

Reduce the risk of electrical hazards when digging; your life depends on it!

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By LTL Staff



Personal injury due to live power cable damage can potentially result in burns to the hands, face, and body. These burns are typically caused by explosive effects or arcing current and by the arc blast which may follow when the conductor insulation is punctured by a sharp instrument.

To avoid contact with underground energized electrical power lines, call before you dig and have a certified utility locator perform a survey of the excavation site before commencing work. All electrical or utility lines and equipment discovered must be marked and isolated if working in close proximity.

As site drawings and maps may be outdated or may not indicate field routings properly, the worker is required to use appropriate personal protective equipment. Fiberglass-insulated shovels and picks provide added safety when excavating by hand. For example, a worker using an insulated spud bar would be isolated from electrical shock should contact be made with a live conductor and a worker using a steel spud bar would not.

WARNING: It is recommended that no worker perform work in the immediate vicinity of energized power apparatus; this area should be isolated by proper authorities competent in such activities.

Step and Touch Potential

The voltage of electricity entering the ground is highest at the contact point, lessening with distance. If a power line were to fall at your feet, there would be a difference in voltage between the foot closest to the source of electricity and the foot farther away. This voltage difference is referred to as “step potential”. Electricity wants to travel from a difference in potential. Since the human body contacts different potentials, the foot closest to the contact point would act as an entry point for the electricity. The current would run up the leg, across the abdomen, and down the other leg back to ground. “Touch potential” works in a similar manner with electricity flowing through the body using the hands as the point of entry. This may occur if the hands were to come into contact with an energized source, i.e., a striking/digging tool that has punctured a cable sheath or conductor insulation. The current would flow through the hand, arm, chest, abdomen, leg and foot to the ground. Serious injury may result due to the current flowing through the heart and brain.

The cost to an employer resulting from worker injury and associated production downtime is staggering. The Occupational Health & Safety Act of Ontario states that it is the responsibility of the employer to take every precaution reasonable in the circumstance for the protection of the worker: *The worker shall use rubber gloves, mats, shields and other protective equipment and procedures adequate to ensure protection from electrical shock and burns while performing the work.*

TIPS FOR SAFE DIGGING

Be sure to CALL BEFORE YOU DIG, and use ...

- site plans or maps to aid in locating power cables
- cable locating devices

- safe digging practices
- appropriate personal protective equipment including head, eye, hand, and foot protection, as well as insulated digging tools — insulated spud bar, shovel, pick, and cant hook

Benefits of fiberglass handled tools:

- Greater strength pound per pound than steel
- Will not transmit heat or cold, and will not conduct electricity
- Will not absorb moisture or warp
- Is non-corrosive and resistant to acids and other chemicals

CSA Z462 Annex N (N.4.4. Underground Electrical Lines & Equipment)

Before excavation starts and where there exists a reasonable possibility of contacting electrical or utility lines or equipment, a request shall be made to the supply authority or equipment owner to identify and mark the line location(s).

The supply authority or equipment owner will need to be advised of the following:

- a) location of the excavation;
- b) type of work;
- c) date and time work is to begin;
- d) caller's name and name and address of contractor/department;
- e) telephone number for contact; and
- f) special instructions (if any).

Electrical or utility lines or equipment discovered shall be marked before work begins. Persons-in-charge shall periodically report the location of electrical or utility lines or equipment to all workers, including new workers, subject to exposure.

CSA Z462 4.3.7 Personal & Other Protective Equipment

4.3.7.1 Workers working in areas where electrical hazards are present shall be provided with and use protective equipment that is designed and constructed for the specific part of the body to be protected and for the work to be performed.