



21st Annual Edition

fire safety

NEWSPAPERS IN EDUCATION

Working to create a fire-safe and burn-free Wisconsin



Fire Safety Week

October 7-13, 2018

Essay Contest
Teachers Win up to
\$1,500 for your classroom!

Poster Contest

Enter for a chance
to win Gift Cards!

See page 3 for details.



Featuring:



The Science of
Fire Safety, and
Firefighting



Developing an
Escape Plan



Smoke Alarms
How they Work



Fire Sprinklers
How they Work

Plus fire safety tips and life saving information!

This special section was prepared by the Milwaukee Journal Sentinel marketing department. There was no editing or reporting from the newsroom involved.

The Fire Inside

Burn Survivor tells a story of the importance of Fire Safety and turns tragedy into triumph

By: Lindsey McKee

Burn survivors have two options when telling the story of how they were burned. There is the “two-cent” version, which is a brief statement of the facts. And then there is the “10-cent” story, which goes into more detail about their fire emergencies.

LaToya Eskridge was burned in a house fire on Milwaukee’s north side at about age three, which resulted in severe burns on 73 percent of her body and loss of the fingers on her left hand. That’s the two-cent story.

The 10-cent story, goes something like this...

A nearly three-year-old Eskridge lay on bed napping with her sister and cousin in an upstairs room. Her other cousin was asleep in the next room. A spark from an electrical outlet set the brand-new bed – still wrapped in plastic – ablaze.

“My family was downstairs,” she said. “So by the time they found out, the room was fully engulfed in flames and they couldn’t get to us.”

Neighbors called 9-1-1, but also threw rocks in the windows to ventilate the burning room. Unfortunately, the added oxygen made the fire worse. Young Eskridge hid near a computer desk, while her sister and cousins stayed fast asleep. The computer above her began to melt on top of her and then exploded.

“I was burned one day before my third birthday,” Eskridge said. “In the fire, there were four children. Two died and two survived.”

Smoke inhalation sent Eskridge’s cousin that was sleeping in a different room to the hospital. But smoke inhalation claimed the lives of her sister and her cousin, who died in their sleep. None of the children were more than four years old.

Aftermath

Eskridge was the last child rescued from that fire. Her rescuers followed her screams to her hiding place. She was rushed to Children’s Hospital with 73 percent of her body covered in second- and third-degree burns.

Melissa Kersten Nurse Practitioner with Ascension Columbia St. Mary’s Regional Burn Center and Director of the Professional Fire Fighters of Wisconsin Charitable Foundation’s Summer Camp for Burn Injured Youth or “Burn Camp” – sheds some light on what that kind of emergency room visit looks like.

“When a child is burned to the extent that Toya was burned, the ER triage is extensive,” Kersten said. “Fluid resuscitation is crucial during the initial phase. Once someone is hospitalized they may be placed on a breathing machine for up to several months. They then undergo very painful daily dressing changes and multiple surgeries to repair any burns that will not heal on their own.”

Eskridge spent seven months in the hospital, returning home with a lot of medical equipment and a steep learning curve.

“I had to learn how to walk again and talk again,” she said. “I had to learn how to live life not only as a burn survivor, but as an amputee. All the fingers on my left-hand were amputated, because they were burned so badly.”

Kersten said that after hospital discharge, burn survivors typically continue daily dressing changes for several weeks, and then wear compression garments to prevent or lessen scarring. Children often need several surgeries as they grow and areas of tight skin begin to restrict their movements.

This was the case for Eskridge, who says she must have had more than 100 surgeries from age three to now in her thirties. But alongside her physical healing, she also had to find emotional healing.

Young Eskridge had a very supportive family with her parents taking different approaches to her recovery. Her father encouraged her self-sufficiency, while her mother shielded her quite a bit. In fact, Eskridge said she was not really aware that she was “different” until she attended burn camp at about seven years old.

“Up until then, I don’t remember seeing a person who looked like me,” she said. “In fact, I still didn’t really know that I looked different, because my friends and family never treated me differently.”

Although burn camp offered valuable skills and some relief, her emotional healing was still a struggle. Feeling survivor’s remorse and hating that she “didn’t look normal,” Eskridge attempted suicide at age 11.

As she continued with her education, she was bullied from elementary through middle school. By the time she graduated from high school, however, her beautiful personality was the most noticeable thing about Eskridge. She joined the dance team and became popular in high school.

From surviving to thriving

Burn camp programs grow with the children they help. At 23, Eskridge attended PFFWCF’s Winter Leadership Retreat for Young Adult Burn Survivors. Here, she and her fellow burn survivors learned valuable skills to be successful – like how to dress and behave in a job interview, language skills as well as etiquette. They also learned to tell their two-cent and 10-cent stories.

“You can tell your story with dignity and pride. And if you don’t want to tell your whole story, you don’t have to,” Eskridge said. “So we learned about a two-cent story or a 10-cent story. And you decide what your story is worth to the person that you’re telling it to.”

In 2013, a depressed Eskridge took a chance on a burn peer support group at Ascension Columbia St. Mary’s Regional Burn Center. As it turned out, her camp counselor – Melissa Kersten – was working with the monthly support group. A familiar face and being with fellow survivors helped turn things around.

“It felt nice being in a room with other people like me that had been through the same thing I had been through,” Eskridge said.

That same year, she attended the Phoenix Society’s World Burn Congress – which she said resembled an even bigger support group of survivors, nurses, firefighters and more. In addition to support and advice, hugs are strongly encouraged.

Last year, Eskridge returned to burn camp. This time, as a volunteer for teenage burn survivors. She sets the example as a “burn beauty,” wearing eye shadow, lip gloss, lashes and versatile wigs. But most important, she tells her campers that it is all right to be different and to be who they are.

With Eskridge’s success, many ask her what took her so long to volunteer at burn camp.

“I was going through a lot in my life, and I don’t think that I would have been beneficial to anybody at the time,” Eskridge said. “I needed help myself. So I had to dig deep down and find out what I needed for me, before I could help anybody else. Before, I would say I was just living life. But now I can honestly say that I’m thriving.”

This is a message she has passed on to her burn camp youth as well as the patients in her work as a therapy services technician.

“It’s so ironic that I had all of this therapy, and now I work in the therapy department,” Eskridge said. “I’m a therapy services technician here at Columbia St. Mary’s, and I assist occupational therapists, physical therapists and sometimes speech therapists. It’s pretty cool to go back where I started from.”

Eskridge draws her strength from a quote she heard at a conference. Keynote speaker Joshua Graham said, “The fire inside me burns brighter than the fire around me.”

“I’m not going to refuse to live my life to the fullest, because this happened to me,” Eskridge said. “I made it another day and I’m blessed regardless. I control my destiny, not my scars.”

