Electrical Safety and Water Damaged Electrical Equipment
Guidelines on what to do in the event of flooding or water damage

Background

Electrical equipment and wiring that has been exposed to water through flooding, fire fighting activities, etc may be dangerous if re-energized without proper evaluation and reconditioning or replacement by qualified persons.

In many cases the water has been contaminated with soil, debris, chemicals, sewage, oil, or other substances. Reduced performance of electrical equipment and wiring and the integrity of electrical insulations due to contamination by moisture and pollutants may lead to fire and shock hazards. Remember, water and electricity don't mix.

What do I do before evacuation?

In any area where immediate flooding is anticipated, it is essential to shut off all electrical power by turning off the main service switch. If there is time, move as much electrical equipment as possible to floors or areas above the anticipated flood level. It is important not only to be prepared for the flooding, but to make preparations for normal living after the flood had subsided. *Note: Always have a flashlight and batteries ready - flooding may occur at night.*

Returning home after a flood

Extreme precautions must be observed when returning home to a flood damaged area. Stay well clear of any electrical power wires. Electricity can travel through water. You should immediately report any downed wires to the Local Distribution Company (LDC or electric utility). No part of a flooded installation can be assumed to be safe, not even the main switch or circuit breaker. Before the equipment is tested or worked on, all power should be disconnected. If the main switch was left in the "on" position, contact your LDC (local utility) to ensure power to the building is off before attempting to access the panel. Call a licensed electrical contractor to assess the damage to ensure your safety. A list of licensed electrical contractors in your area can be accessed at www.pluginsafely.ca.

Getting reconnected

Where electrical power has been disconnected from the premises for safety or damage reasons, the utility requires written authorization from the Electrical Safety Authority prior to reconnecting power. Any necessary repairs or replacement of wiring and equipment shall be completed and a permit shall be filed to have it inspected and authorized for reconnection of service. Further information regarding this process may be obtained from the Electrical Safety Authority at 1-877-ESA-SAFE (372-7233) or at www.esasafe.com.

Safety tips for cleaning up damp or wet locations

Electricity and water do not mix. To help reduce the risks associated with using electrical appliances in wet locations, use a ground fault circuit interrupter (GFCI) to help prevent shocks. These devices are inexpensive and can help protect you when operating appliances such as dry/wet vacuum or other equipment.

Reconditioning flood or water damaged equipment

Do not plug in or attempt to use electrical appliances that have been wet until they have been serviced by an electrician or service agency. Certain electrical equipment that has been submerged may have to be replaced, while other equipment could be serviced by qualified personnel. Ask your electrician or contact the manufacturer or dealer for the nearest service location

- All breakers, fuses, disconnect switches, GFCI's, AFCI's, and surge protective devices that have been submerged must be replaced. There is no method of insuring these life safety devices will operate as intended when they are exposed to water;

- All electrical equipment, panelboards, switchgear, motor control centers, boilers and boiler controls, electric motors, transformers, receptacles, switches, light fixtures, electric heaters and appliances such as water heaters, ovens, ranges, and dishwashers that have been submerged need to be replaced or repaired by the original manufacturer or an approved representative;

- Electrical wiring may require replacement depending on the type of wire or cable and the extent of the damage;

To take proper corrective action, working knowledge of electrical systems and of the affected equipment and wiring is required to properly assess damage due to contact with water and pollutants. In many cases replacement of the affected wiring and equipment is the only safe alternative, even if no visible damage is apparent. Simply allowing equipment and wiring to "dry out" and then reenergize it is not a recommended practice. Attempts to recondition equipment by unqualified persons may result in additional hazards due to the use of improper cleaning agents and techniques.

A licensed electrical contractor, knowledgeable in this type of work, should be engaged to evaluate and repair or replace water damaged electrical equipment and wiring.

Electrical equipment or components that have been replaced due to water damage should be destroyed and **must not** be re-used in another application.

All repair or replacement of electrical wiring and equipment is subject to inspection requirements as prescribed in the Ontario Electrical Safety Code; a licensed electrical contractor will look after this.

While restoring power after a disaster is a priority, doing it safely is a necessity; one disaster is enough.

Visit **www.nema.org/papers/waterdam.html** for Guidelines for Handling Water Damaged Electrical Equipment (tips from the National Electrical Manufacturers Association).

For General Safety Tips associated with Flood Situations visit **www.cpsc.gov/cpscpub/pubs/5035.html** (tips from the U.S. Consumer Product Safety Commission).

Additional considerations for householders

Remove dangerous chemicals such as weed killers, insecticides and corrosives to dry areas to reduce the chance of contaminating electrical equipment.

Shut off all electrical power and the gas supply valve to any gas-fired appliance prior to flooding, if possible. Shut off the electrical supply to all oil-fired equipment. For additional fuel safety tips contact the Technical Standards and Safety Authority at **www.tssa.org**.

For more information

For assistance regarding other aspects of electrical safety or for further information about electrical safety in a flood situation, call 1-877-ESA-SAFE or visit www.esasafe.com.