

## The Hidden Electrical Hazards of Floods

No one will forget the devastation of Katrina, Irene or Sandy, to name a few. Hurricanes and floods leave a lot of visible damage in their wake. However, what is sometimes more hazardous, and harder to properly underwrite, is the invisible damage. Flood waters may contain chemicals, oils, sewage and debris that can render electrical systems unsafe or inoperable. Once the waters recede, it may be impossible to know how long the property was flooded, or what corrosive materials were in the water, such as sewage and other chemicals.

In areas of coastal flooding, salt water is a major problem. Salt is highly corrosive and conductive, and damages not only electrical wiring and equipment, but also the infrastructure. Unfortunately, the corrosion may not appear until weeks or months after the flood. From an underwriting standpoint, it is often difficult to determine if a property has been flooded and contains hidden electrical and structural damage.

From an insurer's perspective, it is important to carefully examine renovations and electrical work that has been done to flooded structures. The National Electrical Manufacturers' Association (NEMA) is a leading authority on electrical installations, and they have published recommendations for repair and replacement of water damaged electrical components. Their positions are supported by other leading safety organizations such as Underwriters Laboratories (UL), National Fire Protection Association (NFPA) and the Federal Emergency Management Agency (FEMA). Claims adjusters need to be aware of these recom-



mendations when handling claims to flood-damaged properties.


According to NEMA, when water comes in contact with electrical cables, cords or wires, the metallic components may become corroded. Corrosion damages the component itself, and may cause the system to fail. Some wire and cable, such as type NM-B cable, is listed for dry areas only. If it is flooded and later re-energized, there is a risk of shock. NEMA advised that such dry area only wiring should be completely replaced after flooding. Extended exposure to water can accelerate deterioration of insulation. Some cables contain fillers, including paper and polypropylene. These cables should also be replaced if the ends have come in contact with water.

Other electrical components of special interest for insurance are communication devices and other protection and signaling systems, including burglar and fire alarms and sprinkler systems. Corrosion due to flooding can cause short circuits, or alter the characteris-

tics of the circuits. These systems should be replaced or cleaned, serviced and tested by the manufacturer or other qualified contractors. It is essential that such systems be fully operational, from both an underwriting and safety perspective. The safety features for electrical equipment such as low and medium voltage circuit breakers can be damaged by flooding. The flood waters remove lubricants and introduce particles such as silt, which impair proper functioning and inability to provide protection for short circuits or overloading.

MSO, Inc. recently inspected a building on Long Beach Island, New Jersey that was damaged by Superstorm Sandy. The building is a perfect case in point for the hidden dangers of flooding. The building did not sustain serious structural or wind damage from the storm, however all of the first floor wiring and fixtures were damaged, as well as systems associated with the automatic sprinkler system. All wiring and electrical fixtures will need to be replaced or properly reconditioned in





accordance with NEMA standards. Without electricity, the dry pipe sprinkler system is not operational and no alarm signal can be sent to the police or central station.

The Ocean Star, a newspaper in Point Pleasant Beach quoted a licensed electrician and fire fighter in this heavily damaged Ocean County, New Jersey town, “Salt water and flood waters contain minerals, oil and other contaminants which causes copper in the wiring to erode. This creates resistance which causes heat. Wood that was damaged by salt water will dry out and erode. This gives you a heat source with the wiring, fuel from the dry wood and with oxygen there can be a fire.”

An example of the fire hazards to damaged buildings occurred in Manasquan, New Jersey after the storm. Many of the beach front homes were heavily damaged and all were flooded by Storm Sandy. Six weeks after the storm, three homes were destroyed and nine others damaged by fire. Arson has been ruled out, however, electrical ignition was not.

The issue from a property insurance perspective would be the underwriting and claims handling standards going forward. Not all states and municipalities specify that wiring be replaced. Electricians can only certify and recommend that wiring and other electrical components be replaced. Situations could happen where the wiring is not properly replaced. Fires and loss of life could result. Therefore, if a property is to be insured, and it is suspected to have been subjected to flood damage, a full review of renovations and repairs should be made.

Underwriting and rating inspections should include a careful review of the electrician’s invoices and certifications as well as all municipal and other certifications to establish that exposed wiring and other electrical components have been replaced or properly reconditioned. Fire alarm, burglar alarm and other signaling devices will need similar documentation and testing to confirm they are fully functional.

Understanding the hidden danger of flooding is an important tool as an underwriter evaluates the insurability of a risk.

*This article originally appeared in the NYIA NY Connection Magazine.*

