Safety Trained Supervisor (STS) Training

Module Three - Personal Protective Equipment, Respirator Protection & Confined Spaces
Personal Protective Equipment
29 CFR 1926
• OSHA- PPE  
http://www.osha.gov/Publications/osha3151.html

• NIOSH’s Protective Clothing Web Page  
http://www.cdc.gov/niosh/npptl/topics/protoclothing/
1926.95 PPE Criteria

“PPE for eyes, face, head, and extremities; protective clothing; respiratory devices; and protective shields and barriers, shall be provided, used, and maintained in a sanitary and reliable condition wherever it is necessary by reason of hazards of processes or environment, chemical hazards, radiological hazards, or mechanical irritants encountered in a manner capable of causing injury or impairment in the function of any part of the body through absorption, inhalation, or physical contact.”
PPE

• Employee-owned PPE
  – The employer is responsible for ensuring its adequacy, including maintenance and sanitation

• Design
  – Must be worn according to manufacturer instructions

*Example:* Hard hats have a band that is designed to disperse the shock of impact to the head. Wearing a baseball cap beneath the hard hat defeats that protection and can result in injury as well as an OSHA citation.
Hard Hats, Eye/Face, Foot, & Hand Protection

• Hard Hats – Are required when performing electrical work and where overhead hazards are present (ANSI Standard – Z.89)
• Safety Glasses – Shall be provided to employees when machines or operations present potential eye or face injury from physical, chemical, or radiation agents (ANSI Standard Z.87)
• Hand Protection – Should be selected to fit the job (ANSI – J.6)
• Foot Protection – ANSI Standard Z.41
Hearing Protection – Permissible Noise Exposures

<table>
<thead>
<tr>
<th>Duration</th>
<th>Noise Level (dBA)</th>
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<tbody>
<tr>
<td>8 hours</td>
<td>90</td>
</tr>
<tr>
<td>4 hours</td>
<td>95</td>
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<tr>
<td>2 hours</td>
<td>100</td>
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<tr>
<td>1 hour</td>
<td>105</td>
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<tr>
<td>30 minutes</td>
<td>110</td>
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<tr>
<td>15 minutes</td>
<td>115</td>
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</table>
PPE - Common OSHA Citations

• No head protection – As one worker explains, "Heck, you only need a hard hat when something hits you in the head."

• No eye face protection – Most citations occur during welding/cutting operations, not for the welder, but for the welder’s helper.

• No respiratory protection – Overexposure

• No life vests – Bridge jobs where there is a danger of free-falling into a body of water, life vests are required.
Respiratory Protection 29 CFR 1926.103
Respiratory Protection

• Cannot always see hazards in the air
• Inhalation is major route of exposure to chemicals, making respiratory protection very important
• All respirators must be certified by NIOSH
Two Types of Respirators

• Air-purifying
  – Removes contaminants from air

• Atmosphere-supplying
  – Provides air from another source (tank, hose, etc.)
Air-Purifying

- Removes contaminants from air
- Have to have safe level of oxygen in atmosphere (19.5%)
- Has tight-fitting face piece
- Uses a filter, cartridge or canister
Atmosphere-Supplying

- Provides breathing air from clean source
- SAR – Supplied Air Respirator
  - Uses airline hose to feed clean air from source to recipient
Atmosphere-Supplying

- SCBA – Self-Contained Breathing Apparatus
  - Supplies air from tanks carried by user
Miscellaneous Details

- In order to select best respirator, have to compare hazards of the job to the capabilities and limitations of the respirator
- Medical evaluation is required before wearing a respirator
- Not all respirators fit all people, so they must be fit-tested before wearing in the hazardous atmosphere
Testing

• Seal Check

Positive Pressure  Negative Pressure
Testing

- Fit Test
  - Qualitative
    - Hood over respirator and person’s head
      - Irritant smoke
      - Banana oil
Testing

• Quantitative
  – Typically SCBA with testing device
Other Conditions

• If you are wearing a respirator and detect any of the following, leave the respirator-use area
  – Detect vapor or gas breakthrough, changes in breathing resistance or face piece leakage;
  – Need to change filter, canister or canister elements;
  – Need to wash face or face piece to prevent eye or skin irritation;
  – Respirator needs repair
Respirator Maintenance

• Your own respirator
  – Clean as often as necessary
  – Inspect before each use and during cleanings
Respirator Maintenance

- Respirator designated for emergency use only
  - Inspect before and after each use
  - Clean after each use
  - Inspect at least monthly
Respirator Maintenance

• Store respirators so they are protected from
  – Damage
  – Contamination
  – Dust
  – Sunlight
  – Extreme temperatures
  – Excessive moisture
  – Damaging chemicals
Confined Spaces 29 CFR 1910
Confined Spaces

There is a high death toll in construction associated with Confined Spaces.

