SAFETY

NOWRA
National Onsite Wastewater Recycling Association

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RCAP

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Original Materials Development

These materials were originally developed through a CIDWT project. The project was a collaborative effort with stakeholder support to develop materials specifically focused on operation and maintenance of onsite wastewater treatment systems.

Learning Objectives

Upon completion of this module, participant should be able to:

1. Explain the meaning of safety management.
2. Describe the causes of accidents and give examples of each.
3. Identify the hazards associated with wastewater and wastewater systems and name strategies to mitigate these risks.
4. List practices that demonstrate good personal hygiene.
5. Identify safety equipment and demonstrate safe work habits required to prevent injuries.

Overview

- Safety management program
- How to work safely
- Limiting the risk of illness
- Site safety considerations
- Other important hazards
- Confined space entry
- Ergonomics

Common Safety Issues

Is the dog friendly?

Discuss the owner's responsibility for this during contract negotiation

Why is this module important?

- To provide tools to help you stay safe and protect others while working
- To distinguish between:

"Managing safety"

Philosophy

and

"Working safely"

Practice

Managing Safety

1. Why do we have to manage safety in our workplace?

   IT IS THE LAW!

2. Whose responsibility is it?

   EVERYONE

3. What are some examples of unsafe work practices that you have seen?

   NO PPE, Entering a Tank

4. Who has control over your safety?

   YOU DO!

Managing Safety (cont.)

- Engineering controls
  - *Minimize hazards to extent feasible through design and construction*
- Administrative controls
  - *Employee training and information*
  - *Standard operating procedures (including Confined Space Entry)*
  - *Work scheduling*
- Personal protective equipment (PPE)
  - *Respiratory, clothing, gloves, eyes, shoes*

Managing Safety (cont.)

- Behavioral controls
  - *Following standard operating procedures (SOPs)*
  - *Identifying and documenting hazards and near misses*

What does this mean?

- Breaks down management as a process
- Looks at three elements:
  - *People*
  - *Planning*
  - *Control*

The Art of Safety Management

- And puts them in context:
  - *Safety issues*
  - *Health issues*
  - *Environmental issues*

Safety Management Program

1. Company commitment to Safety, Health and Environment (SH&E)
2. Management and Resources
3. Communication
4. Training
5. Materials Hazards
6. SH&E Quality Assurance
7. Work Procedures
8. Emergency Plans
9. Contractors and Suppliers
10. Soil and Groundwater Protection
11. SH&E Performance and Reporting

OSHA is there to help.

- The State's Dept. of Labor often handles the OSHA requirements of employee safety.
- A business with 1 or more employees is required to be in compliance.
- Usually will not bother a person working alone and unincorporated.
- Better to ask for help developing a plan before an accident occurs
- After the accidents, the fines may role in!

Why Do Accidents Happen?

1. Rushing
   - Slow and steady is better
   - Rushing makes you less effective
2. Eyes not on Path
   - Slips, trips and falls
   - Turn off the cell phone
3. Eyes not on Task
   - Impact injuries
   - Look where you are going or at what you are doing
4. Line of Fire
   - Exposure to sewage by “splash back”
   - Stay out of the way of danger

Working Safely

1. Always use good lifting techniques.
2. Use good personal hygiene.
3. Ensure lids are secure when done.
4. Always use your own equipment.
5. Never go inside a tank unprotected or alone.
6. Use the “buddy” system if possible.

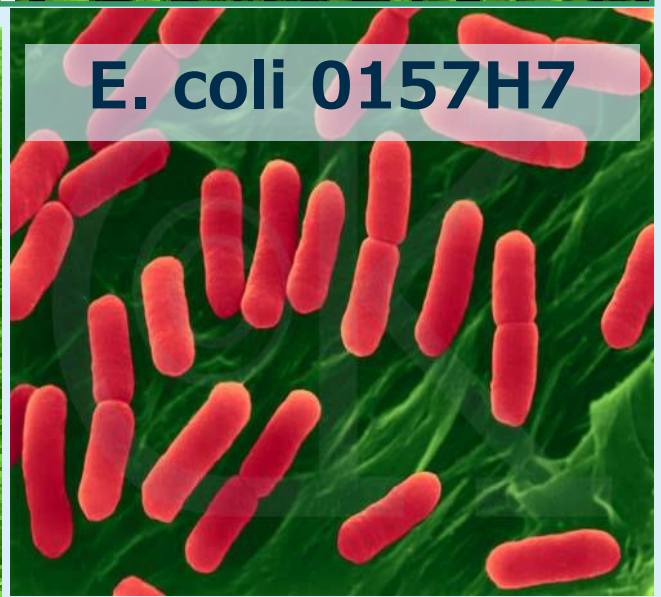
Common Workplace Accidents

- Back injuries
  - Wear a back supporter
  - Lift smart
- Cuts/abrasions
  - Heavy gloves
  - Steel toed shoes
  - Coveralls
- Driving Accidents
  - Use seat belt
  - Do not rush
  - Do not use cell phone

