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## Since 2008

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Appendix A

## CONFINED SPACE HAZARD ANALYSIS

Name of Confined Space: _____
Space Location: _____

**In order to determine if the space is a <u>confined space</u>, please answer "Yes" or "No" to the following questions:**

A. IS IT A CONFINED SPACE?

1. Is the space large enough and so configured that a person can bodily enter and perform work?
   - ❑ Yes
   - ❑ No

   Description: _____
2. And, does the space have limited or restricted means for entry or exit (e.g., tanks, pits, vessels, silos, storage bins, hoppers, vaults, and pits)?
   - ❑ Yes
   - ❑ No

   Description: _____
3. And, is it not designed for continuous occupancy?
   - ❑ Yes
   - ❑ No

   Description: _____

**If you answered "No" to <u>any</u> one of the three questions above, then the space is <u>NOT</u> considered to be a confined space.**

**If you answered "Yes" to <u>all</u> three of the above questions, then the space is considered a <u>confined space</u>. Proceed to the section B and answer "Yes" or "No" to the following questions:**

B. IS IT A PERMIT-REQUIRED CONFINED SPACE?

1. Is the internal configuration such that an entrant could be trapped or asphyxiated by converging walls or floors that slope downward and taper to a smaller cross-section?
   - ❑ Yes
   - ❑ No

   Description: _____

2. Or, does it contain any other recognized serious safety or health hazard?
   - ❑ Yes
   - ❑ No

   Description: _____

3. Or, contains a material that has potential for engulfing an entrant?
   - ❑ Yes
   - ❑ No

   Description: _____

4. Or, contains or has the potential to contain a hazardous atmosphere?
   - ❑ Yes
   - ❑ No

   Description: _____

5. Or, is there anything hazardous that will be brought into the confined space?
   - ❑ Yes
   - ❑ No

   Description: _____

**If you answered "No" to <u>all</u> five of the above questions, then the confined space is considered a <u>non-permit required confined space</u>.**

**If you answered "Yes" to <u>any</u> of the above questions, then the confined space is considered a <u>permit-required confined space</u>.**

**For both space classifications, (permit-required <u>or</u> non-permit required confined space), complete the following hazard assessment checklist to determine if other hazards are present in the space:**

<u>C. SAFETY HAZARDS</u>

- ❑ Animals or insects (stinging, biting, snakes, skunks)
- ❑ Low ceilings (ergonomics, sharp objects, visual obstructions)
- ❑ Sharp objects
- ❑ Electrical hazards (live circuits, metal rope around electrical devices)
- ❑ Adverse temperatures (steam lines, coolant lines)
- ❑ Slippery ladder rungs
- ❑ Rusty surfaces (cuts, hides chemicals, poor footing)
- ❑ Chemical coated walls/surfaces
- ❑ Biological residue/slime (exposure, slippery surfaces, sewage)
- ❑ Loud ambient noise - traffic, etc. (annoyance, communications interference)
- ❑ Vibration (discomfort, noise)
- ❑ Poor lighting (can't read meters, can't perform critical tasks)
- ❑ Radiation

- ❑ Other extreme ergonomic conditions including those that may occur because of PPE limitations: respirators, fall protection harnesses, connection to retrieval equipment
- ❑ Liquids on floor/walking surface (standing water)
- ❑ Hazards external to the hole that could affect operations--combustion exhaust, possible precipitation, vehicle traffic, overhead electrical wires, chemical/hazardous materials lines nearby
- ❑ Others:

_____

_____

D. HEALTH HAZARDS

Chemical Hazards: _____

_____

MSDS available?

- ❑ Yes
- ❑ No

Asphyxiation Potential: _____

_____

E. GETTING TO THE CONFINED SPACE

Is the entrance easily accessible?

- ❑ Yes
- ❑ No

Is a ladder or scaffold required?

- ❑ Yes
- ❑ No

Describe entrance: _____

_____

Is there plenty of workspace available to set up all equipment at entrance?

- ❑ Yes
- ❑ No

Limitations: _____

_____

Type of entry:

- ❑ Vertical
- ❑ Horizontal

F. INTERNAL CONFIGURATION

- ❑ Are there low ceilings--how low?

Can a person:

- ❑ Walk in or crawl in?
  - ❑ On Hands & Knees
  - ❑ On Stomach/Back
- ❑ Erect or Stooped?
- ❑ Footing conditions inside space:

- ❑ Flat Surface
- ❑ Cramped or Limited
- ❑ Round (horizontal pipe)
- ❑ Uneven Surface
- ❑ Slippery Footing Surfaces
- ❑ Obstructions that have to be Stepped Over
- ❑ Sharp Objects
- ❑ Spilled Chemicals
- ❑ Other: _____

❑ Structural Cross Members
- ❑ Low Ceiling
- ❑ Head Hazards
- ❑ Climb over Required

❑ Has a configuration that will prevent adequate purging.

G. ENGULFMENT HAZARDS?

❑ Liquid
- ❑ Water always present?

❑ Powder/grains

❑ Sludge/Sewage

H. FALL POTENTIAL

❑ How far?

❑ Fall directly onto concrete/level surface?

❑ Fall onto something sharp?

❑ Any place to tie off/secure lanyard or winch?

❑ Extraction device available?

I. ENTRY CONDITIONS

*Vertical Entries*

❑ Stairs in place?
- ❑ Industrial stairs?
- ❑ Ship's ladders?

