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# Driver Safety For Service Mechanics

## I. START-UP/BACK-UP

**Objective:** To prevent start-up/back-up accidents by anticipating the hazards involved and knowing how to safely control them.

- A. Walk around vehicle and look underneath to ensure you have safe clearance for start-up.
- B. Check vehicle ladder & materials racks for security.
- C. Use warning flag to mark end of ladder/materials hanging over the top of the truck.
- D. Check blind area on right and in front as well.
- E. After your walk-around check, don't delay in moving vehicle. Do not allow time for another hazard to approach.
- F. Check mirrors for proper adjustment frequently.
- G. Start up slowly at first to allow other vehicles and pedestrians, who may have unexpectedly approached, to safely move away.
- H. Tap horn in congested areas or recruit a signalman.
- I. Ensure that all passengers have buckled their seatbelts properly.

## II. DEFENSIVE DRIVING

**Objective:** To prevent accidents by trying to anticipate hazardous situations and adjusting driver behavior to compensate.

- A. Learn to recognize driving situations that can be hazardous.
- B. Assume other drivers will make errors.
- C. Adjust speed, position, direction and attention to be able to maneuver safely if a hazard develops.
- D. Scan far enough ahead to be able to react safely to approaching situations.
- E. Scan frequently to the side and rear for passing or approaching vehicles.
- F. Scan thoroughly before changing speed or direction.

## III. RIGHT-OF-WAY

**Objective:** To prevent accidents by drivers giving "right-of-way" until it is apparent that right-of-way is being given by the other driver.

- A. Do not force other drivers to brake or steer because of your obstructive maneuver into their path.
- B. Assume other drivers will not see you and avoid you when you maneuver into their path.

- C. Move into your intended path or direction only after you are assured you will not conflict with other traffic

## IV. PASSING

**Objective:** To prevent accidents during passing by anticipating the hazards involved and knowing how to safely avoid them.

- A. Before you pass, check to be certain no one is passing you.
- B. Assume the driver in front of you doesn't know you are passing. That driver may pull to the left to pass a vehicle in front or make a left turn.
- C. While you are passing, watch carefully for vehicles that may be entering the roadway from side roads or driveways.
- D. Assume vehicles approaching from the opposite direction will not see you or slow down for you to complete your passing maneuver.
- E. Watch out for vehicles passing other vehicles from the opposite direction.
- F. If the vehicle you are trying to pass speeds up, let it go. Don't get into a dangerous race.
- G. Don't take risks. If in doubt, don't pass.
- H. Signal your intentions to pass.

## V. USING AND CHANGING LANES

**Objective:** To prevent accidents during lane use and lane changing by recognizing the potential hazards and knowing how to safely control them.

- A. The most important rule in lane usage is to maintain a safe following distance. Use any method you feel comfortable with. Just try to ensure that if the driver in front of you slams on his brakes, you can avoid a collision, stay in your lane and not be hit by the vehicle following you all at the same time.
- B. Try to scan ahead of what is immediately in front of you.
- C. If you see trouble ahead, flash your brake lights to alert drivers following you.
- D. If you cannot see ahead of the vehicle you are following, increase your following distance.
- E. It might swerve into the next lane to avoid a slow or stopped vehicle and leave you exposed to a rear-end collision.
- F. Blind spots to the right of large vehicles are well known. However, automobile drivers may not know you cannot see them as they pass you on the right. Scan to the right thoroughly before steering into the next lane. Give right-of-way, don't take it.
- G. Clean mirrors and check adjustment frequently.

## VI. PARKING

**Objective:** To prevent accidents when parked, by anticipating the hazards involved and knowing how to safely avoid them.

- A. Always try to park your vehicle off the road altogether. Even leaving a small portion of your vehicle on the travel lane creates a serious hazard.
- B. If you pull off onto the shoulder, turn on your flashers day or night. At night, drowsy drivers who see only taillights on your vehicle may follow you onto the shoulder thinking you are still moving.
- C. If a sudden breakdown or other emergency forces you to park on a travel lane, turn on your flashers immediately. Then set up reflective triangles at the proper distances immediately. If you have a CB, call for help. At night, this is an especially hazardous situation for both you and other drivers, be extremely careful.

## VII. DRIVING IN ADVERSE CONDITIONS

**Objective:** To prevent accidents by developing the driver skills and judgment necessary to operate vehicle safely during adverse traction and visibility conditions.

- A. Reduced traction conditions:
  - 1. Increase following distance enough to avoid a rear-end collision if other driver brakes hard.
  - 2. Use moderation in judging safe speed. To maintain a safe stopping distance, slow down, but not so much that you become a hazard to drivers behind.
  - 3. Apply brakes gently and steer without jerky movements.
  - 4. Beware of traveling too slowly on slick, banked curves. The vehicle might slide sideways into opposing traffic or off the road.
- B. Reduced visibility conditions:
  - 1. Use moderation in judging safe speed. To maintain a safe stopping distance during reduced visibility, slow down, but not so much that you become a hazard to drivers behind. Keep vehicle clean, especially headlights, windshield, taillights. Use emergency flashers in extreme conditions.
  - 2. Be prepared to get off road and wait for conditions to improve if necessary.



