



MIOSHA Fact Sheet

Construction Safety & Health Division

Trenching and Excavation

- Protective Systems

Cave-ins are perhaps the most feared trenching hazard. MIOSHA has investigated four fatal trench cave-in accidents in the 5-year period of 2008 through 2012. However, other potentially fatal hazards exist in trenching and excavation operations, including asphyxiation due to lack of oxygen in a confined space, inhalation of toxic fumes, drowning, etc. Electrocution or explosions can occur when workers contact underground utilities.

MIOSHA requires that workers in trenches and excavations be protected, and that safety and health programs address the variety of hazards they face. MIOSHA [Part 1. General Rules](#), Rule 114 requires an Accident Prevention Program at every construction work site.

How to Avoid Hazards

Pre-job planning is vital to accident-free trenching; safety cannot be improvised as work progresses. The following concerns must be addressed by a competent person:

- Preplan: contact utilities (e.g., gas, electric) to locate underground lines, plan for traffic control when necessary, and determine proximity to structures that could affect choice of protective systems.
- Evaluate soil conditions and select and construct appropriate protective systems in accordance with MIOSHA [Part 9. Excavation, Trenching and Shoring](#). Appropriate protective systems to prevent a cave-in may include trench boxes, shields, benching and/or appropriate sloping of trench sides.
- Test for low oxygen, and hazardous gases and vapors, especially when gasoline engine-driven equipment is running, or the soil has been contaminated by leaking lines or storage tanks. Fossil fuel powered equipment produces carbon monoxide in exhaust and must not be used without adequate ventilation. Provide appropriate respiratory protection when necessary.
- Provide safe access into and out of the excavation.
- Provide appropriate protections if water accumulation is a problem.
- Inspect the site daily at the start of each shift, following a rainstorm, or after any other hazard-increasing event.
- Keep excavations open the minimum amount of time needed to complete operations.

For additional assistance, please contact the Construction Safety and Health Division at 517-284-7680 or the Consultation Education and Training Division at 517- 284-7720. Construction Safety Standards can be viewed on the MIOSHA website at www.michigan.gov/mioshastandards.

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