

**HAZARDOUS WASTE WORKER
COURSE "EXAM"
REFRESHER REVIEW EXERCISE**

Hazardous Waste Worker Course "Exam"

This document was first developed as a way to assess what trainees have learned in the 40-hour Hazardous Waste Worker Course. It is given on Thursday afternoon (so does not include several topics covered on Friday), graded, and returned and discussed on Friday. In this way, it became a learning exercise while also providing us with documentation of learning achieved.

Hazardous Waste Refresher Review

We later used it in a refresher course and found it was an excellent way to check knowledge retention and provide a visible aid to a discussion and review of all the topics.

Some questions have several right answers.

One thing the trainer should realize going into the discussion of this document is that some of the questions can be answered in several ways. The trainer who uses it should be knowledgeable enough to handle different answers and discuss different points of view. A couple of items are specific to the way we teach; for example, if you do not teach the use of the D.E.C.I.D.E. process for decision-making in emergencies, you will need to rewrite question 14.

Construction of the document.

The graphics are not sophisticated, as they date prior to our mastery of Clip Art, and many of the items we needed cannot be found in clip art programs anyway. They are cut and pasted from a number of sources, including our training manual. You will recognize Larry, Moe, and Curly from the Latent Image Exercise called "Buried Drum" written by Richard Dwyer and borrowed from the Midwest Consortium. Thanks, Rich. You may even recognize some of the cut-and-paste items from your own training manual!

Using the document.

There are two basic methods for using the document.

1. In some classes, you can simply pass it out and wait until everyone finishes answering the questions in writing. Then use the overhead transparency copies to discuss all the answers. We always allow trainees to use their training manuals and any references in the classroom when answering questions, as we consider the ability to find information when you need it more important (and realistic) than memorizing text.

2. If your class includes trainees with poor reading or organizational skills, pass out the document but use the overheads to go through it as you direct trainees to circle or mark answers. This way you still have documentation of learning, although it is not as accurate, but trainees' answers do not depend on their ability to read. Several of the questions, such as number 13, require the use of a reference. The chemicals we selected for this question are those we discussed in class as examples of their chemical classes, and we hoped the trainees would be familiar enough with them to remember the different kinds of symptoms they can cause.

Allow about an hour and a half for completion and discussion of the "test" or review. We generally try to give something like this just before a break so that quick finishers can go ahead and break when they are through. The review happens after everyone has had a break.

Advantages

The major advantage to using this document is that it provides a visual means of assessing knowledge. It also serves as an end-of-course summary and discussion of many topics. Because it is easily copied onto transparencies, the discussion is enhanced by visual images to which the group leader can point. Using an erasable marker on the transparency, the leader can write in answers or circle appropriate words or drawings.

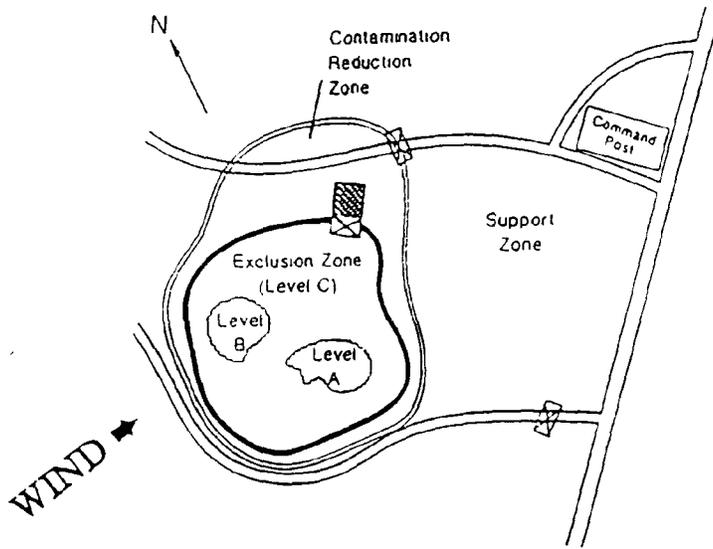
Disadvantages

There still is a certain amount of reading required for some questions. Number two, for example, asks trainees to circle words instead of drawings. The questions about PPE are a little complicated, but this can be dealt with in the discussion. The major disadvantage to the trainer is the cut-and-paste work required to change the document. We plan to try to scan it into a computer and be able to modify it that way, but so far have not tried this.