Preventing common workplace illnesses

- Repetitive motion
  - Change position
  - Stretch
- Exposure to UV unit radiation
  - Eye protection
- Long term exposure to noise
  - Ear protection
- Protect points of entry
  - Appropriate gloves (nitrile)
  - Goggles
  - Coveralls

Common Biological Hazards in Sewage



Microbiological Hazards

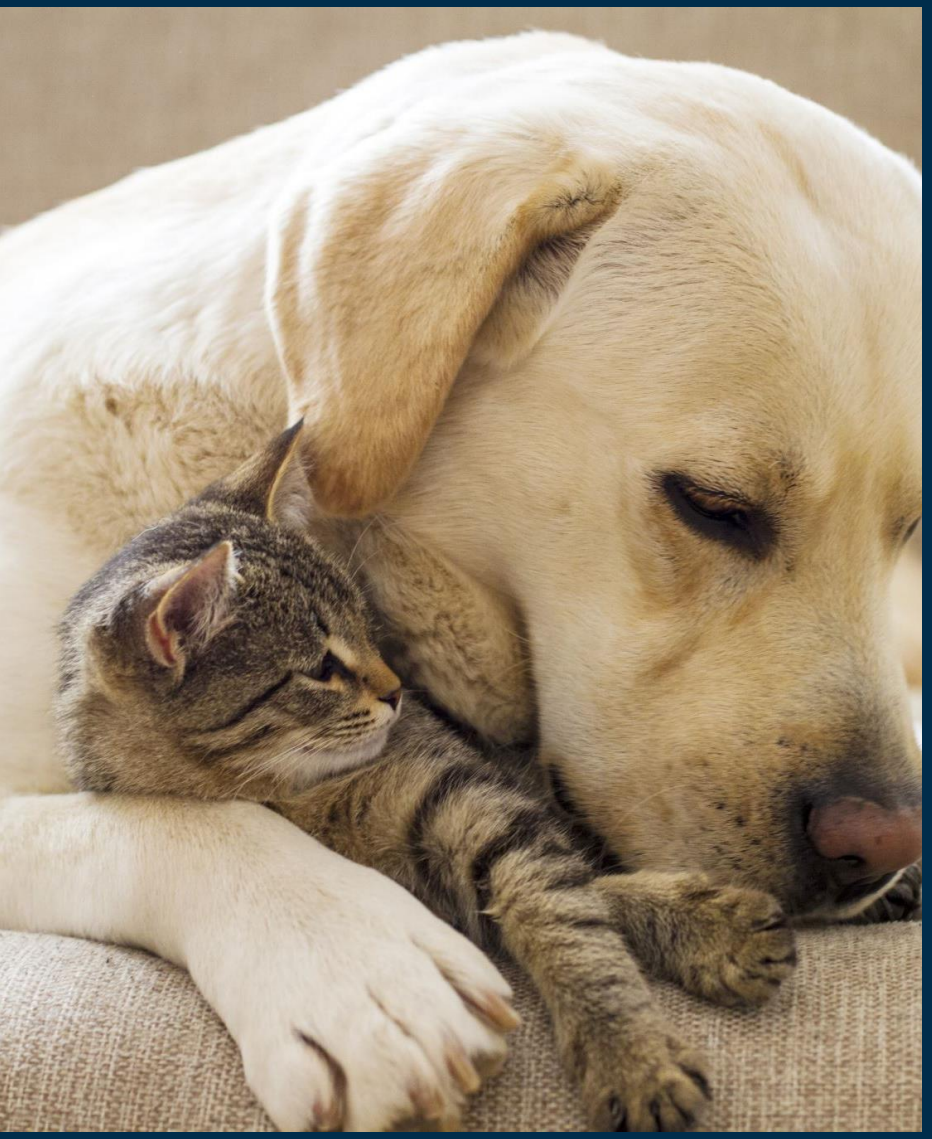
- Bacteria
- Viruses
- Protozoans
- Helminths