## Non-Permit Confined Spaces

1. A permit space can be deemed a non-permit space if the following criteria are met:
  - a. You can demonstrate that the only hazard posed by the permit space is an actual or potential hazardous atmosphere.
  - b. You can demonstrate that continuous forced air ventilation alone is sufficient to maintain that permit space safe for entry.
  - c. You develop monitoring and inspection data that support the requirements under the general requirements.
2. Entrance area shall be inspected and all unsafe conditions eliminated.
3. If applicable, the opening of the space shall be guarded in a way to prevent an accidental fall and to protect the person working in the space for objects that may fall into the space.
4. The internal atmosphere shall be tested with a calibrated direct-reading instrument for the following:
  - a. Oxygen content between 19.5% and 23.5%.
  - b. Flammable gases and vapors: not more than 10% of the Lower Flammable Limit (LFL).
  - c. Potential toxic air contaminants: below permissible exposure limit (PEL) published for the specific contaminant.
5. Continuous forced air ventilation shall be from a clean source and continue until all personnel have left the space.
6. The atmosphere within the space shall be periodically tested to ensure that the continuous forced air ventilation is preventing accumulation of a hazardous atmosphere.
7. A written certificate shall be prepared, signed, and contain the following information at a minimum:
  - a. Date of entry.
  - b. Location of space.
  - c. Instrument readings of the confined space atmosphere.



## Permit-Required Confined Spaces

The final rule for permit-required confined spaces is intended to eliminate deaths and injuries to workers entering and working in confined spaces and to rescue workers. A permit-required confined space is a space such as a tank, process vessel or bin which has limited opening for entry and exit and has potential for containing a serious hazard.

1. Any space is a permit-required confined space if it:
  - a. is not designed for continuous human occupancy.
  - b. is large enough and configured so that bodily entry can be performed.
  - c. has a limited or restricted entry or access.
  - d. contains some type of serious hazard.
2. Entry permit for permit-required confined spaces shall include:
  - a. Date of entry.
  - b. Location of entry.
  - c. Type of work to be performed in the confined space.
  - d. Hazards to be controlled or eliminated prior to entry.
  - e. Safety equipment required.
  - f. Safety precautions required to do the job.
  - g. Type of atmospheric tests and the results of those tests.
  - h. Type of rescue equipment that will be needed.
  - i. Duration for the permit.
  - j. Space for approval authority.
3. Some specific examples of confined spaces are:
  - a. Storage vessels
  - b. Furnaces
  - c. Tanks
  - d. Aircraft fuel cells
  - e. Railroad tank cars
  - f. Vats containing a hazard
  - g. Manholes
  - h. Crawlspace
4. Atmospheres must be tested in confined space before entry. Recommended sequence and acceptable limits are:
  - a. Oxygen: 19.5% to 23.5%
  - b. Flammability: less than 10% of LFL
  - c. Toxicity: less than recognized exposure limits (OSHA, ACGIH, MSDS, etc.)
5. If the confined space is vacated for any significant time period, retesting of atmosphere shall be conducted.

6. An employer may allow entry into a permit space without a written program, written permit, attendant, or rescue team, provided:
  - a. The only hazards in the permit space are atmospheric.
  - b. The hazards can be controlled by use of continuous forced air ventilation.
  - c. The atmosphere is tested periodically during the entry.
7. If a permit space has no potential for an atmospheric hazard, it may be reclassified as a non-permit space as long as all hazards remain eliminated.



## Centrifugal Overhaul Safety Outline

- I. To Safely Disassemble and Reassemble a Centrifugal Compressor
  - A. Refrigerant Recovery
    1. Use EPA approved recovery equipment
    2. Wear proper personal protective equipment, (PPE)
      - a. Butyl gloves
      - b. Butyl boots
      - c. Goggles
    3. Ensure proper ventilation is available and working.
    4. Have hazardous spill containment equipment available.
    5. GFCI on power source for all power equipment being utilized.
    6. Current first aid kit available.
  - B. Erection of Gantry
    1. Do not exceed weight during lifting that can be lifted by using legs; never use back to lift.
    2. Ensure that all bolts and fasteners are securely tightened.
    3. Ensure trolleys and chain falls are of sufficient weight ratings for objects to be picked up/lifted.
    4. Inspect all rigging for:
      - a. Frayed chokers
      - b. Bent eyebolts, guide bolts, and or shackles (Discard any rigging gear that appears damaged.)
    5. Keep work area around gantry clear so gantry may be moved safely without toppling over.
    6. When disassembling compressor, ensure you always have a square pick.
      - a. One Person only to direct picks and movement at all times.
      - b. Move slowly with trolleys and never allow any part of body under load.
      - c. Improper pick angles can lead to gantry toppling, personal injury and damage.
      - d. All heavy compressor components to be set off floor, laid flat, if possible, and always blocked and secured.
      - e. Cleanliness of work area to be maintained at all times.
      - f. All cleaning of compressor parts to be done with user-friendly cleaning solutions and proper PPE; refer to cleaner MSPS for PPE.
      - g. During reassembly of compressor, all previous safety rigging procedures to be followed.
      - h. Tear down of gantry and clean up procedures to be done in the manner of previous setup safety guidelines.



