ✓ Avoid grease build-up on floors around shop machinery.
- ✓ Wear footwear that matches the job, providing good traction and proper fit.
- ✓ Keep surfaces free from debris such as empty boxes and/or other debris. Maintain good housekeeping of the work place.
- ✓ Never run, unless your life depends on it.
- ✓ Make sure you can see where you are going. Carry loads that you can see over.
- ✓ Don't grope around in the dark. Use a flashlight or extension light to find the light switch or to make your walking area visible in unlighted areas.
- ✓ Keep your work area clean. Never leave tools or equipment on walkways, landings or in front of doors.
- ✓ If you have to climb, wear a safety belt and lanyard and take the time to use all available safety measures.
- ✓ When climbing always keep one hand free to use for balance and grip.
- ✓ Do not take the shortcut, take the safest route
- ✓ Use the handrail on stairways and ramps.
- ✓ Inspect the ladder before using it for any defect or slick surface.
- ✓ Secure hoses or electrical lines flush with the surface where they cross a traffic point.
- ✓ During the winter months, be careful of icy surfaces and walk with your hands out of your pockets and free when you suspect the surface is treacherous.

## Spill Prevention Program

All employees must be aware of the hazards involved when working with chemicals and the remedies that need to be used when a spill does occur. A training program will give instructions on how to handle the chemical being used and first aid to be applied to victims of chemical exposure. First aid and caution signs will be conspicuously posted so as to alert individuals on a constant basis. Charts identifying the chemicals utilized in the workplace, their symptoms and effects must also be posted. The workers must know what the acceptable level of exposure to a chemical is and what safety systems must be in place when working with a chemical. Staff should also be aware of new chemical products which may be available that are less harmful, and they must ensure that facilities are adequately ventilated when using chemicals on the premises.

Any water that is provided to an employee throughout the facility should be clearly identified as to whether it is for drinking, washing or cooking. All restrooms must be kept clean and sanitary.

Employees should be screened before taking positions that may expose them to hazards they are not physically capable of handling. An employee who takes an assignment which requires physical labor must be trained to lift heavy loads properly so as not to damage themselves physically, or cause a spill.

The following requirements must be met for storage locker/cabinets:

- Cabinets will be permitted on one side of a corridor only.
- Cabinets must end at least 6 ft. from a corridor exit door.
- Cabinet ends must be at least 12 in. from the edge of a doorway on the latch side and from the edge of the door leaf when fully opened into a corridor.
- The cabinets must not be more than 20 in. deep by 37 in. wide by 72-3/4 in. high.
- The cabinets must be all metal construction with positive latches to prevent spillage of contents in the event of an earthquake.
- All doors must return automatically to the closed position when not held open manually.

A 45 degree-angle fairing must be provided from the wall to the corridor corner of the cabinet. Fairing must be provided at both ends of cabinet or bank of cabinets. \* A 45 degree-angle fairing must be provided at the top of the cabinets from the outside corridor edge of cabinet to the wall.

All cabinets must be anchored to the wall firmly enough to withstand 0.5g of lateral acceleration (or a lateral load equal to 1/2 the total dead weight of the cabinet and its contents) in the event of an earthquake.

Liquids and chemicals are not to be stored in corridor lockers.

Any deviation from the above requirements must be approved by the Responsible Safety Officer.

## Hazardous Chemical Exposures

In any company which utilizes chemical substances, a training program on the handling, hazards, storage, exposure risks, symptoms of chemical exposure, spills, and first aid needs to be part of any new employees training. There must also be follow-up training sessions as to any new chemical or processes that may be initiated by the company. Follow-up training sessions act as a reinforcement of safety standards that need to be followed on a daily basis.

In a training program, employees will learn acceptable levels of chemical exposure, proper storage and labeling of chemicals, and usage of protective clothing and equipment for handling chemicals. They will also learn about potential fire and toxicity hazards, when not to have a chemical in a confined area, or to store in closed containers, usage of eye wash fountains and safety showers, and the necessary posting of open, and dangerous areas. It is important that an employee recognize the Threshold Limit Values or Permissible Exposure Limits of airborne contaminants and physical agents in the workplace. Employees must be instructed on the proper response procedures for spilled materials. The training should include materials available for use, proper waste disposal, and communication procedures. [3]

A procedural manual or set of instructions must be part of the program, with periodic inspections that clearly indicate whether an employee may be mishandling a chemical or endangering himself or others. Part of the manual or procedures must establish a standard of when and how to deal with chemical spills, neutralizing, and disposing of spills or overflows. These procedures must also be posted in an area that is easily accessible for reference usage.

In the event of a minor chemical spill, in addition to prompt corrective measures, the RSO or designated representative should be notified after the cleanup of the occurrence. In the event of a major spill, or any highly hazardous substance, notification to the above parties shall be made first before any cleanup is attempted. [5]

First aid training and equipment will be routine in any facility where chemicals are used. Employees must know how to handle equipment in emergency situations, what equipment needs to be used and whether the equipment is adequate for the situation. A proper spill kit must be on hand, and contain the appropriate supplies for materials that may be spilled. Supplies must be easily accessible when required, and considerations must be made for both the type and quantity of materials. [2]

Respirators may be used either as protective safety equipment or for emergency usage for spills. Therefore, the employee should recognize that respirators need to be stored in a clean, sanitary and convenient location and inspected on a regular basis. Also what respirators are approved by NIOSH for their particular applications.

With a first aid program an employee will recognize when a problem may be occurring by exposure to a chemical ranging from headaches, nausea, dermatitis problems to other factors of discomfort when they use solvents or chemicals.

In the design of a facility that transports chemicals from storage to vats, the content of pipes and storage containers must be clearly marked. Within that facility design there must be an emergency shut off system in case of an accident or chemical spill. Each employee will be trained as to these emergency shut-off systems.

Ventilation is another major factor in the design of any facility. Whether by natural means or mechanical, the system must be designed to control dust, fumes, solvents, gases, smoke or vapors which may be generated in the workplace. It is also important that a medical or biological monitoring system be in operation as part of the safety standards. If internal combustion engines are used in the facility, or if there is a chance of leakage or mixture with a chemical that could create a toxic gas, atmospheric gas levels must be monitored. If toxic chemicals are used and stored in the facility they should be located in an isolated area to guarantee safety.

### **Clean Work Areas**

All areas controlled by Northwinds of Wyoming must be kept in orderly and clean condition and used only for activities or operations for which they have been approved. Areas where chemicals may be used or stored must be maintained using good housekeeping best management practices. This includes, but is not limited to, clean and organized storage, labeling, and secondary containment where necessary. [4]

Keep stairs, corridors, and aisles clear. Traffic lanes and loading areas must be kept clear and marked appropriately.

Store materials in work rooms or designated storage areas only. Do not use hallways, fan lofts, or boiler and equipment rooms as storage areas. Chemical substances should be stored in proper containers to minimize the potential for a spill. Whenever possible, chemicals should be kept in closed containers and stored so they are not exposed to storm water.