The Professional Fire Fighters of Wisconsin Charitable Foundation supports burn survivors of all ages and in all stages of recovery. Burn Survivors and their families are encouraged to contact the PFFWCF to find out what resources are available.



The Professional Fire Fighters of Wisconsin Charitable Foundation is working to create a fire-safe and burn-free Wisconsin. Our programming supports; Burn Survivors of all ages and in all stages of recovery, fire prevention and safety initiatives, fire fighters, and communities Statewide.

Contact Information: 321 E Main Street, Suite 200 Madison, WI 53703
(608) 630-8440 Mike@pffwcf.org

The Professional Fire Fighters of Wisconsin Charitable Foundation (PFFWCF) would like to thank the following people and organizations for their hard work and continued support of this life-saving publication: The Milwaukee Journal Sentinel, Andy Johnson – NIE Supervisor, José Acevedo – Advertorial Coordinator, PFFWCF, Michael Vos – Executive Director, Eric Salzwedel – Program Coordinator and the Wisconsin Department of Public Instruction.

Attention Students: Enter Our Poster Contest

You could win gift cards from the Professional Fire
Fighters of Wisconsin Charitable Foundation

Here's a chance for students to be recognized for promoting fire safety with their artwork. Winning posters will receive gift cards from the Professional Fire Fighters of Wisconsin Charitable Foundation.

Suggestions for posters include emphasizing a safety tip, promoting National Fire Prevention Week, or promoting fire safety.

All entries will be considered for use in upcoming promotions, including next year's Fire Safety Newspapers in Education Program, use on the PFFWCF website, and on social media.

Rules

Poster entries must meet the following criteria to be considered for the contest:

- Poster must be done by a 4th - 8th grade student.
- Color or black and white art is acceptable in any media — pencil, ink, crayon, watercolor, etc.
- All entries must include the student artist's name, grade, school, teacher, address, telephone number, email (a school address, phone number, and email are acceptable). This information must either be written on the back of the artwork or firmly attached to the artwork for identification purposes.
- 8.5" x 11" or 11" x 17" final size.
- If you will be entering computer generated art, the finished piece must be submitted as a printed copy; electronic files will not be accepted.
- Only one entry per student.

Deadline for poster entries:

Postmarked by December 22, 2018.

Awards will be posted by January 31, 2019.

Judging

- All entries will be judged by a panel of Wisconsin fire safety experts based on the following criteria:

50% Effectiveness of the message

25% Creativity

25% Artistic ability

- Please note that judges' decisions are final.

Prizes

GRAND PRIZE Winner will receive a framed poster and a \$100 gift card.

FIRST PLACE Winner will receive a framed poster and a \$75 gift card.

SECOND PLACE Winner will receive a framed poster and a \$50 gift card.

HONORABLE MENTION Winner will receive a framed poster and a \$25 gift card.

***See Page 13 for Entry Form**

For more information go to www.pffwcf.org
or www.pffwcf.org/firesafety

Teachers:

Win up to \$1,500 for your classroom!

The Professional Fire Fighters of Wisconsin Charitable Foundation (PFFWCF) encourages teachers of 4th - 8th grade to help prevent fires and burn injuries through education.

The PFFWCF will award \$500-\$1500 prizes to teacher classrooms. To enter, teachers of 4th - 8th grade are invited to write a one-page essay that either:

- Describes how you would use the award money to help increase fire safety in your school or community.
- Describes how you used this section in your classroom.
- Explains how you have been incorporating the Fire Safety section into your lesson plan throughout the academic year.
- Or choose a topic unique to your classroom or school. You may also want to enclose a photograph of a bulletin board you put up with an accompanying essay.

Mail your entry to:

PFFWCF Teacher Essay Contest
321 East Main Street, Suite 200
Madison, WI 53703

Essays must be postmarked by December 22nd, 2018.

Your students can be partners with firefighters. Using this section in conjunction with the Milwaukee Journal Sentinel will help students learn more about fire safety. We've also included Fire Safety Certificates to award to students who complete the home activities on pages 12-13. Please encourage students to complete this with their families.

For more information about PFFWCF, visit www.pffwcf.org or www.pffwcf.org/firesafety.

Kitchen Safety

Let's talk about fire safety in the kitchen!

ED RUCKRIEGEL | UW BURN CENTER

Q: In which room of the house or apartment do you think the most house fires are started?

A: Here's a hint: has anyone in your family ever cooked something too long, and it started burning and getting smoky in the air? If you are thinking about the kitchen, you are right. The kitchen is actually the most common room where house fires are started.

Q: What are the most common causes of kitchen fires?

A: Believe it or not, people (including men, women, and children) usually cause the fires to start, not electricity, appliances, or pets. Many fires are caused by what is called "unattended cooking," which means that someone left food on the stove or in the microwave without watching it closely. Another type of kitchen fire is a "careless cooking fire," which is caused by someone turning the heat up way too high.

Q: What can I do to prevent fires and keep myself and my family safe while cooking?

A: If you follow these tips from the Madison Fire Department, you can help stop kitchen fires before they even start!

- Pay attention and be alert; don't cook if you are too sleepy or distracted.
- When cooking on the stove top, stay in the kitchen and watch the pot closely. Staying in the kitchen allows you to take quick action if the food begins to burn.
- Set the stove on a lower heat setting. You can turn it up if you need to, but be careful not to turn it up too high and burn your food.
- Use a timer to remind you when the food is finished cooking.
- Keep a lid for the pot close by. If a small fire erupts in the pot or pan, cover it to extinguish it.

- Keep a fire extinguisher near the kitchen in case a fire gets out of control. Only trained adults should use a fire extinguisher. Before you start cooking, make sure you know where the fire extinguisher is and how to use it.
- Keep flammable items far away from the stove! This includes mitts, pot holders, dish towels, and paper. Take time to clear away the area around the stove before you start to cook.
- Children should always be supervised by an adult while cooking. Keep younger children at least 3 feet away from the stove so they don't accidentally reach for something or bump into something and get burned.
- Don't store anything inside the oven. You might forget to take it out of the oven before you turn it on, which could start a fire.

Q: What's wrong with this picture?

A: No one is watching the pot on the stove! Always stay in the kitchen and



watch closely while food is cooking. Also, there are items too close to the stove (the book and the hat) that could accidentally start on fire.

Thank you for listening to these tips to keep yourself and your family safe from kitchen fires!

FIRE! CALL 911!

JENNIFER NIELSEN, RN | ASCENSION COLUMBIA ST. MARY'S REGIONAL BURN CENTER

Did you know that Fire Fighters in the United States respond to over 3,000 house fires a day? (Thanksgiving Day sees three times as many house fires than any other day.) That's over 1,000,000 house fires a year! Fire safety and fire prevention has helped decrease the number of house fires by 19% in the last 25 years! Fire Fighters and community educators are working with law makers and communities daily to help keep you safe!

