Cave-In Hazard Case Study:

A 22-year-old laborer was killed as he manually dug a trench for a pipe installation. The trench was about eight feet deep, and none of its walls were properly shored or sloped. When one of the walls collapsed, the victim was buried under six feet of soil. Never enter a trench that is not properly inspected and protected!

Understanding Cave-In Hazards

Soil is heavy. A cubic foot of soil often weighs more than 100 pounds.

A cubic yard weighs at least 2,700 pounds– roughly the equivalent of a compact car.



1 cubic foot of soil >100 lbs.

1 cubic yard of soil >2700 lbs.

1 compact car 3100 lbs.

Trenching Accident Statistics

54 Fatalities per Year

While trenching and excavation work poses a number of serious hazards, cave-ins are the deadliest, accounting for 76% of all fatalities for excavation workers. Cave-ins cause 54 fatalities a year.

1,000 Injuries per Year

Cave-ins are also responsible for 1,000 injuries per year. 140 lead to permanent disability.

Trenches are one of the most dangerous environments in the worksite. ***Every month, a trench collapse kills two workers.*** *As an employer it is your responsibility to assure that all necessary precautions and controls are in place to protect yourself and others.*

Stages of a Cave-In: No Warning

Cave-ins typically occur with no warning, so appropriate protective measures must be properly installed before any work in the excavation begins.

- Know the stages of a cave-in.
- As a trench is excavated, inward pressure on the trench walls becomes unsupported.
- As the soil's tensile strength is reached, cracks form, running parallel to the trench. This puts stress on the base of the wall, and the path towards a cave-in has begun.

Signs of a Potential Cave-In

All of the following soil conditions could indicate a potential cave-in:

- Tension cracks
- Toppling
- Bulging

Prevention is Protection

Protect all excavations from potential cave-ins that may harm personnel. Use one of the following methods:

- **Sloping and benching:** Slope or terrace the sides of the excavation to reduce vertical soil load.
- **Shoring:** This support system is engineered to hold soil in position and prevent a cave-in.
- **Shields (trench boxes):** These protect workers within a walled structure should a cave-in occur.

Reminder: Choose the protection method best suited to the soil type and trench depth. Tension cracks and bulges or movement in trench walls or floor are signs of an imminent cave-in. Make trenches safer by sloping, benching, shoring, the use of shields, or some combination.

Discussion Topics

1. Have you ever witnessed a collapse or hear of one on the news? What happened?

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2. What are some signs that a trench may collapse?

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3. What is the best method of protection for our scope work?

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Name	Signature

Date: _____