[1]

Do not allow exits, passageways, or access to equipment to become obstructed by either stored materials or materials and equipment that is being used.

Arrange stored materials safely to prevent tipping, falling, collapsing, rolling, or spreading - that is, any undesired and unsafe motion.

Do not exceed the rated floor capacity of stored material for the area. The load limit and the maximum height to which material may be stacked must be posted.

Place materials such as cartons, boxes, drums, lumber, pipe, and bar stock in racks or in stable piles as appropriate for the type of material.

Store materials that are radioactive, fissile, flammable, explosive, oxidizing, corrosive, or pyrophoric only under conditions approved for the specific use by the Responsible Safety Officer.

Segregate and store incompatible materials in separate locations.

Remove items that will not be required for extended periods from work areas and put them in warehouse storage. Call for assistance.

Every work location must be provided with illumination that meets OSHA requirements. Evaluation of illumination quality and requirements is made by the Responsible Safety Officer, but the supervisor of an area is responsible for obtaining and maintaining suitable illumination.

Areas without natural lighting and areas where hazardous operations are conducted must be provided with enough automatically activated emergency lighting to permit exit or entry of personnel if the primary lighting fails.

Certain jobs require standard safety apparel and appliances for the protection of the employee. Your supervisor is aware of the requirements and will furnish you with the necessary approved protective appliances. These items shall be worn and effectively maintained as a condition of your continued employment and part of our mutual obligation to comply with the Occupational Safety and Health Act.



## **Training Program**

### **Scope**

To provide employees of potential occupational hazards in the work place.

### **Application**

To provide training on the following subjects to workers that may be affected by these procedures.

Northwinds of Wyoming, Inc. safety training program consists of a variety of in-house, field and client based programs. The company safety representative, clients and various safety companies conduct these programs.

In addition to our in-house training, Northwinds has become a member of Petroleum Education Council Inc. and have implemented their Safety and Petro-Chem Awareness Programs with our in-house programs.

The training programs conducted in-house are classroom and operational\*\* programs and include

<b>Programs/Training</b>	<b>Reference Source</b>
Alcohol & Substance Abuse	DOT 49 CFR 199 & 40
Bloodborne Pathogens	OSHA 29 CFR 1910.1030(g)(2)
Confined Space Entry**	OSHA 29 CFR 1910.146(g)
Crane Safety**	API RP 2D/29 CFR 1926, Subpart N
DOT HM-126F HAZMAT	DOT 49 CFR 172.704
Electrical Safety	OSHA 29 CFR 1910.332/29 CFR 1926, Subpart K
Emergency Response	OSHA 29 CFR 1910.38(a)
Fall Protection	OSHA 29 CFR 1926.503
First Aid/CPR**	OSHA 29 CFR 1910.151(b)
Forklifts**	OSHA 29 CFR 1910.178(l)
Hot Work Permitting	OSHA 29 CFR 1910.119
Hydrogen Sulfide**	MMS 30 CFR 250.67/ANSIZ390.1-1996
Hazard Communication	OSHA 29 CFR 1910.1200(h)
HAZWOPER**	OSHA 29 CFR 1910.120
Incipient Fire Fighting**	OSHA 29 CFR 1910.157(g)
Lockout/Tagout	OSHA 29 CFR 1910.147(c)(7)
Personal Protective Equipment	OSHA 29 CFR 1910.132(f)
Process Safety Management	OSHA 29 CFR 1910.119
Respiratory Protection	OSHA 29 CFR 1910.134(e)(5)
Trenching and Shoring	OSHA 29 CFR 1926.650-652
Welding and Burning	OSHA 29 CFR 1910.252(a)(2)(xii)(c) MMS 30 CFR 250.52, 29 CFR 1926, Subpart J
Additional training programs are incorporated as required by federal, state, and local laws	
** Denotes training programs that require hands-on practical exercise	

## **New Supervisor Training**

### **Purpose**

- This training program is developed to provide newly hired or promoted first line supervisors the necessary information and reference for the correct safety procedures and rules that are required when managing personnel.
- The supervisor and employee must be sure that the employee understands and knows how to work safely each and every day. Therefore each supervisor must gain information and develop skills in order to communicate safety to his crew members.
- Each newly-hired or promoted supervisor must have the necessary skills gained through experience to complete the job at hand but he/she must also know how to complete the job safely by recognizing the hazards of each and every job as well.
- This program is designed for your study and use of the information contained herein. This program plus alertness to new methods and changing conditions should assure the continuation of a safe work performance of the crew.

### **New Employee Orientation**

All new employees when hired to perform safety-sensitive functions must receive a safety orientation by either the Company safety officer or the project foreman. This orientation includes (but not limited to):

- Description of the work being performed.
- Review of the Company Safety Manual including;
  - Company Safety Policy
  - Company Safety Rules
  - Accident Reporting Policy
- Review of the Company Hazardous Communication Program including;
  - The Right-to-Know Law
  - Material Safety Data Sheets and Labeling
- Type of Personal Protective Equipment (PPE) including;
  - Types of P.P.E. used at jobsite
  - Proper wear and maintenance of P.P.E.
  - Hazard Recognition and Assessment
  - Hearing Protection
  - Respiratory Protection
- Hazard Reporting
- Emergency procedures
- Hazardous Materials
- Vehicle Safety
- Fall Protection
- Electrical Safety
- First Aid
- Hazardous Materials
- Housekeeping

## Tailgate/Toolbox Meetings

- Safety meetings are required by Northwinds on a weekly basis or as required by the client. Each supervisor is given the necessary materials to perform regular safety meetings on numerous topics. The safety office can obtain additional assistance. No work will be performed before a weekly safety meeting is conducted.
- A safety meeting form will be completed by having each employee in attendance sign-in and topics listed and signed by the supervisor.

## Accident Reporting & Investigation

- All incidents/accidents will be reported to the management immediately. After notification of management a complete investigation will be completed.
- An accident report form will be completed and sent to the safety office within 24 hours of the incident.

## First Aid Procedures

- All supervisors receive first aid and CPR training.

## Emergency Procedures

- Each work site is required to have a written emergency evacuation and response plan developed. Each plan designates key personnel responsibilities (firefighting, rescue and medical duties), routes of evacuation, alarm systems, and notification of emergencies, types of evacuation and accounting of employees.
- Once the plan is designed it is to be reviewed by each crew member before work begins and periodically thereafter, then posted in a central location at the work site.

## Safe Work Practices

Safe work practices begin with the first rule,

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### **No job is so important that it will be tried at the sacrifice of safety.**

- Safety is the responsibility of each supervisor and each supervisor must have complete knowledge of the safe way to perform any and every job under his/her supervision. This includes being able to explain the safe procedure to each employee and check to see that it is understood and followed.
- The supervisor must be sure that the employee understands and knows how to operate a tool or a piece of equipment properly and within its limitations and that the tool is the proper tool for the job.