Some think that fire safety is simply knowing what to do if your clothes catch on fire. Well, that is part of it. Fire safety is everything you need to know to be safe, to make your home safe, and knowing what to do if ever a fire starts in your home.

Here are some fire safety tips for your home:

1. Make sure you have working smoke detectors on every level of your home including inside all bedrooms and outside each sleeping area.
2. Remind your parents to test smoke detectors every month.
3. Plan and practice a fire escape plan.
4. Don't play in the kitchen when someone is cooking.
5. If a fire occurs in your home, remember to ...

Get out! Stay out! Call for help!

Take Action!

PHOENIX SOCIETY FOR BURN SURVIVORS

Do you know someone who is a burn survivor? Maybe they're a friend, a family member, a neighbor, or someone you just met. Have you ever wished there was something you could do for them or wanted to know more about the burn community? Did you know that you can help and be a part of this wonderful community?

The first thing you should know is that taking action really isn't that difficult. Change begins with these three simple steps.

1. Learn about your local burn communities and organizations.

Have a parent help you do an online search to find resources near you. You can do this without leaving your house or changing out of your pajamas! Have you searched how many resources there are in your city? Or county? Surrounding areas? Or even in your state! Learning what's around is the first step to be an advocate for the burn community. For more information, check out the Professional Firefighters of Wisconsin Charitable Foundation at www.pffwcf.org!

2. Connect with organizations, events, and burn community networks.

Now that you know of locations near you, it's time to take action! Go outside and connect with the community. Maybe a burn related organization is in need of volunteers for events or fundraising opportunities. Some camps for burn survivors collect donations, and you could help! By participating in events and learning more about the families it serves, it connects faces to names and makes your contributions even more meaningful. Even kids can help support burn survivors by gathering resources like toys or stuff for a burn camp.

Don't have any organizations or resources near you?

There are a variety of online resources, social media pages, and online groups that reach burn survivors around the world. The Phoenix Society for Burn Survivors is a leading non-profit organization that supports burn survivors and families from all over the world through support programs and an online community. Learn more about their amazing work and ways to connect at www.phoenix-society.org.

3. Acceptance, Kindness and Advocacy.

This is easiest step of all, but it's also the most impactful. Giving a kind word to anyone can brighten up their day. Set an example for others by being welcoming. Include a burn survivor in activities. This can make a big difference to somebody you know has a burn injury or a family member affected by a burn. Try this out at your school,

Recommendations to become an active member of the burn community.

neighborhood, community center, spiritual center, work, and even at the grocery store.

Acts of kindness include small but important things! If you meet a burn survivor:

- make eye contact and smile!
- have a conversation (about anything!)
- encourage them through their journey

Being accepting and kind can open the doors to lasting friendships and create an opportunity to learn more about the burn community. Advocating doesn't always mean standing at a podium and speaking to prove a point. It is about being consistent, genuine, and caring about an important cause or community.

Want to learn more? To find resources, read more articles, search events, and discover current topics for burn survivors, families, professionals - and supportive friends like you! go to:

www.phoenix-society.org



FREE Summer Camp for Burn Survivors

The 25th Annual PFFWCF Summer Camp for Burn Injured Youth or "Burn Camp" will be held August 11 – 17th, 2019 at Camp Timberlee. Burn Camp is for kids ages 7 to 17 with life changing burn injuries. This fun summer camp experience promotes healing, creates a sense of community, and a network of support that lasts a life time. Please contact us for more information or to refer someone that could benefit from this amazing program.

(608) 630-8440 • Mike@pffwcf.org

Fire Sprinklers Are Good For the Environment

You already know that a fire in a home is very dangerous to the people who live there and to the firefighters who must respond.

Did you also know that a fire is very harmful to the environment?

It's true. Home fires damage the Earth in several key ways:

- The carbon emissions that result from burning materials,
- The use of large amounts of water to extinguish the fire,
- Polluted runoff water from the fire that gets into groundwater and standing water,
- The addition of fire-damaged materials that go into landfills, and
- The carbon emissions that result from replacing materials damaged in the fire.

Preventing a fire in the first place is the best way to help people and the planet. There is only one safety feature that protects people and the Earth – home fire sprinklers.

Home fire sprinklers are similar to ordinary plumbing – the pipes are usually hidden behind the walls and ceilings. If there is fire, the heat will activate only the sprinkler closest to the fire, putting water on the flames and controlling or putting out the fire.

That quick action saves lives, prevents injuries, and protects homes and belongings. But it also controls the fire with far less water than fire department hoses, which use more than 10 times the amount of water per minute. A fire in a sprinklered home is quickly controlled; while an unsprinklered home fire will burn and grow so large that it will likely take thousands of gallons of water to put it out.

Let's do the math: The less time a fire burns means fewer greenhouse gas emissions are released.

Less water needed to control the fire means less water is used, and less pollution runs off. Finally, the less fire damage, the fewer materials get hauled to the landfill. With home fire sprinklers, less is more!

HOME FIRE SPRINKLER COALITION

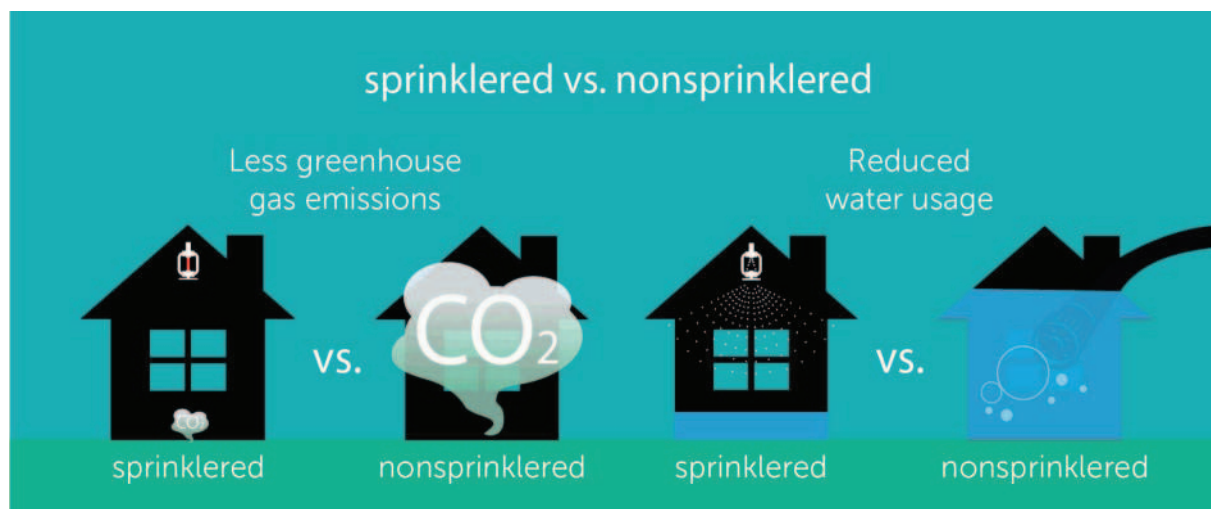


Fire sprinklers can stop a fire in less than **1½** minutes.