HAZARDOUS WASTE WORKER COURSE

NAME _____ DATE _____

1. What's wrong with the zoning on this site?



2. When you plan the decon for this or any site, you should consider

CHEMICALS

CLOTHING WORN BY WORKERS

SLOPE

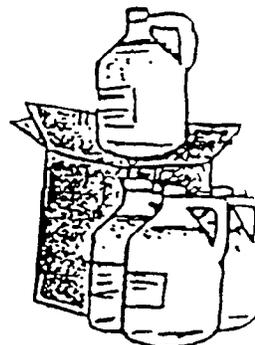
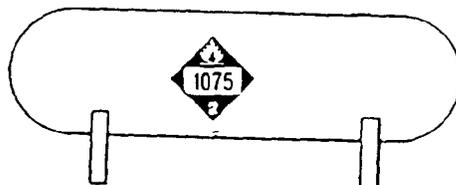
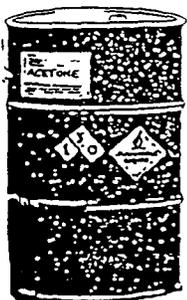
WORK TO BE DONE

ACCESS TO WATER

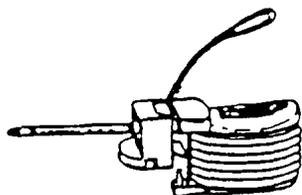
(Circle all that need to be considered in planning.)



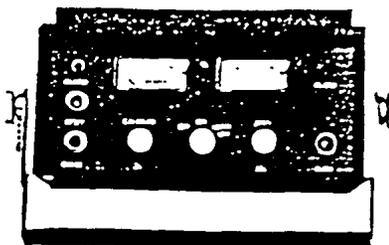
3. Circle the container with contents under pressure.



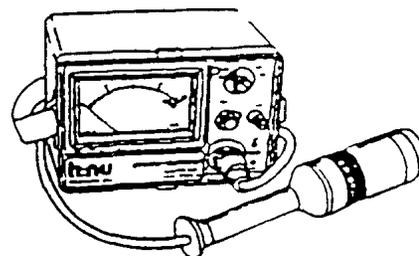
4. Choose the instrument you would use to monitor the air in a small shed containing drums of solvent. It is believed that a drum may be leaking.



Detector Tubes



Combustible Gas/
Oxygen Meter



Photoionization
Detector



5. You have done initial monitoring with a photoionization detector on a site that has soil contaminated by volatile organic compounds.

The results showed very small concentrations, well below exposure limits for the compounds.

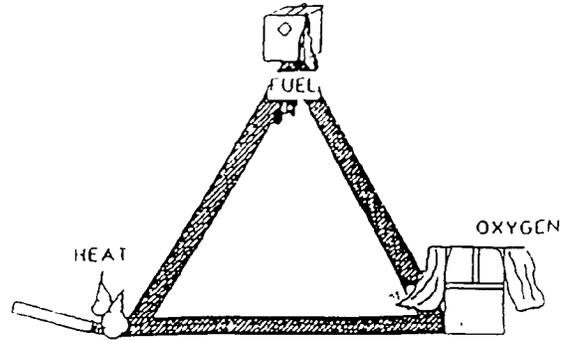
You should:

- ___A. Put the air monitoring equipment away and do your work.
- ___B. Periodically monitor the air for contaminants.
- ___C. Leave the site immediately and call the hazmat team.



6. List or describe two hazards involved in collecting samples from drums.

7. You can prevent fire by eliminating one of the corners of the fire triangle.



Explain which "corner" these eliminate.

