Special National Electrical Safety Month Issue!

Electrical Safety Illustrated May 2014

5 Easy Steps to a Safer Home

AFCI vs. GFCI
Knowing the difference could save your life.

Take the Test!
Are YOU safety savvy?

CRACKING THE CODE?
What YOU should know about the National Electrical Code®.

Protect Your Community
Free guide inside to help make your community safer!

Deadly Deals
What you don’t know about counterfeits could kill you.

For more information about electrical safety visit www.esfi.org.

Would you invest 50¢ to protect a child?
Twenty years ago the Electrical Safety Foundation International (ESFI) was founded as a cooperative effort by the National Electrical Manufacturers Association (NEMA), Underwriters Laboratories (UL), and the U.S. Consumer Product Safety Commission (CPSC) to advance the public's electrical safety awareness with the provision of unbiased information. We've accomplished a lot in our twenty years, though we know the need for electrical safety education is ever-present. With our nation's growing dependence on electricity, more people are recognizing the need for ongoing and evolving public education addressing the hazards associated with our electrified lives. It is in this pursuit that ESFI develops our programs and initiatives and we applaud you for taking a proactive approach to protect against electrical hazards.

ESFI commemorates “National Electrical Safety Month” each May with the release and promotion of new and updated electrical safety resources. As part of our campaign's growing momentum, governors across the nation have issued proclamations recognizing National Electrical Safety Month in their states and encouraging their constituents to renew their commitment to safety. For Electrical Safety Month 2014, we are excited to announce the launch of *Electrical Safety Illustrated*. In this magazine we will discuss timely electrical safety issues and equip you with the knowledge to better protect your home, family and communities from electrical hazards.

While we touch on a variety of topics, we recognize that we must also go back to the basics to ensure a fundamental understanding surrounding electrical safety. Each section provides only an overview of the issues and we encourage you to visit our website, [www.esfi.org](http://www.esfi.org), to delve deeper into the subjects. We also invite you to follow us on Facebook, Twitter, LinkedIn and YouTube to stay abreast of emerging electrical safety concerns and receive reminders about how you can protect yourself.

We hope that you will also share this magazine with your neighbors, co-workers, friends and family. Included in the magazine, is a “Safety Advocate Guide” to help you inspire others to get involved and become passionate about electrical safety. After all, the National Fire Protection Association (NFPA) estimates 47,700 home structure fires reported to U.S. fire departments each year involved an electrical failure or malfunction as a factor contributing to ignition. These fires resulted in 418 civilian deaths, 1,570 civilian injuries, and $1.4 billion in direct property damage.

Awareness and education are the only ways we will reduce the incidence of electrical fires, and we appreciate your involvement in National Electrical Safety Month 2014.

Sincerely,

Brett Brenner
President, Electrical Safety Foundation International
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What is the Code?
The National Electrical Code® (NEC) codifies the minimum requirements for safe electrical installations in a single, standardized source. While the NEC is not itself a U.S. law, the NEC is commonly mandated by state or local law. Local jurisdictions and code enforcement boards inspect for compliance with the minimum standards, as set forth in the code.

What is the revision process?
The NEC is revised by the National Fire Protection Association’s Committee on the National Electrical Code, which consists of 19 code-making panels and a technical correlating committee. Revision occurs every three years to ensure that the code takes into account the latest in technology and safety. Following the release of a new edition, the development process continues; soliciting proposals for amendment. Anyone, including the public, may submit proposals but they should demonstrate evidence that clearly indicates a need for the revision. Panels then review all proposed revisions and comments and, through voting consensus, establish the rules that then make up the next version of the NEC.

Data and Statistics provide the fuel to drive innovation and policy.
- Demonstrates need for new technology and education on codes and policies
- Evaluates the effectiveness of existing codes and safety technologies
- Provides cost analysis of implementing new technologies and economic impact in local communities

In light of new data and trends about electrical safety, new and improved technology will emerge to address deficiencies.

