

U.S. Consumer Product Safety Commission
Safety Alert
Install Ground-Fault Circuit-Interrupter Protection for Pools, Spas and Hot Tubs
CPSC Document #5039

The U.S. Consumer Product Safety Commission (CPSC) recommends installing and using ground-fault circuit-interrupters (GFCIs) for protection against electrocution hazards involving electrical circuits and underwater lighting circuits in and around pools, spas, and hot tubs.

CPSC is aware of more than a dozen electrocutions and a similar number of electrical shock incidents involving circuits around swimming pools between 1997 and 2002.

Electrical incidents involving underwater pool lighting were more numerous than those involving any other consumer product used in or around pools, spas, and hot tubs.

The greater danger associated with electrical shock in a swimming pool is that anyone in the pool may be rendered immobile and unable to rescue themselves or to call for help. Drowning becomes a likely outcome, even if the current is not immediately lethal. Bystanders and would-be rescuers risk serious injury if the current flow isn't stopped before they make contact with a conductive fixture, such as a ladder, or enter the water to try to help a victim.

While grounding provides essential protection for pool, spa, and hot tub equipment, GFCIs are the most effective means for protecting people against electrical shock hazards of this nature.

A GFCI constantly monitors the flow of current through a protected lighting fixture, pump motor or appliance circuit and senses any loss of current to an outside path. If the current flowing into an electrical appliance or fixture differs by a

very small amount from what flows back out, the GFCI instantly interrupts the current flow to prevent a sustained, lethal level of electricity from reaching the consumer. The consumer may feel a painful shock but should be protected from electrocution.

The National Electrical Code (NEC) requires GFCI protection for cord- and plug-connected pumps on pools, spas, and hot tubs; 120-volt underwater lighting fixtures; and receptacle outlets in the vicinity of pools, spas and hot tubs. Today, the code prohibits electrical installations closer than five feet from water and requires GFCI protection for all electrical equipment, including 240-volt equipment located five to 10 feet from the water and for receptacles within a 20-foot perimeter.

Older pools, spas and hot tubs may not have adequate GFCI protection. In particular, pools older than 30 years may not have GFCI protection on underwater lighting circuits. Because the NEC provision for spas only became effective in 1981, even somewhat newer spas or hot tubs may not be protected.

CPSC urges consumers to have an electrician who is qualified in pool and spa repairs install adequate GFCI protection for all pool, spa, and hot tub electrical equipment and for underwater swimming pool lighting fixtures. Additionally, outdoor outlets that could potentially be used to plug in electrical appliances (e.g., radios, pumps, washers) used near the pool also should be equipped with GFCI protection. Remember to test the GFCI regularly to be assured of continued protection.

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TO PREVENT ELECTROCUTION:

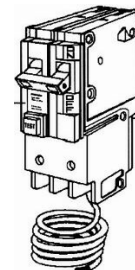
- **Install GFCIs**
 - **On underwater lighting circuits operating at more than 15 volts.**
 - **On all electrical equipment used with pools, spas and hot tubs, including heaters operated on 240-volt circuits.**
 - **On all outdoor receptacles and any indoor receptacles that could potentially be used to power electrical appliances within 20 feet of the water's edge.**
 - **In accordance with applicable local codes and the NEC.**
- **Test GFCIs monthly to assure continued protection. Infrequently used and portable or cord-connected GFCIs should be tested before each day's use.**
- **To test a GFCI:**
 - **Plug a nightlight into the outlet and turn it on.**
 - **Press the "TEST" button. Did the light go out? If not, replace the GFCI.**
 - **Press the "RESET" button. Did the light come back on? If not, replace the GFCI.**



Receptacle GFCI



Portable GFCI



Circuit Breaker GFCI

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NEW NUMBER

The U.S. Consumer Product Safety Commission protects the public from unreasonable risks of injury or death from 15,000 types of consumer products under the agency's jurisdiction. The CPSC's 471 employees are committed to protecting consumers and families from products that pose a fire, electrical, chemical, or mechanical hazard or can injure children. The CPSC's work to ensure the safety of consumer products – such as toys, cribs, power tools, cigarette lighters, and household chemicals – contributed significantly to the 30 percent decline in the rate of deaths and injuries associated with consumer products over the past 30 years. Deaths, injuries, and property damage from consumer product incidents cost the nation more than \$500 billion annually.

To report a dangerous product or a product-related injury, you can go to [CPSC's forms page](#) and use the first on-line form on that page. Or, you can call CPSC's hotline at (800) 638-2772 or CPSC's teletypewriter at (800) 638-8270, or send the information to info@cpsc.gov. Consumers can obtain this publication and additional publication information from the [Publications section](#) of CPSC's web site or by sending your publication request to publications@cpsc.gov.

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