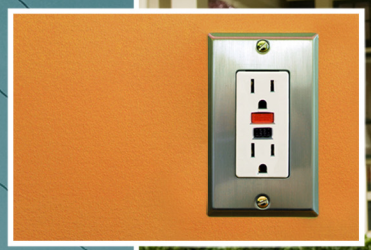
Know the Dangers
in Your Older Home

ESFi
Electrical Safety Foundation International



The Electrical Safety Foundation International

A publication on Electrical Safety for your home.

Home fires are a major problem in the United States

Each year, home electrical problems alone account for an estimated 53,600 fires. These fires cause more than 500 deaths, injure 1,400 people, and account for $1.4 billion in property damage.

Older Homes Pose an Even Greater Threat

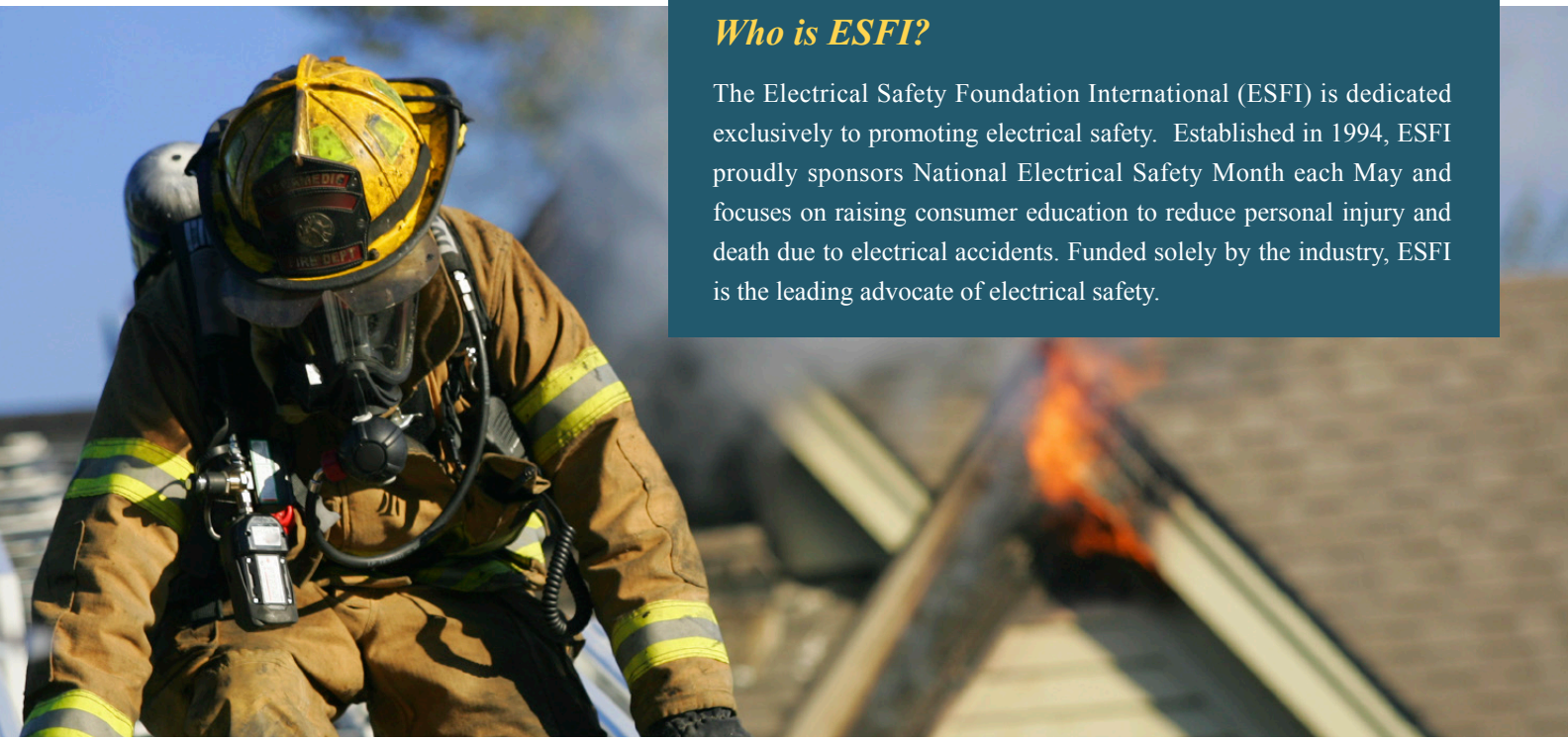
Many of these fires occur in aging homes. Today, our dependence on electricity is increasing, and we are expecting more out of our home's electrical system. According to the U.S. Census Bureau, half of the homes in use in the United States were built before 1973. These homes were built before many of the electronics and appliances we use today were even invented. Unfortunately, our increased demands for energy can overburden an older home's electrical system causing fires or electrocutions.

