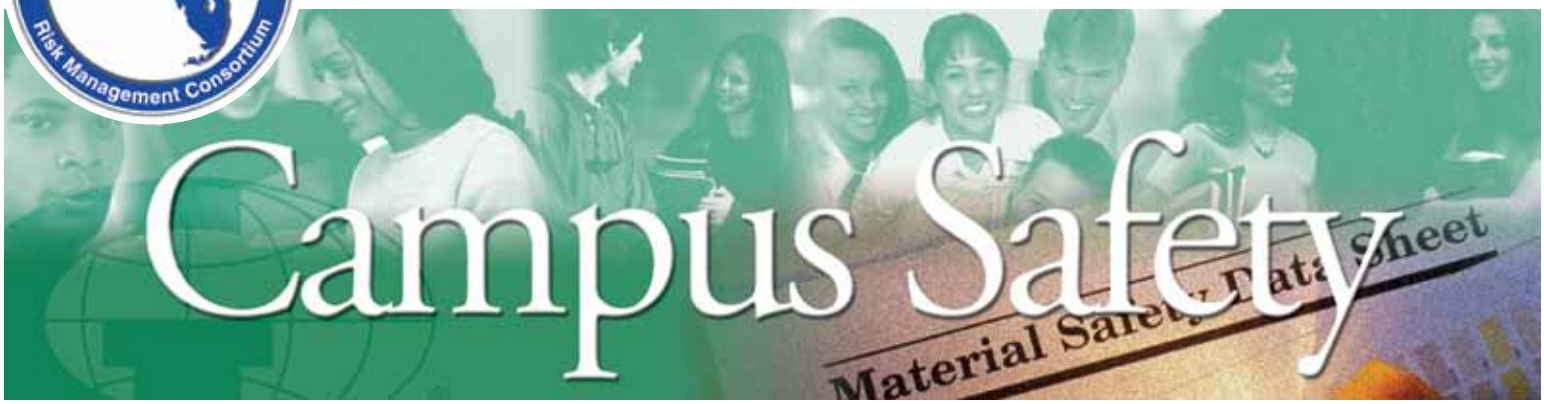
Florida Community Colleges Risk Management Consortium



The Shocking Truth

A "GFCI" is a ground fault circuit interrupter. A ground fault circuit interrupter is an inexpensive electrical device that, if installed in branch circuits, could prevent over two-thirds of the approximately 300 electrocutions still occurring each year in and around the workplace.

Installation of the device could also prevent thousands of burn and electric shock injuries each year.

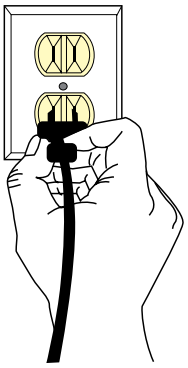
The GFCI is designed to protect people from severe or fatal electric shocks because a GFCI detects ground faults, it can also prevent some electrical fires and reduce the severity of others by interrupting the flow of electric current.

The Problem

Have you ever experienced an electric shock? If you did, the shock probably happened because your hand or some other part of your body contacted a source of electrical current and your body provided a path for the electrical current to go to the ground, so that you received a shock. An unintentional electric path between a source of current and a grounded surface is referred to as a "ground-fault." Ground faults occur when current is leaking somewhere; in effect, electricity is escaping to the ground. How it leaks is very important. If your body provides a path to the ground for this leakage, you could be injured, burned, severely shocked, or electrocuted.

Some examples of accidents that underscore this hazard include the following:

- An employee was working on an overhead fluorescent light fixture while on an aluminum ladder. When he came in contact with an energized electrical wire, he was electrocuted.
- An employee was working just outside of the maintenance shop utilizing a power drill when it began to rain. The employee ceased working until the rain ended. He then came outside and grabbed the drill and was electrocuted.



These two electrocutions occurred because the electrical current escaping from the appliance traveled through the victim to the ground—the wet driveway. Had a GFCI been installed, these deaths would probably have been prevented because a GFCI would have sensed the current flowing to ground and would have switched off the power before the electrocution occurred.

How the GFCI Works

In a facilities wiring system, the GFCI constantly monitors electricity flowing in a circuit, to sense any loss of current. If the current flowing through the circuit differs by a small amount from that returning, the GFCI quickly switches off power to that circuit. The GFCI interrupts power faster than a blink of an eye to prevent a lethal dose of electricity. You may receive a painful shock, but you should not be electrocuted or receive a serious shock injury.