Foam blanket: _____

Using intrinsically safe lighting: _____

Grounding and bonding containers during product transfer:

Prevention plan for leaks: _____



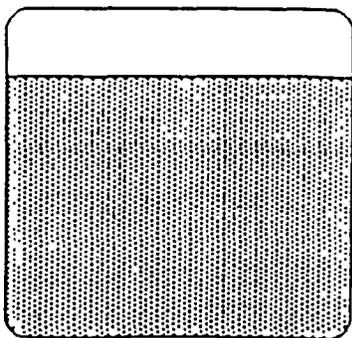
8. Three chemicals were spilled into water. You want to find out where they have gone. Here's what you know about them.

Chemical A: Solubility = 0.07% Specific Gravity = 3.5

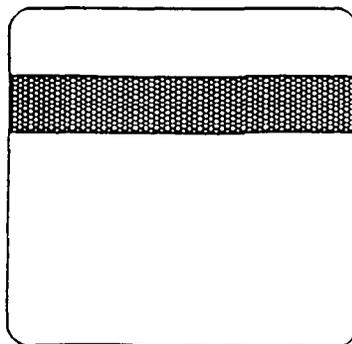
Chemical B: Insoluble in water Specific Gravity = 0.7

Chemical C: Soluble in water Specific Gravity = 1.5

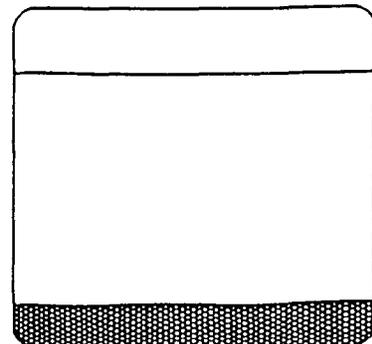
Which chemical is shown in each container below?



Chemical _____
dissolves in water



Chemical _____
floats on top



Chemical _____
sinks to bottom

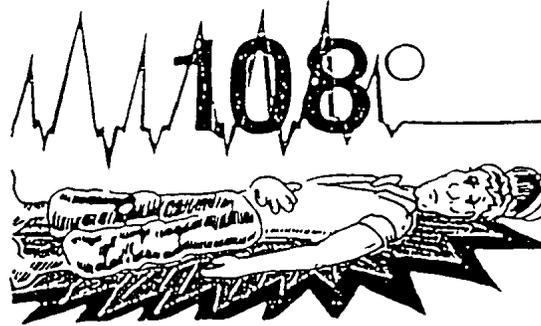
9. What is this? If you have to use it, what are the rules for taking it off?



10. Name one safe way to deal with each of these containers.



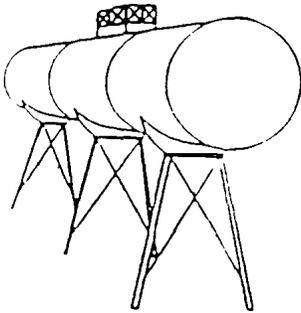
11. You must work on the Olin/McIntosh site in August. You are sampling drums in the hot sun, wearing an APR and splash apron. List three things you can do for yourself to prevent being in the situation pictured below.



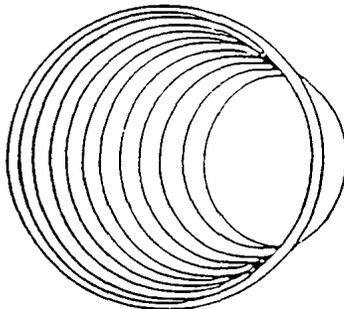
1. _____
2. _____
3. _____



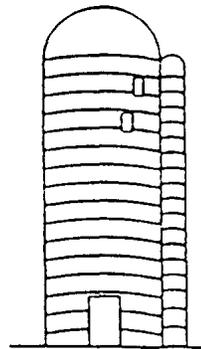
12. You are going into each of these. Circle the ones for which you need a confined space permit.