❑ Ladders Used?
- ❑ Fixed ladders?
  Condition: _____
- ❑ Straight portable ladder?

❑ No ladders used
- ❑ Tripod accessible?
- ❑ Even surface, tripod okay?
- ❑ Uneven surface, tripod not okay? Describe: _____
- ❑ Tripod available--has chain on legs, or not?

- ❑ Tripod unusable due to inability to place legs, cylindrical surface?
  - ❑ Requires some other method?
  - ❑ Davit?
  - ❑ Secure to overhead beam? (Beam structurally okay?)
- ❑ Some other method?
  - ❑ Horizontal support beam available over hole?
  - ❑ Need eccentric support or davit?

*Horizontal Entries*

- ❑ Elevation above ground?
- ❑ Work platform provided to upper elevation?
- ❑ Place to secure lifeline?
- ❑ Location to place mechanical device?
- ❑ Cut hazards can damage rescue rope?

J. ENTRANCE/EXIT CONFIGURATION

- ❑ Opening?

  Type: _____

  Round?
  - ❑ Yes What diameter? _____
  - ❑ No
- ❑ Vertical

  How far? _____
- ❑ Horizontal

  How far? _____
- ❑ Both

  How far? _____

K. INTERNAL FEATURES

- ❑ Pipes with mechanical joints or possible openings inside space?
  - ❑ Materials in pipes/lines?
- ❑ Electrical equipment that needs servicing?
- ❑ Possibility of engulfment?
- ❑ Entrapping features (converging walls, wedging situations)?
- ❑ Pipe/lines going through the space?
  - ❑ Any mechanical joints (flanges, valves)?

L. CONTAMINANTS TO SAMPLE FOR

- ❑ Oxygen
- ❑ Combustible gas? Type: _____
- ❑ Toxics
  - ❑ Direct reading instrument available/type
  - ❑ Use Draeger/Colorimetric

M. KNOWN USE OF SPACE

- ❑ Original

- ❑ Present Use
- ❑ Contained Chemicals
- ❑ Oxygen consumers? (Rust, decay, wet carbon, chemical reactions, combustion)

N. HAZARDS/FEATURES OF THE SURROUNDING AREA

- ❑ Piping or chemical containers?
  - ❑ What chemicals? _____
  - ❑ How far away? _____
  - ❑ Possibility of spill into Confined Space? _____
- ❑ High noise levels? (Communications interference)
- ❑ Soil methane?
- ❑ Parking lot, loading area or parking spaces close by?
- ❑ Can anything fall into the hole?
- ❑ Poor lighting in the area?
- ❑ No electrical services?
- ❑ No ground point?
- ❑ Traffic hazards (in surrounding area)?

O. SEASONAL WEATHER EFFECTS

- ❑ Must the entry be made in bad weather?
- ❑ Could precipitation create a hazard - subject to rapid flooding?

P. OTHER

- ❑ High ambient noise (or anything that can hamper communications)?
- ❑ Ambient temperature extremes (heat stress, direct employee exposure, cold stress, ice formation on working surfaces)?

Q. HAZARDOUS ENERGY HAZARDS

- ❑ Moving machinery hazards?
  - ❑ Written lockout procedures in place?
- ❑ Electrical energy hazards?
  - ❑ Lockout procedures in place?
- ❑ Lockout points identified?
  - ❑ Tagged/labeled?
  - ❑ Described in procedures only?
- ❑ Chemical hazards - line breaking required?
- ❑ Identified shutoff valve?
- ❑ Line blanking required?

R. SITE SUPPORT FEATURES

- ❑ Certified grounding point available or in proximity?
- ❑ Electrical services present?
  - ❑ How many outlets? (two separate circuits recommended) _____
  - ❑ Generator required?
- ❑ Telephone nearby?

- ❑ Rope anchorage points available for rescue use?
- ❑ Other: _____

S. EQUIPMENT

Type of equipment needed to enter/exit space

- ❑ Portable Ladders?

T. VISUAL

- ❑ Poor lighting?
- ❑ Entrants cannot be visually observed by attendant?

U. VENTILATION

- ❑ Space has configuration that will hamper effective ventilation/purging
  - ❑ Convoluted Space
  - ❑ Large Volume
  - ❑ Second or additional opening
    - ❑ Exits Close Together
    - ❑ Favors Flow through Ventilation
    - ❑ Distance Openings Apart
- ❑ Estimate of Internal Volume of Space: _____

V. COMMUNICATIONS

- ❑ Internal Available
- ❑ Radio Required
- ❑ Voice Only Adequate
- ❑ Intrinsic Safety Design Required
- ❑ Radio Interference
  - ❑ Inside Space
  - ❑ Outside Space

W. DISTANCE INTO SPACE

- ❑ Greater than 50 feet? (Greater than length of extraction cable)
- ❑ Will require extra internal attendant(s)?

X. SEWER/MANHOLE WORK

- ❑ Telecommunications/Electrical?
- ❑ Sewer?
  - ❑ Sanitary?
  - ❑ Storm?
  - ❑ Combined?

**Once the hazard assessment checklist is complete, file the completed form with the department performing the work and EH&S. Ensure that all necessary actions are completed before work commences. If necessary, consult EH&S for assistance.**

- **For entry into non-permit required confined spaces, use the Pre-Entry Checklist for Non-Permit Required Confined Spaces (Appendix B) and consult EH&S if necessary.**

**For entry into permit-required confined spaces, use the Permit-Required Confined Space Entry Permit (Appendix C) and consult EH&S for assistance.**