## Excavation and Trenching

### I. Scope and Purpose

These documents are to be used whenever a trench or excavation is dug and employees are needed to enter the excavation, without changes, modification or exceptions. The documents provide a guideline for digging and working in a trench or excavation.

### II. Precautions

- A. Each employee is responsible to know, understand and practice sound safety rules so they will not endanger themselves or fellow workers by committing an unsafe act. He or she also must caution others when observing an unsafe practice or condition.
- B. This procedure must remain on the job site and be available for review and inspection at any time.
- C. The Safety Officer and Job Foreman are responsible for ensuring this procedure is followed. Ultimately employees need to be responsible for themselves.

### III. Process

#### A. Underground Utilities.

1. Prior to any digging, Miss Utility must be notified to mark any utilities that are in the area to be excavated.

#### B. Soil Classification

1. Prior to any digging, soil classification must be established. Although there are three soil types—A, B and C—consider everything to be Type C. (Pre-disturbed soil automatically becomes Type C.) See note on flow chart.

#### C. Protective Support System

1. **Sloping:** Consider all soil Type C and slope angle of repose at 30°. (For every foot dug vertically, you need to dig 1½ feet horizontally.)
2. **Shielding:** With trench boxes, top of box must be 18" above the edge of the ditch. Note, everything above the trench box still needs to be at a 30° angle of repose.
3. **Shoring:** Aluminum hydraulic. The distance between the bottom cylinder on the jack and the bottom of the ditch cannot exceed 4'. The top cylinder on the jack and the top of the ditch cannot exceed 2'.

**See attached flowchart.**

## EXCAVATION FLOWCHART

1. Contact Miss Utility - **Do not do any digging until all utilities have been located and clearly marked.**
2. Soil Classification
  - Type A - cohesive, 1.5 tsf compression strength (doesn't exist in Eastern U.S.)
  - Type B - cohesive, .5-tsf compression strength (chances of working in are slim)
  - Type C - cohesive, <.5-tsf compression strength ( **Consider everything you work in this type.**)
3. Protective Support Systems
  - Sloping** - If you can't classify soil then consider it Type C and slope at a 30° angle. For every 1-foot dug vertical (down), you need to dig 1 1/2 feet horizontally (wide).
  - Shielding** - Trench boxes, Top of the trench box must be 18 inches above the ditch. (Example: a box 8' tall can be used in a trench 6 ½' deep) Remember everything above the trench box still needs to be at a 30° angle.
  - Shoring** - Aluminum Hydraulic, The bottom cylinder on the shore can be a maximum of 4' from the bottom of the ditch, and the top cylinder can be a maximum of 2' from the top of the ditch.

### **KEY THINGS TO REMEMBER**

1. What ever type of system you choose you must maintain at least 2' between the edge of the ditch and the spoil pile, equipment, or anything else that could pose a risk of falling into the ditch.
2. You must maintain a means of egress. **Ladders !!!!** every 25' of ditch (No one should have to travel more than 25' laterally.) They must be placed inside the shored area, not outside, and they must extend 2 to 3 feet above the top of the ditch.
3. Ladders, ramps and stairways are required on ditches starting at 4' deep.
4. If you're unclear about something, STOP and get the right answers before you continue.
5. Re-inspect trench after moving any equipment and after any change in weather.
6. **1 cubic foot of dirt can weigh 100-145 pounds. With the suction effect, pulling out one buried worker's foot can take up to 750 pounds of force!!**



## Lockout/Tagout Procedure

### I. Purpose and Scope

- A. This document provides guidance for the use of lockout/tagout controls when performing work involving hazardous energy sources (electricity, hydraulic, gas, steam, water, etc.) to the equipment being serviced.
- B. This document covers all workers involved in the servicing or maintenance of machines or equipment when the unexpected energizing or start-up of the machine/equipment—or the release of stored energy—could cause injury to personnel. Exceptions to the procedures in this document are:
  - 1. Work on cord-connected and plug-connected equipment which is disconnected from the power source during servicing or maintenance activities.
  - 2. Exposure to electrical hazards during minor servicing activities (such as amp checks) which are only possible on energized equipment provided that personnel are properly trained and effectively protected by other means.

### II. Safety

- A. Each employee is responsible to know, understand and practice SAFETY rules as they apply to their own jobs so they will not endanger themselves or fellow workers by committing an unsafe act. They also must caution others when they observe an unsafe practice or condition.
- B. It is the employee's responsibility to promptly report to their supervisor any condition, tool, equipment, or property, which has caused or may cause personal injury on the job site.
- C. It is the responsibility of every supervisor to see that all work done by them or under their direction complies with all applicable SAFETY rules, policies and company procedures.
- D. Any direct or willful violation of established SAFETY rules, policies, and company procedures will result in disciplinary actions, which may include dismissal.
- E. Any deviation from these SAFETY rules requires approval from supervision and/or the Safety Officer.
- F. Supervisors will not allow deviation from SAFETY rules without consulting with the Safety Officer.

### III. General Guidance

- A. When a lock or tag is attached to an energy isolation device, it is to be removed only by the person who attached it.
- B. A lock or tag is NEVER to be ignored, bypassed, or otherwise defeated.
- C. Tags must be legible and understandable by all personnel whose work is, or may be, in the area.

