

Safe Work in Trenches

Hazard Alert



Most trenches are dug to lay pipe or place manholes, conduit runs, or footings. It is easy to try to work fast in a trench and get out without taking the correct safety steps. **Don't.** Each year, more than 30 construction workers are killed in trenches.

The Hazards

A trench is a *confined space* with many special problems. **Most deaths in trenches are from cave-ins.** Other risks are falls, electrocution, being struck by falling objects (or a backhoe), and bad air. Bad air can hurt your breathing, help cause a fire, or poison you. **Many workers die trying to rescue other workers in trenches.**

Protect Yourself

OSHA says your employer (the contractor) must train you about the hazards and how to protect yourself.

If a trench will be dug, the contractor must name a competent person. (OSHA says a competent person knows the OSHA excavation standard,* is trained in soil analysis and protective systems, can identify hazards, and has authority to stop work right away.)

OSHA has special rules to protect workers in trenches (and all excavations). You must follow the OSHA rules unless:

- The trench is in stable rock, *or*
- The trench is less than 5 feet deep and a competent person finds no reason to expect a cave-in.

A competent person must inspect a trench:

- **Before every shift**
- If bad air is expected — such as, the trench is in a sewer or near a dump or stored chemicals
- After anything that can increase hazards, such as:
 - Every rainstorm
 - Vibration (such as, from nearby heavy equipment or a passing train)
 - The trench wall moves, causing cracking, scaling, or bulging
 - A heavy load near the trench moves or gets heavier.

BEFORE YOU WORK IN A TRENCH:

Get a competent person to OK it.

Make sure all equipment is in good condition. This includes water pumps and ventilators.

You must have a way to get out, like a ladder (within 25 feet of you), if the trench is 4 feet deep or more.

The contractor must have all utilities marked before digging. The contractor must call utility companies and shut off all electricity, gas, and water pipes in the trench. Do not use a boom near overhead power lines. If you must operate boomed equipment, ask the competent person to make sure power has been cut off and the lines have been grounded. *(Please turn the page.)*

If bad air is expected, OSHA says there must be a rescue plan and rescue equipment on the job site. Rescue teams must have special training. The best way is to follow OSHA rules for rescues from confined spaces.*

If bad air is expected, a competent person must test the air:

- OSHA says the air must have 19.5 to 23.5% oxygen.
- OSHA says substances that can burn or explode — like gasoline or methane — must be at less than 20% of the lower explosive limit (or lower flammability limit). (The industry says 10%.)
- Check the air for toxics like chlorine, carbon monoxide, sewer gases, and hydrogen sulfide. These **toxics can kill**. Carbon monoxide has no smell. Hydrogen sulfide smells like rotten eggs. The competent person will decide if blowers can keep the air safe.

A competent person must check the soil. This check helps the competent person choose the right worker-protection system.

- A trench can be in stable rock, or type A, type B, or type C soil. Stable rock and type A soils are the safest. Most soils are type B. Sand and trenches with water are type C soils.
- **Do not work in a trench that contains water** until the competent person checks if it is safe.
- Clay can be type A, B, or C soil; it depends on how much water is in the clay. **Many cave-ins happen in clay, because people think it looks safe.**

WHEN YOU WORK:

You will need to use **sloping, benching, shoring, or a trench box** to prevent injuries or deaths.

Keep the spoil pile 2 feet or more from the edge of the trench.

Prevent materials, rocks, or soil from falling into the trench; use barriers, if needed.

A competent person should test the air as often as needed to make sure it is safe.

IF A TRENCH CAVES IN:

Get out of the trench. Call 911 (or emergency services). Help your co-workers from **outside** the trench, if you can.

Never go into a trench that is caving in or has bad air — even to rescue co-workers. You can be killed.

For more information, call your local union, the Center to Protect Workers' Rights (CPWR) (301-578-8500 or www.cpwr.com), the National Institute for Occupational Safety and Health (1-800-35-NIOSH or 1-800-356-4674 or www.cdc.gov/niosh), or OSHA (1-800-321-OSHA or www.osha.gov). Or check the website www.elcosh.org.

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*The OSHA trench standard is in the Code of Federal Regulations: 29 CFR 1926.650, 651, and 652. The confined space standard is 29 CFR 1910.146