



## SITE SAFETY MEETING - TOOL BOX TALK

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# Heavy Motorized Equipment & *Lightning!*

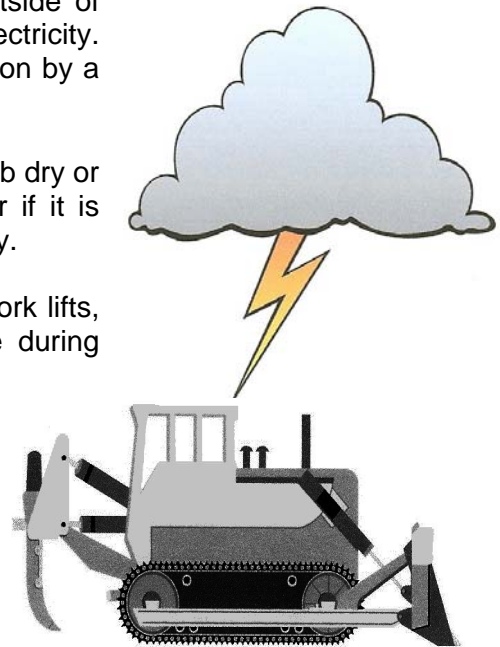
What happens when lightning strikes a piece of heavy equipment, such as a backhoe or Bulldozer?

Electrically speaking, currents are carried mostly on the outside of conducting objects. The outer surface carries most of the electricity. The conditions inside the steel cab can be likened to protection by a partial Faraday Cage\*.

The hazard depends on the conditions. For example, is the cab dry or wet? If the cab is made of fiberglass (a poor conductor) or if it is open, the "skin effect" principle described above may not apply.

Backhoes, bulldozers, loaders, graders, scrapers, mowers, Fork lifts, etc. which have enclosed cabs (ROPS) are generally safe during nearby electrical storms.

- Shut down the equipment, close the doors, and sit with your hands in lap to wait out the storm.
- Do not touch anything that may be connected to the outside.
- During close lightning, never attempt to step off the equipment to ground.



Should you do so, you establish a "dual pathway to ground," which creates a very dangerous "step voltage" and "touch voltage" situation. In their attempt to equalize themselves, the lightning voltages may go right through *you*.

Smaller equipment without ROPS is not safe during electrical storms. Riding mowers, golf cars, utility wagons, compactors, and other equipment are examples. Rubber tires do not provide protection from lightning. Should an electrical storm approach while you are using this type of equipment, abandon the machine and get into a safe, substantial shelter.

A person who has been struck by lightning will not retain an electrical charge. If someone is struck by lightning:

- Call 911 and / or send for help.
- Apply First Aid if you are qualified to do so.

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\* A **Faraday cage** is an enclosure formed by conducting metal. Such an enclosure blocks out external static electrical fields. An external static electrical field will cause the electrical charges within the conducting material to redistribute themselves so as to cancel the field's effects in the cage's interior. This effect is used for example to protect electronic equipment from lightning strikes and other electrostatic discharges.

## Questions to start discussion

1. What happens when lightning strikes a backhoe or Bulldozer?
2. What conditions affect the hazard of being on or in a piece of equipment during a lightning storm?
3. What should you do if you are in an enclosed ROPS cab during an electrical storm?
4. What types of equipment would not be safe to remain on or in during an electrical storm?
5. What should you do at the threat of an oncoming electrical storm if you are in a piece of equipment or vehicle that does not have an enclosed cab?
6. What should you not do when lightning is close?
7. What should you do if someone is struck by lightning?

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### Meeting Notes:

Employee Comments / Concerns: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Other Safety issues to be addressed on the job: \_\_\_\_\_  
\_\_\_\_\_

**Training Record:** Date: \_\_\_\_\_ Jobsite: \_\_\_\_\_ By: \_\_\_\_\_ Title: \_\_\_\_\_

Employee Name	Emp #	Signature	Employee Name	Emp #	Signature
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

**Tool Box Talks** are employee safety meetings designed to serve as 15 minute on-site training sessions focused on key topics relative to your work.

Site superintendents or foremen are responsible for holding meetings each week usually during a morning break. This important segment of your general safety program encourages open discussion on the topic of the week and allows employees to share their experiences about accidents and safe or unsafe work practices. Recordkeeping is mandatory and all involved must sign off on each session.

Topics for your company could include: electrical safety, excavation and trenching safety, fall protection, scaffold safety, stairway and ladder safety, hazard communication, fire safety, personal protective equipment, tool safety, materials handling, etc.

Sample Tool Box Talks are provided compliments of the Safety Committee of the Hartford County Homebuilders Association. For more information on Tool Box Talks contact The HBA office 860 563-4212. *Tool Box Safety Talks* can be purchased from the National Association of Homebuilders 1-800 368-5242, [www.nahb.com](http://www.nahb.com) or may be available through your business insurance provider.

**BUILD SAFELY – THINK SAFETY**