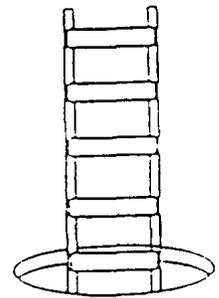
Storage Tank



Pipeline



Silo



Manhole



13. You are weak and nauseated and your head hurts. You were washing drums that used to contain

Hydrogen peroxide

Acetic acid

Parathion

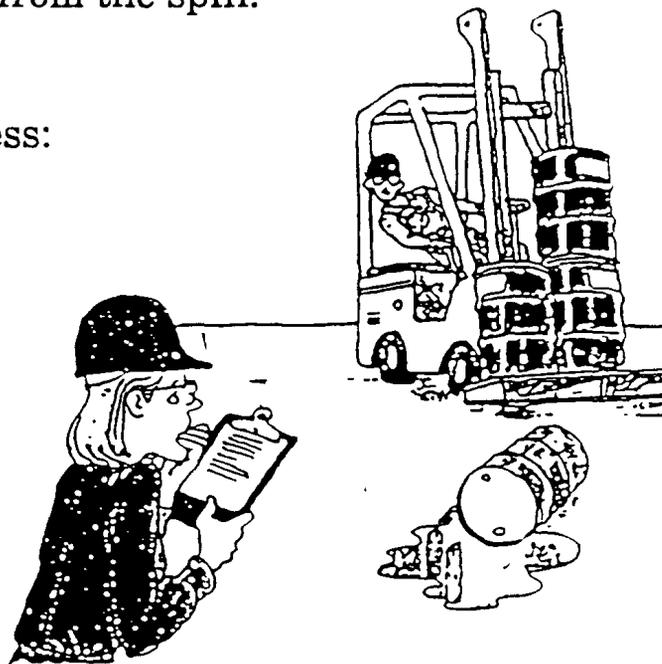
Circle the chemical you were probably exposed to. You may use the NIOSH Pocket Guide to Chemical Hazards.



14. You have identified the liquid. It is a hazardous material. You and the forklift driver move away from the spill.

What do you do next?
Remember the DECIDE process:

- D**etermine the presence of hazardous materials
- E**stimate likely harm
- C**hoose your objective
- I**nvestigate options
- D**o best option
- E**valuate progress