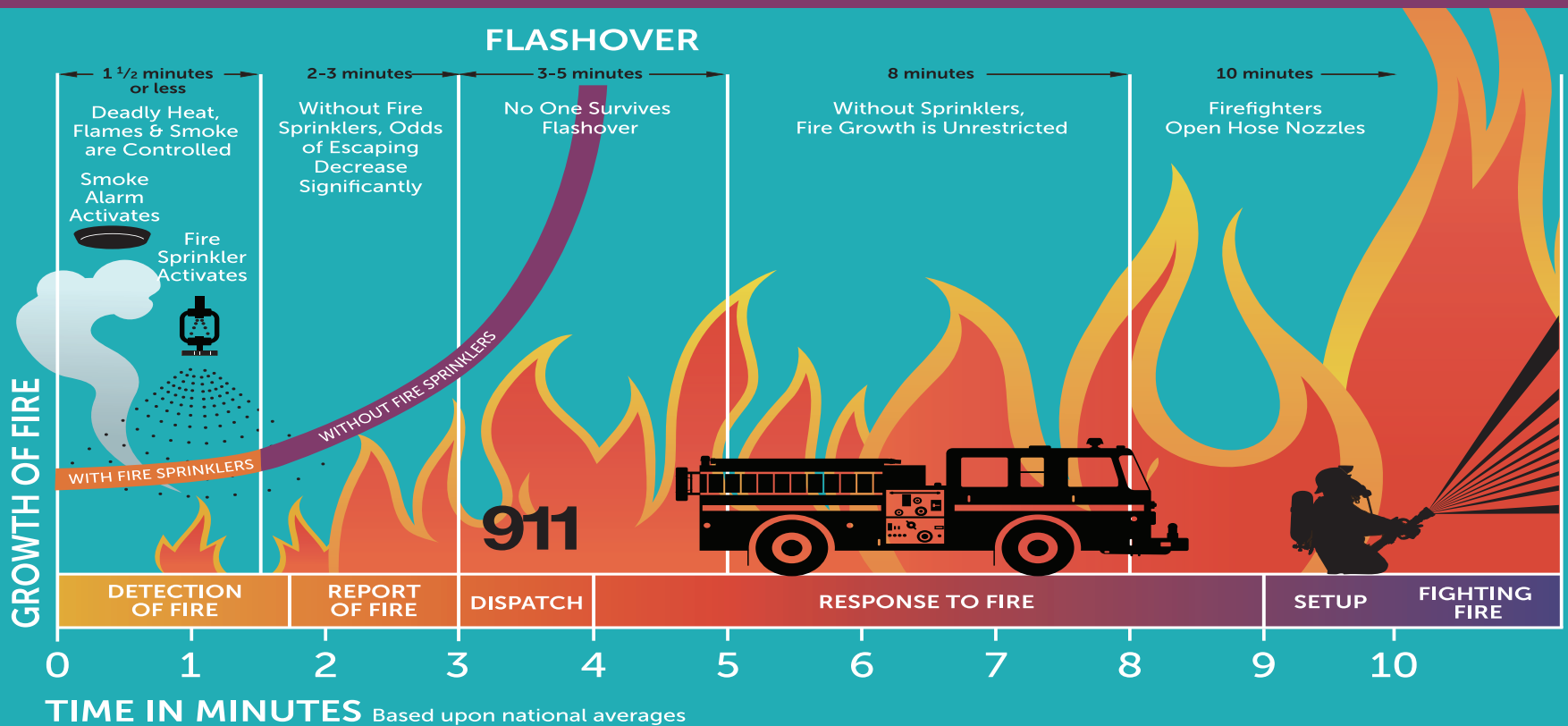
Only the sprinkler closest to the fire will activate, spraying water directly on the fire.

Saving you, your family and your property.

Source: National Fire Protection Association (NFPA)



HOME FIRE TIMELINE



Home Fire Sprinkler®
COALITION
Protect What You Value Most™
HomeFireSprinkler.org

It's 12:53 a.m.

10 seconds You and everyone in your home are sound asleep. Ten seconds ago, a small fire started in your living room. In the next five minutes, your life may change forever. Or you may just need to clean up in the morning and air out the house.

It will all depend on whether or not you have fire sprinklers protecting your home.

Every 84 seconds, there is a house fire in the United States. More than 3,000 Americans die in fires every year, 85% of them in home fires. The victims are usually children and older adults. Although the majority of home fires start during the day, most fatal fires start at night. Like this one.

1 minute One minute after the fire starts, the smoke alarm sounds. You awaken. You don't smell smoke, but you get up to check. It takes almost 30 seconds to get out of bed and exit the room.

90 seconds As you exit, you start to smell smoke. You see smoke billowing out of the living room. The curtains in the room are in flames. The temperature at the ceiling is approaching 1,000 degrees Fahrenheit. You are forced to "stay low and go."

2 minutes If your home has fire sprinklers. Heat activates the single sprinkler closest to the fire. Within seconds, the flames are controlled and may be extinguished. Smoke in the living room starts to clear. Buying you time to get out alive, while saving your property.

2 min. 9 sec. If your home is not protected by fire sprinklers, you have to crawl through thick, hot smoke to get out. You yell to warn others in your home, you are blinded by smoke, and you fear for the safety of others in your home. You will not survive in this environment much longer. The fire is not bright. It is hidden by thick, black smoke. Modern building materials and furnishings give off poisonous gases as they burn. Most people who die in fires don't die from burns. Smoke and toxic fumes are almost always the killer.

Fire sprinklers save lives and property.

2 min. 25 sec. In the blackness, you collide with your family members. You all know what to do because you practiced your fire escape plan. Your house is filled with deadly smoke. Your family safely reunites at your safe meeting place and activates 911.

Fire spreads through your home. The temperature at the living room ceiling approaches 1,400 degrees Fahrenheit.

Homes protected by fire sprinklers save lives and cause far less damage because they stop a fire when it is small and use far less water than the Fire Department does when they arrive.

3 min. 57 sec. You are glad that everyone is out safe, but sad that you've lost everything. Seconds later, the living room is enveloped in flames as everything in the room reaches ignition temperature and catches fire. This is known as flashover.

4 min. 16 sec. Fire is amazingly fast. In less than five minutes, the fire is out of control.

