

# Hazards of Working With Raw Sewage

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*In the United States, over 25% of all homes are using Onsite Wastewater Systems (OWS) for their wastewater disposal purposes*

*Environmental Health Perspectives*

## Minimum Pump Requirements

- Tri-County Health Department ISDS Regulation # I-02
  - Every four years



## Potential Worker Hazards



- Homeowner Maintenance
- Employee Safety Practices
- Type of Onsite Wastewater System (OWS)

## Main Hazards

- Physical
- Chemical
- Biological



## Physical Hazards

- |  |  |
|--|--|
| ■ Collapsed septic tanks or cesspools                                  | ■ Chemical degradation   |
| ■ Damaged risers   | ■ Unstable soils   |
| ■ Cesspool pumping or agitation  | ■ Unsafe tank covers   |
| <ul style="list-style-type: none"> <li>■ Attempt to restore</li> </ul> | ■ Electrical shortages   |
| ■ Age  | <ul style="list-style-type: none"> <li>■ Pumped systems</li> </ul> |
|  | ■ Heat & cold stress   |
|  | ■ Improper lifting   |

## Preventing Injury or Worse



- Never work alone!
  - Bring a companion
- Stay on the outer edges of the tank
- Mark dangers
  - Rope off area

## Physical Injury Prevention

- Lift with knees not back
  - Use lifting tools when needed
- Appropriate shoes and clothing
  - Steel toe boots
  - Clothing covering arms and legs
  - Stay warm and dry
- Personal Protection Equipment (PPE)
  - Gloves
  - Eye protection
- Stretch
- Drink Water

## Chemical Hazards



- Gasoline
- Motor oil
- Detergents
- Solvents
- Drain cleaners
- Methane
- Hydrogen Sulfide

## Methane

- Waste decomposition
- Explosive
- Asphyxiate
- Kills in minutes



## Hydrogen Sulfide Gas



- Flammable
- Colorless
- Foul odor
- Toxic
- Exposure entry
  - Eyes, nose, throat & skin
- Symptoms
  - Eye irritation, sore throat, cough, fluid in lungs, fatigue, headaches

## Preventing Chemical Exposure

- Proper training
- Use proper air monitors and PPE
  - Self-Contained Breathing Apparatus (SCBA)
- Use correct gas monitor
  - Reads methane, nitrogen, oxygen & hydrogen sulfide levels
- Follow confined space standards
  - Occupational Health and Safety Act (OSHA)
- Allow tank to ventilate before pumping
  - Leave the lid off for a few minutes

### Bad Idea



### Biological Hazards

- Salmonella
- Hepatitis A
- Hepatitis B
- Tetanus
- Entomoeba
- Shigella
- Giardia lamblia
- Leptospirosis
- E. coli
- Yersinia

### Preventing Biological Exposure

- Wear long sleeves and pants
  - Protects minor cuts & scrapes
  - Wash in hot water (160° F)
- Liquid-proof gloves
- Eye protection
- Wash hands and face
  - Before smoking
  - Eating
  - Drinking
  - After shifts



### Appropriate Attire



### Additional Tips

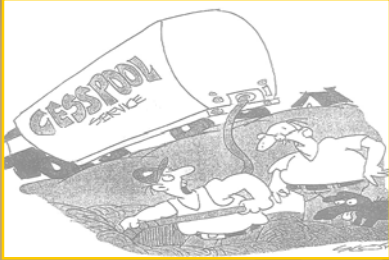
- Keep a first aid kit available
- Treat all punctures, cuts and scrapes
- Designate safe area for eating & drinking
- Shut mouth near an open septic tank
- Keep hands away from face



### In Summary

Take a few extra precautions to keep yourself and others safe and healthy when out in the field!

## Questions?????



## Special Thanks

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## Sources

A safety Guide for Septic System Inspection, Cleaning, and Homeowner Care

Exposure to Biohazards, Professional Safety Magazine, Aug 2005, Vol.50, No.8

Hydrogen Sulfide Gas, Environmental Health Fact Sheet, Illinois Department of Public Health

Septic system density and infectious diarrhea in a defined population of children - Children's Health & Environmental Health Perspectives, May 2003, Mark A. Borchardt; Po-Hang Chyou; Edna O. Devries; Edward A. Belonia