Supervisors must ensure that all equipment is inspected prior to operation to prevent unsafe operation.

All hazards are identified and eliminated if possible or engineering control measures are implemented.

- Firefighting equipment is available and in good operating order.

## **Vehicle Safety**

All employees will have in their possession a valid driver's license. If the company learns of an employee operating a company vehicle without a valid license, that employee will lose all driving privileges with Northwinds of Wyoming and face possible termination if his job requires operation of a vehicle.

There will be no private use of a company vehicle for any reason.

No passengers are permitted to ride in a company vehicle if they are not employed by Northwinds of Wyoming Inc. Failure to comply can lead to termination.

All motor vehicle regulations will be observed and followed by personnel operating company vehicles.

The use of alcohol and drugs while driving a company vehicle is strictly forbidden. If an employee is proven to driving under the influence of alcohol or drugs, that employee will be terminated immediately.

All employees will wear all appropriate and available safety restraints when operating or riding in a company vehicle.

No vehicle shall be driven which has an obvious mechanical problem affecting the safety of the vehicle

The use of mobile devices (MP3 players, cell phones, mobile computers) while driving is prohibited.

## **Vehicles**

Company vehicles will be inspected daily by the driver to ensure that the vehicle is in good operating condition. The driver should check the following items daily. Your supervisor should be informed of any repairs needed.

- Headlights, tail lights, brake lights, turn signals and hazard lights.
- Brakes, Emergency brake.
- Windshield, Windshield wipers, and other windows.
- Mirrors, Seat belts, Horn, and Tires.
- Engine fluid levels and belts.
- First Aid Kit and fire extinguisher.

In addition to required state inspections, all company vehicles will be thoroughly inspected by qualified personnel periodically.

All company vehicles will be equipped with a fire extinguisher and first kit. The operator will ensure that they are kept properly maintained.

## Defensive Driving

The main problem is the driver. Studies show that 90% of all accidents result from drivers' faults. If a driver obeys every highway rule and regulation and watches out for the other drivers' mistakes, the chances of being involved in an accident will be greatly reduced.

For the drivers' protection, it is important to watch and be prepared for the faults of other drivers. This is called Defensive Driving.

Being a safe driver and a defensive driver involves several factors.

- **Knowledge** - The knowledge of the rules and regulations in conjunction with awareness of your vehicle limitations is vital.
- **Ability** - You must have complete control of your vehicle at all times and know how it will react in certain situations and what you must do to prevent certain reactions.
- **Attitude** - This is the willingness to obey all rules and to yield to all vehicles and pedestrians when there is an accident situation.
- **Reaction** - Your reactions to the ever-changing traffic around you, and doing the right thing at the right time.
- **Observation and Anticipation** - Always expect the vehicles around you to be hazardous and anticipate their error before it becomes your own. You must be aware of all possible accident situations and take preventive action.

## Projecting Loads

All vehicles will follow safe and secure load practices. This includes the proper marking of loads extending more than four feet beyond the rear of the vehicle with a red flag (daytime) or a red light (nighttime). No projecting load will be unmarked.

## Trailers

Riding in or on a moving trailer is prohibited.

## Towing Vehicles

When towing another vehicle the following the following guidelines will apply:

- Safety chains will be used. (Even when using a draw bar)
- Tow rope or chain will not exceed 15 feet.
- Tow rope or chain will be marked in a highly visible manner (white flag).
- Towed vehicle will use it hazard lights or be marked in the rear.

When towing any vehicle or trailer, remember the limitations in braking, handling, and control of your vehicle.

## Traffic Control

The speed limit for any company property, or work site under normal conditions is 20 MPH. Changing conditions and heavy traffic will reduce the speed of all vehicles. Braking distances increase with the size and weight of the vehicle. A Service vehicle identified by a flashing yellow light always has the right of way at the work site.

## School Busses and Emergency Vehicles

All Northwinds of Wyoming employees will stop for school buses loading or unloading children, and will yield the right-of-way to any emergency vehicle presenting a siren or emergency lights.

## **Hazardous Conditions**

There are several conditions which could cause a driver to have an accident.

- **Light** - The amount of natural and artificial light determines the driver's ability to see and be seen. Too much or too little light, or the rapid change can temporarily blind the driver, and can bring panic or worse.
- **Weather** - In addition to affecting the driver's ability to see and be seen, it can affect his ability to start, stop, and turn. Slow down for adverse conditions and use lights if necessary.
- **Road** - Road conditions determine what maneuvers the driver must make to stay on the road. Roads covered with snow, snow pack or ice are hazardous, but are most hazardous any time the temperature increases. You should exercise extreme caution under these conditions.
- **Traffic** - Traffic conditions vary with the time of day, day of the week, the time of the year, or the size of vehicles on the road. Adjust your speed accordingly and maintain a safe distance to all vehicles around you.
- **Vehicle** - The condition of the vehicle will affect the driver's ability to start, stop, turn or back up. These are the maneuvers a driver must control to maintain control of the vehicle. If one or more is lacking, there is a definite hazard.
- **Driver** - The condition of the driver is the most important. 90% of all accidents occur due to the driver's carelessness. Is the driver physically and mentally ready to drive.
- **Alcohol and Drugs** - Alcohol is a drug; and when taken by itself, or in combination with other drugs, a driver's ability will be impaired. It is absolutely forbidden to operate a company vehicle under the influence of alcohol or drugs in their system.

When these conditions are good there is usually no problem. Most problems occur when these conditions occur together, and in most cases that is the norm. If these conditions are poor the driver should assess the situation and adjust his driving accordingly.

## **Animals**

There may be occasions when an animal such as a dog or cat suddenly darts in front of a moving vehicle. If the driver swerves or slams on the brakes, he may cause an accident. The driver must be aware that small animals (dog, cat, rabbit, etc.,) will cause very little damage to the vehicle. Regretfully the safest alternative may be to hit the animal. However a large game animal (deer, antelope) or livestock (cattle, horses) are capable of a great deal of risk. About 90% of wild game or livestock accidents occur between dusk and dawn. The driver should use extreme caution with large animals, due to their unpredictable nature. The driver should slow the vehicle to safe stopping speed when possible.

## **Emergencies**

This topic addresses those emergency situations that cannot be avoided by obedience to the rules and regulations. No matter how well one drives, there may be times when one is faced with an emergency. It is important to know what to do ahead of time in order to react properly.

### **Tire Blow Out**

If a tire blows out, DON'T slam on the brakes. Hold the steering wheel tight, steer straight ahead and slow down gradually to a stop just off the road.

### **Skidding**

If the vehicle begins to skid, do not use the brakes. If the rear of the vehicle skids right, steer right. If it skids left, steer left.

