



Boating and Marina Safety: Avoid Electric Shock Drowning



Unknowingly, many swimmers and boat and marina operators place themselves in the face of danger by swimming near electric-powered boats and docks. This innocent act of fun can turn tragic as electric shock drowning occurs each year. Raising awareness among marina and boat operators can help prevent electric shock drowning or other electrical injuries while out on the water.

What is electricity?

Electricity is the movement of electrons from one atom to the next through conductive material. Electricity's main goal is to return to the ground, even if that has to pass through your body to do so. Electricity always takes the shortest path to the ground, and always takes the path of least resistance.

What is Electrified Water?

When electricity touches water the electricity moves throughout the water. This occurrence results from flowing electrical currents from faulty wiring in or near boats or docks. The water molecules themselves do not conduct electricity; however, the ions within the water carry the moving electrons throughout the water. These moving electrons create electrified water through a process called water electrification.

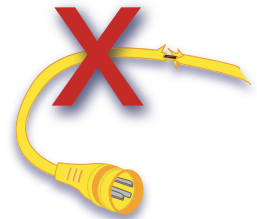


What is Electrick Shock Drowning?

Docks and boats can carry sources of electricity. Faulty wiring or the use of damaged electrical cords, and other devices not approved as "shore or marine rated", can cause the surrounding water source to become energized from electricity leakage. When the human body makes contact with energized water it becomes the conductor of electricity and can cause complete loss of muscle control, ventricular fibrillation, and electric shock death.

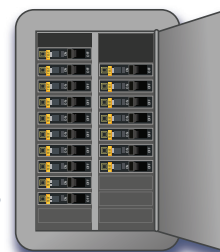
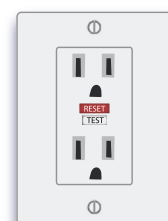
Learn how to keep marinas and docks safe this summer with these tips from ESFI:

- Do not allow swimming in or around your marina. While you cannot prevent individuals from acting on their own accord, posting signs prohibiting swimming is an easy way to help prevent an electric shock drowning incident.
- Place warning signs in prominent areas around your marina such as: **“ELECTRIC SHOCK HAZARD RISK: SWIM AT YOUR OWN RISK.”**
- Have your dockside electrical system (pedestal) inspected and updated by a qualified electrician annually. If you are thinking of having a new one installed, have it installed by a qualified electrician to be sure it meets the NEC and NFPA safety codes and standards.
- Have Ground Fault Circuit Interrupters (GFCI) installed on the dock and test them once a month.
- Use portable “UL- Marine Listed” GFCIs when using electricity near water. They will decrease the chances of electrically related injuries and deaths.
- Require boat owners and renters to use only “UL- Marine Listed” shore or marine power cords, plugs, receptacles, and extension cords that have been tested by Underwriters Laboratories (UL), Canadian Standards Association (CSA) or ETL SEMKO (ETL). They are specifically designed to keep people safe when using them near water.
- Never use cords that are frayed or damaged or that have had the prongs removed or altered. Damaged cords exposed to water could result in electric shock drowning or other electrically-related injuries.
- If you question the safety of your dock’s electrical system, immediately turn off the power supply at the electrical panel and do not turn it back on until it has been checked by a certified marine electrician.
- Immediately fix all electrical safety hazards and maintain routine inspections to prevent problems before they occur.
- Never stand or swim in water when turning off electrical devices or switches.
- Plan annual safety events at your marina where owners can learn about boat and dock electrical safety and have their boats inspected by licensed electricians.