- D. Tags may invoke a false sense of security, and their meaning needs to be understood as an integral part of the safety training program.
- E. It should be understood that tags are essentially warnings affixed to energy isolation devices, and do not provide the physical restraint on those devices that is provided by a lock.
- F. This procedure specifies minimum requirements only and in no way supersedes or conflicts with the customer's established lockout/tagout program.
- G. Valves/switches may not be repositioned until all tags have been removed and the customer's representative has concurred.
- H. Each person working under an isolation condition, whether mechanical or electrical, should hang a tag for his specific task.
- I. Multiple lock adapters should be used when more than one person will be working on a system at a time.

#### IV. Specific Issues

##### A. Locks

1. All locks used will be standard padlocks. Combination locks are not permitted.
2. The set of locks used must be keyed differently and designated for lockout purposes only.
3. Lockout locks must be able to withstand the environment in which they are being placed.
4. Lockout locks must be of substantial construction so that they cannot be easily removed without the key or bolt cutters.

##### B. Tags

1. All tags used in the lockout/tagout program must meet the following requirements:
2. The tag and the means of attachment must be capable of withstanding the environment in which they are being placed.
3. The tag's means of attachment must be self-locking and non-reusable.
4. The standard tags used in a lockout/tagout program will be in the "Danger" format, as shown in Attachment 1.
5. Tags must include date, time, personnel and a legend, such as "Do Not Open", "Do Not Operate", "Do Not Close", "Do Not Start", or "Do Not Energize".

##### C. Process

1. Identify the need for Lockout/Tagout.
2. Coordinate with the customer or organization to determine if there is a program already in place.
  - a. If the customer has a Lockout/Tagout program, use the existing program.
  - b. If there is no program in place, then proceed with the following steps.
3. Identify the isolation requirements associated with the job, both mechanical and electrical protection.

4. Complete a copy of Attachment 2, Lockout/Tagout Log with the following information.
  - Equipment locked and tagged out.
  - Who locked/tagged the equipment.
  - Date and time equipment locked/tagged.
5. With the customer's approval and help as required, position the equipment, and lock equipment in position.
6. Upon completion of job, with the customer's approval, and concurrence from all personnel working under the isolated condition, clear the tag and remove the lock.
7. Contact the customer representative to reposition the equipment to normal.
8. Complete Attachment 2, Lockout/Tagout Log with the following information.
  - Who unlocked/un-tagged the equipment?
  - Date and time equipment unlocked/un-tagged.

# Attachment 1

**DANGER**

DO NOT REMOVE THIS TAG

Remarks \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

SEE OTHER SIDE

**DANGER**

**DO NOT  
OPERATE  
THIS  
SWITCH/  
VALVE**

Signed by: \_\_\_\_\_

Date/Time: \_\_\_\_\_

## Attachment 2

| Locked/Tagged Out Equipment | Locked By | Date/Time Locked | Unlocked By | Date/Time Unlocked |
|-----------------------------|-----------|------------------|-------------|--------------------|
|                             |           |                  |             |                    |
|                             |           |                  |             |                    |
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## Cooling Tower Access for Service and Repair

### I. Scope and Purpose

Cooling tower work requires close interaction with building managers and engineers. Many jobs will interfere with some portion of nearly every building system. It may be necessary, therefore, to exchange and document written safety plans with site management. This exchange of information is required under OSHA and should identify the safety measures needed to complete your task. This document provides a guideline to identify possible hazards and avoid them.

### II. General Guidelines

#### A. Control of Hazardous Energy

*Identify sources of energy*

1. Use Lock-out devices, Dedicated locks, Tags

#### B. Confined Space

*Does work area meet the definition of confined space?*

1. Is a confined space permit required?
2. Is the ERT trained and able to respond?

#### C. Hazardous Chemical (HazCom)

*Are you bringing HazCom material onto the job?*

*Are other contractors using HazCom material?*

1. Are the MSDS sheets on site and are you aware of the hazards?

#### D. Fall Protection and Personal Protective Equipment

*Is there a standard rail to protect you from a fall over 4 feet? If no rail, consider PPE.*

1. Point of attachment must withstand 5000 lbs.
2. Full body harness.
3. Declination device.
4. Total fall is less than 6 feet.
5. Is there a method to retrieve you when you fall?

*Are there chemicals or abrasives?*

1. Use safety glasses and face shield.
2. Use proper gloves.

#### E. Working surfaces

*Are ladders in good working order?*

*Is the floor designed to hold your weight?*

*Are all holes or openings covered?*



## Proper Handling Of Material

Improper handling of materials is one of the leading causes of nonfatal injuries in the service industry. In fact, one study concludes that 80% of workplace injuries were related in some way to improper material handling. The following guidelines will assist you in handling materials properly.