## Backing Up

When backing up, the driver should check behind the vehicle. Then should signal (honk horn 2-3 times) when preparing to back. The signal will be distinct from the background noise of the work site. The driver may also use a ground guide to assist him when backing up.

## Driving Off Pavement

If the right wheels run off the highway edge, do not use the brakes. Do not try to pull sharply back onto the pavement. Steer straight ahead, straddling the pavement edge, take your foot off the accelerator, slow the vehicle down almost to a stop, then turn sharply and guide the vehicle back onto the road.

## Mechanical Problems

If the vehicle breaks down, or you run out of gas, pull over onto the shoulder leaving as much room as possible for the moving traffic. Turn on your emergency flasher lights and move the vehicle as soon as possible.

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**When in the opinion of the driver, conditions for driving are unsafe for him, it shall be the driver's responsibility to stop driving.**

## Trenching and Shoring Procedures

Developed in accordance with the OSHA Safety & Health Regulations for Construction Standard, Excavations subpart, 29 CFR 1926.0650.

## Scope and Application

This policy sets for the official practices required for excavations made by Northwinds of Wyoming, Inc. employees.

## Definitions

### Aluminum hydraulic shoring

An engineered shoring system comprised of aluminum hydraulic cylinders (cross braces), used in conjunction with vertical rails or horizontal rails. Such a system is designed specifically to support the sidewalls of an excavation and prevent cave-ins.

### Benching

A method of protecting employees from cave-ins by excavating the sides of an excavation to form one or a series of horizontal levels or steps, usually with vertical or near-vertical surfaces between levels.

### Cave-in

The separation of a mass of soil or rock material from the side of an excavation, or the loss of soil from under a trench shield or support system, and its sudden movement into the excavation, either by falling or sliding, in sufficient quantity so that it could entrap, bury, or otherwise injure and immobilize a person.



**Competent person**

One who is capable of identifying existing and predictable hazards in the surroundings, or working conditions that are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them. All competent persons must complete the 4-hour Physical Plant trenching and shoring class, successfully pass the exam, and be certified for successful completion of the class. A competent person should have and be able to demonstrate the following:

Training, experience, and knowledge of:

- soil analysis,
- use of protective systems, and
- requirements of 29 CFR 1926 Subpart P.

Ability to detect:

- conditions that could result in cave-ins,
- failures in protective systems,
- hazardous atmospheres, and
- other hazards including those associated with confined spaces.
- Authority to take prompt corrective measures to eliminate existing and predictable hazards and to stop work when required.

**Excavation**

Any man-made cut, cavity, trench, or depression in an earth surface, formed by earth removal.

**Registered Professional Engineer**

A person who is registered as a professional engineer.

**Shield (shield system)**

A structure that is able to withstand the forces imposed on it by a cave-in and thereby protects employees with the structure. Shields can be permanent structures or can be designed to be portable and moved along as work progresses. Also known as trench box or trench shield.

**Shoring (shoring system)**

A structure such as a metal hydraulic, mechanical or timber shoring system that supports the sides of an excavation and which is designed to prevent cave-ins.

**Sloping (sloping system)**

A method of protecting employees from cave-ins by excavating to form sides of an excavation that is inclined away from the excavation so as to prevent cave-ins. The angle of incline varies with differences in such factors as the soil type, environmental conditions of exposure, and application of surcharge loads.

**Trench (trench excavation)**

A narrow excavation (in relation to its length) made below the surface of the ground. In general, the depth is greater than the width, but the width of a trench is not greater than 15 feet. If forms or other structures are installed or constructed in an excavation as to reduce the dimension measured from the forms or structure to the side of the excavation to 15 feet or less, the excavation is also considered to be a trench.

## General Requirements

All excavations shall be made in accordance with the rules, regulations, requirements, and guidelines set forth in the Occupational Safety and Health Administration's standard on Excavations, 29 CFR 1926.650, .651, and .652, except where otherwise noted below.

## Procedures

A competent person shall be placed in charge of all excavations. Underground utilities must be located and marked before excavation begins. Employees are not allowed in the excavation while heavy equipment is digging.

## Inspections

The competent person shall conduct inspections:

- Daily and before the start of each shift.
- As dictated by the work being done in the trench.
- After every rain storm.
- After other events that could increase hazards, such as a snowstorm, windstorm, thaw, earthquake, dramatic change in weather, etc.
- When fissures, tension cracks, sloughing, undercutting, water seepage, bulging at the bottom, or other similar conditions occur.
- When there is a change in the size, location, or placement of the spoil pile.
- When there is any indication of change or movement in adjacent structures.

## Soil Types

**Type A (most stable)** - Clay, silty clay, and hardpan (resists penetration). No soil is Type A if it is fissured, is subject to vibration of any type, has previously been disturbed, or has seeping water.

**Type B (medium stability)** - Silt, sandy loam, medium clay and unstable dry rock; previously disturbed soils unless otherwise classified as Type C; soils that meet the requirements of Type A soil, but are fissured or subject to vibration.

**Type C (least stable)** - Gravel, loamy sand, soft clay, submerged soil or dense, heavy unstable rock, and soil from which water is freely seeping.

**Layered geological strata (where soils are configured in layers)** - The soil must be classified on the basis of the soil classification of the weakest soil layer. Each layer may be classified individually if a more stable layer lies below a less stable layer, i.e., where a Type C soil rests on top of stable rock.

Because most excavations on OSU property will be conducted in order to repair / replace existing pipelines or equipment (i.e., the soil has been previously disturbed), **excavations shall be made to meet the requirements for Type B or Type C soils only**, as appropriate.

## Testing Methods

The competent person in charge of the excavation shall be responsible for determining whether the soil is Type B or C. If the competent person wants to classify the soil as Type C, no testing is needed. However, tests must be conducted to determine if the soil can be classified as Type B. To do this, the competent person shall use a visual test coupled with one or more manual tests.

## **Visual Test**

In addition to checking the items on the trench inspection form, the competent person should perform a **visual test** to evaluate the conditions around the site. In a visual test, the entire excavation site is observed, including the soil adjacent to the site and the soil being excavated. The competent person also checks for any signs of vibration.

During the visual test, the competent person should check for crack-line openings along the failure zone that would indicate tension cracks, look for existing utilities that indicate that the soil has been previously disturbed, and if so, what sort of backfill was used and observe the open side of the excavation for indications of layered geologic structuring.

This person should also look for signs of bulging, boiling, or sloughing, as well as for signs of surface water seeping from the sides of the excavation or from the water table.

In addition, the area adjacent to the excavation should be checked for signs of foundations or other intrusions into the failure zone, and the evaluator should check for surcharging and the spoil distance from the edge of the excavation.

## **Manual Tests**

### **Thumb Penetration Test**

Attempt to press the thumb firmly into the soil in question. If the thumb penetrates no further than the length of the nail, it is probably Type B soil. If the thumb penetrates the full length of the thumb, it is Type C. It should be noted that the thumb penetration test is the least accurate testing method.

