



Electricity - Danger In Daily Routines

Electricity has become such a common thing in our world that it is very easy to forget just how dangerous it can be and how much damage it can cause.

The National Safety Council ranks deaths from electrocution fourth in industrial deaths behind traffic, violence, and construction related deaths. It estimates that more than 600 people are killed each year with an additional 3,600 disabling injuries resulting from electric shock of varying degrees. Most of these incidents involve low voltage of less than 600 volts and as strange as it may seem, most involve people that should know better. This is an excellent reason to stay out of the elevator machine room unless you are accompanied by an individual trained in working around these conditions.

Voltage, Amperage, and Wattage

Electricity is measured in terms of voltage, amperage, and wattage. Technically, **voltage** is defined as the electrical potential difference between two points in the circuit, while the **amperage** is a measurement of current and is an expression of the amount of electrical energy flowing through a circuit at a given point. The **wattage** is the resulting power or work produced by the volts and amps in the circuit.

To help understand these concepts, an analogy of a water hose is useful. Using this analogy we would get voltage by turning on the spigot and allowing the water or amperage to flow through the hose. The pressure of the water coming out of the hose would then be the wattage. You would need a higher pressure (wattage) when washing your car than you would want if you were going to water

plants in your garden. You adjust the flow (amperage) to prevent damage to the plants and the garden.

Just as in the analogy above, it's the current, not the voltage that is the culprit in electrical shock injuries. Electric shock occurs when an electrical current passes through the body and even a very small shock can be painful.

How does shock occur?

Electricity is always looking for a way to ground and is always looking for a short cut. If our body provides an easier path to ground, the electric current will pass through our body giving you an electric shock. Metal and water are both very good conductors, their molecular structures make it very easy for electricity to flow through them.

When a metal ladder comes into contact with a power line running to a house, a person standing on that ladder may receive a strong or even fatal shock as the current passes from the wire to the ladder, then through the body on it's way down to ground. The reason that birds are able to sit on electrical wires for hours without being fried is because they are not providing a path to ground for the electricity. When power utility workers deal with power equipment and lines, they wear special clothing, boots, and gloves that protect them and effectively inhibits the path to ground.

Advancements in product safety and construction methods, such as the use of fiberglass instead of metal in ladders and the introduction of Ground Fault Circuit Interrupter (GFCI) outlets, have helped reduce the number of electrical incidents.



W. Timothy Eason, Q.E.I.
Vice President

As Safety Manager for Vertical Transportation Excellence, I attempt to make people aware of the hazards in our day-to-day work environment and attempt to pass on some tools to help them work through the day safely.

We are constantly exposed to hazards, both big and small, in our professional and personal lives. Some of the things that we are exposed to constantly can be the most hazardous.

Over the years I have developed a great respect for two things, water and electricity. Both of them exist naturally in our environment, one we need for our mere existence and it is difficult to imagine how we would be able to live comfortably without the other.

We sincerely hope that you find this information helpful in your day-to-day activities. Feel to email Tim Eason directly at teason@vtexcellence.com.



What to do in case of an electric shock.

It is essential that a person that has received an electrical shock receive immediate medical assistance. The damage from electric shock is primarily internal and it is common for those who have received such a shock to show no major outward signs of injury other than burns at the site of entry and exit of the current. In the event an accident does occur, there are a few critical things to remember:

- **Call for help** – it is unlikely that you will be able to handle the situation alone and additional medical attention may be necessary.
- **De-energize the circuit** – many responders have received shocks when attempting to move a victim and become part of the path to ground themselves.
- **Use a non-conductive device** such as a broom, your leather belt, or any other thing made of non-conductive material that will help you move the victim to a safe area.
- **Administer first aid** until medical assistance arrives.

What can you do to reduce the risk of an incident?

Some things to consider in our daily lives that can help keep us from becoming part of the “path to ground” are:

- **Don't overload electrical outlets** – if you need those audio and video outlets, get an electrician to install additional outlets and circuits if necessary.
- **Stay away from fallen power lines** – call the police and/or utility company.
- **Keep appliances away from the water** – if something is going to be used near water as in the kitchen or bathrooms, make sure it is on a GFCI circuit.
- **Contact the power company before you dig** – many power lines are buried underground.
- **NEVER put that fork or knife in the toaster** to dislodge your toast or bagel – that is a great way to start your day off with a bang!

With hurricanes and natural disasters increasing in frequency and intensity, the availability and residential installation of back-up power generators are becoming more common. Always have a licensed

electrician install the generator for you. You should never connect the generator directly to your house wiring circuit. If installed and connected improperly, “back feed” can be created through the house wiring back through power feeds and can provide unexpected shock to the crews that are working to restore power. Also, never use a gas generator inside the home. Carbon monoxide from the engine emissions is poisonous and can also result in injury and death.

Although Federal Consumer Protection task manufacturers with providing safe products, it is ultimately the responsibility of the individual to act safely and responsibly in their homes. In the workplace, Occupational Safety and Health Administration (OSHA) 29 CFR 1910.269 (a) (2) states that it is the employer's responsibility to train and to familiarize employees with the necessary safety-related work practices, procedures, equipment, and safety requirements for their particular job.

In the elevator industry, the ASME A17 code takes additional steps towards electrical safety by stating that only qualified people should work on the elevator, and also that the door to the machine room should have a self closing, locking door.

Despite the Codes and Standards that relate to safety in the workplace, it is ultimately the responsibility of the individual to work safely. If it doesn't look safe or if you're not trained for it, don't do it.

1. Always be aware of your surroundings and of the dangers in the work that you are doing.
2. Always be prepared for the unexpected.
3. Always enjoy what you do and do it safely. 

Code Corner (cont.)

no means is it easy to comply with. It is our hope that readers of this commentary will take a close look at their own start up procedures and standards to ensure that the passengers riding their escalators are being protected by adherence to these mandatory procedures. 



As chair of the American Public Transit Association (APTA) Elevator and Escalator Task Force, I have created a Working Group to focus on the issues of escalator starting procedures. With the pressure to keep escalators running for the public, there are occasions when a decision must be made if starting an escalator under certain conditions should occur.

This places the mechanic, contractor, and ultimately the Owner in the position to make a decision balancing safety against the need to provide access to the passengers needing the escalator. Our goal in the APTA Working Group was to establish less subjective standards to help make these decisions at start up, but after an interruption in service as well.

As we rely on ASME A17.1 as the basis for our decisions, it quickly became apparent that there was no need to develop new standards. ASME A17.1-2000 had an excellent, clear, and unambiguous requirement that provides virtually all the steps required for ANY operator or owner of an escalator. Requirement 8.6.10.5 Escalator or Moving Walk Startup states:

“Authorized personnel shall check the escalator or moving walk prior to permitting use. All authorized personnel who are assigned to start this equipment shall be given a copy and be provided with training to ensure that they understand and comply with the following procedures.”

Visit www.vtexcellence.com/codecorner for list of procedures.

If any of these conditions is unsatisfactory, the unit shall be placed out of service, barricade the landing areas, and notify the responsible party of the problem. Equipment subject to 24-h operation shall be checked daily by authorized personnel.

This rule is rarely enforced or understood. For example, item (d) would clearly prohibit the escalator starting with damaged or missing teeth. One missing tooth is not in compliance. Think of how many escalators you see with the anti friction coating missing in the upper transition curve. How often are balustrade panels or other items damaged when the escalator is turned on?

This is a clearly written requirement. By

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