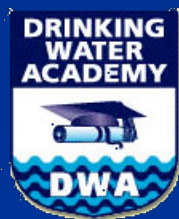


# Field Safety



Nathan Wiser  
U.S. EPA, Region 8  
UIC Inspector

# Attend Periodic Refresher Training

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- This module is a reminder, but does not substitute for any required field safety trainings or refreshers

# Inspectors Face Variety of Environments / Situations

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- Evaluating and protecting yourself from hazards is essential
- In 2017, there were 2.8 million non-fatal workplace injuries\*

# What Causes Nonfatal Workplace Injuries\*?

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- Overexertion, other exertion (32.0%)
- Falls (25.7%)
- Contact with object/equipment (23.1%)
- Violence by persons/animals (7.1%)
- Transportation incidents (5.4%)
- All others (6.7%)

# What Causes Fatal Workplace Injuries\*?

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- Transportation incidents (40.4%)
- Falls (17.2%)
- Violence by persons/animals (15.7%)
- Contact with object/equipment (13.5%)
- Exposure to harmful substance (10.3%)
- Fires/explosions (2.4%)

# Plan, Avoid Complacency

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- Plan ahead
- Driving is a most common source of workplace death, so be careful
- Don't be so certain you know everything
- Ask if there are any risks to be aware of
- Don't become complacent

# Take a Moment

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- No need to rush when arriving at site
- Assess the whole site first
- Injection well may not be only hazard
- Don't be afraid to ask questions

# Personal Protective Equipment

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PPE should not be used as a substitute for engineering, work practice, and/or administrative controls.

PPE should be used in conjunction with these controls to provide for employee safety and health in the workplace.

PPE includes all clothing and other work accessories designed to create a barrier against workplace hazards.



# A Reminder about Exposure

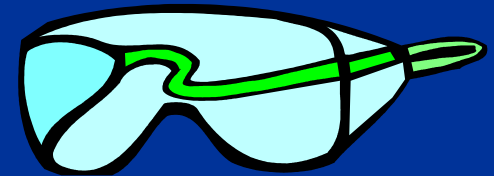
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- Understand the hazards to be faced
  - **Chemical**
    - Inhalation
    - Skin contact
    - Ingestion
  - **Mechanical**
    - Falling objects
    - Rotating parts
  - **Physical**
    - Noise
    - Radiation
  - **Thermal**
    - Heat and cold
  - **Electrical**
    - Exposed live parts

# Prepare Ahead of Time

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- Use “worst case” scenario if hazards are not known
- Make sure the equipment fits properly



# Personal Protective Equipment

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Using personal protective equipment requires hazard awareness and training on the part of the user.

**Employees must be aware that the equipment does not eliminate the hazard. If the equipment fails, exposure can occur.**

To reduce the possibility of failure, equipment must be properly fitted and maintained in a clean and serviceable condition.

# Personal Protective Equipment

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- Level D protection
  - Provides protection against “normal” workplace safety hazards
    - No contaminants are present *or*
    - Contaminants are present below levels where there is evidence of adverse health effects; *and*
    - The site is without risk of respiratory or skin hazards

# Head Protection

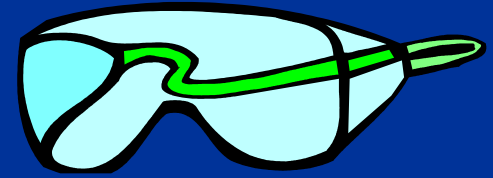


- Hard hat
  - Should be worn at all inspections
  - Be aware of the head protection standard (ANSI Z89.1)
  - Replace your hard hat
    - is cracked, has defects or penetrations
    - every five years (rule of thumb)
  - Make sure your hard hat fits and is comfortable
  - Different kinds of hard hats designed for different hazards: electrical and impact