- Extremely common in sewage
- Microscopic
- Found naturally
- Anaerobic conditions favor survival
- Some are pathogenic
- Presence of fecal coliforms as an indicator

Managing Microbiological Hazards

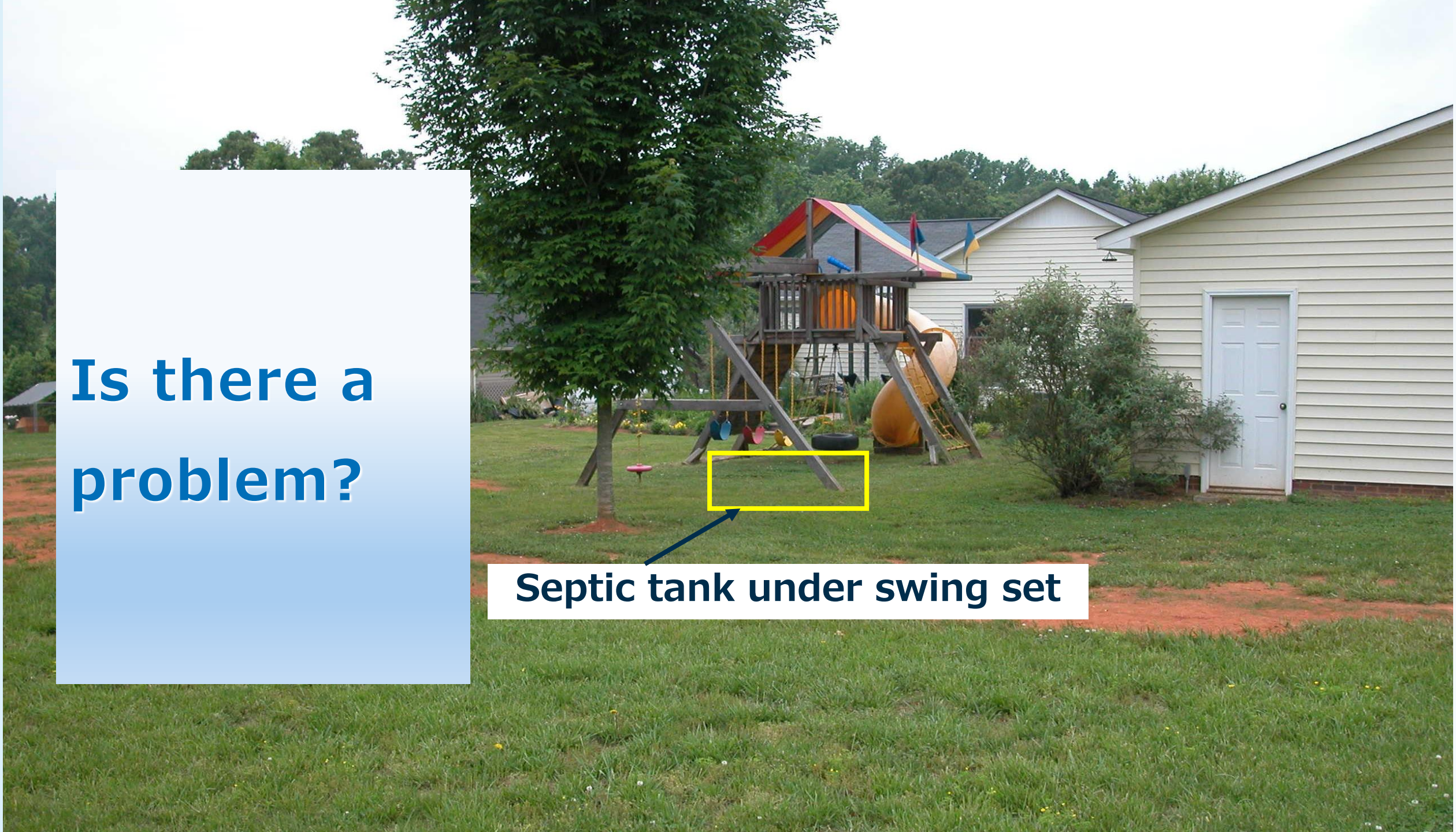
- Assume that pathogens are present
- Use appropriate PPEs
- Clean and sanitize after service visit
- Manage risk of contaminated clothing at end of shift