6 min. 12 sec. The Fire Department arrives on the scene to find fire coming out the windows of your home. They deploy their fire hoses and spray water at a rate of 150 to 300 gallons per minute.

If you have fire sprinklers, you may spend the time describing the fire and how it was controlled. If not, they will get to work extinguishing the fire. The firefighters will put out the hot spots, turn off the water, and work to save your property.

Fire sprinklers use less than 341 gallons of water to put out an average fire.* Firefighters use more than 2,935 gallons for an average fire. *According to the Scottsdale Report

With fire sprinklers, an average fire will cause \$2,166 in damage. Without fire sprinklers, an average fire will cause \$45,019 in damage. A fire like this one is likely to cost more than 10 times that much.

Fire sprinklers save lives and property.

Presented by Home Fire Sprinkler Coalition/www.homefiresprinkler.org

Fire Forensics: Claims and Evidence

As fire burns it leaves clues in its path – evidence visible only to a trained Fire Investigator. Using what they know about fire and fire behavior, investigators hunt for clues, collect evidence and report on what happened. Fire Investigation is an important part of Fire Prevention. It is a complex job that involves Science, Technology, Engineering and Math (STEM).

Learning these skills are critical to developing a knowledge base that could one day help eliminate certain causes of fire.

Sound interesting? Great! Let's start with fire science basics.

Welcome to the Fire Investigator Training Academy!

By: Ginger Sommer and Dennis Avelar

What is Fire?

Fire is a gas-phase chemical reaction that emits heat and light.

Stage 1 - Ignition

- During a fire, solids and flammable liquids do not burn. Only gases burn.
- Fire is the result of fuel gases mixing with oxygen and heat in the correct proportion.



Stage 2 - Pyrolysis

- Pyrolysis is when heat converts solids and liquids into fuel gases.



Stage 3 - Combustion

- These fuel gases mix with oxygen, and when ignited by heat, result in flaming combustion.
- Another word for fire is combustion.



Elements of Fire

Three elements must be present for a fire to start and continue burning.



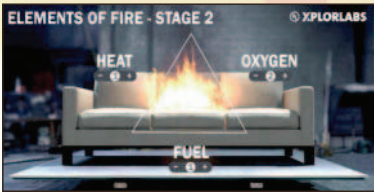
Primary

- What's needed to create and sustain fire?
- A fire requires all three elements. Adjust one of the elements and it changes the fire.
- Remove just one element and the fire will go out, or extinguish. Fire exists only when all three elements of the Fire Triangle work together.



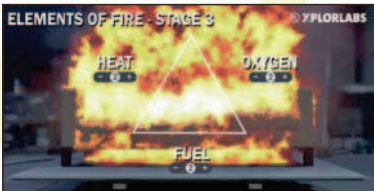
Stage 1

- Oxygen is in the air. Just like we need it to live, fire needs it to burn.
- Oxygen is the most common element on Earth.



Stage 2

- Heat is thermal energy that produces fuel gases (pyrolysis) and causes ignition.
- Heat is the thermal energy needed to produce the fuel that combines with oxygen. Heat promotes the fire growth and the spread of flames by maintaining a continuous cycle of fuel production and ignition.



Stage 3

- Fuel is any substance that combusts after converting to a gas in the presence of heat.
- Wood, furniture, carpeting... just about any material that surrounds us is potential fuel. When heated, these materials create gases and combine with oxygen. With the heat, the gases ignite and release light, heat and smoke. This is fire.

Four Stages of Fire Development



Stage 1 Ignition

- Heat, oxygen and a fuel source combine. The result of this chemical reaction is fire.
- This gas-phase chemical reaction causes the fire to start.



Stage 2 Growth

- The fuel load will continue to burn because oxygen is available.
- As long as there's enough oxygen in the room, the fire continues to burn



Stage 3 Full Development

- All combustible materials are ignited with enough oxygen.
- If a steady supply of oxygen exists, all the combustible fuels will be consumed in the fire.



Stage 4 Decay

- Usually the longest stage of a fire, with oxygen, heat and fuel decreases until the fire goes out.
- With ample oxygen, the fire only stops burning after the fuel has been completely consumed. Some fuels leave behind evidence such as char, ash or other chemicals.

Fire Behavior

The Behavior of Fire in a Closed Room



Stage 1

- During a fire, gases and smoke move because of differences in temperature, density, and pressure.
- During a fire, heat is transferred to gases in the room. This results in the gases expanding.



Stage 2

- As the gases are heated and become buoyant, they flow upward, forming a thermal plume.
- Heated gas is less dense than the air surrounding it. Because the surrounding air hasn't been heated at this stage, a thermal plume – a column of smoke and hot gases – moves upward.



Stage 3

- A ceiling jet – a thin layer of hot gases – spreads out along the ceiling.
- When the thermal plume reaches the ceiling, it turns and continues to move away from the heat source forming a ceiling jet – a relatively thin layer of hot gases that spreads out along the ceiling.



Stage 4

- When the ceiling jet reaches the walls, a hot gas layer forms and pressure increases.
- The hot gas layer forms and pressure increases because the ceiling and walls of the room are limiting further expansion of the hot gas.



Stage 5

- Combustion continues if the chemical reaction has available fuel, oxygen, and heat.
- The smoke, which is full of heated gases, increases in temperature and pressure. As long as fuel, oxygen and heat are present in the right amounts, combustion continues.



Stage 6

- Without an outside air supply, the oxygen in the room depletes and combustion stops.
- In the previous example of the sofa burning out in the open, the fire went into decay because the fire was limited by the available fuel. In the instance of a closed-room fire, the fire goes into decay because it consumed all of the oxygen needed for combustion. This is called ventilated-limited fire in a closed room.

Ventilation

The Impact of Ventilation (Outside Air) on Fire



Stage 1

- An opening to outside air during a structure fire allows for ventilation.
- Ventilation is the exchange of hot fuel gases and air. Any opening in a structure can allow ventilation to occur.



Stage 2

- During ventilation, hot gases flow out (exhaust) and cooler air enters (intake) the room.
- In this example, buoyant hot gases, or exhaust, flow out of the open window while the intake, denser and cooler air that's loaded with more oxygen, enters the room low to the ground.



Stage 3

- The effect is like a pump feeding a fresh source of oxygen to the fire.
- High pressure flow to low pressure with the pumping of fresh, oxygen-rich air. The fuel load will continue to burn as long as oxygen is available.
- With good ventilation, or a steady source of oxygen, a fire can grow until flashover occurs. Flashover causes everything in the room to pyrolyze and ignite all at the same time. Ventilation often makes a fire bigger, especially in structures with large amounts of synthetic material as potential fuel.

Congratulations!