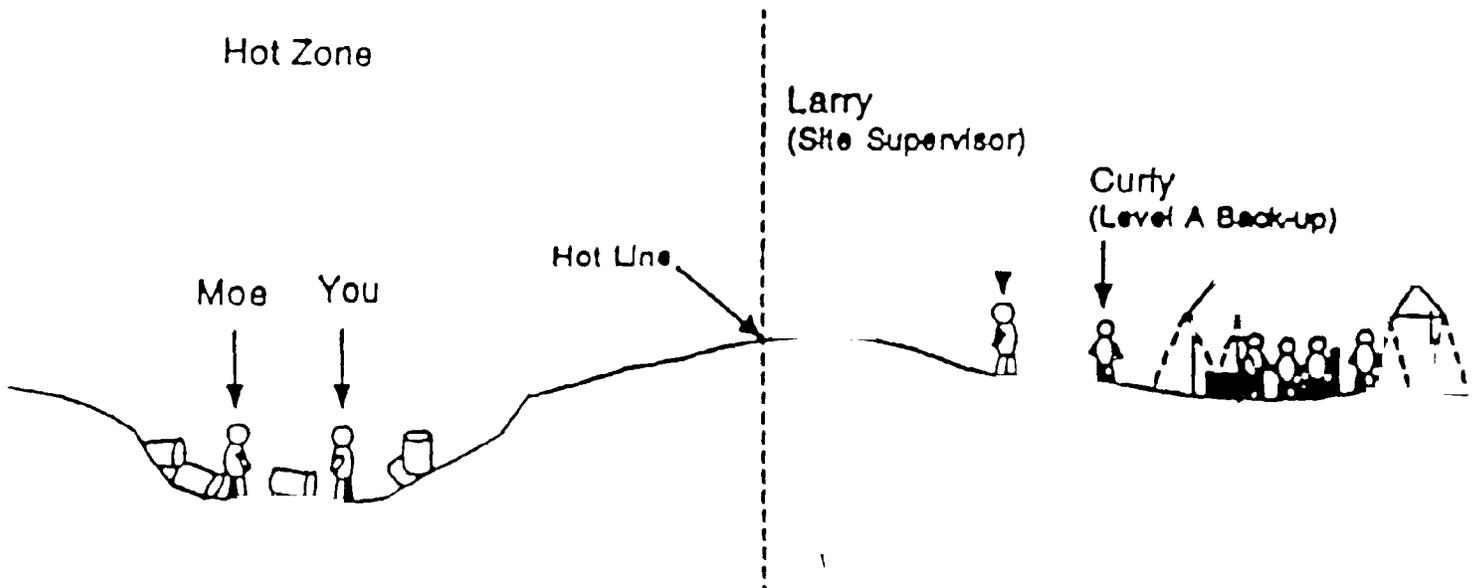


15. You and Moe are working in a trench in Level A protective gear. Moe staggers and falls down -- he does not get up or respond when you ask him if he is OK. You don't feel so good either. Nobody in the decon area can see you over the hill, and you don't have a radio.

What should you do?

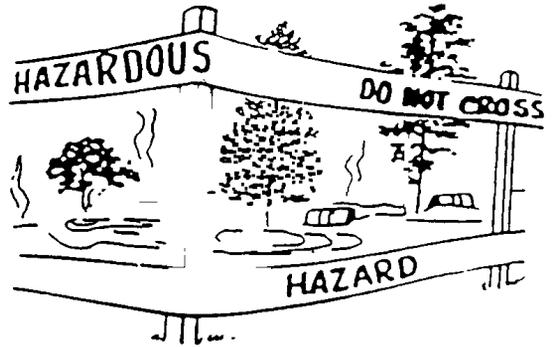
What should Larry do?

What should Curly do?



16. Some workers have rights under the HAZWOPER standard. Which of the following types of work are covered by HAZWOPER. Check any that apply

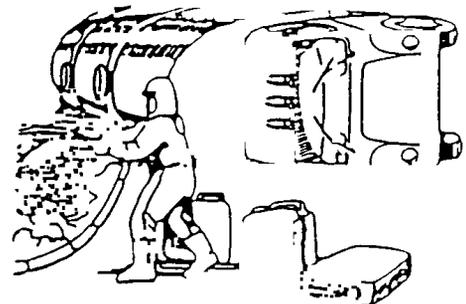
Hazardous waste site clean up



Work at TSD facilities
(facilities that treat, store, or dispose of hazardous wastes)



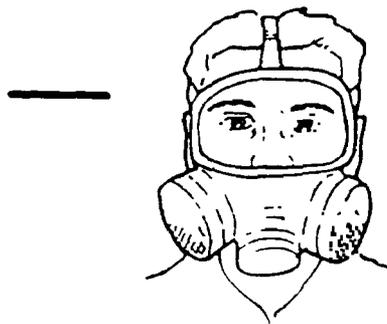
Emergency response to chemical spills



17. The drawings below show different degrees of respiratory protection. Match each of the following work area conditions to the drawing showing the most appropriate protection.

Place the letter from each description by the right respirator.
Use each letter only once.

- A. Work area atmosphere contains 18% Oxygen and a high concentration of unidentified organic vapors.
- B. Work area atmosphere contains 21% Oxygen and no detectable air contaminants.
- C. Work area atmosphere contains 21% Oxygen and an organic vapor which has been identified. The organic vapor has good warning properties and is present below the IDLH level.