Other Hazards around the Site

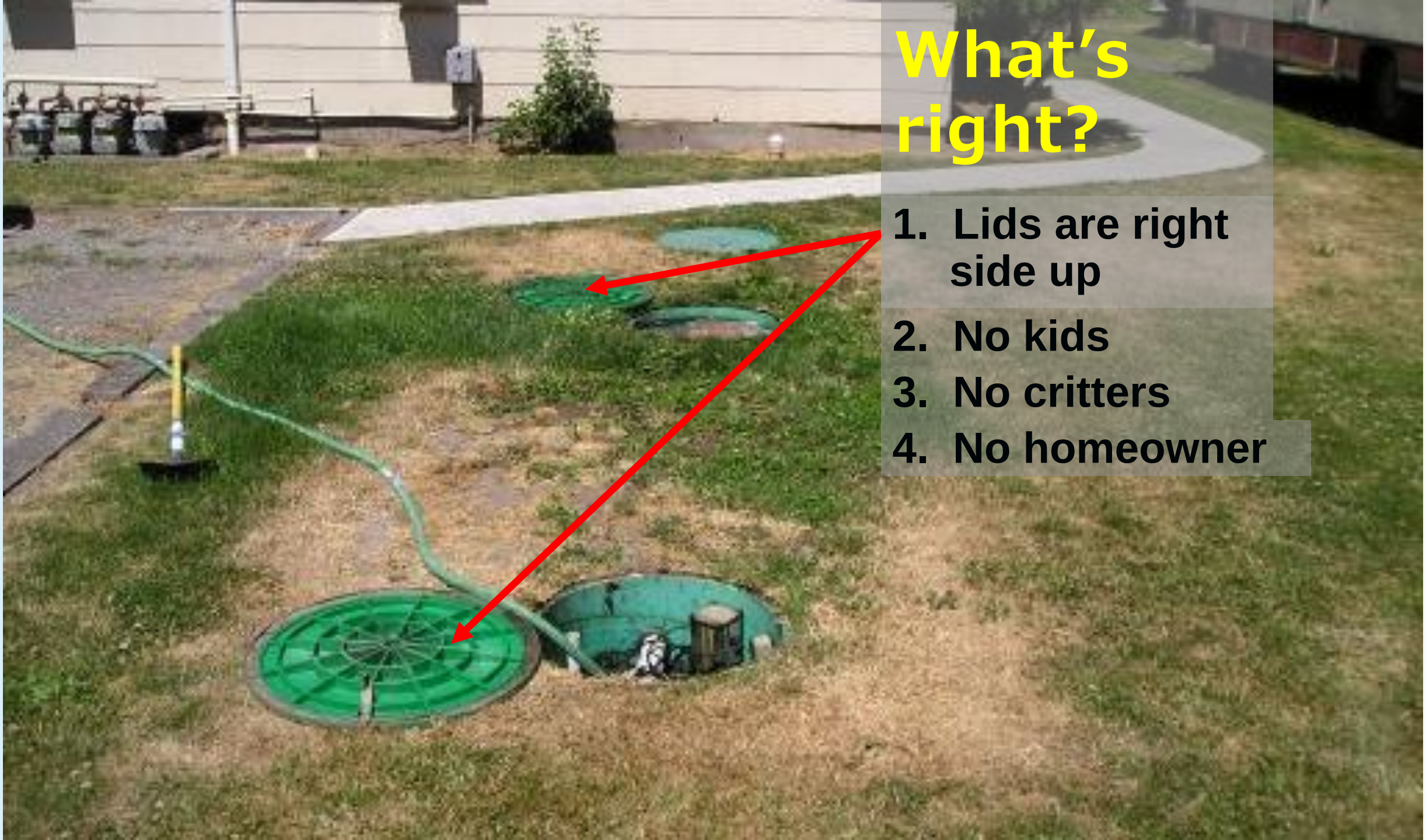


- Kids
- Dogs
- Cats
- Insects
- Snakes
- Vegetation
- and … The Owner?

Is there a problem?