Welcome to the fascinating world of fire forensics! Ready for your first challenge? Proceed with caution:

There's been a fire!

Your job is to solve the case – figure out where the fire started (point of origin) and how (cause).

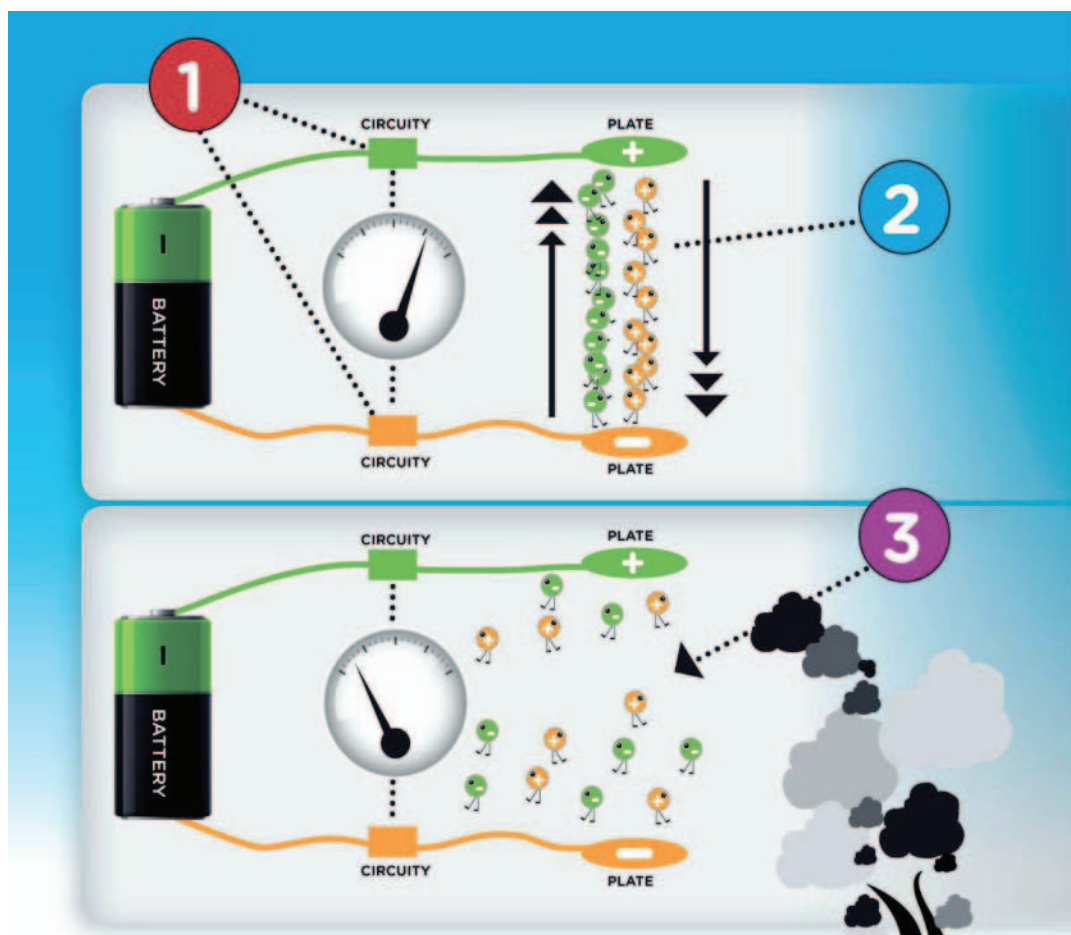
Fire investigation is like reading a story backwards – you enter the scene at the end, seeing black walls and charred debris.

Fire investigators have to rely on their training and work backwards – using the scientific method to fill in the story by examining the clues left behind as evidence is gathered and analyzed.

Enter the Fire Lab (*insert www.ulxplorlabs.org*)

How do smoke alarms work to save lives?

By: Amy LeBeau, NFPA



SMOKE ALARMS

Did you know that scientists have spent many years working on smoke alarms to keep us safe? One of the most common types is an ionization smoke alarm. Here's how it works:

- 1** Inside the smoke alarm, there are two tiny metal plates called electrodes that are connected to a battery. This is called a circuit.
- 2** There is also a substance called Americium-241. Americium-241 converts air molecules into positive and negative ions. Because opposites attract, the negative ions move toward the positive plate and the positive ions
- 3** move toward the negative plate. This movement creates a complete circuit or path of electricity.
- 4** When smoke enters the smoke alarm, the ions bond with the smoke, breaking the path of electricity.
- 5** When the flow of electricity is reduced, the alarm goes off.



Think about all of the ways that you enjoy fire: roasting marshmallows, telling stories around a campfire, or watching a beautiful fireworks display. Fire is amazing and makes our lives better in so many ways! But fire can also be destructive and devastating.

Scientists, engineers, and other ordinary people are using their growing knowledge to create ways to help us enjoy the benefits of fire, while minimizing the dangers. New discoveries and advancements in fire safety are being made every year. Who knows? Maybe you can make the next big discovery!

People Have Invented Important Fire Safety Tools

An important part of fire safety is early detection. This means knowing that there is a fire while it is small enough that everyone in harm's way can get to safety before the small fire becomes a big fire. Forty years ago, smoke alarms were very expensive and difficult to install, so very few buildings had them. But in the last several decades, scientists have invented small, battery-operated smoke alarms that are not only easy to use, but also cost a lot less. Now almost every home in America has at least one.

Can you find the smoke alarms in your home? What about in your school? Be thankful for the way these amazing devices keep kids fire safe! Now that schools have smoke detectors that sound an alarm in the school and also at the fire station, along with heat detectors, fire sprinkler systems, and other fire safety rules, deaths and injuries from fires in schools have become extremely rare.

People Have Designed Fire-Safe Buildings

Which of the three little pigs was the wisest, the one who built his home out of straw? Or the wood-working pig? Or the bricks-and-mortar guy? You're right! The pig who made his house out of bricks not only knew how to protect his home from the wolf, but he also had some good knowledge about fire safety.

Continued on page 11

SPARKY SAYS:

Hey kids! Get your family together and have a home fire drill, just like schools do. Make sure each person in your family knows two ways out of each room and your outside meeting place. Visit sparky.org for fun games and activities.

Continued from page 10

Engineers use building materials that are hard to burn, called fire-resistant materials, to keep fires from spreading quickly. Common fire-resistant materials used in buildings are concrete, stucco, and bricks. Another amazing fire-resistant material that engineers have developed is drywall, which is used for the walls inside most homes. These amazing boards have a layer of a fire-resistant material called Gypsum, which really helps to slow fires down. The rest of the drywall has a special substance that is full of moisture, which also helps to keep the fire from spreading quickly. Did you know your walls are full of moisture?