### **Dry Strength Test**

Take a sample of dry soil. If it crumbles freely or with moderate pressure into individual grains, it is considered granular (Type C). Dry soil that falls into clumps that subsequently break into smaller clumps (and the smaller clumps can only be broken with difficulty), it is probably clay in combination with gravel, sand, or silt (Type B).

### **Plasticity or Wet Thread Test**

Take a moist sample of the soil. Mold it into a ball and then attempt to roll it into a thin thread approximately 1/8 inch in diameter by two inches in length. If the soil sample does not break when held by one end, it may be considered Type B.

A pocket penetrometer, shear vane, or torvane may also be used to determine the unconfined compression strength of soils.

## **Spoil**

**Temporary spoil** shall be placed no closer than 2 feet from the surface edge of the excavation, measured from the nearest base of the spoil to the cut. This distance should not be measured from the crown of the spoil deposit. This distance requirement ensures that loose rock or soil from the temporary spoil will not fall on workers in the trench.

Spoil should be placed so that it channels rainwater and other run-off water away from the excavation. Spoil should be placed so that it cannot accidentally run, slide, or fall back into the excavation.

**Permanent spoil** should be placed some distance from the excavation.

## Surface Crossing of Trenches

Surface crossing of trenches should not be made unless absolutely necessary. However, if necessary, they are only permitted under the following conditions:

- **Vehicle crossings** must be designed by and installed under the supervision of a registered professional engineer.
- Walkways or bridges must:
  - have a minimum clear width of 20 inches,
  - be fitted with standard rails, and
  - extend a minimum of 24 inches past the surface edge of the trench.

## Ingress and Egress

Trenches 4 feet or more in depth shall be provided with a fixed means of egress.

Spacing between ladders or other means of egress must be such that a worker will not have to travel more than 25 feet laterally to the nearest means of egress.

Ladders must be secured and extend a minimum of 36 inches above the landing.

Metal ladders should not be used when electric utilities are present.

## Exposure to Vehicles

Workers exposed to vehicular traffic shall be provided with and required to wear reflective vests or other suitable garments marked with or made of reflectorized or high-visibility materials.

Trained flag persons, signs, signals, and barricades shall be used when necessary.

## Exposure to Falling Loads

All workers on an excavation site must wear hard hats.

Workers are not allowed to work under raised loads.

Workers are not allowed to work under loads being lifted or moved by heavy equipment used for digging or lifting.

Workers are required to stand away from equipment that is being loaded or unloaded to avoid being struck by falling materials or spillage.

Equipment operators or truck drivers may remain in their equipment during loading and unloading if the equipment is properly equipped with a cab shield or adequate canopy.

## Warning Systems for Mobile Equipment

The following steps should be taken to prevent vehicles from accidentally falling into the trench:

- **Barricades** must be installed where necessary,
- **Hand or mechanical signals** must be used as required,
- **Trenches left open overnight** shall be fenced and barricaded.

## **Hazardous Atmospheres and Confined Spaces**

Workers shall not be permitted to work in hazardous and/or toxic atmospheres. Such atmospheres include those with:

- less than 19.5% oxygen,
- a combustible gas concentration greater than 20% of the lower flammable limit, and
- concentrations of hazardous substances that exceed those specified in the Threshold Limit Values for airborne contaminants established by the ACGIH.

All operations involving such atmospheres must be conducted in accordance with OSHA requirements for occupational health and environmental controls for personal protective equipment and for lifesaving equipment. Engineering controls (such as ventilation) and respiratory equipment may be required.

## **Testing for Atmospheric Contaminants**

If there is any possibility that the trench or excavation could contain a hazardous atmosphere, atmospheric testing must be conducted prior to entry. Conditions that might warrant atmospheric testing would be if the excavation was made in a landfill area or if the excavation was crossed by, was adjacent to, or contained pipelines containing a hazardous material (for example, natural gas lines).

Testing should be conducted before workers enter the trench and should be done regularly to ensure that the trench remains safe. The frequency of testing should be increased if equipment is operating in the trench.

Testing frequency should also be increased if welding, cutting, or burning is done in the trench.

Workers required to wear respiratory protection must be trained, fit-tested, and enrolled in a respiratory protection program.

Some trenches qualify as confined spaces. When this occurs, compliance with OSU's Confined Space Program is also required.

## **Standing Water and Water Accumulation**

Methods for controlling standing water and water accumulation must be provided and should consist of the following if employees must work in the excavation:

- Use of special support or shield systems approved by a registered professional engineer.
- Water removal equipment, such as pumps, used and monitored by a competent person.
- Workers removed from the trench during rainstorms.
- Trenches carefully inspected by a competent person after each rain and before workers are permitted to re-enter the trench.

## Benching, Sloping, Shoring, and Shielding Requirements

All excavations or trenches 4 feet or greater in depth shall be appropriately benched, shored, or sloped according to the procedures and requirements set forth in OSHA's Excavation standard, 29 CFR 1926.650, .651, and .652.

Excavations or trenches 20 feet deep or greater must have a protective system designed by a registered professional engineer.

Excavations under the base of footing of a foundation or wall require a support system designed by a registered professional engineer.

Sidewalks and pavement shall not be undermined unless a support system or another method of protection is provided to protect employees from their possible collapse.

### Benching

There are two basic types of benching: single and multiple, which can be used in conjunction with sloping.

In Type B soil, the vertical height of the benches must not exceed 4 feet. Benches must be below the maximum allowable slope for that soil type. In other words, a 10-foot deep trench in Type B soil must be benched back 10 feet in each direction, with the maximum of a 45-degree angle.

***Benching is not allowed in Type C soil.***

### Sloping

Maximum allowable slopes for excavations less than 20 feet based on soil type and angle to the horizontal are as follows:

Soil Type	Height/Depth Ratio	Slope Angle (In Degrees)
Stable Rock	Vertical	Vertical (90°)
Type A Soil (*)	¾ : 1	53°
Type B Soil	1 : 1	45°
Type C Soil	1½ : 1	34°
Mixed Soil Types	1½ : 1	34°

A 10-foot-deep trench in Type B soil would have to be sloped to a 45-degree angle, or sloped 10 feet back in both directions. Total distance across a 10-foot-deep trench would be 20 feet, plus the width of the bottom of the trench itself. In Type C soil, the trench would be sloped at a 34-degree angle, or 15 feet back in both directions for at least 30 feet across, plus the width of the bottom of the trench itself.

## **Shoring**

Shoring or shielding is used when the location or depth of the cut makes sloping back to the maximum allowable slope impractical. There are two basic types of shoring: timber and aluminum hydraulic.

