



Playing It Safe
Teaching Students to
Respect the Power of Electricity

“Safety first” is more than just a slogan – it’s what students at all grade levels must learn about using electricity. We’re proud to offer a range of free safety-related materials through the

indoor and outdoor safety – which is particularly important as students begin to spend more time outdoors. The more students understand about how electricity works the safer they’ll be. Other sections of “The Electric Avenue” are packed with resources to help students understand what electricity is, how it is produced, and how it gets to homes, schools and businesses.

Grades 6 and Up

FirstEnergy’s online video library also includes an engaging electrical safety video designed for grades 6-8. “The Shocking Truth” is a live-action, 18-minute video that vividly teaches students how to avoid injury.

Pre-teens and teens will also enjoy our colorful electric safety board game, “Electric Safety – It’s Watt You Know!” One of these Monopoly-type games is available per classroom.

To learn more about all of the educational resources FirstEnergy makes available, free of charge, to schools, youth groups and civic organizations, please visit our website at www.firstenergycorp.com/education.

FirstEnergy website at www.firstenergycorp.com/education. Here’s a sampling of what’s available for different grades.

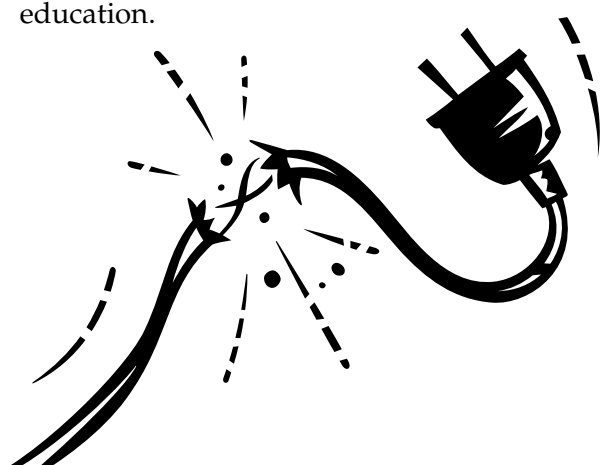
Kindergarten Through 4th Grade

To find resources for K-4, visit www.firstenergycorp.com/education and click on “Louie’s Safety Universe.” You’ll find Louie the Lightning Bug, a cute and colorful character. Louie’s 10-minute safety video is suitable for children in K-4, his coloring book is for grades K-2, and the activity book targets grades 1-3. Louie’s safety stickers and growth chart are fun for young children.

Also in the “Video Library” section of the FirstEnergy site, teachers of young students will find the classic “I’m No Fool with Electricity,” an eight-minute video starring Jiminy Cricket and Pinocchio. “Volton,” 22 minutes long, is designed for grades 3 and up.

Grades 4 Through 6

“The Electric Avenue” is the Internet-based resource for safety and energy education materials for grades 4-6. The “Play It Safe” section is full of information on



- 1 **Playing It Safe**
- 2 **The Shocking Truth About Electricity**
- 3 **The Cutting Edge**
- 4 **Educational Resources**

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- Electric Operating Companies:
- Ohio Edison
 - The Illuminating Company
 - Toledo Edison
 - Metropolitan Edison
 - Pennsylvania Electric
 - Penn Power
 - Jersey Central Power & Light



The Shocking Truth About Electricity

Safety Is the Answer

We rely on electricity throughout the day, at home, at school and at work. Electricity gives us power, light, warmth, games and – through our computers – instant access to knowledge. Over the last 25 years, our use of electricity has grown even beyond what was imagined when many of our houses and schools were built. One or two outlets per room seemed like plenty, years ago, but that’s certainly not true today!

What is still true is the importance of electrical safety. Children and adults alike need to understand electricity and take care to use it safely. Here’s a quiz that can help spark your students’ interest in electrical safety:

Q: Why can electricity be dangerous?

A: Electricity is hot. It can burn a person or animal, and it can cause a fire.

Q: What keeps the electricity that runs through the power cord of an appliance from causing a fire?

A: The cord is insulated to keep the heat inside. This is why you should never plug in an appliance with a damaged cord.

Q: How does electricity move?

A: Electricity runs through the easiest conductor it can find. The power cord of an appliance is a conductor, but so is water. Electricity will run through water if it gets near enough.

Q: If there is an electrical fire, why is it dangerous to throw water on it?

A: The water might conduct electricity to your body and burn or shock you.

Q: Why is it so easy for a person to get an electric shock?

A: More than half of the human body is composed of water, and water is an excellent conductor of electricity.

Q: What do you need to remember if you’re standing in a puddle of water?

A: Do not touch anything electrical. The water linking your feet to the ground makes you an even better conductor of electricity than you were before.

Q: If your bread gets stuck in the toaster, how should you get it out?

A: Unplug the toaster first. Then use wooden tongs to remove your toast.

Q: What should you do if the power cord on your appliance is too short to reach the electrical outlet?

A: Ask an adult to help you find an extension cord that is safe to use.

Q: What should you do if your light bulb burns out?

A: Be sure to replace it with a bulb of the right wattage. If the bulb wattage is too high, the lamp could catch on fire. Also be sure the bulb is screwed in all the way. A loose bulb can also cause a fire.

Q: Where should you put your drink while you are using a computer?

A: Keep your drink away from the keyboard, monitor and CPU. An accidental spill could cause an electrical shock.

Q: What should you do if you drop a hair dryer into a sink full of water?