Put it into perspective:

- 1/2 of the homes in the United States were built before the advent of the drip-type coffee maker or garage door opener.
- 1/3 were built before the hair dryer or electric can-opener were invented.
- This does not even take into account the recent explosion in the use of computers, cell phones, and other personal electronic devices

Electrocutions can be Prevented

Fire is not the only danger. Each year, hundreds of people in the U.S. are electrocuted in their own homes. Many electrocutions and home electrical fires can be prevented by using more up-to-date technology and by recognizing warning signs your home may be showing.



Who is ESFI?

The Electrical Safety Foundation International (ESFI) is dedicated exclusively to promoting electrical safety. Established in 1994, ESFI proudly sponsors National Electrical Safety Month each May and focuses on raising consumer education to reduce personal injury and death due to electrical accidents. Funded solely by the industry, ESFI is the leading advocate of electrical safety.

This Toolkit can help you protect your home

By educating yourself on the dangers commonly found in older homes you can take an active roll in protecting yourself.

Home Safety Checklist

This toolkit provides you with a simple and easy checklist that can help you to identify electrical hazards in your home.

This toolkit also introduces technology that can protect your family from injury and your home from fire.

This lifesaving technology includes:

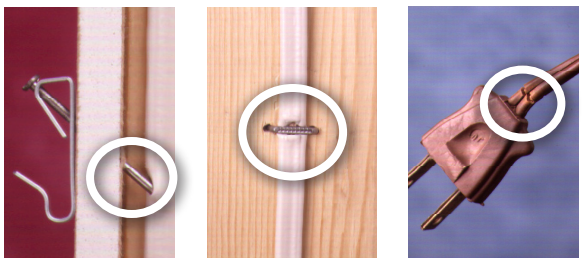
- AFCIs – a new type of circuit breaker that recognizes potential fire hazards and immediately shuts off the power.
- GFCIs – special outlets that have saved thousands of people from shocks and burns over the last three decades.
- TROs – new outlets designed to protect small children from inserting foreign objects into them.

Top Causes of Arc Faults

- Loose or improper connections, such as electrical wires to outlets or switches
- Frayed appliance or extension cords
- Pinched or pierced wire insulation, such as a wire inside a wall nipped by a nail or a chair leg sitting on an extension cord
- Cracked wire insulation stemming from age, heat, corrosion, or bending stress
- Overheated wires or cords
- Damaged electrical appliances
- Electrical wire insulation chewed by rodents

Aging Happens

but fires don't have to



What is an Arc Fault?

An arc fault occurs when electricity is unintentionally released from home wiring, cords, or appliances because of damage or improper installation. This release of electricity can cause surrounding material to catch fire. According to the National Fire Protection Association, electrical arcing is the source of ignition in more than 30,000 fires annually. These fires are responsible for the deaths and injuries of hundreds of people and cause more than $750 million in direct property damage.

A Consumer Product Safety Commission report revealed a number of factors that contribute to electrical fires in existing homes, including improper alterations, deterioration due to aging, and faulty products. These factors often cause arc faults, which are a leading cause of home fires.

How can Arc Faults be prevented in older homes?

Arc Fault Circuit Interrupters (AFCIs) are devices that replace standard circuit breakers in the electrical service panel. **AFCIs detect arc faults and shut down power to a circuit in milliseconds.** The U.S. Department of Housing and Urban Development's Healthy Homes report lists lack of AFCIs among the primary residential hazards associated with burns and fire-related injuries. These devices are so effective that the 2008 Edition of the *National Electrical Code®* requires that almost EVERY circuit in new homes be protected by AFCIs.

Installing & Testing AFCIs

AFCI circuit breakers should be installed by a licensed electrician. They should be tested regularly after installation to make sure they are working properly and protecting the circuit.

Why is it important to have an AFCI breaker installed in my home?

An AFCI provides a higher level of protection than a standard circuit breaker by detecting and removing the hazardous arcing condition before it becomes a fire hazard. Hidden electrical fires can spread quickly, delaying detection by smoke alarms.

Ground Fault
Circuit Interrupters (GFCIs)

GFCI Quick Tips

A GFCI should be used in any area where water may come in contact with electrical products.

- Put a ground fault circuit interrupter (GFCI) between your electric power source and your electric product.
- Test your GFCI monthly and after every major electrical storm.
- If you have a home without GFCIs, consult a qualified, licensed electrician about adding this important protection; purchase plug-in units or a portable GFCI to provide individual receptacle or load protection.