Here's how it may work in your workplace. Suppose a bare wire inside an appliance touches the metal case. The case is then charged with electricity. If you touch the appliance with one hand while the other hand is touching a grounded metal object, like a water faucet, you will receive a shock. If the appliance is plugged into an outlet protected by a GFCI, the power will be shut off before a fatal shock would occur.

The Shocking Truth (cont.)

Availability of GFCIs

Three common types of ground fault circuit interrupters are available for home use:

RECEPTACLE TYPE

This type of GFCI is used in place of the standard duplex receptacle found throughout the workplace. It fits into the standard outlet box and protects you against "ground faults' whenever an electrical product is plugged into the outlet. Most receptacle-type GFCIs can be installed so that they also protect other electrical outlets further "down stream" in the branch circuit.

CIRCUIT BREAKER TYPE

In facilities equipped with circuit breakers rather than fuses, a circuit breaker GFCI may be installed in a panel box to give protection to selected circuits The circuit breaker GFCI serves a dual purpose - not only will it shut off electricity in the event of a "ground-fault," but it will also trip when a short circuit or an over-load occurs. Protection covers the wiring and each outlet, lighting fixture, heater, etc served by the branch circuit protected by the GFCI in the panel box.

PORTABLE TYPE

Where permanent GFCIs are not practical, portable GFCIs may be used. One type contains the GFCI circuitry in a plastic enclosure with plug blades in the back and receptacle slots in the front. It can be plugged into a receptacle, then the electrical product is plugged into the GFCI. Another type of portable GFCI is an extension cord combined with a GFCI. It adds flexibility in using receptacles that are not protected by GFCIs.

Where GFCIs Should Be Considered

In facilities built to comply with the National Electrical Code (the Code), GFCI protection is required for most outdoor receptacles (since 1973), bathroom receptacle circuits (since 1975), garage wall outlets (since 1978), kitchen receptacles (since 1987), and all receptacles in crawl spaces and unfinished basements (since 1990). Owners of facilities that do not have GFCIs installed in all those critical areas specified in the latest version of the Code should consider having them installed. For broad protection, GFCI circuit breakers may be added in many panels of older facilities to replace ordinary circuit breaker. For buildings protected by fuses, you are limited to receptacle or portable-type GFCIs and these may be installed in areas of greatest exposure, such as the bathroom, kitchen, maintenance area, garage, and outdoor circuits.

A GFCI should be used whenever operating electrically powered garden equipment (mower, hedge trimmer, edger, etc.). Employees can obtain similar protection by using GFCIs with electric tools (drills, saws, sanders, etc.)

Installing GFCIs

Circuit breaker and receptacle-type GFCIs may be installed in your workplace by a qualified electrician. Receptacle-type GFCIs may be installed by knowledgeable employees with electrical wiring practices, who also follow the instructions accompanying the device. When in doubt about the proper procedure, contact a qualified electrician. Do not attempt to install it yourself.

The portable GFCI requires no special knowledge or equipment to install.

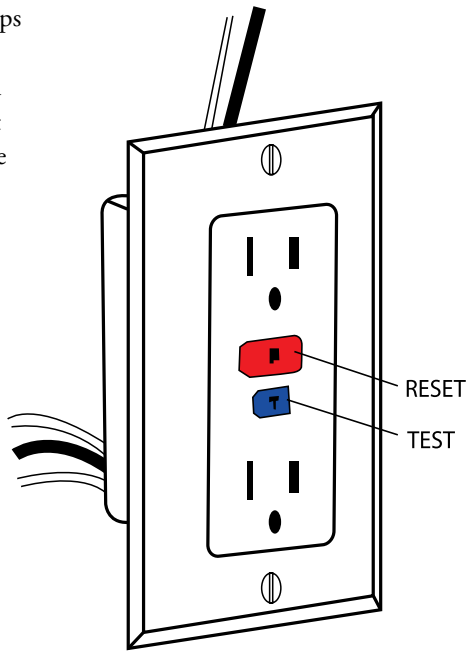
TESTING THE GFCIs

All GFCIs should be tested once a month to make sure they are working properly and are protecting you from fatal shock. GFCIs should be tested after installation to make sure they are working properly and protecting the circuit.

To test the receptacle GFCI, first plug a nightlight or lamp into the outlet. The light should be on then, press the "TEST" button on the GFCI. The GFCI's "RESET" button should pop out, and the light should go out.

If the "RESET" button pops out but the light does not go out, the GFCI has been improperly wired. Contact an electrician to correct the wiring errors.

If the "RESET" button does not pop out, the GFCI is defective and should be replaced. If the GFCI is functioning properly, and the lamp goes out, press the "RESET" button to restore power to the outlet.



RECEPTICLE TYPE GFCI