

The US Coast Guard has re-opened over 400 “drownings” cases where people swimming in marinas wearing type II PFD’s have perished. Further investigation has revealed that these “drownings” were actually the result of electrocution caused by 125VAC radiating from vessels.

## Electric Shock Drownings are Preventable Deaths!

How can this happen? Quite simply by having a power cord with a poor grounding connection (green wire) and by having an appliance on board that has a very minor short or resistance in the 125VAC system. Unsupported wiring rubbing on panel cases of appliances is another cause. The 3<sup>rd</sup> largest cause is having non-UL rated battery chargers (chargers used for automotive charging/boosting) installed in vessels. These electrical conditions can cause current to electrocute crew on board OR radiate into the water creating a lethal condition for swimmers.

*I’ve found at least 2 out of the 3 above conditions on over 98% of all vessels I’ve inspected in the last 10 years!*

Transport Canada has deferred to the American Boat and Yacht Council with regard to the construction and maintenance of small craft. ABYC has determined that the priority is to protect people aboard the vessels – since that is where they belong – not those swimming in marinas or near moored or anchored vessels running AC generators or inverters! So, a properly wired vessel with both 125VAC and 12VDC systems “must” have the grounding conductor bus (green wire) at the back of the 125VAC panel wired to the 12VDC negative (black) engine bus. If the 125VAC grounding conductor is not wired to the 12VDC negative engine bus, crew on board may be electrocuted while using 125VAC systems if they make contact with any part of the 12VDC negative system. *Example:* you’re changing an oil filter in the engine space and lean against the 125VAC battery charger. If there’s a short in the appliance, you become the path to ground through the engine block and become electrified. It is imperative to have your vessel wired properly. ELCI’s (Equipment Leakage Current Interrupters) are now standard on all vessels produced after 2008 and are essentially a large GFCI (Ground Fault Current Interrupter) for the entire vessel. That being said, vessels fitted with GFCI’s should test their receptacles **weekly** to ensure proper protection and operation as lightning strikes and other interference several MILES away can render these devices inoperable, leaving crew unprotected against a fault.

*(A GFCI tester is a one-time purchase of less than \$20 from a hardware store.)*

### SWIMMERS | DIVERS

The human body is a better conductor in fresh water than in salt water. Stray current radiates from a source (propeller or grounding plate) outward on the surface of fresh or brackish water. An unsuspecting swimmer/diver reaches to take a stroke and (being more conductive than fresh water) becomes a conductor. On land this would not be considered so serious, but in water, a gradient of 2.0 Volts/foot is considered **lethal** when the human body is immersed in a less conductive electrolyte.

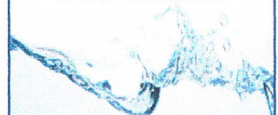
*In fact: “500- milliamps sustained for 0.2 seconds” is considered lethal!*

### How can you stay safe?

1. Never swim in a marina or near vessels with AC power (shore power, generator sets, inverters)
2. Ensure your shore power cord is in good condition with locking rings fitted at both the deck receptacle and shore power supply with clean serviceable contacts. Replace old / worn cords!
3. Test your GFCI receptacles weekly
4. Ensure and maintain proper 125VAC and 12VDC grounding aboard your vessel
5. Install an ELCI
6. Post “NO SWIMMING/DIVING” signs at each dock
7. Look out for each other. If you see someone entering the water in a marina or near shore/generator powered vessels – please ask them to stop – explain the risks involved.

If someone falls in the water near a vessel with AC power, use a recovery method that doesn’t involve jumping in after them – especially if they report a tingling sensation or numbness!!!

For more  
information



- [ABYCinc.org](http://ABYCinc.org)
- search **Electric Shock Drowning**
- call us at **613.921.8331**