Site Safety Considerations


What's right?
1. Lids are right side up
2. No kids
3. No critters
4. No homeowner


What's incorrect?
1. No provider on site
2. Using owner's hose
3. No back-flow preventer on hose
4. Shovel should be turned over
5. Lids/access open and exposed

Additional Hazards

- Equipment
- Electrical
- Gases
- Confined Space
- Ergonomic

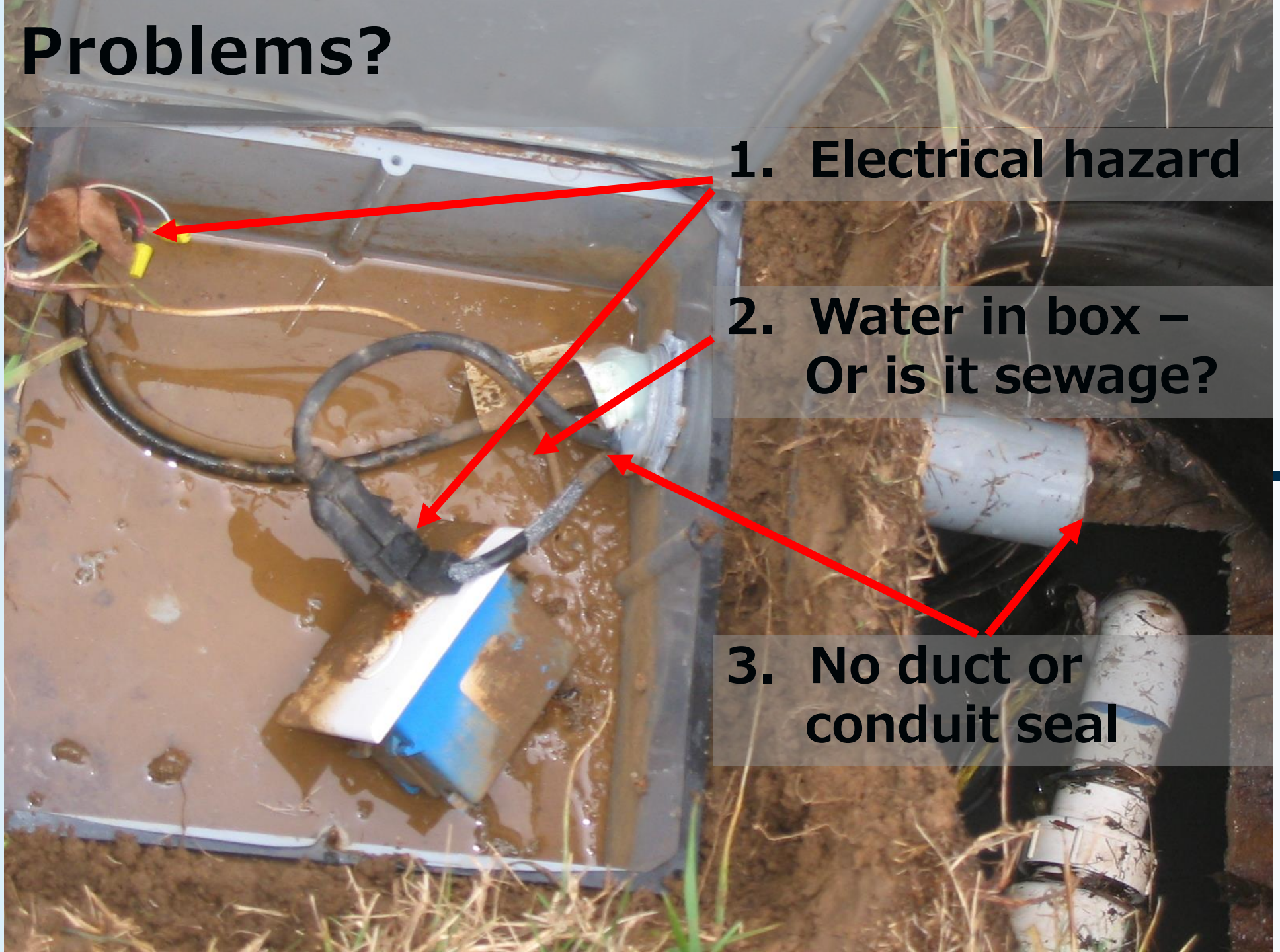
Equipment

- Perform regular maintenance
- Calibrate
  - Pressure gauges
  - DO, Chlorine and pH meters
- Cl test strips (not expired)

Electrical

- Use Lockout/Tagout procedures.
- Do not override safeties.
- Use ladders with appropriate rating.
- Use grounded or insulated tools in good condition.
- Battery operated hand tools work well.
- Do only what you legally and safely can do.

Problems?



