

Potential Hazards During Permit-Required Confined Space Entry and Work

1. Atmosphere Hazards.

- A. Insufficient oxygen or excess amount of oxygen, either initially or gradually occurring.
- B. Inert gases (excluding oxygen) such as nitrogen, helium, steam, freon, argon and carbon dioxide.
- C. Flammable and explosive gases, including methane from decomposing materials and/or fish excrement, liquids, vapors, and dusts.
- D. Toxic dusts, mists, fumes, smoke, vapors, fibers, radiation, and gases.

2. Activation of equipment, pipes, or lines that may cause hazards if you do not use lockout/tagout procedures.

- A. Start up of pumps, agitators, tumblers, crushers, mixing blades, or screw conveyors.
- B. Opening or leaks in feed lines which introduce corrosive, toxic, flammable, pressurized, heated, liquid, or gaseous substances such as steam, water, blast furnace gas, or other substances hazardous to your health or that may displace oxygen inside the confined space.
- C. Exposure to ionizing radiation.
- D. Pressurized lines containing hydraulic oils, other fluids, or gases.
- E. Avalanche of materials.
- F. Inadequate shoring of the walls of a confined space (for example, trenches or pits).
- G. Fire or flood hazards you are unable to lock out.
- H. The confined space may move or change location during the course of the work (for example, improperly chocked tank truck, lack of a cab or jack stand).

3. Electrical Shock or Electrocutation.

- A. Electrical shock or electrocution from plug-in lights, tools, or other portable equipment.
- B. Not using spark-resistant tools.

4. Communication Problems.

- A. Lack of continuous communication with the entry attendant by everyone inside the confined space.
- B. Unable to contact rescuers because means of communication is inoperable or missing.

5. Cutting and Welding Hazards.

- A. Ignition source.
- B. Changes in atmosphere, such as a lack of oxygen or a build up of toxic fumes.
- C. Leaks in welding lines that release gases such as acetylene, oxygen and argon into the atmosphere inside the confined space.
- D. Entrants fail to wear the necessary personal protective equipment.

6. Falls.

- A. Avalanche of materials or falling objects, including hazards of trenches/excavations collapsing.
- B. Falls from a height of 5 feet or more.

7. Rescue Problems.

- A. Opening in the confined space too small for rescuers wearing self-contained breathing apparatus to enter.
- B. Obstacles, distance to the confined space exit, or equipment that may block a straight path to the exit (piping, corners or bends in ducts, mixing blades, etc.) which may catch the rescue/retrieval line, blocked exits.

- C. Failure to post an entry attendant, or the attendant leaves the site.
- D. Failure to plan and have on hand the necessary rescue equipment prior to entry.
- E. Inadequate lighting or failure of light source.

8. Personal Protective Equipment (PPE) Problems.

- A. Failure to use, improper use of, inappropriate, damaged/inoperable PPE, or unavailable PPE including respirators, harnesses and lifelines, gloves, boots, body protection, hard hats, hearing protection, and eye protection.
- B. Inadequate or improper lighting.
- C. Contaminants (liquids, gases or solids) that may cause eye, lung or skin irritation.
- D. Slippery surfaces or tripping hazards.
- E. Exposure to ionizing radiation.
- F. Biological hazards (for example, sewage, stagnant water, insect infestation, snakes, rodents, or other animals).
- G. Eye and face injuries caused by not wearing face shields, goggles, and safety glasses.

9. Temperature Extremes—Hot or Cold.

- A. Failure to ensure ventilation is adequate to keep the confined space cool.
- B. Failure on the part of the entry attendant to recognize the symptoms of heat or cold stress.
- C. Entrants wear non-water proof clothing and get wet.
- D. Entrants wear clothing that is restrictive or coated and allows their body temperature to increase.
- E. Heated surfaces and/or walls of the confined space.

10. Noise or Vibration.

A. Noise extremes that could cause potential health effects or interfere with entrant's ability to hear alarms or communicate with the entry attendant.

B. Excessive vibration.