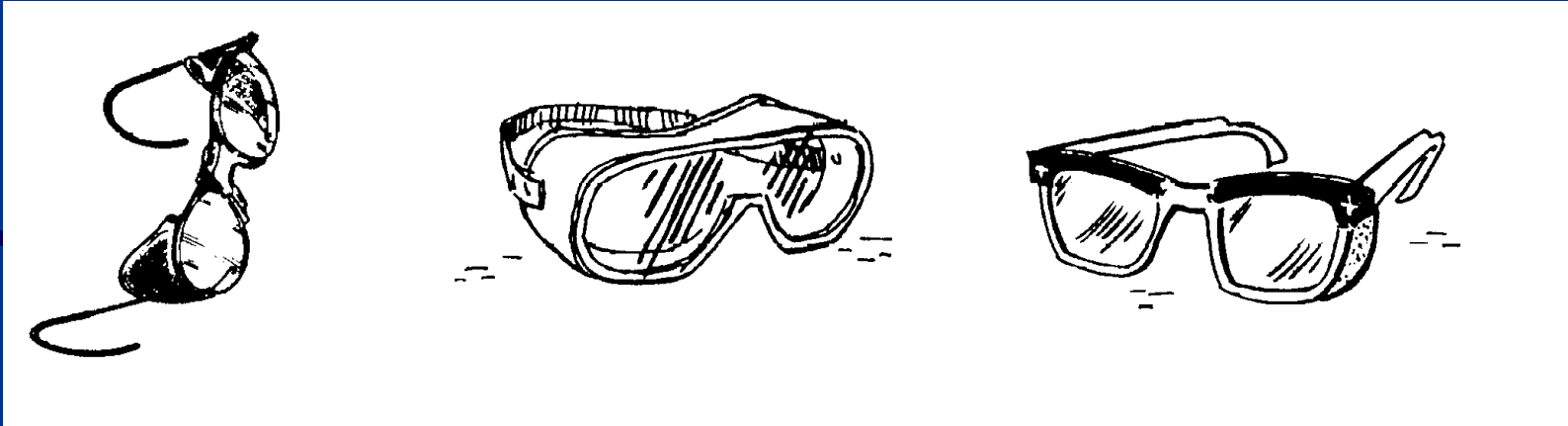
# Eye Protection

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- Safety glasses
  - Wear at all times during field inspections.
  - Be aware of the eye protection standard (ANSI Standard Z87.1)
  - Prescription glasses (per OSHA):
    - Need to be incorporated into the glasses, or
    - Wear safety glasses over the prescription glasses

# EYE PROTECTION



Eye protection comes in different types. Goggles are designed for solid or liquid hazards that are airborne and in a quantity that there is a greater likelihood of contact with or near the eye. Safety eyeglasses with protective side shields are designed for eye protection when the hazard is more casual by nature and the hazard(s) is of low quantity and likelihood.



# Foot Protection

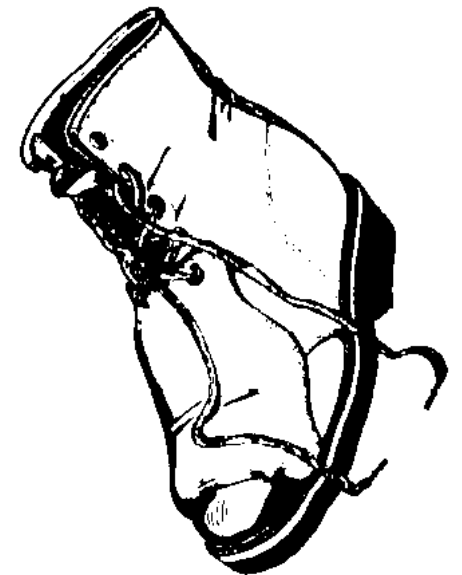


- Boots
  - Wear at all times during field inspections.
  - Be aware of the foot protection standard (ANSI Standard Z41.1)
  - Should be selected with the type of hazard in mind (e.g., penetration, contamination by chemicals, ankle twists, slippery surfaces, cold, and static electricity)

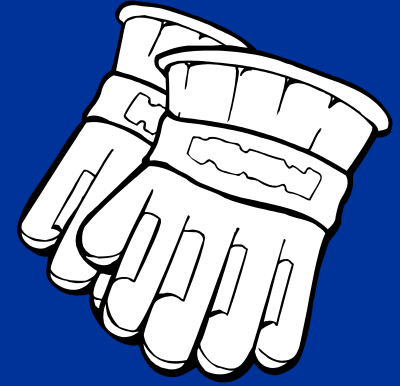
# FOOT PROTECTION

Proper footwear can afford a level of protection for the feet and toes. Steel-toed boots or shoes protect toes against the crushing hazard of falling objects, such as involved with pipe moving or heavy material handling. Rubber boots protect the feet against chemical hazards. For chemical hazards, check with your MSDS'.

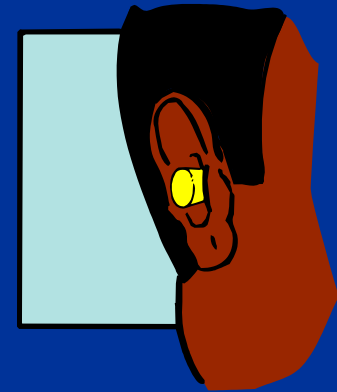
Footwear should also be selected based on protection from the walking/working surface. Construction sites with nails, or rough terrain including sharp rocks will require shoes or boots with sturdy, puncture-resistant soles.