Because the OSU Physical Plant has aluminum hydraulic shores, they will be the focus of this section. Hydraulic shoring provides a critical safety advantage over timber shoring because workers do not have to enter the trench to install them. They are also light enough to be installed by one worker. This shoring is gauge-regulated to ensure even distribution of pressure along the trench line and can be adapted easily to various trench depths and widths. However, if timber shoring is used, it must meet the requirements of 29 CFR 1926.650, .651, and .652.

All shoring shall be installed from the top down and removed from the bottom up.

Hydraulic shoring shall be checked at least once per shift for leaking hoses and/or cylinders, broken connections, cracked nipples, bent bases, and any other damaged or defective parts.

The top cylinder of hydraulic shoring shall be no more than 18 inches below the top of the excavation. The bottom of the cylinder shall be no higher than four feet from the bottom of the excavation. (Two feet of trench wall may be exposed beneath the bottom of the rail or plywood sheeting, if used.)

Three vertical shores, evenly spaced, must be used to form a system. Wales are installed no more than two feet from the top, no more than four feet from the bottom, and no more than four feet apart, vertically.

## **Shielding**

Trench boxes are different from shoring because, instead of shoring up or otherwise supporting the trench face, they are intended primarily to protect workers from cave-ins and similar incidents.

The excavated area between the outside of the trench box and the face of the trench should be as small as possible. **The space between the trench box and the excavation side must be backfilled to prevent lateral movement of the box.** Shields may not be subjected to loads exceeding those which the system was designed to withstand.

Trench boxes are generally used in open areas, but they also may be used in combination with sloping and benching.

The box must extend at least 18 inches above the surrounding area if there is sloping toward the excavation. This can be accomplished by providing a benched area adjacent to the box.

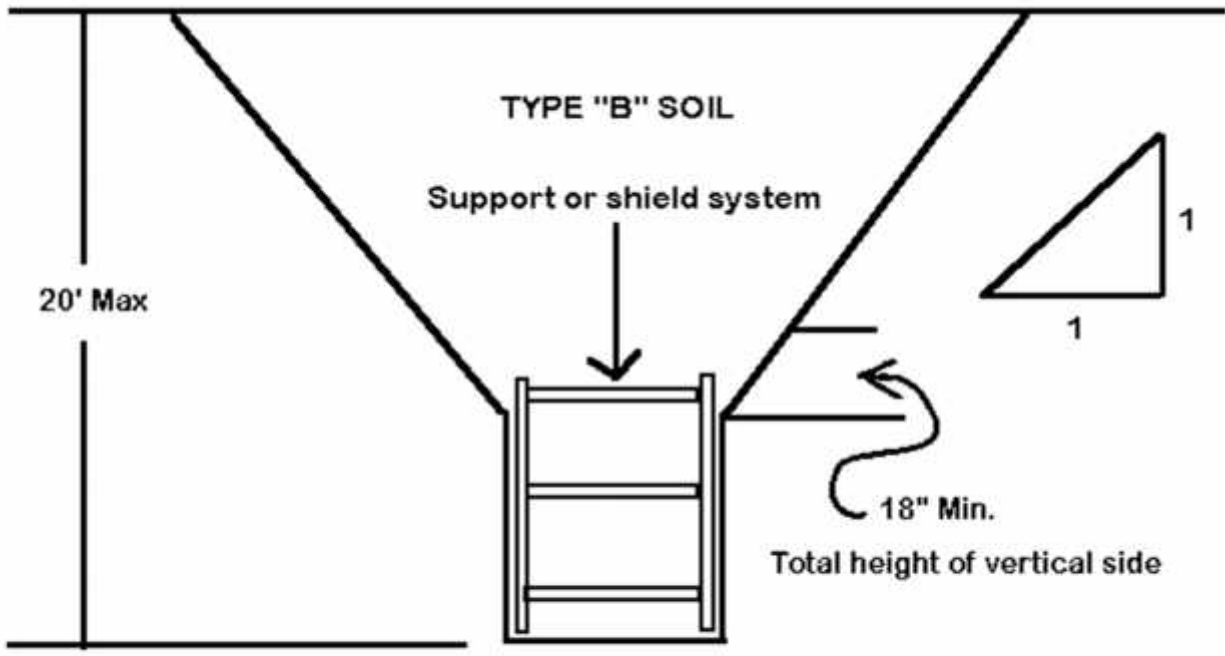
Any modifications to the shields must be approved by the manufacturer.

Shields may ride two feet above the bottom of an excavation, provided they are calculated to support the full depth of the excavation and there is no caving under or behind the shield.

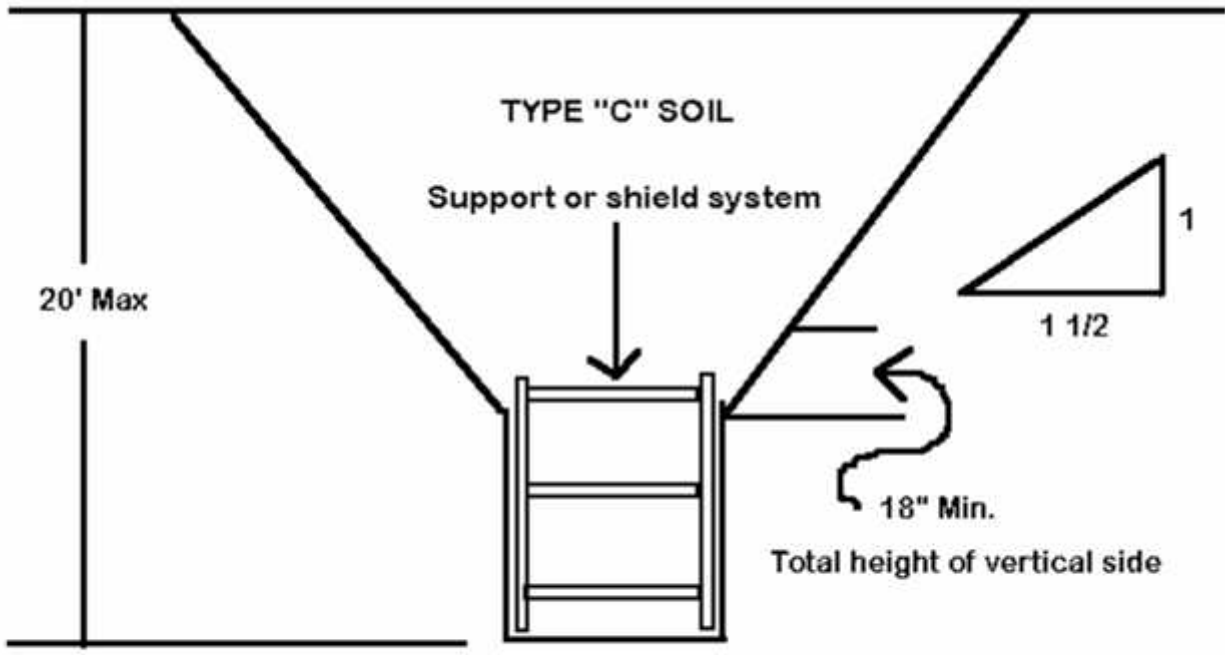
Workers must enter and leave the shield in a protected manner, such as by a ladder or ramp.