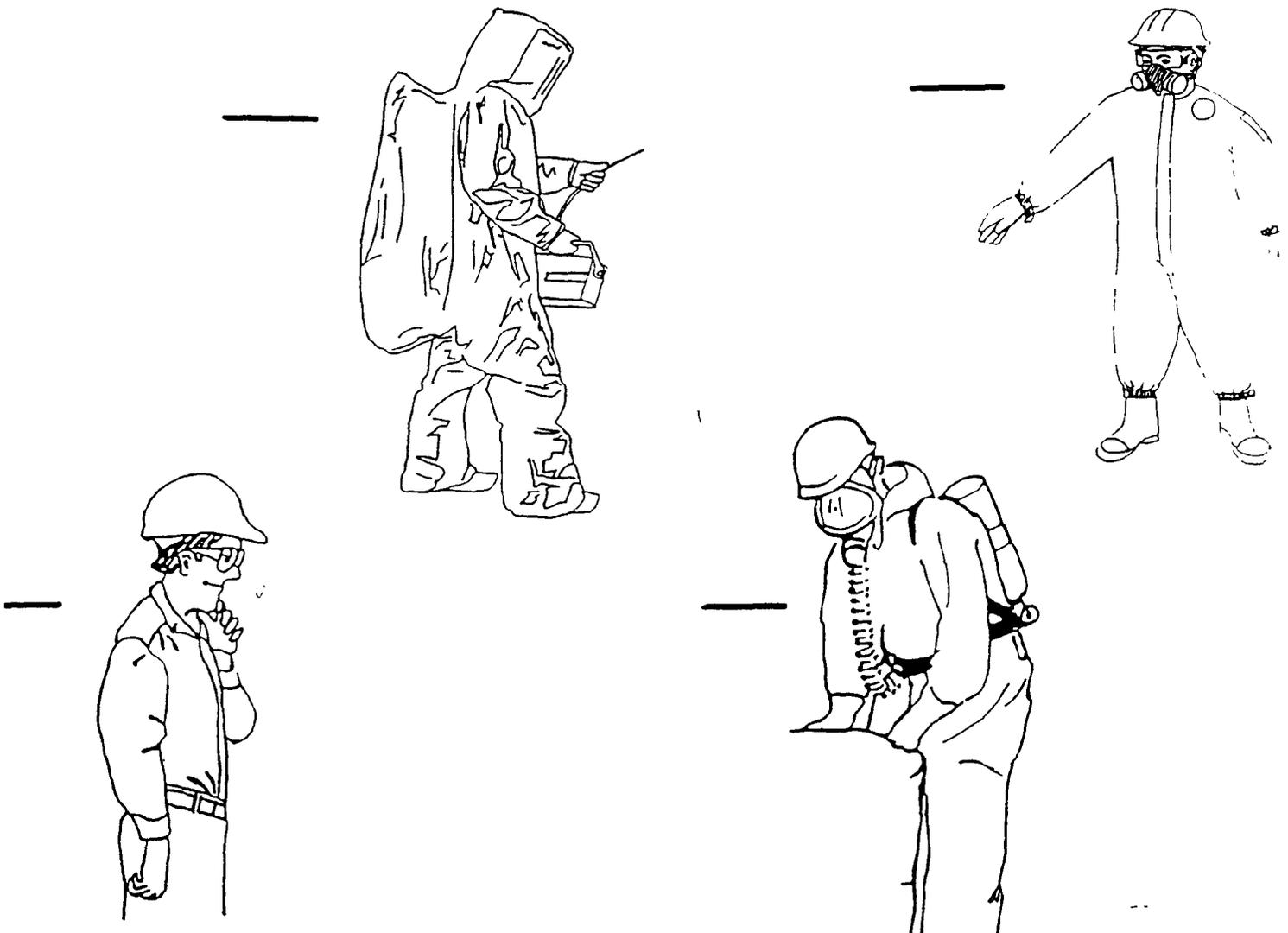
18. The drawings below show the 4 levels of protection for PPE ensembles. Match each of the job descriptions to the drawing that shows the most appropriate level of protection.

A. Your job is to clean sludge from the bottom of a tank. Ventilation has raised the Oxygen level to nearly normal, but IDLH concentrations of toxic vapors are present. The sludge represents a minor splash hazard to the skin.