# General Protective Equipment



- When conditions warrant, gloves and hearing protectors **should be** worn
- Unreasonably loose, poorly fitted or torn clothing **should not** be worn
- Hazardous jewelry (e.g., finger rings and chain bracelets) **should not** be worn



# General Safety Considerations

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- Protective clothing can reduce an individual's hearing, vision and agility and can greatly increase the chance of injury
- Food, drinks, chewing gum or tobacco, cigarettes and medications that might increase hand to mouth transfer of toxic materials from gloves, unwashed hands or equipment should not be consumed
- Vehicles, with keys left inside, should be parked away from the control area

# Transportation Safety

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- Traffic accidents are the leading cause of death of U.S. workers
- Allow extra time for travel
- Plan your travel route ahead of time
- Get directions from owner/operator
- Know accident conditions (e.g., light, weather, road, traffic, vehicle, and driver)

# Safety During Routine Inspections

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- Wear protective equipment when entering any operating area
- Ask that manipulation of wellhead components be performed by the operator
- Be aware of hazardous materials around
- Be aware of pressurized well components
- Be aware of what is happening at the well
- Look for wildlife/insects/poisonous plants

# What is Pressurized?



Pump is providing pressure to the wellhead

# Equipment Danger



**Exposed  
moving  
belt**



# Heat and Cold Stress

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- Prior to engaging in any field activity, an assessment should be made of weather conditions
- Be aware of physical abilities, limitations and medical conditions for yourself and others performing the inspection

# Good Work Practices

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- Hot Weather:
  - Drink plenty of liquids before and during work activities
  - Acclimate to site work conditions
  - Use cooling devices to aid natural body ventilation
  - If possible, conduct field activities in the early morning or evening during hot weather

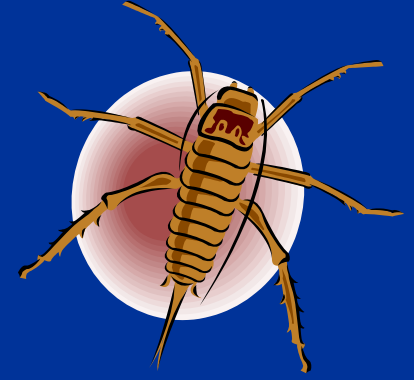
# Good Work Practices

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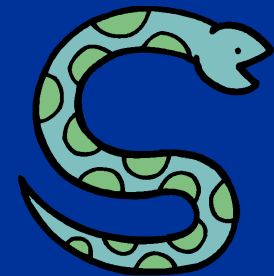
- Cold Weather
  - Gloves
  - Insulated clothing
  - Warming shelters
  - Rest periods
  - Change of dry clothing



# Biological Hazards



- The ability to identify and avoid biological hazards is a worker's best protection
- **Plants** such as poison ivy, poison oak, and poison sumac may cause a severe allergic response
- **Ticks** carry Rocky Mountain Spotted Fever and Lyme Disease
- Always be aware of the types of **spiders** and **poisonous snakes** that you may encounter



# Biological Hazards

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**Notice snake  
(probably more  
scared than  
inspector)**

# H<sub>2</sub>S Gas Exposure

Hydrogen Sulfide – characterized by an odor of rotten eggs. A very small concentration can be fatal. H<sub>2</sub>S meter is advised.

Hydrogen Sulfide is toxic and colorless. We develop insensitivity with more exposure.

SG = 1.54 relative to air      IDLH = 100 ppm

LEL = 4%      STEL = 5 ppm

UEL = 44%

When encountered, employees should take precautions and may need to wear approved respirator masks.

Any area where H<sub>2</sub>S has been reported or encountered, or with insufficient oxygen should be avoided until sufficient tests have been made to determine safety

# Common H<sub>2</sub>S Sources

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## Naturally in nature

Oil Fields – Mines – Volcanoes – Geothermal Exploration

## Through decay of organic matter

Fishing industry – Tanneries - Manure Processing

Municipal sewers - Brewery Industry – Landfills

## Chemical Processes

By Product – Catalyst – Felt Making – Asphalt Roofing

# Plan and Let Others Know

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- Be sure to have a cell phone in case of emergency
- Know location of emergency medical facilities
- Provide information to your supervisor



# Summary

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- Nearly 3 million work place injuries and more than 5,000 fatalities per year
- Plan your inspection and dress appropriately
- Take your time
- Common dangers include
  - Transportation
  - Working too carelessly or too long
  - Pressurized components
  - Animals, plants, insects
  - H<sub>2</sub>S

# Summary

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- Plan and let supervisor know
- Attend all safety meetings held at the worksite
- Wear PPE
- Ask operator to move wellhead parts
- Be alert and pay attention to the operator and surroundings
- Don't become complacent