

Know the dangers in your older home

A publication on electrical safety
for your home from:

**The Electrical Safety
Foundation International**

Make the most of your energySM

Schneider
 **Electric**

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, 1,400 injuries, and \$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 into perspective

- One-half of the homes in the United States were built prior to the advent of drip coffee makers and garage door openers.
- One-third of these homes were built before hairdryers or electric can openers 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 United States 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.



Electrical Safety Foundation International

The Electrical Safety Foundation International® (ESFI) is dedicated exclusively to promoting electrical safety. ESFI is a 501(c)(3) organization funded exclusively by electrical manufacturers and distributors, independent testing laboratories, utilities, safety and consumer groups, and trade and labor associations.

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.

This tool kit can help you protect your home.

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

Home safety checklist

This tool kit features a user-friendly checklist that can be used as a guide to help you to identify electrical hazards in your home.

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

These enhanced safety devices include:

- AFCIs – Advanced circuit breakers that recognize potential fire hazards and immediately shut off the power.
- GFCIs – Specialized outlets that have saved thousands of people from shocks and burns over the last three decades.
- TROs – New outlets that are designed to protect small children from inserting foreign objects into them.



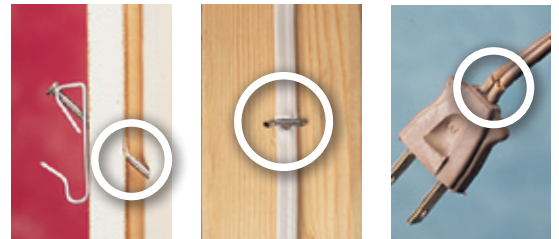
Top causes of arc faults

- 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 each year. These fires cause hundreds of deaths and injuries and more than \$750 million in direct property damage.



A Consumer Product Safety Commission report revealed that electrical fires in existing homes may be attributed to several factors, including improper alterations, deterioration due to aging, and faulty products. These conditions 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 new safety 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 absence 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 and 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 that I have AFCI breakers installed in my home?

AFCIs provide 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

- GFCIs should be used in any area where water may come into contact with electrical products.
- Put a ground fault circuit interrupter (GFCI) between your electric power source and your electric product.
- Test your GFCIs monthly, and after every major electrical storm.
- If GFCIs are not present in your home, consult a licensed electrician about adding this important protection; purchase plug-in units; or use a portable GFCI to provide individual receptacle or load protection.

Over the last three decades, GFCIs have saved thousands of lives and prevented many more injuries. Found mostly in areas where electrical products might come into contact with water (e.g. 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 GFCIs were introduced, the number of accidental electrocutions in the United States has been reduced by 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 do GFCIs work?

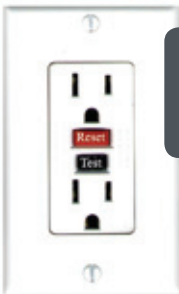
GFCIs constantly monitor electricity flowing in a circuit. If the electricity flowing into the circuit differs by even a slight amount from that returning, the GFCI quickly shuts off the current flowing through that circuit. The advantage of using GFCIs is that they can detect the slightest variations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



GFCIs save lives and should be tested once a month to ensure they are working properly.

Testing your GFCI

①



Push the “reset” button of the GFCI receptacle to prepare the unit for testing.

②



Plug 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 turn off when the “test” button is pushed. If the light does not turn off, then the GFCI could have been improperly wired or damaged and may not offer shock protection. 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 caused by contact with outlets. The vast majority of these incidents involve children under the age of six.

These injuries can be prevented.

Plastic outlet caps have traditionally been used to prevent children from sticking objects into outlets. However, these plastic outlet caps can often be removed quite easily by a young child. Tamper-resistant outlets are a safer option. These specialized outlets have been so effective in preventing injuries to children that the 2008 National Electrical Code requires that they be installed into all new home construction. However, these inexpensive products can easily be incorporated into existing homes as well.

Protect children from shocks and burns.

What are tamper-resistant outlets?

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

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. When not in use, both shutters are closed and openings are covered.

Can TROs be easily installed in older homes?

Yes. It is easy to retrofit an older home with TROs. The process for installing them is identical to the process used for standard receptacles.

What do TROs cost?

You can replace common electrical receptacles with TROs for as little as \$2 per outlet in existing homes. ESFI estimates that TROs 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 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 with excessive wattage may overheat and cause a fire.

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 and 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? Faulty outlets or switches may indicate an unsafe wiring condition.
- ☐ Are all outlets and switches cool to the touch? Unusually warm outlets or switches may indicate an unsafe wiring condition.
- ☐ 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 plates.

Kitchen

1. Check all countertop 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 into contact with water. Plug kitchen appliances into GFCI-protected outlets.
- ☐ Do appliance cords dangle from counter or table tops? These cords can 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 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 which circuits are used for 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 trip constantly may be a sign that circuits are overloaded or that other electrical hazards exist. Consult a qualified, licensed electrician.
- ☐ Is your home protected by AFCIs? AFCIs are safety devices that replace standard circuit breakers in the electrical service panel and that greatly reduce the risk of home electrical fires. Consult a licensed electrician if you are interested in adding AFCI-protection to your home.

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



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To learn more about ESFI and electrical safety, visit **www.electrical-safety.org** or call 703-841-3229.

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