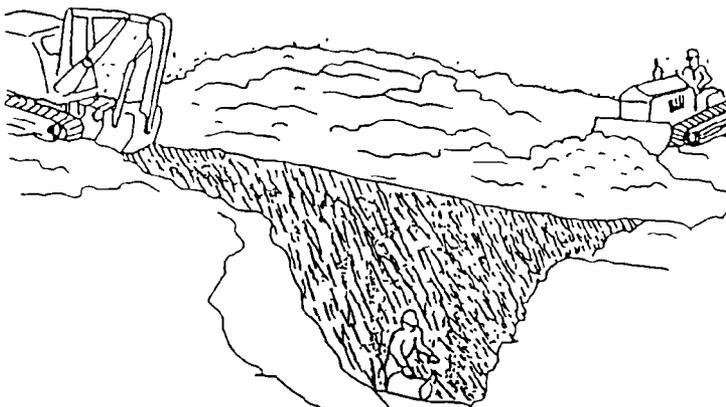
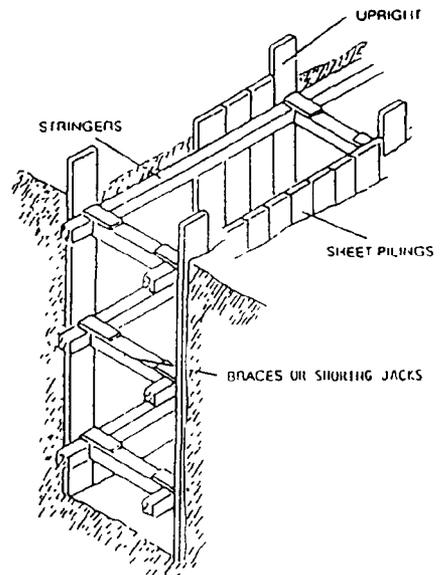
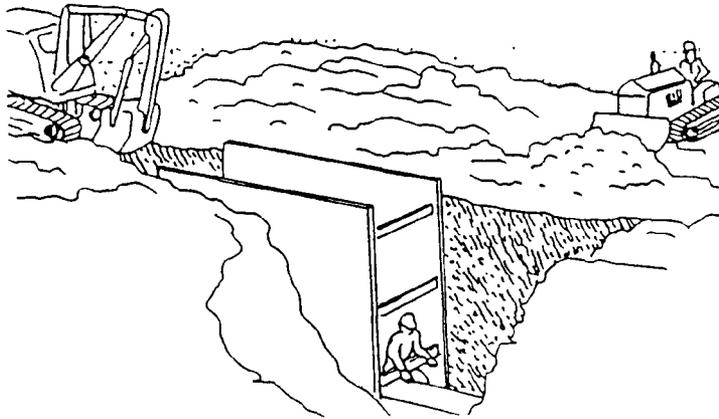
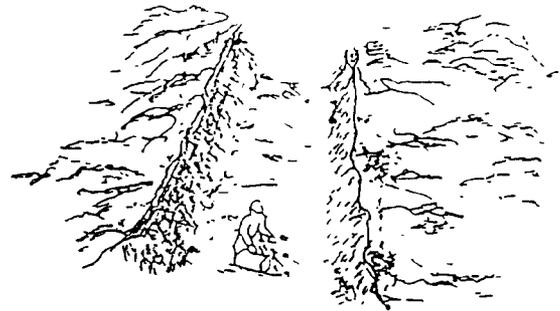
B. Your job is to unload a supply truck in the support zone.

C. Your job is to repair a broken pipe connected to a tank of waste 90% sulfuric acid. The acid is spraying from the pipe with considerable pressure.