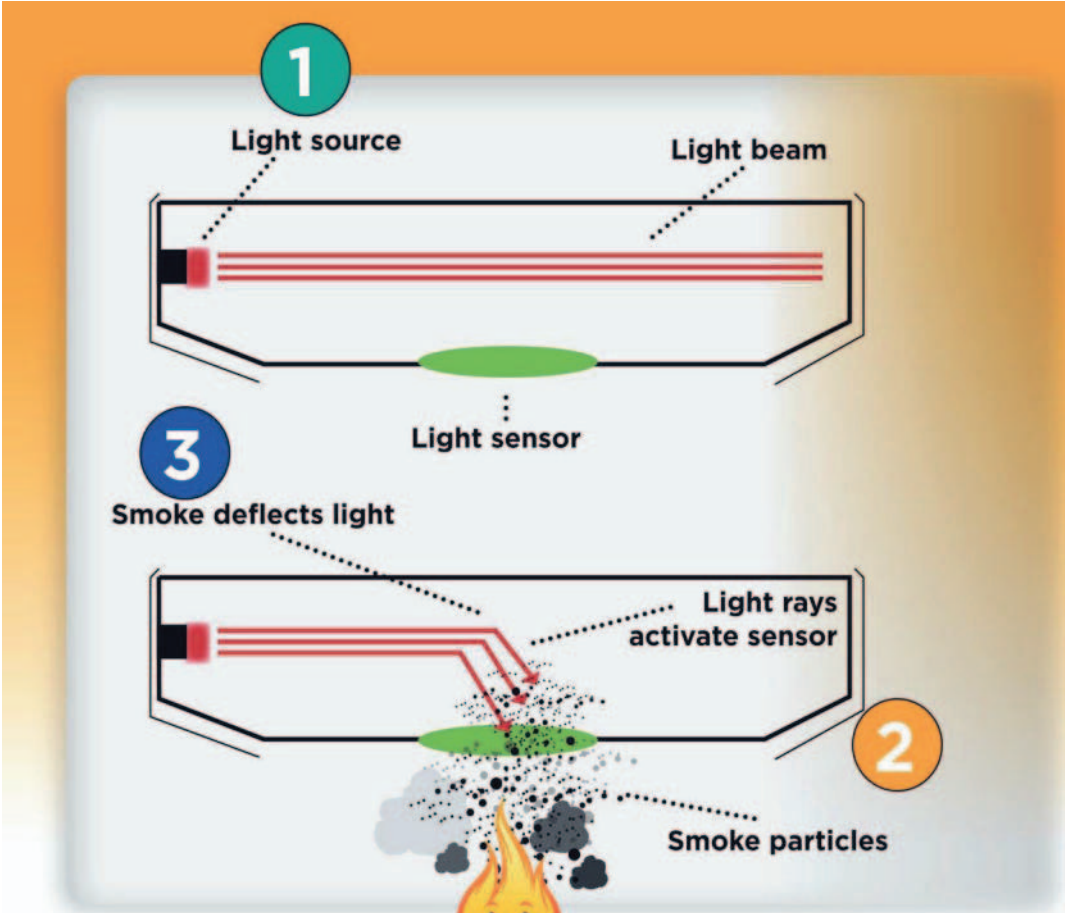
Engineers have also started planning buildings so that people can get out of a burning building quickly. Every room should have two different exits. What are the two exits from the room you are sitting in right now? If you don't see two doors, check to see if there is a window that would be easy for you to use as a second way out. Other ways engineers design buildings for easier escape are to make wide hallways and stairs, add exit signs, and design fire sprinkler systems to put out fires before the fire department arrives.

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SPARKY SAYS:

Hey kids! If the smoke alarm sounds, get out and stay out.



SMOKE ALARMS

Another type of alarm is a photoelectric smoke alarm. Here's how it works:

- 1 Inside the smoke alarm, there is an LED light that sends a beam of light (similar to a laser pointer) in a straight line across the chamber. In a separate compartment inside the chamber, there is a photosensor that detects light.
- 2 As smoke enters the alarm, the smoke particles interrupt the light beam, scattering it in many directions. Some of the LED light scatters toward the light sensor. When light beams hit the sensor, the alarm will go off!
- 3 When the batteries in your smoke alarm get low, the smoke alarm automatically activates a low battery chirping sound different from the alarm sound so you know it's time to get new batteries.

Some smoke alarms contain both photoelectric and ionization smoke detection systems.

LOOK. LISTEN. LEARN.

Be aware.
Fire can happen
anywhere.™

- Look for places fire could start.
- Listen for the sound of the smoke alarm.
- Learn 2 ways out of every room.

FIRE PREVENTION WEEK
firepreventionweek.org



NFPA — the official sponsor of
Fire Prevention Week since 1922.



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How to make a Home Fire Escape Plan



Memorize your fire department's emergency phone number and write it below:



- ☐ Draw a map of your home. Show all doors and windows.

- ☐ Visit each room. Find two ways out.

- ☐ All windows and doors should open easily.
You should be able to use them to get outside.

- ☐ Make sure your home has smoke alarms. Push the test button to make sure each alarm is working.

- ☐ Pick a meeting place outside. It should be in front of your home. Everyone will meet at the meeting place.

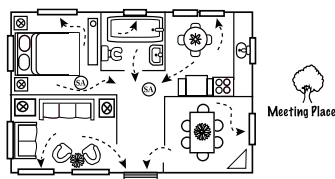
- ☐ Make sure your house or building number can be seen from the street.

- ☐ Talk about your plan with everyone in your home.

- ☐ Learn the emergency phone number for your fire department.

- ☐ Practice your home fire drill at least ***twice a year!***

- ☐ Make your own home fire escape plan using the grid provided.



- Draw a floor plan or a map of your home. Show all **doors** and **windows**.
- Mark **two ways out** of each room.
- Mark all of the **smoke alarms** with (SA). Smoke alarms should be in each sleeping room, outside each sleeping area, and on every level of the home.
- Pick a family **meeting place** outside where everyone can meet.
- Remember, **practice** your plan at least **twice a year**!

[illegible]

Grown-ups: Children don't always wake up when the smoke alarm sounds. Know what your child will do before a fire occurs. Get more information on smoke alarms and escape planning at www.nfpa.org/factsheets.

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2018 Fire Safety Newspapers in Education Quiz

Kitchen Safety:

If there is a fire, call _____!
Everyday Firefighters in the United States
respond to _____ house fires.
What room of the house or apartment do most
fires start? _____
Don't cook if you are _____ or
_____.
If a fire occurs in your home, remember to
____ Out! ____ Out! ____ Help!

Take Action - Phoenix Society for Burn Survivors:

Do you know someone who is a burn survivor?
Yes or No (Circle)
What are the three steps to help burn survivors
be a part of this wonderful community?

