



Reducing powerline contacts

through education and training

IHSA planning awareness campaign

On busy construction sites with multiple trades and fast-moving heavy equipment, inadvertent powerline contact can be a major concern. According to the latest data released by the Electrical Safety Authority (ESA), contact with powerlines by non-electrical workers continues to cause many serious injuries and deaths in Ontario. That's why IHSA is planning an Overhead Powerline Contact Awareness and Education campaign from July to September.

ESA statistics

The campaign will focus on inadvertent contacts with energized overhead powerlines on construction projects. ESA has provided a chart that shows how much bigger the problem of overhead powerline contacts is in the construction sector compared with other sectors (Chart 1).*

Statistics show that 70 per cent of the critical injuries and fatalities from powerline contact occur on construction sites in residential and industrial areas, in parks, and on roadways.† ESA investigators have found that the most common causes of powerline contacts were lack of awareness of powerline hazards and improper procedures. Victims and witnesses were caught totally by surprise when contact was made. Electrical hazards on construction and industrial sites must be treated with the proper respect and the correct procedures must be followed. Hazard assessments must be completed before work begins.

In the construction sector, the type of activity being done on the site when contact was made was a major factor. Lifting materials, excavation, hauling materials, roofing and exterior building work, and tree trimming

continue to be some of the main situations where powerline events occurred (Chart 2).*

Labourers, roofers, and truck drivers or equipment operators are the most common occupations where powerline contact injuries and fatalities occur. They account for almost 50 per cent of all powerline contact fatalities and serious injuries.†

Equipment operators

For equipment operators, sections 181 to 195 of the construction regulations contain specific rules for working near powerlines and other electrical plant. When equipment can encroach on the permitted minimum distances from powerlines, the constructor must have written procedures to prevent that from happening. Copies of the procedures must be available to every employer on the project.

Section 188 of the construction regulations specifies how close workers and equipment may get to overhead powerlines (Table 1). The regulation also describes what action must be taken on a worksite if equipment or the worker operating it is likely to encroach on those distances.

Table 1: Proximity to Energized Overhead Electrical Conductors

Nominal phase-to-phase voltage rating	Minimum distance
750 or more volts, but no more than 150,000 volts	3 metres
more than 150,000 volts, but no more than 250,000 volts	4.5 metres
more than 250,000 volts	6 metres

Source: O. Reg. 213/91, s.188

The employer must provide, and explain, the procedures to the equipment operator before the operator starts work. Other key steps include the following.

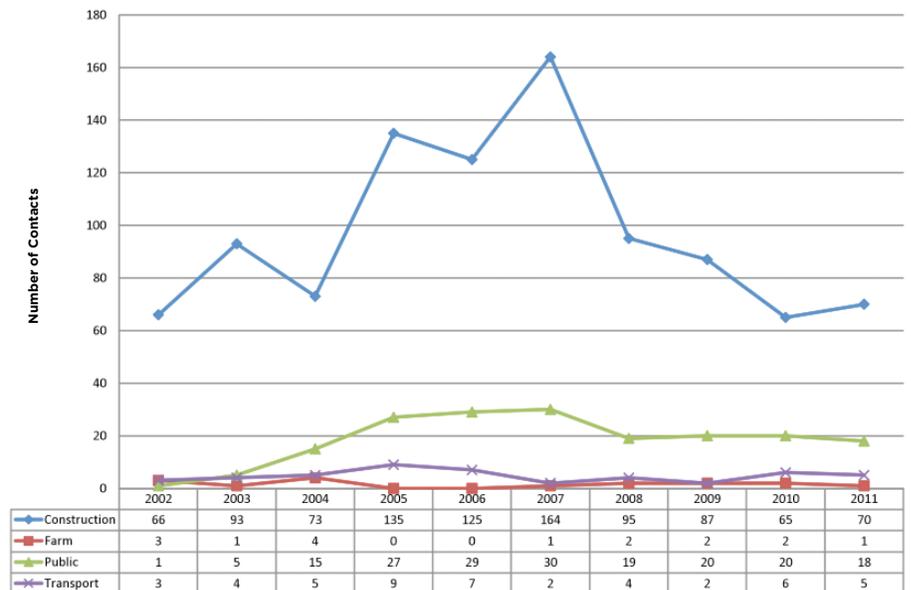
- Establish written measures and procedures and follow them.
- Make copies available to every employer on the project.
- Explain the written procedures to every worker involved.
- Give written notice of the electrical hazard to all operators.
- Give safety talks about powerline contacts.
- Designate a competent worker as a signaller.
- Post “DANGER” signs in hazardous areas.
- Post an electrical warning sign at the operator station(s).
- Post warning devices that are visible to operators near the hazard.