Over the last three decades, Ground Fault Circuit Interrupters (GFCIs) have saved thousands of lives and prevented many more injuries. Found mostly in areas where electrical products might come in contact with water (i.e. bathrooms, kitchens, and outdoors), a GFCI is a special type of outlet designed to trip before a deadly electrical shock can occur. Just 25 years after the GFCI was introduced, the number of accidental electrocutions in the United States has been cut in half, even though electricity use has doubled. If GFCIs were installed in older homes, experts suggest that 70 percent of the approximately 400 electrocutions that occur each year in the home could be prevented.

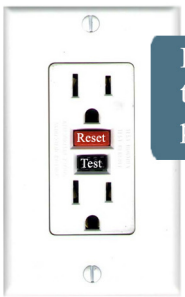
How does the GFCI work?

GFCIs constantly monitor electricity flowing in a circuit. If the electricity flowing into the circuit differs by even a slight amount from that returning, the GFCI will quickly shut off the current flowing through that circuit. The advantage of using GFCIs is that they can detect even small variations in the amount of leakage current; leakage too small to trip a fuse or circuit breaker.

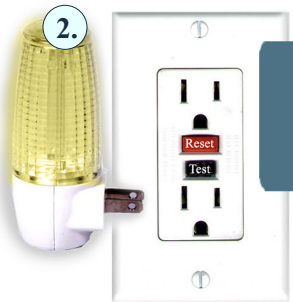
GFCIs should be tested once a month to make sure they are working properly.

Testing Your GFCI

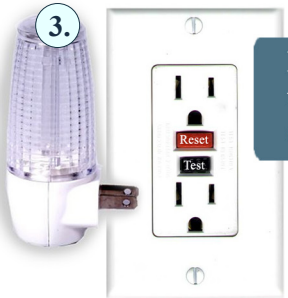
1. Push the "Reset" button of the GFCI receptacle to prepare the unit for testing.



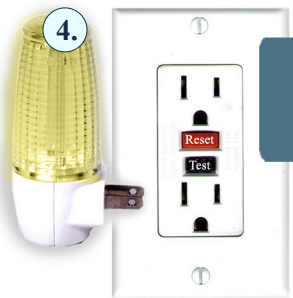
2. Plug in an ordinary night light into the GFCI and turn it on. The light should now be ON.



3. Push the "Test" button of the GFCI. The nightlight should go OFF.



4. Push the "Reset" button again. The nightlight should now go ON again.



The nightlight should go out when the "Test" button is pushed. If the light does not go out, then the GFCI may have been improperly wired or damaged and does not offer shock protection. In this case, contact a licensed electrician to check the GFCI and correct the problem.

Every year, nearly 2,400 children are injured by inserting objects such as keys or hairpins into electrical outlets. This means that seven children per day are treated in emergency rooms for injuries due to contact with outlets. The vast majority of these incidents involve children under the age of six.

These injuries can be prevented

Using a plastic outlet cap is a common solution to prevent children from sticking objects into outlets, but unfortunately, plastic caps are not the safest option and can be easily removed by a young child. A safer solution is installing tamper-resistant outlets. These specialized outlets have been so effective in preventing injuries to children that the 2008 *National Electrical Code* requires that tamper resistant outlets be installed in all new homes constructed. However, these inexpensive products can easily be incorporated into existing homes as well.

Older homes do not have technology that saves children

What are Tamper-Resistant Outlets?

Tamper-Resistant Outlets are standard wall outlets that feature an internal shutter mechanism that protects children from sticking objects into the receptacle (like hairpins, keys and paper clips).

The spring-loaded shutter system in the outlet only allows electricity to flow when equal pressure is applied simultaneously to both shutters such as when an electrical plug is inserted. During unused conditions, both shutters are closed, and openings are covered.

Are they easy to install in older homes?

Yes. It is easy to retrofit an older home with tamper-resistant receptacles. Installation of tamper-resistant receptacles is identical to installation of standard receptacles.

What do Tamper-Resistant Outlets cost?

You can replace common electrical outlets for tamper-resistant receptacles for as little as two dollars per outlet in existing homes. ESFI estimates that tamper-resistant receptacles will add less than $50 to the cost of a new home's electrical system.

Home Safety Checklist

Protect your family from fire and other electrical hazards by using this short checklist. These simple and easy steps will help you to identify and to correct electrical dangers commonly found in homes.

1. CHECK THE WATTAGE OF ALL BULBS IN YOUR LIGHTS.

- ☐ Are the bulbs the appropriate wattage for the size of the fixtures? A bulb of too-high wattage may lead to fire through overheating.

2. CHECK ALL LAMP CORDS AND EXTENSION CORDS.

- ☐ Are cords placed out of the walking areas and free of furniture resting on them? Tripping hazards may result. Also, stepping on cords or placing furniture on them can cause damage and create a fire hazard.
- ☐ Are cords in good condition (not damaged or cracked)? Shock or fire hazards can result from damaged cords. Do not attempt to repair cords yourself. Take any item with a damaged power cord to an authorized repair center, or safely dispose of the item and purchase a new one.
- ☐ Are cords unwrapped? Tightly wrapped cords can lead to overheating.
- ☐ Are all extension cords being used only on a temporary basis? Extension cords are not as safe as permanent house wiring. Have receptacles installed where they are needed.