1. Before moving any material, check your surroundings and make sure there is nothing which may cause you to trip, slip, or fall while moving material.
2. Scrap and waste should be removed. Do not throw the scrap and waste from an elevated position. Place them in a cart, bucket, bin or use a chute that goes to the dumpster so you can avoid any hazards to yourself or others.
3. Secure any equipment which may shift or roll before moving it.
4. When a load of material is too heavy to handle, get some help. Call a co-worker; use a cart, dolly, or hand truck; or call for a forklift or crane.
5. If materials must be moved by hand, always use proper lifting techniques. Keep the object being lifted as close to your body as possible. Squat down with your back straight, butt down, head up, lift with your legs and avoid twisting your back while lifting.
6. Be aware of sharp edges on material. Protect your hands by wearing leather gloves.
7. Wear steel-toed boots or shoes if heavy material could roll or be dropped onto your feet.
8. When using a crane or fork lift, you must stay alert and stand clear so that you and others are not under the load or boom and are clear of any pinch points.
9. If you are moving any equipment overhead, you must rope off a lift area and wear a hard hat.
10. The crane operator is responsible for making sure the load is not too heavy. You are in charge of rigging and preparing the load for lift. Make sure the proper slings and carriers are used to secure the load.
11. When loading or unloading a truck, keep in mind that the load may shift slightly. When removing straps to unload materials or equipment, be sure you are in a safe position away from pinch points in case the load shift when straps or chains are removed.



## Ladder Safety Checklist

- I. Procedure for Identifying Hazards While Ascending and Descending a Ladder
  - A. Site Inspection
    1. Check ground condition to ensure it is solid and level.
    2. Clear debris at base of ladder.
    3. Secure footing.
    4. Determine whether conditions require more than one person on site.
    5. Proper clearance from electrical hazards.
    6. Proper toe clearance.
  - B. Ladder Inspection: Condition, Placement and Use
    1. Extension Ladders
      - a. Inspection of ladder including rungs, tread, rail and proper size needed for proper load rating.
      - b. Clean of oil, grease, ice, water, etc.
      - c. Angle of ladder: 4 to1 ratio.
      - d. Face ladder in proper direction. Slide section faces outward with latches facing the building.
      - e. Ladder is secured in place at top, bottom or both.
      - f. Only one person on ladder at all times.
    2. Step Ladders
      - a. Inspection of ladder including rungs, tread and rails per proper load rating.
      - b. Clean of oil, grease, ice, water, etc..
      - c. Check for stability.
      - d. Set ladder by placing foot on bottom step to level.
      - e. Only one person on ladder at all times.
  - C. Personal Inspection
    1. Proper shoes
    2. Safety glasses
    3. Hard hats
    4. Shoes clean of oil, grease, ice, water, etc.
- II. Ascending the Ladder
  - A. Identify safety hazards.
  - B. Attach rope for bringing up tools.
  - C. Place both hands on rails.
  - D. Face toward wall.
  - E. Ascend ladder keeping a three point contact.
  - F. Tie off ladder.

G. Pull up tools, limiting weight to amount safely carried and brought over roof.

III. Descending the Ladder

A. Identify safety hazards.

B. Secure tools for lowering.

C. Untie ladder.

D. Place both hands on rails.

E. Face toward wall.

F. Descend ladder keeping a three point contact.

G. Detach rope and tools.



## Back/Lifting Safety

Preventing back injuries is a major workplace safety challenge. According to the Bureau of Labor Statistics, more than one million workers suffer back injuries each year, and back injuries account for one of every five workplace injuries or illnesses. The following information should help you prevent back injuries

### I. Stretch - Before Work and After Long Breaks

#### A. Upper Back

1. Stand with hands in front of thighs and palms facing body.
2. Lift hands toward chin while exhaling.
3. Do two sets of 12 with one minute rest between sets.

#### B. Middle Back

1. Stand erect and raise shoulders toward ears.
2. Hold position for a moment and slowly lower shoulders.
3. Do two sets of 12 with one minute rest between sets.

#### C. Lower Back

1. Get on hands and knees and allow back to sag.
2. Arch back upwards like a cat and bend head forward.
3. Hold position for a moment and slowly return to starting point.
4. Do two sets of 20 with one minute rest between sets.

### II. Plan Before You Lift

#### A. Assess the load-weight, size, shape and bulk.

1. Determine if load exceeds your limitations.
2. Whenever possible ask co-workers for help, use a cart, hand truck, dolly or forklift.

#### B. Plan Route

1. Determine where item will be placed.
2. Check space for adequate room for arms.
3. Be aware of obstructions on both sides and above the new space.
4. Check path—remove tripping hazards and protect any openings.
5. Ensure that lighting is sufficient to see where you're going.
6. Stabilize uneven or loose ground.
7. *Remember: The shortest path isn't always the fastest and safest.*

### III. Lifting Technique

#### A. Beginning to Lift

1. Face object squarely with feet shoulder-width apart.
2. Be sure you have solid footing.

3. Make sure you have a firm grip that won't slip or become painful.
  4. Keep object as close as possible to your center of balance.
  5. Lift head and shoulders.
  6. Keep the natural curve in the back by keeping your bottom down and head up.
  7. Use strength of legs to slowly and smoothly push up.
  8. Move feet first to change direction.
  9. Don't twist your body.
- B. Lowering the load (reverse the procedure)
1. Bend knees and squat down.
  2. Keep head and shoulders up.
  3. Keep the natural curve in the back by keeping your bottom down and head up.
  4. Use strength of legs to lower slowly and smoothly.
  5. Stand up.
- C. When using mechanical help
1. Push, don't pull.
  2. Fasten load to equipment.
- D. *Remember: When in doubt, ask for help!*



## Response to Refrigerant Release

### I. Scope and Purpose

Refrigerant systems are a variety of hazardous gases and liquids, under various pressures. The changes in the state of these refrigerants are used to relocate heat to a less objectionable area. Sulfur dioxide, ammonia, and other chemical mixtures are combined to create various refrigerants. Because of the hazards these chemicals can create, ASHRAE has issued recommendations that affect mechanical rooms. These recommendations have become part of the BOCA standard, enforced in most of the local jurisdictions. This document provides a guideline for response to large refrigerant leaks.