Roofers

Like equipment operators, roofers often run the risk of making contact with an electrical service. Electrical services such as conduits or cables could be just below the membrane of the roof. They could also be mounted to the underside of the roof deck on the inside of the building. Roofers should take the following precautions:

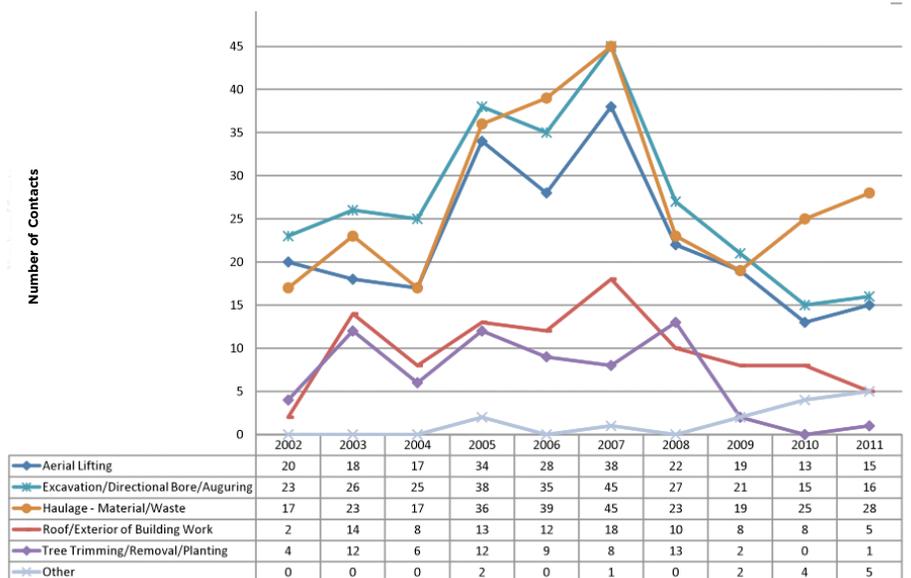
- Ask the owner of the property where the conduit or cable is located.
- If possible, check the underside of the roof deck inside the building for conduits and cables in the spot where you plan to cut.
- If you are working on a concrete roof deck, x-ray the area before cutting.
- Always remove the membrane system before cutting holes in the roof deck.
- If an electrical service is located close to where you plan to cut, ask to have the power shut off and locked out.
- If the power cannot be shut off and locked out, ask to have a new location chosen for the hole.

Chart 1—Number of Overhead Powerline Contacts in Ontario by Sector, 2002–2011*



Source: ESA records

Chart 2—Number of Overhead Powerline Contacts for the Construction Sector by Activity, 2002–2011*



Source: ESA records

Education is the most powerful tool for preventing powerline contact.

Ladders

When contact with powerlines results in serious injuries or deaths, the most common equipment being used is a ladder (Table 2). This happens when workers are moving the ladder from one work location to another.

Table 2: Occupational Powerline Contacts, 2002 to March 2013 (Q1)[†]

Equipment	Critical injuries	Fatalities	Total
Ladder	10	3	13
Dump truck	3	4	7
Crane	4	2	6
No equipment used	4	0	4
Auger	3	1	4
Aerial work platform	2	2	4
Pole	2	2	4
Unknown	2	1	3
Truck not specified	3	0	3

It's important to set ladders up and take them down properly to ensure they don't touch any overhead electrical wires. The following checklist offers a few helpful ideas on setting up a ladder safely.

- Before setting up a ladder, always check for overhead powerlines.
- Do not rest a ladder against flexible or movable surfaces.
- Set the ladder on a firm, level surface. On soft, non-compacted, or rough soil, use a mudsill.
- Maintain three-point contact when climbing up or down. That means two hands and one foot or two feet and one hand on the ladder at all times.
- Keep your centre of gravity between the side rails. Your belt buckle should never be outside the side rails.

Education

Education is the most powerful tool for preventing powerline contact. Educated workers know the right procedures, can assist their co-workers, and can help ensure that the worksite stays safe. Educated supervisors can maintain proper procedures and make sure everyone is following the rules. It's important that everyone know their responsibilities and where the danger lies.

Although Ontario continues to make progress in reducing inadvertent electrical contacts, more can be done to protect workers from this hazard. Through proper procedures and training, workers will be more aware of the hazards and learn how to prevent them.

Visit our website and publications to learn more about our Overhead Powerline Contact Awareness and Education campaign. As part of the campaign, IHSA will distribute a hazard advisory on inadvertent contacts with energized overhead powerlines on construction projects. We also have many other products (e.g., posters and stickers) and information available at ihsa.ca

* ESA statistics for Chart 1 and Chart 2 represent known powerline contact incidents reported to ESA by electric Local Distribution Companies.

[†] Statistics were provided by the Ontario Ministry of Labour, the Ontario Coroner's Office, and the Electrical Safety Authority, 2002 to March 2013 (Q1).