3. CHECK ALL WALL OUTLETS AND SWITCHES.

- ☐ Are all outlets and switches working properly? Improperly operating outlets or switches indicate that an unsafe wiring condition may exist.
- ☐ Are all outlets and switches cool to the touch? Unusually warm outlets or switches may indicate an unsafe wiring condition exists.
- ☐ Do you hear crackling, sizzling, or buzzing from your outlets? Call a licensed electrician to identify the cause.
- ☐ Are all outlet and switch cover plates in good condition? Replace any missing, cracked or broken cover plate.

Kitchen

1. CHECK ALL COUNTER TOP APPLIANCES

- ☐ Are all appliance cords placed away from hot surfaces? Pay particular attention to cords around toasters, ovens, and ranges. Cords can be damaged by excess heat.
- ☐ Are all appliances located away from the sink? Electrical appliances can cause a shock if they come in contact with water. Plug kitchen appliances into GFCI protected outlets.
- ☐ Do appliance cords hang off counter or table tops? These cords are likely to catch on people passing by.

2. CHECK ALL LARGE APPLIANCES

- ☐ Have you ever received even a slight shock (other than one from static electricity) from any of these appliances? Do not touch the appliance until it has been checked by an electrician.
- ☐ Is the top and area above the cooking range free of combustibles (for example, potholders, plastic utensils)? Using range for storage of non-cooking equipment may result in fires or burns.
- ☐ Is there excessive vibration or movement when the washer or dryer is operating? Movement during operation can put undue stress on electrical connections.

Bedroom

1. CHECK FOR TAMPER RESISTANT OUTLETS

2. CHECK PORTABLE HEATERS

- ☐ Is it placed away from things that can catch fire such as drapes and newspapers? Relocate heaters away from passageways and keep all flammable materials such as curtains, rugs, furniture or newspaper at least three feet away.
- ☐ Is the equipment stable and placed where it will not be tipped over? Fire hazard can result if a heater is tipped over. Animals and even blowing drapes can be factors.

3. CHECK FOR THE PRESENCE AND PROPER PLACEMENT OF SMOKE ALARMS AND TEST EACH ONE. Smoke alarms should be located on every level of the home, inside each bedroom, and outside each sleeping area.

Bathroom — Electricity and water don't mix!

1. CHECK FOR GROUND FAULT CIRCUIT INTERRUPTERS (GFCIs)

- ☐ Are the bathroom outlets protected by GFCIs? GFCIs should be installed in kitchens, bathrooms, and other areas where the risk of electric shock is high.
- ☐ If you have any GFCIs, do you test them regularly? GFCIs must be operating properly to protect against electrocution.

2. CHECK SMALL ELECTRICAL PRODUCTS SUCH AS HAIR DRYERS AND CURLING IRONS

- ☐ Are they plugged in when not in use? Plugged-in electrical appliances (even when switched off) may result in an electrocution hazard if they fall into water.
- ☐ Are they in good condition? Pay particular attention to erratic operation and damaged wiring or other parts.

Basement/Garage

1. CHECK YOUR BREAKER BOX

- ☐ Is your fuse box or circuit breaker box appropriately labeled? Labeling helps to easily identify what circuits power each room in your home.
- ☐ Does everyone of appropriate age know where the fuse box or circuit breaker box is located and how to turn off and restore power to the home?
- ☐ Are you regularly resetting tripped circuit breakers? Circuit breakers that are constantly tripping indicate that the circuit is overloaded or that other electrical hazards exist. Consult a qualified, licensed electrician.
- ☐ Is your home protected by Arc Fault Circuit Interrupters (AFCIs)? AFCIs are devices that replace standard circuit breakers in the electrical service panel and that greatly reduce the risk of home electrical fires. If you are interested in having AFCI protection added to your home, consult a qualified, licensed electrician.

For *outdoor* electrical safety tips, please visit ESFI's website at **www.electrical-safety.org.**

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The Electrical Safety Foundation International (ESFI) is dedicated exclusively to promoting electrical safety. ESFI is a 501(c)(3) organization funded by electrical manufacturers and distributors, independent testing laboratories, utilities, safety and consumer groups, and trade and labor assocations. ESFI sponsors National Electrical Safety Month each May, and engages in public education campaigns and proactive media relations to help reduce property damage, personal injury and death due to electrical accidents.

Electrical safety tips are available on the Electrical Safety Foundation International's Web site, at **www.electrical-safety.org**, or call (703) 841-3229.