### II. Recommended Requirements for the Protection of Workers and Tenants in Buildings

- a. Seal mechanical rooms from the rest of the building.
- b. Provide sensors that activate visual and audible alarms.
- c. Interlock alarms to shut down any equipment that produces an open flame.
- d. Initiate forced ventilation to remove the gases from the space.

### III. Safety

- A. During the refrigerant alarm—or if you know that a large release has occurred—you must treat the space as *Immediately Dangerous to Life and Health (IDLH)*
- B. **DO NOT ENTER THE SPACE UNTIL IT IS CLEAR OF THESE GASES.** Unless you are equipped and have up-to-date certification in SCBA (self-contained breathing apparatus)
- C. Notification of a responsible party is advised. Most states have HAZMAT teams trained to deal with these conditions. Notify your local fire department.

### IV. General Guidelines

- A. If you are not equipped with up-to-date inspected and certified SCBA, you must remain outside of affected area until a responsible party can determine that the area is safe to work in.
- B. If you do have SCBA, your task should be to shut down and isolate the leak, shut down any source of open flame, and verify that forced ventilation is running. Remember, in most cases you only have 15 to 18 minutes of air.
- C. Allow ventilation to run and test the atmosphere with the proper testing equipment for 15 minutes after the alarm has reset before entering the affected space without SCBA.



## Gas and Oil-Fired Boiler Maintenance Safety Rules

1. Turn off main power.
  - A. See lockout/tagout procedures.
2. Shut off fuel supply and bleed off any pressure in lines.
  - A. Gas-fired boiler
    1. Shut off main gas valve.
    2. Shut off pilot gas valve.
  - B. Oil-fired boiler
    1. Valve off supply and return oil line.
    2. Have means to maintain any spilled oil.
3. Shut off water supply.
  - A. Makeup water valve.
  - B. Supply and return lines at boiler.
  - C. Test and make sure boiler room floor drains are open.
  - D. Drain boiler.
4. Check boiler rooms ventilating equipment for proper operation.
  - A. Air dampers.
  - B. Fans.
5. Personal protection.
  - A. Tyvec jumpsuit.
  - B. Safety glasses.
  - C. Dust mask.
  - D. Gloves.
  - E. Confined space entry safety rules and ventilation.
  - F. Fall protection.
6. Cleaning chemicals.
  - A. Follow manufacturer's recommendations for use.
  - B. Check compatibility with surfaces to be cleaned.
  - C. Use proper personal protective equipment.
7. Work area.
  - A. Keep work area clean.
  - B. Know emergency exits.
  - C. Keep all boiler room doors unlocked while working.
  - D. Make sure escape routes are clear and accessible.
  - E. Let someone know you are working in boiler room.
  - F. Know emergency phone numbers.
8. Perform maintenance per manufacturers recommendations.
  - A. Check proper operation of all boiler safety controls.



## Mold Prevention and Handling Procedures

### **I. If Water is Spilled**

A. If water is spilled, document:

1. The cause of the spill.
2. When it occurred.
3. What got wet.
4. What was done.
5. Who was notified.

B. If the spill is our responsibility:

1. Shut down source of water.
2. Use plastic sheeting to mitigate additional damage when possible.
3. Assess and document what got wet.
4. Clean up excess water.
5. Report incident to supervisor (then insurance company).
6. If water cannot be dried completely in 24-48 hours, contact a specialty contractor to assist in the cleanup and drying process.
7. Document all activities that were undertaken.

### **II. If Existing Mold is Encountered While Performing an Emergency Repair**

- A. Try to minimize the disturbance of the existing mold.
- B. Notify the building owner or customer of the mold condition as soon as practical after discovery.
- C. Go over steps we will take to perform repairs with customer/owner.
- D. Recommend mold remediation for the area.
- E. Try to contain mold spores in the area where it is discovered by sealing duct work and openings while working.
- F. Wear face mask (N-95 respirator) to avoid inhalation.

- G. Wear gloves - avoid touching moldy items with bare hands.
- H. Wear goggles to avoid contact with the eyes.
- I. Cut out a section of wall to gain access to leaks, saving the cut out drywall.
- J. Make an emergency repair.
- K. Put removed section of drywall back in place.
- L. Cover opening with plastic sheeting and duct tape in place.
- M. Notify owner or customer of what was done and how the area was left by writing it on the service ticket, going over it with them, and having them sign the ticket.