Workers may not remain in the shield while it is being moved.

### Illustration of Shielding Systems in Type B and C Soils



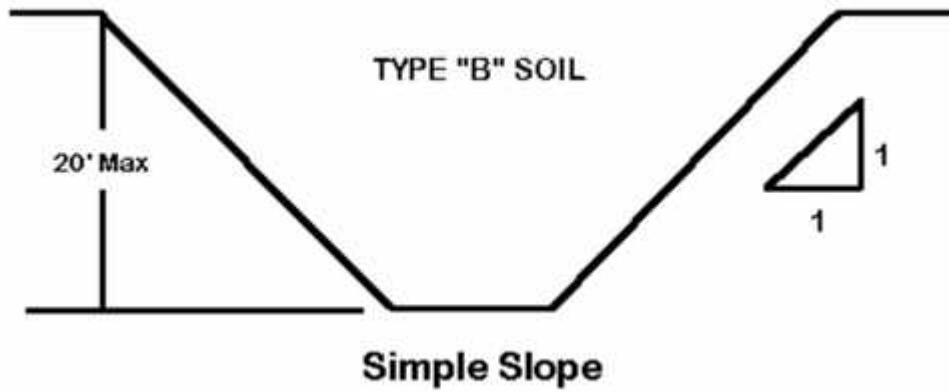
Vertical-Sided Lower Portion



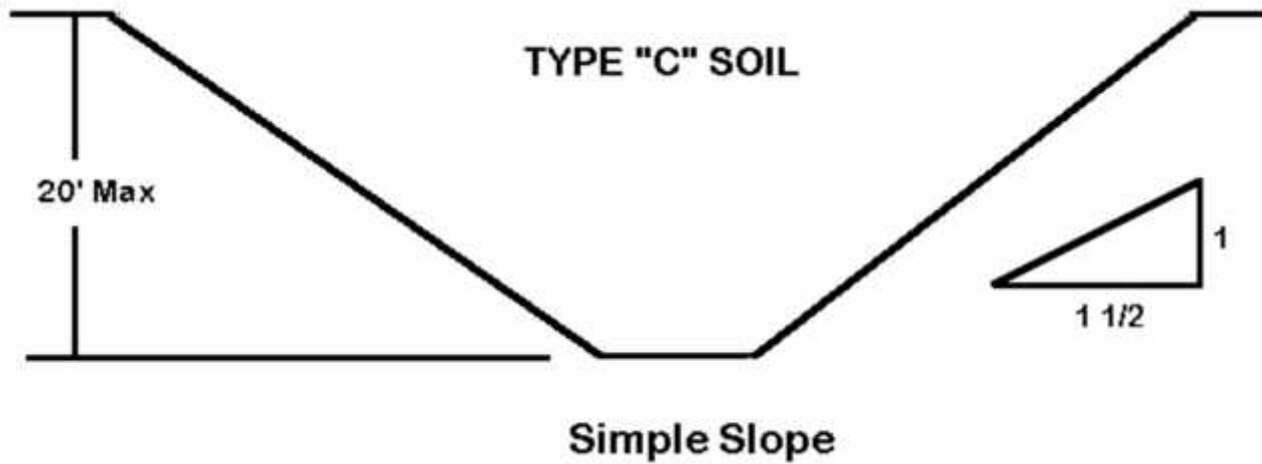
Vertical-Sided Lower Portion



## Illustration of Simple Slope Trenching in B and C Type Soils



All simple slope excavations 20 feet or less in depth shall have a maximum allowable slope of 1 1/2:1.



## Welding, Burning, and Chipping

- Hot work or other appropriate permits will be obtained before any welding, burning, or chipping operation.
- No unauthorized person will be allowed to use welding equipment. Welders must be certified for the work to be performed.
- Welders are responsible for the maintenance of their equipment, and for the protection of the passersby. The welder will ensure that all personnel are adequately protected and warned of hazards involved.
- Employees will use great caution when in or near welding operations. Exposure to Electric Arc welding can cause severe burns to unprotected eyes.
- Plastic case lighters are forbidden in and around welding operations and open flames.
- The fumes generated by welding are hazardous if inhaled. Adequate ventilation will be provided to ensure that the fumes are kept out of the employee's breathing zone while welding.
- Arc-welding units should be located in gas-free areas.
- Before cutting into a line, it must be punctured by a small air drill, punch, or hacksaw.
- Before welding is done on a Freon system, the system must be properly purged to prevent any oil vapors from causing an explosion, and to prevent Freon vapors from creating poison gas when a heater flame is applied.
- All steel drums, barrels, or other closed vessels that have contained volatile liquids or gases must be thoroughly cleaned, filled with water or made safe by other approved methods before a cutting or welding torch is applied.
- When a welder is cutting or welding on a line, no one should work in front or near the open end of the line.
- Pieces of hot metal must not be left where handling or stepping on them might burn workers.
- Power to an electric arc welding machine should be turned off when the equipment is not in use.
- Only enough cable to reach the job should be used. The remainder should be kept rolled on the racks.
- When changing welding electrodes, use care to avoid making contact with the other side of the circuit. A ground should be connected directly to the piece being welded.
- Welders should select their goggles carefully. A proper fit can prevent eye injuries.
- Welders working in the field should wear special safety helmets with face shields.
- Barrels or drums, empty or full, should not be used as welding platforms.
- Welders should dispose of used welding rod stubs. If left on the ground they can puncture shoes.

## Winches and Winch Truck Safety

### Winch Truck Driver Responsibilities

- The driver/operator is responsible for the condition of the winch cables.
- The winch must be out of gear before moving the vehicle

### Winch/Winch Truck Requirements

- Winches shall be left in gear while lowering a load.
- The winch shall have an appropriate guard (headache rack) to protect the driver.
- Cable drums should have an appropriate guard.
- The tail chain on the winch line must not be pulled against the pulley.
- Rolling tailboards must have a positive locking device.

### Personnel Requirements

- All personnel must keep their hands away from moving drums.
- Stepping over or under a working winch line is prohibited.
- Use great care when working near winch lines. They can become taut or slack without warning.
- Never use the winch line for climbing.

## **Using a Winch**

- Only one person is allowed to give signals to the operator. Use standard hand signals.
- The operator should hold position of the winch line until given instructions to move/change position.
- Spooling winch lines by hand is allowed only when:
  - The winch operator is at the controls
  - The spooler is wearing leather palmed gloves.

## **Other Requirements**

- Winch lines shall be cut back or replaced when the line becomes worn and/or frayed
- The winch line shall only be cut with a wire rope cutter.
- "OSHA" knots are not allowed. A thimble must be used.
- Gin Poles shall be treated similar to a crane and the same rules apply.