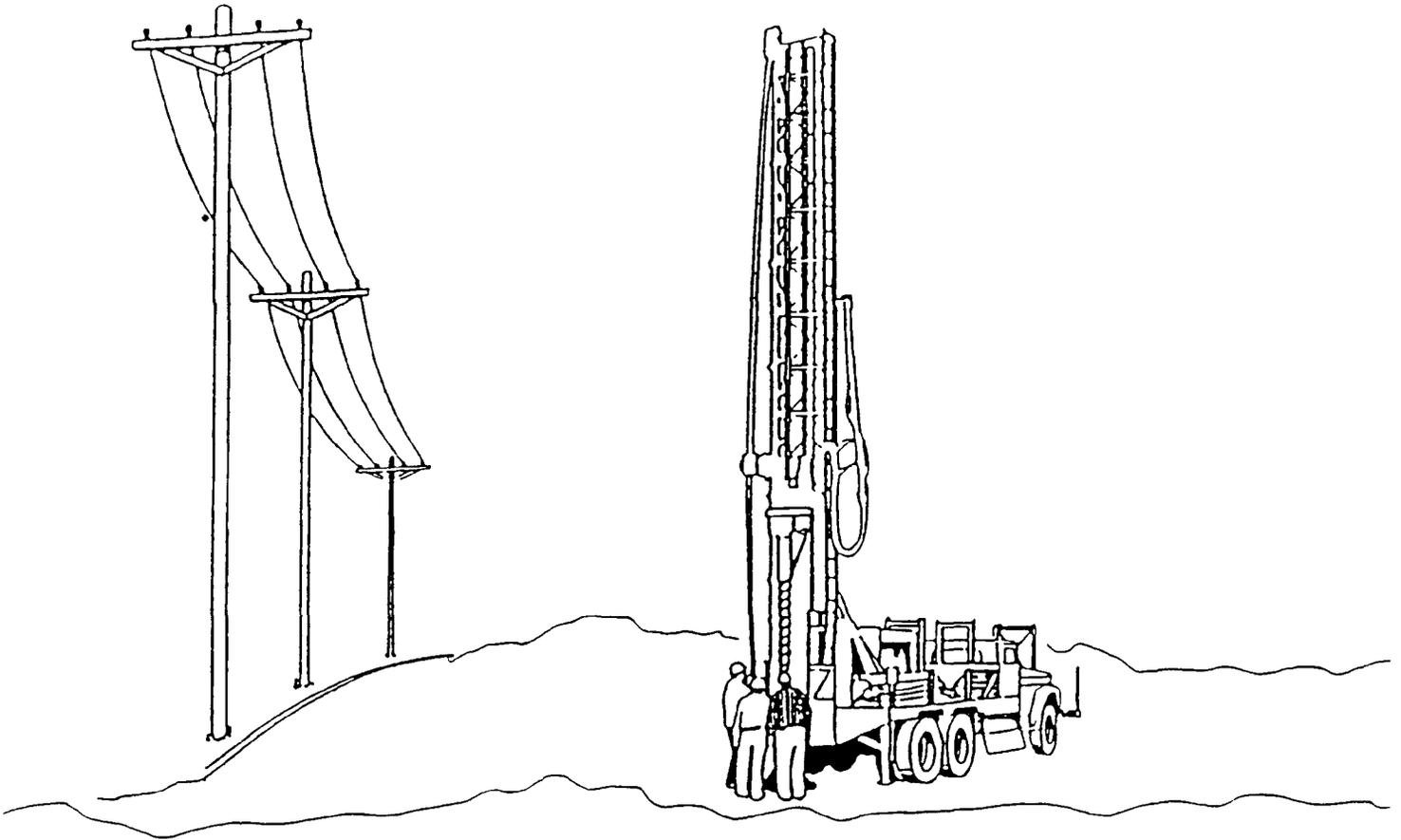
D. Your job is to pump the contents of 55 gallon drums into a tank truck. The staging area has normal oxygen content, but a toxic vapor present above the PEL. The contaminant has adequate warning properties and is present at less than the IDLH concentration.



19. The drawings below show excavations. Put an X across any excavation that appears likely to cave in.



20. Identify 3 types of accidents that could injure the workers in the drawing. Tell how each type of accident could be avoided.



Accident

Preventive Measures

1. _____

2. _____

3. _____