- **New**: Mitigates hazards within scopes/application not previously addressed
- **Improved**: R&D enhances existing technology to increase protections

Codes incorporate new technology, data, and feedback on existing Code to establish new electrical safety minimums.
- Mandate the use of recent technological advancements
- New proposals considered
- Comments on existing and proposed Codes reviewed

Once codes are adopted, compliance and enforcement ensures that the minimum standard in electrical safety is being applied.
- Permits
- Inspections
- Training of trade industry
- Penalties for noncompliance
- Potential civil and criminal liability

Is it necessary to update the Code every three years?
As the unbiased authority on electrical safety, the Electrical Safety Foundation International (ESFI) is a staunch supporter of the National Electrical Code® and its current three-year revision cycle. The process is accountable to the public, both in soliciting public participation in the development process and the resulting protections provided by the Code. ESFI strongly encourages states and jurisdictions to adopt the most recent NEC edition to protect its residents with the latest advancements in electrical safety. The NEC saves lives and its importance should not be minimized; it is the agreed upon minimum standard for safety, as determined by experts, and should be promptly adopted in full.
The National Electrical Code ® (NEC) is **in effect** only **AFTER** it is adopted by the state or local jurisdiction.

**3,810**

Average number of fires in dorms and barracks. The 2014 NEC will now require AFCI protection in living areas of these residences.

**1/3**

of Americans have four or more TVs and the average home now has more TVs than people.

**3,745**

proposals were submitted to NFPA to be considered for incorporation into the 2014 NEC.

**3 vs. 6**

Some jurisdictions are considering extending the revision cycle of the NEC from three to six years. This proposed extension would prevent the code from incorporating new technology that was not previously available and leave some residents over 15 years **behind in terms of safety.**

**Did you know?**

Adoption of the **current NEC** provides the necessary level of safety to protect you from electrical /fire and shock hazards. Upgrades exceeding the minimum requirements increase the safety and convenience of your home’s electrical system.

**Electrical Safety Foundation International**

Visit **www.esfi.org** for free resources and more information about electrical safety.

**The average home in the US was built in 1974.**

At that time **only one in six** homes had central air conditioning.

Each day, nearly **7 children** are treated in hospital emergency rooms for electrical shock or burn injuries caused by tampering with a wall outlet. The **2008 NEC mandated the installation of tamper-resistant receptacles (TRRs) in all new residential construction to reduce this risk.**

**The National Fire Protection Association (NFPA) revises and disseminates the Code.**

**TRUE.** After the first NEC was created, the National Conference on Standard Electrical Rules disbanded and transferred responsibility to NFPA in 1911. Eight editions preceded before NFPA gained ownership.

**Only manufacturers can influence the National Electrical Code making process.**

**FALSE.** Participation in NFPA’s codes and standards revision is open to input and comment from anyone and can be accessed at www.nfpa.org.

**The cost of the NEC supports code development**

**TRUE.** NFPA is a non-profit organization devoted to fire, life, and electrical safety. Funds from the sale of codes and standards support updating the codes as well as other safety-related activities.
Though both provide enhanced electrical safety and have similar acronyms, AFCIs and GFCIs protect against very different things. Use this table to learn the differences and values of these safety technologies.

<table>
<thead>
<tr>
<th>AFCI</th>
<th>GFCI</th>
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<tbody>
<tr>
<td><strong>Motto</strong></td>
<td>“The best fire protection is prevention.”</td>
</tr>
<tr>
<td><strong>Protects Against</strong></td>
<td>Arc faults – a dangerous electrical problem caused by damaged, overheated, or stressed electrical wiring or devices that may result in a fire.</td>
</tr>
<tr>
<td><strong>How they Work</strong></td>
<td>AFCIs detect hazardous arcing conditions and shut down the electricity before a fire can start.</td>
</tr>
<tr>
<td><strong>Need</strong></td>
<td>The U.S. Consumer Product Safety Commission estimates that AFCIs could prevent roughly 50% of the electrical fires that occur every year.</td>
</tr>
<tr>
<td><strong>Maintenance</strong></td>
<td>Test AFCIs each month. If the device does not trip when tested, it should be replaced. See page 6 for instructions.</td>
</tr>
<tr>
<td><strong>Typical Cost</strong></td>
<td>Approximately $35 for Branch/feeder AFCIs.</td>
</tr>
</tbody>
</table>