The exact count is unclear due to the way injury causation is coded.
General Description of Confined Spaces

- Space is large enough for human entry
- Space has limited/restricted entry or exit
- Space is not designed for continuous occupancy
- Air quality may be hazardous
Types of Confinement

Tanks, manholes, work spaces, truck tanks, vessels, vaults, tank cars, sumps, silos, pools, pipes, bins, pits, under trailers etc.
Large Enough for Human Occupancy

Working above “mud” truck opening to add water. Worker was overcome by methane gas released by the drilling operation.

*He fell in and drowned.*
Limited / Restricted Exit / Entry

Working in long corridor with dropped floor section with faulty water cooler. Worker was lying on his back when dense refrigerant escaped.

{Worker died.
Not Designed for Continuous Occupancy

Gasoline pump used to pump water from excavation. Workers stayed out for several hours.

Later, workers entered the area and were overcome by carbon monoxide.
Types of Injuries Sustained in Confined Spaces

Inhale toxins, asphyxia, burns, systemic poisoning, drowning, fracture, death, etc.
Major Problem with Confined Spaces

Hazards take many forms. Often workers that are injured are those who did not recognize the potential hazards.
Confined Spaces

The solution lies in training workers to recognize the confined spaces.

*But it is not a simple task as workers must think.*
REVIEW / EXAM QUESTIONS

These questions are common questions on the STS exam.
Review Questions

Workers have to enter a confined space, which contains 1% chemical fumes (not IDLH). What kind of respiratory protection would be suitable?

A) Disposable paper mask
B) Nothing would be required; it is up to the employee
C) Supplied air respirator or SCBS
D) Full-face respirator with a chemical cartridge
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When monitoring a confined space, which of the following would you check for first?

A) Toxic Vapors
B) Oxygen Deficiency
C) Poisonous Gasses
D) Explosive (LEL) Atmosphere
Answer

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What should you do before you send people into a permit-required confined space?

A) Have an attendant remain in sight of employees
B) Have an attendant for more than 5 persons
C) Have an attendant and everyone on lifelines
D) Have an attendant remain in radio contact of employees
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Which of the following is the least effective safety measure for work that requires entry into a confined space known to have contained toxic chemicals?

A) One man equipped with a rope around his waist
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C) Rescue personnel on stand-by at the fire station
D) Both workers assigned to the task inside the tank
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What is the major exposure hazard to chemical components?

A) Inhalation
B) Adsorption
C) Ingestion
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On a construction site, who is responsible to ensure that workers have PPE?

A) The employee
B) The local Union
C) The employer
D) OSHA
Answer

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For head protection, workers should wear a hard hat that complies with what ANSI Standard?

A) Z.64
B) Z.85
C) Z.87
D) Z.89
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Safety shoes must meet the requirements of:

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D) No standard applies
Answer

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Hard hats must be worn when performing what type of work task(s)?

A) Electrical
B) Where overhead hazards are present
C) High traffic areas
D) A & B
E) All of the above
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(Electrical & where overhead hazards are present)
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Inhalation of chemical airborne contaminants usually involves which three physical classifications?

A) Gases, vapors, and particulate matter
B) Mists, dusts, and liquids
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A) Inspection must be done a yearly basis
B) Inspection must be done weekly
C) Inspection must be done monthly and checked for proper function before and after each use
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Respirators must be inspected:

A) Daily
B) Before and after each use
C) Weekly
D) Biweekly
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Review Questions

You are the supervisor of about 10 mechanics. The tools used for the job are noticeably loud. You ask the Safety Rep to look into the situation. The Safety Rep reports back that the weighted average for the work group was 105 dBA. How long can your mechanics be exposed to 105 dBA without hearing protection?

A) 15 minutes
B) 30 minutes
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