1. Electrical hazard
2. Water in box –
   Or is it sewage?
3. No duct or
   conduit seal

Gases

- Poisonous
- Explosive
- Sometimes both!
- Invisible but may have an odor (H_2S)
- Replaces/displaces O_2 or converts to something worse in the lungs

Gases and Chemicals of Concern

- Hydrogen sulfide (H_2S)
- Sulfuric acid (converted from H_2S)
- Chlorine gas
- CO(X)'s
  - Carbon dioxide
  - Carbon monoxide
- Methane

Confined Space

- Repairs, systems in use
  - Lack of oxygen
  - Hydrogen sulfide, Methane
  - Respiratory stress or arrest
  - First aid
- New Installations
- Any tank is a confined space

Confined Space

Remember that open excavations can be considered a confined space based upon depth.

Confined Spaces

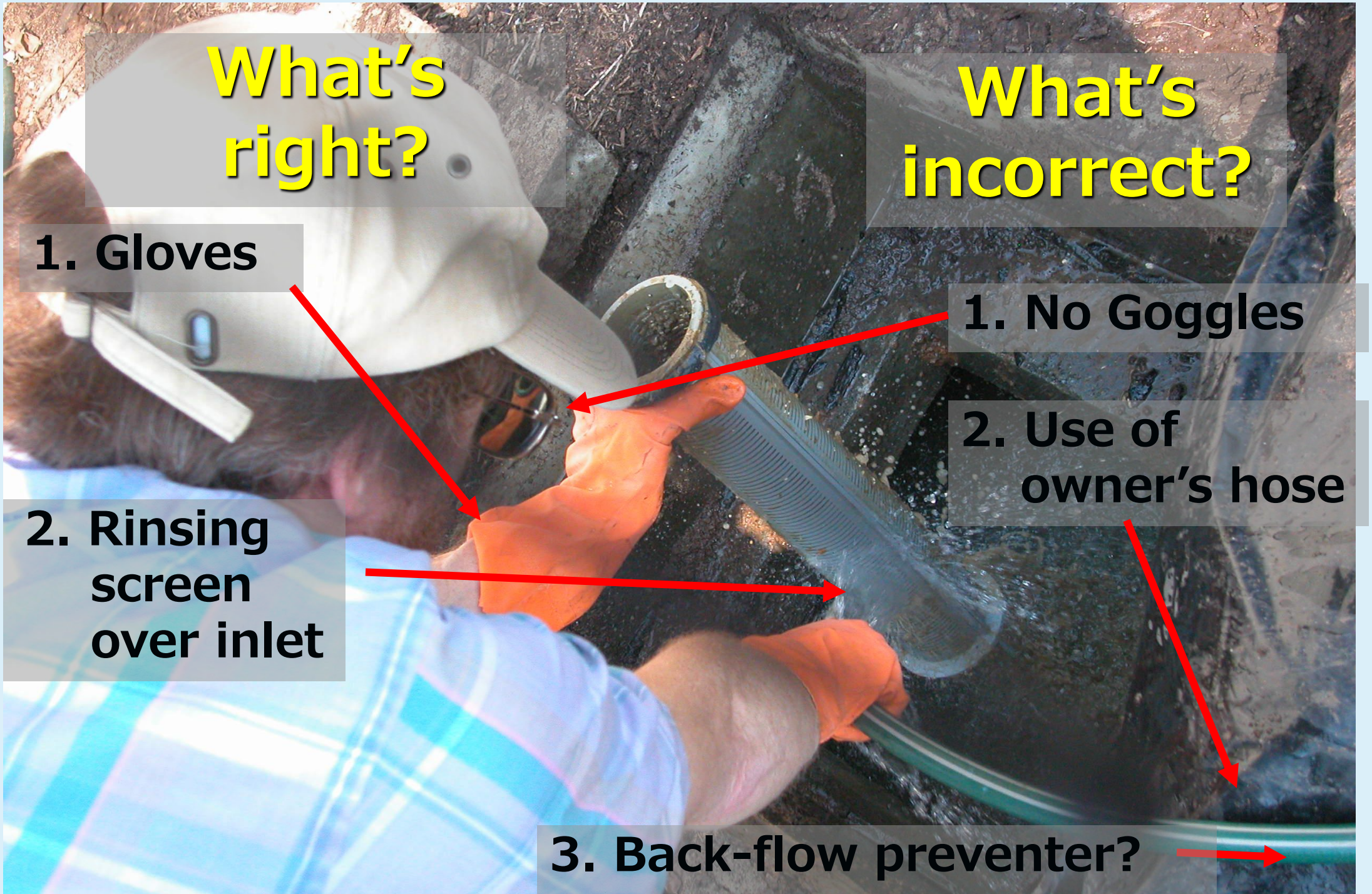

This is an unsafe practice. Your head, body, etc. should never be in a confined space.