### **III. If Existing Mold is Encountered and No Emergency Exists**

- A. STOP.
- B. Wear protective gear as described above.
- C. Assess whether the mold will be disturbed during work.
- D. If it will be disturbed, have remediation done by owner/customer prior to work.
- E. If it will not be disturbed, wear protective wear and proceed with work.



## Rooftop Unit Fall Protection

- A. Each time a service mechanic prepares to work on a roof, he must identify the potential fall hazards and take whatever measures are necessary to protect himself from those hazards.
- B. Any equipment that is elevated 4 feet or more above the rooftop should be equipped with a catwalk and guardrail system.
- C. A guardrail system should be installed on the edge of the roof when equipment has been installed within 10 feet of the roof's edge.
- D. Temporary roof openings should either be properly covered or equipped with temporary guardrail systems.
- E. When service mechanics service equipment that is not properly equipped with fall prevention systems, they should protect themselves with either a fall arrest or restraint system, or fall protection nets.

### **Guardrail Systems:**

- Vertical Height of Top-rail - 42 Inches
- Mid-rail – Approximately halfway between top rail and roof surface
- Structural Integrity – Guardrails must be able to withstand 200 pounds of force applied in any direction at any point on the top rail.

### **Covers:**

- Must withstand at least twice the load that could be placed upon them
- Must be adequately secured in place
- Must be conspicuously labeled with the words "Hole" or "Cover"

### **Fall Arrest and Restraint Systems:**

- Full body harness
- Locking Snap Hooks
- Fall Arrest or Fall Restraint Lanyard
- Anchorage Point – Must be able to support at least 5,000 pounds.

### **Nets:**

- Must be installed as close to the working surface as possible
- Must never be installed more than 30 feet below the working surface
- When a net is a 5 foot (or less) fall from the working surface, it must extend out from working surface edge at least 8 feet
- When the net is more than a 5 foot, but less than a 10 foot fall from the working surface, it must extend out from working surface edge at least 10 feet
- When the net is more than a 10 foot fall from the working surface, it must extend out from the working surface edge at least 13 feet.



## Welding and Cutting

- A. Always clear area below cutting or welding operations to keep hot slag from dropping on hoses, cables, or people.
- B. Use properly shaded welding helmets or burning goggles for eye protection and prevention of flash burns. Always wear eye protection to guard against slag while chipping, grinding and dressing welds.
- C. Use only manual electrode holders specifically designed for arc welding.
- D. Make sure that all parts subject to electrical current are fully insulated against the maximum voltage to ground.
- E. Make sure that the ground return cable has a safe current carrying capacity equal to, or exceeding, the specified maximum output capacity of the arc-welding unit that it services.
- F. Place cables, leads and connections so that they are not a fire or tripping hazard.
- G. Shield all arc welding and cutting operations with non-combustible or flameproof screens to protect bystanders from direct arc rays.
- H. Keep a suitable fire extinguisher readily available when welding or cutting.
- I. Be sure that proper ventilation is provided whenever welding, cutting or heating operations are being performed.
- J. Make sure your torch set is equipped with a flash arrestor/reverse flow check valve unit.



## Service Truck, Equipment, Tools & Hazardous Materials Safety Checklist

- I. Service Truck
  - A. Maintenance checklist (see other side).
  - B. Are materials on roof rack tied down properly?
  - C. Are materials and equipment in the truck properly secured?
  
- II. Personal Protective Equipment
  - D. Eye protection?
  - E. Respirators and masks?
  - F. Helmets, hoods, head protection?
  - G. Gloves, aprons, sleeves?
  - H. Hearing protection?
  - I. Safety harnesses and lifelines?
  - J. Back support belts?
  - K. Proper work boots?
  - L. Shirts are to be worn.
  - M. No short pants.
  
- III. Hand Tools
  - A. Proper tool being used for each job?
  - B. Neat storage, safe carrying?
  - C. Inspection and maintenance?
  - D. Electric tools are grounded?
  
- IV. Hazardous Materials
  - A. Is a binder containing MSDS for supplies containing hazardous chemicals available to employees before using.

# VEHICLE PREVENTIVE MAINTENANCE RECORD

Date \_\_\_\_\_

Vehicle Number \_\_\_\_\_

Driver \_\_\_\_\_

Company records indicate your vehicle was last serviced at \_\_\_\_\_ miles  
on \_\_\_\_\_. Next service date due at \_\_\_\_\_ miles.

## Preventive Maintenance

Check the following each day your vehicle is used:

- \_\_\_\_ Brake Lights
- \_\_\_\_ 4-Way Flashers
- \_\_\_\_ Engine Gauges
- \_\_\_\_ Adjust Mirrors
- \_\_\_\_ Tires (Excessive Wear, Sidewall Cuts, Air Pressure)
- \_\_\_\_ Horn
- \_\_\_\_ Brakes
- \_\_\_\_ Parking Brake
- \_\_\_\_ First Aid Kit
- \_\_\_\_ Accident Report Envelope
- \_\_\_\_ Safety Equipment (Fire Extinguisher, Flares, Triangles)

The following checks should be made once each week:

- \_\_\_\_ Transmission Fluid
- \_\_\_\_ Battery Level
- \_\_\_\_ Radiator Fluid Level