Fire Sprinklers are good for the environment:

Home fires damage the Earth in what way?
a. The carbon emissions that result from
burning materials
b. The use of large amounts of water to
extinguish the fire
c. Polluted runoff water from the fire that gets
into groundwater and standing water
d. The addition of fire-damaged materials that
go into landfills
e. The carbon emissions that result from
replacing materials damaged in the fire
f. All the Above

UL XLPLORLABS Fire Forensics: Claims and Evidence

What are the three elements of a fire?

If you eliminate one element will the fire go
out? Yes or No
What are the four stages of Fire Development?

Ventilation often makes a fire bigger or
smaller? _____
*Ready for a challenge? Enter the Fire Lab at
www.ulxplorlabs.org

Smoke Alarms:

What beeps and can save your life?

If your smoke alarm sounds, what should you
do? _____
What are two types of smoke
alarms? _____

When batteries in your smoke alarm get
low, what will your smoke alarm do?

Home Escape Plan:

How many ways should you be able to get out
of each room? _____
What is the emergency phone # to call in case
of a fire? _____
You should have a meeting place outside of
your house. True or False

Energy Safety from We Energies:

What does natural gas smell like?

What does it mean when you see a Mr. Ouch
Sign?
Electricity + _____ = DANGER

PREPARATION • PREVENTION • PRACTICE



Our Home is *Fire Safe!*

The student named below has successfully completed the Fire Safety Home Survey
exercises with their family, and their home is now a certified "Fire Safety Zone."
Please hang this certificate proudly in your home to remind you to always maintain
your fire safety plan.

Student's Name

I promise to be aware of fire safety and to practice fire safety at all times.

Student Signature

Parent or Guardian Signature

Teacher Signature

- I have performed the Fire Safety Home Survey exercises with my family
and I will save and display this certificate in my home.
- I know to call 911 in the event of a fire.
- Our family has a fire escape plan, our home has smoke alarms and we pledge
to maintain them on a regular schedule.
- I will not play with matches or lighters.
- My family and I have inspected our home, including our basement, attic and
garage and certify that we have not identified potential fire risks.



Poster Contest Entry Coupon

Only students in 4th - 8th grades are eligible
to enter.

Student's name _____

School _____

Teacher's name _____

Teacher's email _____

Grade _____

School phone _____

School address _____

City, state, zip _____

Please mail entries to:

**Professional Fire Fighters of Wisconsin
Charitable Foundation**

321 E. Main Street, Suite 200, Madison, WI 53703



Energy Safety

from We Energies

Electricity and natural gas are important parts of your daily life. You use them to heat your home, cook your food and power things like TVs and computers. That's why it's important to use energy safely. Follow these rules to stay safe around electricity and natural gas:



Stay away from power lines.

Stay far away from all power lines – especially when they're lying on the ground. Never climb trees or fly kites near power lines. And don't release metallic balloons outdoors – they may touch power lines, causing fires and outages.



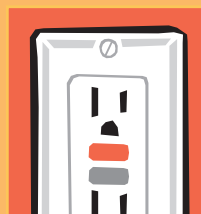
Natural gas smells like rotten eggs.

If you smell natural gas, do not use a light switch or even a phone, which could generate a spark and cause a fire or explosion. Get everyone out of the house and tell a trusted adult to call We Energies for help.



Mr. Ouch means danger.

Never play near electrical equipment such as substations, power poles or transformers (green boxes). When you see Mr. Ouch, don't touch.



Outlets are for plugs.

Don't put your fingers or any object other than a plug into an electrical outlet. And keep electrical appliances away from water. Electricity + Water = DANGER.



Call before you dig.

Before doing any digging or planting in your yard, call Diggers Hotline at 811 to have public underground utilities marked for free. And don't pull out marker flags until the work is complete; others working in your yard may need to know where underground utilities are located to avoid a dangerous accident.

Go to **we-energies.com** for more energy safety information.



WE-160050-10-GJ-NIE

We Energies – Energy You Can Depend On

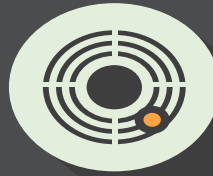
FIRE SAFETY

Fires can start and spread quickly, so we all need to know what to do when it comes to being safe at home. **Just a little bit of planning can make a big difference for your family.**



SMOKE ALARMS

Install one on every floor of your home, including outside of sleeping areas and inside each bedroom. They should be tested monthly and replaced every 10 years. Replace batteries once a year or consider installing alarms with 10-year batteries.



IN THE KITCHEN

Keep young children away from the stove area, fireplaces and other heat sources. Never leave the kitchen unattended while cooking, and keep flammable objects away from the stovetop.

APARTMENTS

Know your building's escape exits and use stairs to get out. Pull the nearest fire alarm as you leave.

GET OUT & STAY OUT!!!

Practice makes perfect when it comes to your family's escape plan. **Make sure you have at least two ways out from every room and choose a place to meet that is a safe distance away from your home. Once you're outside, call 911.**

EXIT



WHAT KIDS SHOULD KNOW

- Never play with matches, lighters, candles or fireworks.
- Leave the house if you hear an alarm, see flames or smell smoke.
- Always feel doors before opening them. If hot, find a new way out.
- Never go back into a burning building.
- Never stop for toys or pets.
- Get Low & Go! Smoke rises, so stay low to beat the heat.
- If you can't get out, cover vents and cracks around the door to keep smoke out. Stand by window and signal for help.



FIRE FACTS

- Every hour, approximately 16 children are injured from fires or burns.
- 85% of all fire-related deaths are due to home fires.
- Fires can spread rapidly and leave families as little as two minutes to escape.
- Smoke alarms reduce the chances of dying in a fire by nearly 50 percent.



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KIDS**
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Children's
Hospital of Wisconsin

Safe Kids Wisconsin

(715) 843-1890 | safekidswi.org | safekids.org | chw.org

25th Annual



August 11 - 17, 2019

A free summer camp for burn survivors with life changing burn injuries.

Attention! Seeking Burn Survivors ages 7-17.

Contact us for more information about this life changing summer camp.

(608) 630-8440 • *Mike@pffwcf.org*

Thank you!

The Professional Fire Fighters of Wisconsin Charitable Foundation is working to create a fire-safe and burn-free Wisconsin. For 21 years the Milwaukee Journal Sentinel has been a partner on this award winning program that saves lives through education. The fun and engaging content within these pages teach students about fire and burn prevention, gas and electrical safety, and risk reduction in their homes. Please share with us how you are using our Fire Safety Newspapers in Education program at home and at your school.



/pffwcf



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#WIBurnCamp

#PFFWCF

#FireSafeBurnFreeWI



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NIE Supervisor:
Andrew Johnson

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