Site Hazards

- Underground utilities
- Uneven surfaces, slopes, and ditches
- Critters and Bugs: Snakes, bees, ants, hornets, and the danger of shock/startle.
- Hypothermia (cold) and Heat Stroke. A real killer!
- REMEMBER TO CLOSE *ALL* LID(S) TIGHTLY/SECURELY BEFORE LEAVING! (Lockout/Tag out)

PPE AND PERSONAL HYGIENE


What's incorrect?
1. No Gloves
2. Shovel turned up
What's right?
1. Lid right side up
2. Screen over hole for rinsing


What's right?
1. Gloves
2. Rinsing screen over inlet
What's incorrect?
1. No Goggles
2. Use of owner's hose
3. Back-flow preventer?

Points of Contamination

- All the tools touched
- Truck door handle
- Steering wheel
- Radio
- Gear shifter
- Lunch
- Cigarettes, snuff, vaping devices, gum, etc.

Good Practices

- Coveralls
- Industrial grade nitrile gloves
- Goggles
- Container for contaminated clothing, equipment, etc.
- Waterless sanitizer
- Spray disinfectant
- Soap and water (lots of it)

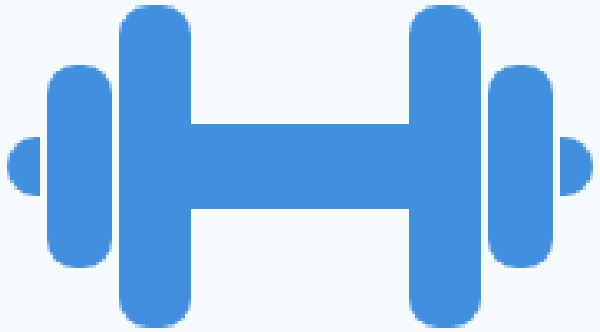
Doing it Right?

1. Use of providers hose with back-flow preventer
2. Lid turned right side up
3. Gloves
4. Coveralls


What are the safe behaviors?
1. Gloves
2. Use of providers hose with back-flow preventer
What are the unsafe behaviors?
1. No goggles
2. Bending over hard on the back
3. Splash back hazard

Ergonomics

- Prevent back injuries using good lifting postures:
  - Stabilize your core before the lift.
  - Position body close to the load.
  - Bend your knees and use your legs.
  - Do NOT “lift and twist”.
- Lifting limits: use the “buddy system.”
  - Loads are lighter; makes good sense




Incorrect!


Better, much better!


Dum dee dum…
HEY, BUDDY! A LITTLE HELP WOULD BE NICE!!!
Two working together is always better than one!

What can you do to improve?

- Assume the equipment in the back of the truck is contaminated.
- The vehicle interior is probably contaminated to some degree.
- Use soap and disinfectants properly by observing protocols for cleaning and disinfection hold times.

Do you need to be immunized?

- Ask your personal physician
- Ask the local health department
- Know the risks

What can you do to improve?

When you go home, don’t forget to protect the spouse and kids.

- Take off contaminated clothing in a separate area.
- Keep contaminated clothing separate from family laundry.
- Have a washing machine at the shop for contaminated clothes.
- Consider using a professional laundry service.

Emergency Numbers & Info

- Keep a fully stocked Emergency First Aid Kit in your vehicle, including:
  - List of phone numbers for and travel directions to area hospitals or emergency rooms
- Confirm cell phone service in your work area.
- Contingency plan: make sure someone knows your schedule.
- Know the 911 address for your work site
- GPS locator setting active?

Always think safety when in the field

- Site or job specific hazards
  - Biological (pathogens)
  - Critters
  - Equipment
  - Electrical
  - Confined space
  - Gases
  - Ergonomics
- Points of entry
- Areas of contamination
- Personal Protective Equipment (PPE)
- Contingency contact plan

Summary

- Safety management program
- How to work safely
- Limiting the risk of illness
- Site safety considerations
- Other important hazards
- Confined space entry
- Ergonomics

QUESTIONS?

Instructor's Contact information here