The following checks should be at least once a month:

- \_\_\_\_ Master Cylinder
- \_\_\_\_ Hoses (for Cracks or Leaks)
- \_\_\_\_ Engine Block for Oil Leaks

Please initial the appropriate date on those days the above checks are accomplished.  
Return this sheet to \_\_\_\_\_ at the end of the month.

|        |        |         |         |         |         |         |         |
|--------|--------|---------|---------|---------|---------|---------|---------|
| ____ 1 | ____ 5 | ____ 9  | ____ 13 | ____ 17 | ____ 21 | ____ 25 | ____ 29 |
| ____ 2 | ____ 6 | ____ 10 | ____ 14 | ____ 18 | ____ 22 | ____ 26 | ____ 30 |
| ____ 3 | ____ 7 | ____ 11 | ____ 15 | ____ 19 | ____ 23 | ____ 27 | ____ 31 |
| ____ 4 | ____ 8 | ____ 12 | ____ 16 | ____ 20 | ____ 24 | ____ 28 |         |



# Service Contractors Bureau MCA of Metropolitan Washington



## PTP (Daily Pre-Task Plan)

|                          |        |               |   |
|--------------------------|--------|---------------|---|
| Company Name:            |        | Submitted by: |   |
| Date:                    | Job #: | Supervisor:   |   |
| Project Name:            |        | Manpower:     | Trade      Foreman      Journeyman      Apprentice                      |
| Project Location:        |        | H             | S      P <input type="text"/> <input type="text"/> <input type="text"/> |
| Description of Activity: |        | Weather:      | Temp: am <input type="text"/> Temp: pm <input type="text"/>             |

### Evaluating Your Work Area (check Yes or No)

| Yes                      | No                       |   | Yes                      | No                       |   |
|--------------------------|--------------------------|---|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | Have you walked your area?  | <input type="checkbox"/> | <input type="checkbox"/> | Do you have the PPE needed for this task?             |
| <input type="checkbox"/> | <input type="checkbox"/> | Are you working around live systems?  | <input type="checkbox"/> | <input type="checkbox"/> | Are the required materials and tools provided?        |
| <input type="checkbox"/> | <input type="checkbox"/> | Does this task require special training?  | <input type="checkbox"/> | <input type="checkbox"/> | Does this task involve a confined space?              |
| <input type="checkbox"/> | <input type="checkbox"/> | Is an MSDS review necessary for this task?  | <input type="checkbox"/> | <input type="checkbox"/> | Have all tools/equipment been inspected before use?   |
| <input type="checkbox"/> | <input type="checkbox"/> | Is air monitoring required?   | <input type="checkbox"/> | <input type="checkbox"/> | Should the Safety Dept. be involved in this planning? |
| <input type="checkbox"/> | <input type="checkbox"/> | Are work permits required for this task?  | <input type="checkbox"/> | <input type="checkbox"/> | Is there a safety issue that has not been addressed?  |
| <input type="checkbox"/> | <input type="checkbox"/> | Are you familiar with evacuation routes?  |                          |                          |   |
| <input type="checkbox"/> | <input type="checkbox"/> | Has emergency equipment, such as fire extinguishers, eyewash stations, safety showers, and phones been located? |                          |                          |   |
| <input type="checkbox"/> | <input type="checkbox"/> | If the work area is congested, has the work plan been coordinated with other crafts?                            |                          |                          |   |

### Potential Hazard Checklist (place checkmark if applicable)

|  |  |   |
|--|--|---|
| <input type="checkbox"/> Pinch Points          | <input type="checkbox"/> Adequate Access   | <input type="checkbox"/> Hazardous Checklist    |
| <input type="checkbox"/> Thermal Burns         | <input type="checkbox"/> High Noise Levels | <input type="checkbox"/> Heat Exhaustion/Stress |
| <input type="checkbox"/> Particles in Eyes     | <input type="checkbox"/> Falling Objects   | <input type="checkbox"/> Sharp Objects or Tools |
| <input type="checkbox"/> Elevated Work         | <input type="checkbox"/> Manual Lifting    | <input type="checkbox"/> Radiation              |
| <input type="checkbox"/> Poor Housekeeping     | <input type="checkbox"/> Chemical Spill    | <input type="checkbox"/> Excavations            |
| <input type="checkbox"/> Electrical Shock      | <input type="checkbox"/> Plant Operations  | <input type="checkbox"/> Lockout/Tagout         |
| <input type="checkbox"/> Chemical Burns        | <input type="checkbox"/> Scaffolding       | <input type="checkbox"/> Ladders                |
| <input type="checkbox"/> Fire/Explosion        | <input type="checkbox"/> Mobile Equipment  | <input type="checkbox"/> Rigging                |
| <input type="checkbox"/> Falls from Elevations | <input type="checkbox"/> Confined Spaces   | <input type="checkbox"/> Line Breaking          |
| <input type="checkbox"/> Inhalation Hazard     | <input type="checkbox"/> Critical Lift     | <input type="checkbox"/> Other:                 |

### Personal Protective Equipment

List PPE Required: Hard Hats, Safety Glasses \_\_\_\_\_

### Description of Work

### Problems or Delays

### Comments