

## *Confined Space Awareness 2002 Surveyor's Conference*

Oregon Department of Transportation

### *What is a Confined Space*

- A confined space is a space that is...
  - Large enough so a worker can bodily enter, and;
  - Has limited/restricted means for entry/exit, and;
  - Is not designed for continuous worker occupancy

### *What is a Confined Space*

- Large enough so a worker can enter



### *What is a Confined Space*

- Has limited means for entry and exit



### *What is a Confined Space*

- Is not designed for continuous worker occupancy



### *Examples of Confined Spaces*

- Utility vaults
- Septic tanks
- Pipelines
- Pump stations
- Water truck tanks
- Drainage lift stations
- Bridge box girders
- Culverts
- Standpipes
- Chemical storage tanks
- Oil/Water separators

### *Bridge Box Girders*



### *Concrete Catch Basins*



### *Utility Vaults, Catch Basins, Sewers*



### *Utility Vault*



### *What Risks Are Posed by Confined Spaces*

- Confined spaces are dangerous
  - Many contain undetected hazards that can:
    - kill workers
    - cause serious injury to workers

### *Hazards Found in Confined Spaces*

- Physical hazards
  - fall hazards
  - protruding objects
  - electrical shock hazards
  - crush hazards

## *Hazards Found in Confined Spaces*

- Structural Hazards
  - access issues
    - catwalks & ladders to reach openings
    - heavy lids or hatches to remove to get into the space
    - small openings that are hard to fit through
    - structural defects in ladders and accessways
  - Conditions that make it difficult to exit during a medical emergency

## *Hazards Found in Confined Spaces*

- Atmospheric Hazards
  - low oxygen
  - toxic gases
  - flammable gases
- Chemical Hazards
  - left over chemicals from painting, welding, or from product in a storage tank

## *What Factors Lead to Confined Space Accidents*

- Failure to Recognize and Control Hazards in Confined Spaces
- Co-workers attempting to rescue injured workers in confined spaces
  - multiple deaths, usually from rescue attempts - usually 50% of all fatalities
- LACK OF PLANNING!!!!

## *OR-OSHA's PRCS Rule*

- 29 CFR 1910.146
- Copies available from your Region/Division Safety Manager
- Requires Employers Who Have Confined Spaces to have a written program
  - must follow the tenants of the code

## *ODOT's PRCS Program*

- What's Required?
  - Confined Space Inventory
  - Hazard Assessment
  - Designation of Space as PRCS or non-PRCS
    - Non-PRCS
      - qualified persons can enter after addressing safety hazards identified
    - PRCS
      - qualified persons can enter after proper planning & preparation of
        - Entry Permit for Each PRCS

## *What needs to happen before a confined space is entered?*

- A hazard assessment needs to be conducted in the space by a qualified person;
- All hazards that can be removed or reduced need to be addressed
- The space needs to be designated as permit required or non-permit required

## How are Risks in Confined Spaces Identified

- ONLY .....
  - by performing a detailed confined space hazard assessment prior to entry into the confined space
    - ODOT PRCS Hazard Assessment/Evaluation Form will be used
  - see ODOT Safety Program PRO 96003 “Permit Required Confined Space Program” for details

## Who Can Perform a Hazard Assessment in a Confined Space?

- Only those ODOT workers who have...
  - Attended the 8 hr Confined Space Entrant Course, and
  - Are designated to do so by their supervisor

## What do the Results of the Hazard Assessment Indicate

- A detailed hazard assessment will tell you if.....
  - The confined space is a Permit Required Confined Space or a Non-Permit Required Confined Space, and
  - Will identify the hazards present as well as location and severity

## PRCS Hazard Assessment Example



## Permit Required Vs. Non Permit Required Confined Spaces

- Permit Required Confined Spaces:
  - have or have the potential to contain hazards that are immediately dangerous to life and health
    - **ENTRY INTO THESE SPACES CAN RESULT IN DEATH!**

## Permit Required Vs. Non Permit Required Confined Spaces

- Non-Permit Required Confined Spaces:
  - may contain serious safety hazards but do not pose an immediate threat to life and health
  - work in these spaces may progress as in any other hazardous work space
    - certain work activities will introduce hazards that immediately dangerous to life & health
      - painting, zinc flame spray, use of combustion engines
      - welding, grinding or any other hot work

## How do I Know where Confined Spaces are in My Region?

- A detailed inventory that lists the location and space type should be available in each Region/Division
  - See your Region/Division Safety Manager for a copy
- If in doubt, assume the space is a Permit Required Confined Space until proven otherwise

## How are Confined Spaces Marked?

- All potential or actual permit required confined spaces must be labeled.



## Can I Enter a PRCS if this is the only training I have received?

- NO
  - Only those individuals who have attended an 8 hr confined space entrant class can assess and enter
    - entry must be a part of your job duties

## Can I Enter a Non-Permit Required Confined Space?

- YES, If
  - The space has had a hazard assessment,
    - performed in the last 8 hours by a competent person who attended the confined space entrant course, and
    - a copy of the hazard assessment is posted outside the confined space
  - The results of the assessment must show the space is a non-permit required confined space, and list any hazards located in the space

## Can I Enter a Non-Permit Required Confined Space?

- Can I enter, cont..
  - Hazardous work activities will not take place in the space, including
    - welding, grinding, hot work, painting, chemical use, use of combustion engines, zinc flame spraying, etc.
  - You are assigned activities that involve entering a Non-Permit Required Confined Space
  - You have the ability to control the hazards identified in the assessment

## Can I Enter a Non-Permit Required Confined Space?

- Remember.....
  - Non-Permit Required Confined Spaces still contain hazards that are unique to the space
    - you must plan your work carefully and ensure the hazards identified in the hazard assessment are addressed
    - if conditions change, leave the space and have the hazards in the space re-assessed by a qualified person before re-entering the space

## Culverts

- Culverts are confined spaces
- ODOT has a culvert advisory that gives further guidance
- ADV98004



## Culverts - Entry Allowed Without Assessment if.....

- No blockage inside
  - a blocked culvert is one with tree, rocks or other matter causing the flow of water to be backed up at a depth of two feet or more or when the passage of light is impeded
- Less than 2 feet standing water or rapidly moving water
- Detectable air flow - should be able to feel
- No sheen or hazmat present on water surface
- No other condition that may be IDLH

## Culverts - Treat as PRCS if....

- Culvert is blocked
- Lack of air flow
- More than 2 feet of water
- HAZMAT present or sheen on water
- You will be performing maintenance activities

## Culverts - Treat as PRCS if....

- The culvert is a T or Y shape
- The culvert dead ends
- The culvert is excessively long
  - greater than two road widths
- The culvert is damaged and poses a risk of collapse
- Less than 24 inches
- Culvert is excessively deep

## Culverts

PRCS



PRCS



Non-PRCS



Non-PRCS



## Culverts

Non-PRCS



Non-PRCS



## Hazardous Work Activities in Confined Spaces

- You may *NEVER* perform any of the following in any confined space:
  - welding
  - spray painting
  - coating application
  - grinding
  - application of foam in place
  - burning of any kind