

TECHNICAL BULLETIN: Handling Flood Damaged Electronics and Equipment Mitigation Checklist

Storm surge, flash flooding and river flooding is the enemy of any business or home. The toll on electronics and equipment continues even after the water recedes. If energized during the event the affected equipment and machinery may have sustained damage to the circuit breakers, in-line fuses, motors and main fuses which may have “blown and shorted” from the initial onslaught of water infiltration. The second onslaught of damage to electronics is “ongoing and continues” even as the water recedes. Electrical wiring, motors, computers, motor starters, contactors and control cabinets received contaminants from the flood water (ground water and salt water from flooding is very contaminated) this water contains chlorides, sulfides, heavy metals, hydrocarbons and other biological inhibitors and environmental waste chemicals that are unhealthy, toxic and corrosive. As the water recedes the stainless, copper, aluminum and plain steel substrates of micro-circuitry and electrical components which have been covered in contaminated water continue to oxidize from the contaminants in the water as the oxygen hits the contaminated metallic surfaces which increases corrosion exponentially. Painted surfaces can bubble, pop and peel. All metals can corrode resulting in oxidation.

Flash rusting and corrosion enhanced by flooding and drying can be averted with proper mitigation protocols. Fast action is the key to being able to restore sensitive electronics, equipment and electrical gear. Some items may corrode from the secondary effects of the flooding just by being in non-climate controlled conditions and being exposed to high moisture meaning relative humidity has reached condensing levels or the dew point has been exceeded meaning these items have been exposed much higher levels of humidity than designed and energizing them without a thorough analysis of the effects of corrosion may result in premature failure.



Equipment Restoration Candidates - if proper dewatering and corrosion control inhibitors are applied:

Electrical Gear - Certain transformers, controllers, electrical cabinets, breakers, switch gear & cabinets, wiring and distribution equipment can be effectively restored and tested. Certain small controllers, case molded circuit breakers and dry transformers may need replaced.

IT Equipment, Computers and Servers - Hard drives that have been immersed in flood water should be stabilized and processed for data recovery. Computers, routers, servers and switches that are subject to high moisture may be restored effectively.

Boilers, HVAC and Fire Pump Systems - Are possible candidates for restoration. Certain devices such as limit switches, burner management control, motor controllers and motors may need repaired or replaced. Pressure vessels, coils and pumps will need preservation to ensure they may be restored.

Equipment and Machinery of all types including Restaurant and Food Processing, Bio-medical, Elevators, Security Systems, Automated Access Systems, Machine Shop Equipment and PLC and Relay Logic Control Panels can be effectively restored but small sensitive items may need to be replaced.

Mitigation Protocol Steps

- De-energize and lock out/tag out power sources
- Security and caution tape off all open access hazards and open panels, install temporary barriers for drying purposes
- Inspect for hazards and mitigation needs
- Remove standing water from equipment areas - extract or pump standing water and air wash all equipment Interior and exterior surfaces
- Open all control and cabinets to expose the components and install temporary barriers for drying purposes
- Rough clean and rinse all gross contamination areas with dionized water
- Air wash all surfaces
- Apply contact cleaner to circuit boards and low voltage electrical devices
- Apply corrosion control inhibitors to all electronics and structural components and cabinets



These mitigation steps must be employed as soon as safely possible after the site is cleared for entry. These are the critical steps if restoration is to be attempted on valuable equipment and machinery.



We have our crews, mobile lab, engineers, technicians and third party testing firm ready to respond. Electro-Mechanical Recertifiers, Inc. stands ready to help our strategic partners with recovery of high value assets and equipment. We have prepared and are ready to mobilize to the flood affected regions. If you have any questions please contact us at info@er-emergency.com or **877-378-4183**.

**It is important who responds and how they respond.
You can trust ER to bring both elements.**

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