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| |  | | --- | | Banner | | |  | | --- | | Shocked! The Dangers of Electric Vehicle Charging Stations July, 2015 Property Casualty 360  Electric vehicle charging stations are an important aspect of electric vehicle programs. Manufacturers have created dependable equipment, however, there are shock hazards associated with these high-voltage devices. Safety training and periodic safety inspections can help minimize injuries and hopefully prevent claims or litigation.  Charging stations come in various models and voltages, ranging from 110 volts to 500 volts-125 amperes. The Level 2 charging stations utilize 240 volts-32 amps, which is more common within the nation’s infrastructure.  Cities, counties and municipalities have also decided to use government-funded free charging stations which have been added to city streets, parks and parking garages. This new technology can introduce shock hazards due to vandalism, copper theft, chaffed cables or accidents involving the charging devices. The public is generally unaware of these hazards or what to do in the event of an emergency situation.  Copper theft of charging stations has increased and the stations remain energized after the cables have been severed. The cable on a charging station usually receives energy upon connecting to an electric vehicle and once the charge is complete, the cable becomes de-energized. However, the charging station still remains fully energized with 240 volts or 500 volts of deadly electricity.  The industry relies on Ground Fault Circuit Interrupter (GFCI) breaker technology to protect the public. GFCI is common in many appliances, household outlets and other electronics.  **GFCI failure**  Some areas of the country report a 57% failure rate on GFCI breakers, and variables such as lightning, age and poor inspection policies have contributed to the failure of these devices. A study done by National Electrical Manufacturers Association (NEMA) and the U.S. Consumer Product Safety Commission, ([http://www.cpsc.gov//PageFiles/109854/AnalysisGFCI.pdf](http://www.cpsc.gov/PageFiles/109854/AnalysisGFCI.pdf)) found that:   * In high lightning areas, 8.7% of receptacle GFCIs were not operational compared to 8.0% in low lightning areas. * In warm areas, 8.5% of receptacle GFCIs were not operational compared to 8.2% in cooler areas. * In high humidity areas, 10.5% of receptacle GFCIs were not operational compared to 7.3% in dry areas.   GFCI failure can create a dangerous situation for anyone coming in contact with the electric vehicle charging stations. GFCI breakers should be tested frequently and reviewed with other parts of the charging station. A record should be kept of each inspection.  **Identifying safety concerns**  Collisions, vandalism and theft can damage these devices. The industry lacks safety precautions such as periodic inspections, signage, and safety training to protect the public and electric vehicle owners who utilize them. Cables that have been continuously dragged on the ground will show signs of chafing and wire extrusion. Standing water, cut cables (from copper thieves) and stolen units create a dangerous situation for anyone who comes in contact with the unit and can result in electrocution. However, the majority of the time, the cables are de-energized.  The government expects 1.7 million charging devices across the country by 2017. To date, not one state requires periodic safety inspections. Because these devices are easily accessible, some may choose to bypass standard safety procedures. Currently, there are no consequences for improperly installed charging devices or those that are not Americans with Disabilities Act compliant.  Home charging stations also raise concerns about proper installation. Homeowners may not notify their insurance carrier that they have added this new equipment. Any homeowner can purchase a device online or direct from the manufacturer and decide if they want to spend $1,000 for an electrician to come and install the unit.  Some states have a permit process and others do not. The insurance industry can play an important role in creating a safe charging environment by providing recommendations for homeowners to follow. Creating a relationship with a reputable electrician and informing the local fire department about the device and its shut off location are important safety steps. An EVSE safety expert can also assist the homeowner with the process.  **Safety assessments**  Currently, there are no statutes requiring periodic inspections of electric vehicle charging stations. Some charging devices may be privately owned and others may be owned and operated by a city, county or municipality. With the program in its infancy, incidents or accidents have not been reported and minimal data is available.  Insurers can play an important role in educating policyholders about the dangers of these devices and the value of regular inspections. Commercial insurers and risk managers may want to consider requiring charging station owners to maintain some type of recordkeeping for inspections and testing to keep premiums competitive and reduce the risk of litigation. Policyholders must understand they can be held liable for any incidents involving these stations.  Electric vehicle charging stations play an important role in keeping electric vehicles on the road and safety must be a priority. Regular inspection programs can help identify issues such as malfunctions, theft and vandalism, and may decrease the chances of injuries, claims and litigation.   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