

2 - Excavation: Safety Training

EH&S – MGA

Goals: This safety session should teach you that:

- A. Excavations present a wide range of deadly hazards.
- B. OSHA regulations set out basic safety rules to protect workers in excavations.
- C. Employers and workers must design and support excavations and trenches properly in order to protect themselves.

OSHA Regulations: 29 CFR 1926-650-652, Subpart P—Excavations.

1. Excavations present a wide range of hazards to those working in or around them. Hazards include:

- A. Being crushed or smothered by a cave-in
- B. Drowning from a sudden inflow of water
- C. Being asphyxiated by lack of oxygen
- D. Illness or death from inhaling toxic substances
- E. Falling into an excavation
- F. Electrocution from underground electric utility lines
- G. Fire from an underground gas main being punctured
- H. Being hit by objects or material falling into the excavation
- I. Being hit by construction vehicles working near the excavation

2. OSHA regulations define excavations and trenches this way:

- A. An excavation is any man-made cut, cavity, trench, or depression in an earth surface formed by earth removal.
- B. This definition covers excavations of any size, from cellars to highways.
- C. A trench is an excavation below the ground's surface that is deeper than it is wide and no more than 15 feet in width.

3. OSHA requires developing a safety plan before work starts and considering such factors as:

- A. Soil type, to determine stability and the proper type of support system necessary for safety.
- B. Surface and groundwater conditions and any dikes, ditches, or special equipment needed to keep water out.
- C. Utility lines near the excavation requiring notice to utility companies to verify exact locations.
- D. Location and condition of adjacent structures that could be weakened or even collapse because of the excavation.
- E. Traffic in the area that could endanger workers.

4. Workers in or near excavations or trenches need to protect themselves.

- A. Before beginning work, make sure a “competent” person has inspected the excavation that day as required by OSHA.
- B. Always wear PPE assigned, including a hard hat to protect against falling objects.
- C. Wear a reflective vest to provide protection from traffic in the area.
- D. Wear a respirator if there is any danger of a hazardous atmosphere or oxygen deficiency.
- E. Operate equipment only if you have been trained and authorized.
- F. Don’t stand or work under loaded lifting or digging equipment.

5. Workers must also be aware of indications of possible danger.

- A. Keep an eye out for any conditions that could cause cave-ins, such as cracks, bulges, or signs the ground is moving.
- B. Be wary of water in a trench unless you are sure there are proper methods of controlling it.
- C. Watch out for ventilation problems or the smell of chemicals.
- D. Make sure objects, equipment, or materials are not placed too close to the edge of the excavation—they should be at least 2 feet from the edge.
- E. Check to be sure there are proper slopes or supports to prevent cave-ins and that there are sturdy steps, ladders, or ramps to allow quick escape in an emergency—footholds in the rock or soil are not sufficient.
- F. Be sure your work is not undermining adjacent structures and making them unstable.
- G. Watch out for construction vehicles or other traffic operating close to where you are working—they may have limited visibility or be unaware of your presence.

6. Take the hazards of excavations very seriously.

- A. Cave-ins can be deadly—a cubic yard of earth weighs approximately 3,000 pounds— about as much as a car.
- B. Sloping the sides of an excavation and providing supports for the sides are the two main ways to prevent cave-ins.
- C. Other hazards like flooding or lack of oxygen are also deadly.
- D. In case of any sign of these deadly dangers, warn fellow workers and leave the excavation at once.

Summation:

Knowing about the hazards of excavation in general is only the first step. Each site will have different dangers that must be addressed properly. For each of you, your life is on the line—do everything necessary to protect it.