A: Do not touch it. Ask an adult for help.

Q: What should you do if you hear crackling, sizzling or buzzing from an electrical outlet?

A: Tell an adult right away. These sounds could mean that there is a fire in the building’s wiring.

Beginning Energy Conservation at Home

John Allen, an unemployed computer scientist, has turned his 70-year-old California home into a demonstration of how consumers can cut their contributions to global warming – their power bills. Using 21 electronic sensors, Allen tracks water and air temperatures throughout his house to prevent energy loss. He boosts his hot water with a rooftop system that allows the sun to warm the home's water before it flows to the basement water heater. The roof also holds photovoltaic cells that supplement the home's electricity usage. The family of three averages \$25 a month in electricity costs.

Mercurynews.com, February 6, 2007

Coping With Moon Dust

Before they can establish a manned base on the moon, NASA scientists will have to find a way to deal with moon dust. Produced by the impact of countless tiny meteorites, this dust is very fine and highly abrasive. Scientists fear it could damage equipment as well as the health of astronauts. Larry Taylor, a University of Tennessee researcher who works on moon dust, has discovered that the particles contain tiny amounts of iron and can thus be collected on magnetic filters. In addition, when exposed to microwaves, the dust hardens into a glassy blob. Taylor speculates that microwaved dust could be made into bricks or pavement on the moon's surface.

www.npr.org, January 23, 2007

Generating Savings With Smart Meters

Pilot studies suggest that high-tech electricity meters can help lower demand for electricity at peak hours, thus helping utility companies manage production and helping consumers cut their utility bills. These new meters measure household electricity use without the need for meter readers. The meters can record a customer's usage on an hourly basis, transmit

the data to the utility company and report to the customer on daily and seasonal patterns of consumption.

Baltimore Sun, January 7, 2007

Planning a British Moon Mission

Building on their experience in designing small satellites and miniaturized space instruments, British scientists have proposed two robotic missions to the moon.

The first, scheduled for a 2010 launch date, is named MoonLITE. It will be equipped with missile-shaped tools designed to penetrate two meters into the lunar surface and with instruments intended to investigate the moon's interior and gather information on possible "moonquakes." The second, named MoonRaker, will land a craft on the moon that will search for possible sites for future manned moon bases.

The Guardian, January 11, 2007

Smaller, Denser Chips


Scientists at the California Institute of Technology and the University of California are collaborating on developing a small, dense memory chip that may allow computer power to continue to grow even when silicon technology reaches its limits in 10 to 20 years. The scientists have created a chip that holds 160,000 bits of information and is roughly the size of a white blood cell. Measuring about one-2,000th of an inch on one side, this is the densest chip ever made. It uses a molecular switch shaped like a dumbbell with a ring that slides along the central bar. Voltage pushes the ring to one end of the bar or the other, representing the binary code that computers use to store data.


The New York Times, January 25, 2007





Visit our website at
www.firstenergycorp.com/education


Educational Resources Available


 AT&T's education web pages include **lesson plans and web-quests** as well as tools for creating your own webquests and other web-based classroom tools. Visit www.filamentality.com/wired/wired.html.


 For free bread baking **activity booklets** from Fleischmann's Yeast, visit www.breadworld.com/justkids/school.asp or write Fleischmann's Yeast Offer, P.O. Box 6268, Stacy, MN 55078-6268. The activities focus on measuring and food science topics.


 Stanford University's Gravity Probe B at <http://einstein.stanford.edu/content/education/education.html> presents complex theory and cutting-edge technology for **high school physics classrooms**.


 The Biotechnology Institute publishes "Your World: Biotechnology & You," an **educational magazine** for grades 7-12. A classroom subscription (30 copies of each issue) costs \$49 per year, but back issues are available for free at www.biotechinstitute.org/resources/your_world_magazine.html.


 For a National Cancer Institute online video on **nanotechnology's promise in fighting cancer**, visit <http://nano.cancer.gov> and click on "Video Journey into the World of Nanotechnology and Cancer" at the bottom of the home page.


 "Design and Discovery" is a **free curriculum** from Intel designed to introduce students ages 11 to 15 to engineering through design. Visit www.intel.com/education/Design/index.htm.


 Scholastic offers **free lesson plans** for a range of subjects and grade levels at <http://teacher.scholastic.com/index.asp>.

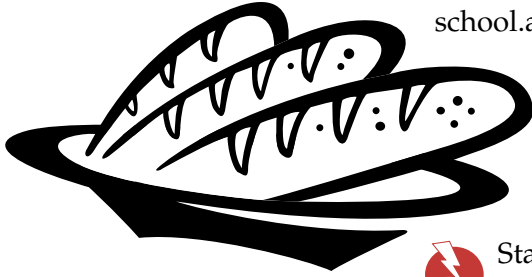
 Students at all grade levels can find **online math help** at www.webmath.com.

 *Converge* is a **free magazine** on technology in education. To subscribe, visit www.convergemag.com.

 For **experiments with electricity**, a history of batteries and an explanation of how batteries work, go to the Energizer online learning center at www.energizer.com/learning.

 "Adventures in Energy" is an **American Petroleum Institute educational website on oil and natural gas** at www.adventuresinenergy.org.

 For **free arithmetic worksheets by S & S Software**, visit www.ssssoftware.com/freeworksheets.



"Education's purpose is to replace an empty mind with an open one."
- Malcolm Forbes

