

Powerline contact

You need written procedures when operating equipment near powerlines

What's the hazard?

Powerline contact can kill or seriously injure you. Two workers have died from powerline contact in Ontario construction so far this year:

- An equipment operator was electrocuted while operating the tailgate of a dump truck after the dump-truck box contacted a 4,800-volt overhead powerline.
- After a dump-truck box contacted a 72,000-volt overhead powerline, the truck driver left the cab and was electrocuted.

In addition, an insulator installing insulator around two 120-volt lines made contact with a transformer and was electrocuted.

Powerline contact happens more frequently than you may think.

According to the Ministry of Labour, there were 196 powerline contacts in 2005. That's up from 108 in 1998.

The powerlines aren't always high-voltage, or even overhead. Many contacts involve low-voltage service or buried cable (see "Buried cable", page 6).

What equipment?

Workers contact powerlines most often when they're using dump trucks and cranes.

But people also hit cables when they're using elevating work platforms and low-tech equipment such as ladders and rolling scaffolds.

Constructors must take steps to prevent powerline contact whenever

- ❑ equipment such as a crane, dump truck, or other vehicle is going to be operated near an energized overhead electrical conductor
- ❑ excavating equipment such as a backhoe will operate near underground powerlines.

What distance?

Constructors must have written procedures to prevent contact whenever equipment operates within the minimum permitted distances from live overhead powerlines (see table on the next page). The constructor must have copies of the procedure available for every employer on the project.

Mandatory procedures

The written procedures required by the Construction Regulation include the following.

- ✓ Place enough warning devices (such as signs) near the hazard so that the equipment operator can always see at least one of them. The operator must be able to see them under any environmental conditions that may occur (e.g., night, rain, fog).

Signs must be specific about the hazard. Use signs which



Keep the minimum distance from powerlines

Normal phase-to-phase voltage rating	Minimum distance
750 or more volts, but no more than 150,000 volts	3 metres
Over 150,000 volts, but no more than 250,000 volts	4.5 metres
More than 250,000 volts	6 metres
Beware: The wind can blow powerlines, hoist lines, or your load. This can cause them to cross the minimum distance.	



This crane boom could reach within the minimum distance.

comply with section 44 of the Construction Regulation. They should state, for example, “Danger! Electrical powerlines overhead”. We recommend that you include the voltage on the sign.

- ✓ You must ensure that operators are provided with written notification of the electrical hazards before they begin work.
- ✓ The operator’s station (e.g., driver’s cab) must have a sign (such as a sticker) warning of the hazard. The machine may come with a warning sticker in the cab. Make sure it’s still legible.
- ✓ You must ensure that the employer of the equipment operators provides and explains the procedures to the operators before they start work.
- ✓ You must designate a competent worker as a signaller to warn the operator when any part of the equipment, load, or hoist line approaches the minimum distance to a powerline. (See section 1 (1) of the Construction Regulation for the legal definition of “competent worker.”) The signaller must be

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What if you HIT A POWERLINE?

- **Stay on the equipment.** Don’t touch the equipment and the ground at the same time. In fact, touching anything in contact with the ground can be fatal.
- **Keep others away.** No one else should touch the equipment or its load—including buckets, outriggers, load lines, and any other part of the machine. Beware of time-delayed relays: even after line damage trips the breakers, relays may still try to restore power. They may come on automatically two or three times.
- **Break contact.** If possible—while remaining inside the machine—the operator should try to break contact by moving the equipment clear of the wires. This may be impossible if contact has welded conductors to the equipment.
- **Call the local utility.** Get someone to call the local electrical utility for help. Stay on the equipment until the utility shuts down the line and confirms that the power is off. Report every incident of powerline contact to the utility—they’ll check for damage that could cause the line to fail later.
- **Report the contact.** When the powerline is rated at 750 volts or more,
 - ✓ report the contact to the inspection department of the Electrical Safety Authority within 48 hours
 - ✓ provide notice in writing to the Ministry of Labour and to the joint health and safety committee, health and safety representative, and trade union.

in full view of the operator and have a clear view of both the equipment and the conductor. The signaller and employer must also comply with section 106 of the Construction Regulation regarding signallers.

(The only exception to these measures occurs when, *under the authority of the owner of the electrical conductor*, protective devices and equipment are installed and written procedures are implemented that are adequate to protect equipment operators from electrical shock and burn.)

Constructors & employers

- ❑ If you anticipate that your work will take place near powerlines, write your procedures ahead of time.
- ❑ Have powerlines moved, insulated, de-energized, or follow the precautions in the Construction Regulation. Insulating or “rubberizing” powerlines offers a precaution against brush contact in some circumstances. Your local utility may provide this service.
- ❑ Avoid storing material or equipment under powerlines. If material must be stored under powerlines, hang warning flags and signs to inform workers about the hazard and the need for written procedures if hoisting.
- ❑ Identify the voltage of the service by checking markings on the utility pole and calling the utility.

- ❑ Tell contractors and workers that work should be planned to avoid powerlines.

Worker orientation

Include the following in your site orientation for workers:

- ✓ Tell equipment operators where overhead powerlines are and where they may hang lower than expected.
- ✓ Tell workers that they should not let ladders or scaffolds lean or drift toward overhead powerlines. Always keep equipment further away than the minimum allowable distance.
- ✓ Inform workers how you have identified powerline hazards, and tell them that written procedures are required before they can work near them.
- ✓ Go over your emergency response procedure with equipment operators and the

workers assisting them in case contact does happen.

- ✓ Tell workers what to do if they make contact (see pg. 5).

Buried cable

Digging into buried cable resulted in 282 powerline contacts from 1998 to 2005. Many of these happened because people began excavating before getting a locate on the service.

Here are some things you can do when dealing with buried cable.

- ✓ Before excavating, request that the owner of the service locate and mark it out. Call Ontario One Call (1-800-400-2255) or the utility owner directly.
- ✓ Mark underground lines on all drawings.
- ✓ Post warning signs along their path.
- ✓ Inform excavation equipment operators about their location and how they are identified. ■