As codes and standards evolve, AFCI receptacles were introduced in 2013 to offer added protection from arc faults.
5 Easy Steps to a Safer Home

How to Test AFCIs and GFCIs

In order to provide enhanced protection, your AFCIs and GFCIs need to be functioning properly. Follow these easy steps to test them each month.

1. **AFCI**
   - Open the electrical service panel.

2. **AFCI**
   - With the breaker's switch in the ON position, press the TEST button.
   - It should trip, causing the switch to move to either the OFF position or the TRIP position if the breaker includes one.

3. **AFCI**
   - If it trips, it is working. Turn it OFF and then ON again to reset.
   - If it does not trip, contact a licensed electrician to replace it.

4. **GFCI**
   - Push the reset button to prepare the outlet.

5. **GFCI**
   - Push the test button. The nightlight should turn OFF.
   - Push the reset button again. The nightlight should now go ON again.

26% of respondents who claimed to have tested their GFCIs have discovered one that was not working properly.

In the US, arcing faults cause about 30,000 home fires each year, resulting in hundreds of deaths and injuries and more than $862 million in property damage.

* Survey conducted by the Consumer Product Safety Commission
** According to the National Fire Protection Association
1. True or False. Using a corded telephone during a lightning storm is safe.
   a. True
   b. False

2. Why do some outlets have three holes?
   a. Provides more voltage
   b. The third prong is the "ground"
   c. To accommodate foreign appliances
   d. It keeps the plug from falling out

3. When using a portable generator in a power outage, you should:
   a. connect generators directly to the household wiring only when an appropriate transfer switch is installed to prevent backfeed along power lines that poses a risk to utility lineworkers making repairs
   b. position the generator outside the home and away from doors, windows and vents that can allow carbon monoxide to enter the home
   c. make sure your generator is properly grounded
   d. plug it into a ground fault circuit interrupter (GFCI)
   e. All of the above

4. The _____ industry alone sustained 52% of all workplace electrical fatalities.
   a. natural resources and mining
   b. manufacturing
   c. trade, transportation and utilities
   d. construction

5. The most common scenario for electrocutions while using power tools is _______.
   a. the equipment coming into contact with water
   b. the equipment coming into contact with electrical wires
   c. the equipment malfunctioned
   d. exposure to bare wires by grabbing a cord with cracked or broken insulation

6. Smoke alarm batteries should be changed every:
   a. month
   b. 6 months
   c. year
   d. 2 years

7. You shouldn't swim near docks or marinas because:
   a. Boats may not see you and run you over
   b. There could be residual fishing equipment like hooks
   c. The water may be electrified by docks or boats that leak electricity into the water
   d. All of the above

8. In a study conducted by Temple University’s Biokinetics Laboratory, what percent of children ages 2 to 4 years old were able to remove plastic outlet covers from the sockets in less than ten seconds?
   a. 25%
   b. 50%
   c. 75%
   d. 100%

9. Across the U.S., a fire department responds to a fire once every:
   a. 23 seconds
   b. 7 minutes
   c. 28 minutes
   d. 52 minutes

10. The proper way to safely move away from a downed power line is to ______ until you are 35 feet away.
    a. take small hops with your feet together
    b. shuffle away with small steps, keeping your feet together and on the ground at all times
    c. skip so that only one foot is on the ground at a time
    d. crawl on all fours

11. True or False. You can be electrocuted using a tree trimmer near a power line even if you don’t touch the wires.
    a. True
    b. False

12. True or False. Swallowing a button-cell battery can be fatal.
    a. True
    b. False

13. What age group has the highest risk of death from fire?
    a. 15 years and under
    b. 21-35 years
    c. 50-64 years
    d. Adults over 65