Electrical Safety Tips for Boat Operators:

- Don't allow yourself or anyone else to swim near the dock. Avoid entering the water when launching or loading your boat. Docks or boats can leak electricity into the water causing water electrification.
- Be aware of your surroundings and potential electrical hazards by checking the location of nearby power lines before boating, fishing, or swimming. Always maintain a distance of at least 10 feet between your boat and nearby power lines.
- If you feel a tingle while swimming, the water may be electrified. Get out as soon as possible avoiding the use of metal objects such as ladders. Notify the owner of the property immediately, as this tingle is a sign that power to the facility should be turned off until a proper inspection has been completed.
- Have your boat's electrical system inspected and upgraded by a certified marine electrician regularly to be sure they meet your local and state NEC, NFPA, and ABYC safety code and standards.
- Have Ground Fault Circuit Interrupters (GFCI) installed on your boat and insist that your marina/dock owners have them installed on the dock. Test them once a month.
- Use "UL- Marine Listed" portable GFCIs when using electricity near water. They will decrease the chances of shock or electrocution.
- Consider having Equipment Leakage Circuit Interrupters (ELCI) installed on boats to protect nearby swimmers from potential electricity leakage into water surrounding your boat.
- Only use shore or marine power cords, plugs, receptacles, and extension cords that have been tested by Underwriters Laboratories (UL), Canadian Standards Association (CSA) or ETL SEMKO (ETL). They are specifically designed to keep you safe when using them near water.
- Never use cords that are frayed or damaged or that have had the prongs removed or altered. Damaged cords exposed to water could result in electric shock drowning or other electrically-related injuries.
- If you question the safety of your boat's electrical system, immediately turn off the power supply at the electrical panel and do not turn it back on until it has been checked by a certified marine electrician.
- Never stand or swim in water when turning off electrical devices or switches to prevent shock or electrocution.
- Notify the marina owner of any electrical safety hazards so that they can be fixed immediately.



***Use the tools designed for safety. GFCIs and ELCIs protect people,
Circuit Breakers protect boats and marinas***

Boat and Marina Electrical Safety Device Reference Guide:

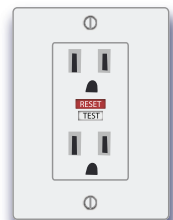
What is a circuit breaker?

A circuit breaker is an automatically operated electrical switch designed to protect an electrical circuit from damage caused by an overload or short circuit. Circuit breakers were designed to detect faulty electrical conditions within electrical systems and interrupt current flow.



What is a GFCI?

GFCIs are electrical safety devices that trip electrical circuits when they detect ground faults or leakage currents. These outlets or circuit breakers prevent shock and electrocutions by quickly shutting off power to the circuit if the electricity flowing into the circuit differs by even a slight amount from that returning.



What is a portable GFCI?

While most GFCIs are outlets, a portable GFCI requires no special knowledge or equipment to install. It adds flexibility in using receptacles that are not protected by GFCIs. Portable GFCIs should only be used on a temporary basis and should be tested prior to every use.



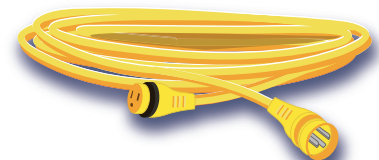
What is an ELCI?

Equipment Leakage Circuit Interrupters (ELCIs) are Circuit Breakers that provide protection from current leakage and overcurrent. ELCIs measure current flow within electrical wires and immediately switches electricity off if an imbalance of current flow is detected. ELCIs provide whole-boat protection.



What is a shore power cord or marine power cord?

A shore power cord is a cord designed specifically for use near water to provide shore side electrical power to ships and boats while its main and auxiliary engine is turned off. Shore power cords have been tested by national certification boards for safety and safe operability.



What is pedestal or dockside electrical system?

A pedestal or dockside electrical system is a power box designed with corrosion-resistant materials to provide electricity safely on the dock meeting safety standards for use in marine environments.

Who is ESFI?

The Electrical Safety Foundation International (ESFI) is the premier non-profit organization dedicated to promoting electrical safety at home, at school, and in the workplace. ESFI proudly sponsors National Electrical Safety Month each May and engages in public education campaigns throughout the year to prevent electrical fires, injuries and fatalities.

ESFI's dynamic educational and awareness resources help educate consumers and the public about how to recognize warning signs of electrical hazards, provide information about advanced safety technologies that offer enhanced protection for the home and raise consumer awareness about dangerous counterfeit electrical products. All of our high-quality resources are available at no cost.

Electrical Safety Foundation International (ESFI)
Tel 703-841-3229 | info@esfi.org