## Work on Operating Pipelines

### Tapping Oil and Gas Lines

- The "Tapping" of an oil or gas line is a specialized operation requiring a comprehensive "Job Plan". The plan will be in accordance with the accepted Hot Tap Procedures, and compliant with all regulations.
- Safety Equipment will be available and inspected before commencing any hot tap operation.
- The bell hole should be dug so as to clear the tapping machine by 3 feet or more on either side. When the horizontal tap is called for there will be 2 feet or more of clearance at the end of the machine. Additional clearance will be called for depending on the size of the tap and length of nipples.
- Only qualified welders will perform in tapping operations.
- The supervisor will determine the wall thickness of the hot tap connection before welding begins.
- Lines to be tapped should have some flow at a reduced pressure. The supervisor to ensure proper flow maintenance will tag valves.
- The stub valve is to be tested before the tap is made.
- Inspect the packing and working parts of the tapping machine before work begins. Pressure testing will be performed before use of machine.
- The person who feeds the bit should be experienced in the procedure.
- Check measurements to be sure the milling tool can be pulled out of the welded nipple and the valve so the valve can be closed and the mill can be recovered. Check to see that a full-opening valve is being used and that the opening is large enough for the mill to pass through.
- Precautions for fire control will be ready and available during the procedure.
- Planning for equipment, personnel, and material is the supervisors' responsibility. The supervisor will ensure that the welder and all involved personnel in the bell hole are provided with harness and lifeline when the operation is below grade.
- The welder will work without a helper unless the supervisor determines that the task cannot be accomplished without one.
- Insure that the bleeder valve is installed on the tapping machine. The valve should be open until the bit drills through the line and air is flushed from the tapping machine.
- When pulling the bit back out of the pipe after drilling the hole, be sure to keep at least one block tight on the driving bar at all times. The feed block should be tight when the lock block is being moved, and the lock block should be tight when the feed block is being moved. If both blocks are loosened at once, the bar could be expelled with terrific force.

### Valves

- Never open or close a valve unless you know what purpose it serves.
- Never jam a valve open or closed unless the manufacturer has specifically authorized it.
- Never open a valve quickly unless it is an emergency. Operate it slowly.
- Do not stand directly in front of, or over a valve when operating.
- Do not use excessive force in operating a valve.
- No portion of a valve under pressure will be disassembled without approval from the appropriate field or plant supervisor.
- Use great caution when thawing out a frozen valve. When possible equalize pressure on both sides of the valve.
- The hands or fingers should not be used to determine the condition of regulator valve seats because sharp edges may exist.
- Watch out for flying particles when the lift gear on the relief valve is tripped/opened.

## Work with Hand and Power Tools

### General

- The condition of all available tools and equipment will be evaluated prior to each shift and the remediation will be performed to repair or eliminate the use of any damaged or unsafe device.
- Appropriate guarding will be available for all moving parts on tools and equipment.
- Any high speed device or other portable hand operated device will have a "dead-man" switch. No employee will attempt to defeat the safety measure on any tool or item of equipment.
- All tools will be cleaned and placed in proper storage after use.
- Loose tools will not be left unattended where they may pose a hazard.

### Power Tools

- Air operated tools will be used if there is a danger of fire or explosion in the work area. Electrical tools will not be used in any area where the presence of a combustible atmosphere is suspected or known.
- When servicing or repairing a power operated tool, it must be disconnected from its air or power source.
- The user of a tool will inspect for defects to the unit including the cord or hose, and all other fastenings. A defect that is discovered will be repaired at that time, if possible or the unit will be placed "Out of Service".

### Hand Tools

1. Never carry a screwdriver by the point, this is a common manner in which puncture and other impaling injuries can and have occurred.
2. Use the screwdriver as a screwdriver. It is not a chisel, punch or pry bar.
3. Wrenches should be used for their intended purpose and tension of the task, never use a cheater to apply or remove a fitting.
4. Never use a cheater on a rod wrench, use a rod wheel or rod prongs.
5. Wrenches are not to be used for leverage or prying.
6. Do not jump on a wrench when additional force is needed.
7. If you do not have the right tool for the job, ask your supervisor.

### Powder Actuated Tools

1. Only properly trained and qualified operators shall use powder-actuated tools.
2. Use proper eye protection. Safety glasses with side protection and a face shield are required.
3. Prior to use, check area for explosive vapors, a Hot Work Permit may be required.
4. Only use approved equipment.
5. Avoid breathing the ignition fumes.
6. The operator's supervisor shall account for all cartridges.

### Stop Work Authority Process

Stop work Authority is a several step process – stop, notify, investigate, correct, resume and follow-up.

A key element of a Stop Work Authority Program is a detailed set of written procedures. They will help ensure that every SWA event works consistently and as intended.

1. Stop

When an employee or contractor perceives condition(s) or behavior(s) that pose imminent danger to person(s), equipment or environment he or she must immediately initiate a stop work intervention with the person(s) potentially at risk.

If the supervisor is readily available and the affected person(s), equipment or environment is not in imminent danger, coordinate the stop work action through the supervisor. The stop work action should be clearly identified as a stop work action and initiated in a non-combative manner.

2. Notify

Notify affected personnel and supervision of the stop work action. If necessary, stop work activities that are associated with the work area in question. Make the area(s) as safe as possible by removing personnel and stabilizing the situation.

3. Investigate

Affected personnel will discuss the situation and come to an agreement on the stop work action.

If all parties come to an agreement the condition or behavior is safe to proceed without modifications, (e.g. the initiator was unaware of certain information or circumstances), the affected persons should show appreciation to the SWA initiator for their concern and then resume work. The SWA is complete at this point and no further steps are needed.

If it is determined and agreed the SWA is valid, A Stop Work Issuance Form will be completed. The condition(s) or behavior(s) that pose threats of imminent danger to person(s), equipment or the environment must be resolved before restarting work. Work will be suspended until a proper resolution is achieved.

4. Correct

Modifications to the affected area(s) will be made according to the corrections outlined in the Stop Work Issuance Form. The affected area(s) will then be inspected by qualified experts to verify completeness of the modifications and to verify all safety issues have been properly resolved. The completion of modifications will then be noted on the Stop Work Issuance Form.

5. Resume

The affected area(s) will be reopened for work by personnel with restart authority. All affected employees and contractors will be notified of what corrective actions were implemented and that work will recommence.

**In the event an employee still believes it is unsafe, they will be assigned to another job with absolutely no retribution.**

6. Follow-Up

Operations Managers will provide the root cause analysis to the stop work action and identify any potential opportunities for improvement. The Safety Manager will publish the incident details regarding the SWA to all Operations Managers and employees outlining the issue, corrective action and lessons learned. Management will promptly review all stop work reports in order to identify any additional investigation or required follow-up.

**Any and all employees have the right to act on the Stop Work Authority at any time they feel unsafe work conditions exist.**