14. Birds are able to perch on power lines without risk of injury because:
    a. Those power lines do not have power running through them at that time
    b. The unique skin on the feet of birds protects them
    c. Sitting on one wire does not provide a ground or connect a circuit, so the current doesn’t leave the wire and continues on its path
    d. Their bones are hollow allowing the current to pass through them without harm

15. When a new version of the National Electrical Code® is adopted by a jurisdiction ______ must follow it.
    a. all buildings currently being utilized
    b. new buildings
    c. renovations
    d. b and c

Answers:
1. b, 2. b, 3. e, 4. d, 5. d, 6. b, 7. d, 8. b, 9. a, 10. c, 11. b, 12. b, 13. c, 14. d, 15. b and c
What are Tamper Resistant Receptacles (TRRs)?

Though they look like standard outlets, only TRRs include a built-in shutter system that prevents foreign objects from being inserted. Only a plug that applies simultaneous, equal pressure to both slots will disengage the cover plates, allowing access to the contact points. Without this synchronized pressure, the cover plates remain closed, preventing the insertion of foreign objects.

Be sure to purchase TRRs that have been certified by a nationally recognized, independent testing lab (i.e. UL, ETL, or CSA).

TRRs should only be installed by a licensed electrician.

The cost of installing a TRR in a newly constructed home is only about 50¢ more than a traditional receptacle.

Existing homes can be retrofitted with TRRs for as little as $2.00 per outlet.

The curiosity of kids knows no boundaries and sometimes leads to dangerous behaviors. Located in practically every room in every house throughout the United States, electrical receptacles present a constant and real danger to these little explorers.

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TRRivia

Each year 2,400 children suffer severe shock and burns resulting from inserting objects into the slots of electrical receptacles.

It is estimated that 6-12 child fatalities each year result from children tampering electrical receptacles.

Tamper Resistant Receptacles (TRRs) provide affordable and permanent protection.

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The saying, "If it's too good to be true, it usually is," should come to mind when you find electrical products that are far below competitor prices. But electrical products are uniquely hazardous when impersonated. They have not undergone testing by an independent laboratory, likely do not comply with industry safety requirements, and since its origin is often unknown, its manufacturer isn't held accountable for the potentially deadly results. Learn what to look for and help protect yourself and your loved ones from fires or injuries associated with counterfeit products.

Use established vendors who purchase their goods from legitimate distributors and genuine manufacturers.

Read the packaging and labels carefully. Text should be free of grammatical errors and should not contain spelling errors.

Packaging should contain the name and contact information of the item’s manufacturer.

Avoid unknown brands and products that do not display any brand affiliation.

Do your research. The Consumer Product Safety Commission (CPSC), manufacturers, and testing laboratories (i.e. UL, ETL, or CSA) have information about product recalls, including those related to counterfeiting, on their websites.

Image 1: Counterfeit. There is no brand name for this product. Additionally, the cost is significantly lower ($2.99) than the average cost ($10) of a cord of this length. While the label does display the mark of an independent testing laboratory (UL), these too can be impersonated. Visit the lab’s website for tips about determining if a mark is real or fake.

Image 2: Counterfeit. Each of the first four bullets contains typos.

Image 3: Counterfeit. This product very closely resembles the legitimate product. Only by visiting the Consumer Product Safety Commission website would you learn that this is a counterfeit and is part of a voluntary recall that includes free inspection and a replacement or refund.
Surge and Protect

Power Surge and How to Protect Yourself

WHAT IS A “POWER SURGE”?
A power surge, or transient voltage, is a sudden and unwanted increase in voltage that can damage, degrade or destroy the sensitive electronic equipment in your home or business.

CAUSES
The National Electrical Manufacturers Association (NEMA) estimates that 60-80% of surges are created within a facility, such as when large appliances, like air conditioners, turn on and off. Surges can also originate from the electric utility company during power grid switching. Lastly, the most powerful surges can be caused by lightning.

IMPACT
A spike in voltage can be harmful to electrical devices in your home if the increase is above the device’s intended operating voltage. This excess voltage can cause an arc of electrical current resulting in heat that damages the electrical components. Repeated small-scale surges may slowly damage your electronic equipment and shorten the life of appliances and electronics involved.

POINT-OF-USE SURGE PROTECTION DEVICES
Protect only the items that are directly plugged into the device from most electrical surges. It does not suppress or arrest a surge but diverts the surge to ground. Use point-of-use surge protectors that have an indicating light and/or audible alarm that alert when it needs replacement.

SERVICE ENTRANCE SURGE PROTECTION DEVICES
Mounted in or on your main electrical panel or at the base of the electric meter, this device provides protection for your entire electrical system. This device covers components that cannot be connected to a point-of-use device, such as outlets and light switches.

REMINDERS
- No surge protection device can handle a direct lightning strike. The best surge protection is to unplug devices from the wall if you suspect a surge might be coming.
- Power strips do NOT provide surge protection. Be sure you are relying on the appropriate device for protection.
- Power strips and surge suppressors don’t provide more power to a location, only more access to the same limited capacity of the circuit into which it is connected.
Protect Your Community

If you’re like most people and already use the internet and social media every day, ESFI has various ways you can engage with us and encourage your friends to do so as well. Education is the key to protecting your community from preventable electrical fires, injuries and fatalities. Knowledge IS power, but often people don’t know the subjects in which they are lacking. Together we can help keep others safe.

- Learn new electrical safety tips and information through our status updates.
- Share our statuses or something you’ve learned so friends in your network stay safe.
- Encourage your friends to connect with us.
- Engage with other safety-minded people.
- Share with us your electrical safety activities and successes.

Like us:
www.facebook.com/ESFI.org

Follow us:
www.twitter.com/ESFIdotorg

Link with us:
www.linkedin.com/company/esfi

Help kids learn about electrical safety:
http://kids.esfi.org/

- Watch entertaining, kid-friendly videos featuring ESFI’s mascot, P.I. Plug.
- Send free e-cards with electrical safety reminders to loved ones.
- Encourage children to play free interactive games that teach electrical safety.
- Free activities for teachers and parents to reinforce electrical safety topics.

Above and Beyond

Print out copies of this magazine and request permission to leave it in the waiting room of doctor’s offices or hair salons in your area.

Encourage daycare providers to use our free teaching activities.

Contact your local newspaper and encourage them to devote a story to National Electrical Safety Month and its mission.

Include a post about National Electrical Safety Month in your town, neighborhood, community center or church newsletter.
The Electrical Safety Foundation International (ESFI) is a non-profit organization dedicated exclusively to promoting electrical safety in the home, school, and workplace.

We engage in public education campaigns throughout the year to increase electrical safety awareness and advocate for safe electrical practices. Education and awareness are the keys to reducing electrically-related fires, fatalities, injuries, and property loss.

For more information visit www.esfi.org or contact us at info@esfi.org or (703) 841-3229.

DON’T BECOME A VICTIM OF THE “SILENT KILLER”!

Carbon Monoxide (CO) is an odorless, colorless, tasteless gas that is virtually undetectable without the use of detection technology like a CO alarm.

Install CO alarms on every level of your home and in a central location outside each sleeping area.

Recovering from a flood?

Allow an electrician or electrical inspector to determine which electrical equipment and appliances can be restored and which need to be replaced.

IS YOUR HOME 40 YEARS OLD OR OLDER?

Consider having a qualified, licensed electrical inspector, electrician, or electrical contractor perform an electrical inspection of your home.

Continue to be the life the party and remember:
Water and electricity don’t mix!

Don’t use electronic devices around pools, spas or hot tubs.

You don’t have to touch a power line to be in danger. High voltage electricity can jump to anyone or anything nearby.

Stay at least 10 feet away from power lines!

Protect your home and loved ones!

Smoke alarms should be installed:
- In every bedroom
- Outside each sleeping area.
- On every level of the home.

Test them every month and replace the batteries each year!