



23RD
ANNUAL
EDITION

fire safety

NEWSPAPER IN EDUCATION

Champions for burn survivors, fire fighters, and safe communities

FIRE PREVENTION WEEK
OCTOBER 4-10, 2020

*Prizes available for student poster
contest and teacher essay contest*

Fire Safety in the Kitchen

*Life Saving Information
• about Smoke Alarms*

Developing an Escape Plan

Fire Sprinklers: How They Work



Newspaper In Education

journal **sentinel**

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

OUT OF THE FRYING PAN, INTO A FIRE

BRINGING FIRE SAFETY INTO THE KITCHEN

By Lindsey M. McKee

According to the Professional Fire Fighters of Wisconsin Charitable Foundation, fire-related deaths in residences were up 79 percent just within the first four months of 2020. The Wisconsin Department of Safety and Professional Services (DSPS), which administers the state fire prevention code, sees a particular type of home fire consistently topping the charts.

“Nationally and statewide over several years, cooking fires is the No. 1 cause of residential type fires,” said DSPS Section Chief Bradley Johnson. “I think it’s reasonable to make a prediction that the number of cooking fires likely will increase with more people staying home due to the pandemic.”

2020 fire data is incomplete but still informative. As of Aug. 25, cooking fires stand at 506 instances (just under half of 2019’s total) and civilian injuries currently stand at 11 injuries (compared to 15 injuries total in 2019).

“Right now our data shows that we’re right in the middle for residential cooking fires,” Johnson said. “Civilian injuries due to cooking fires are going to be on the high side this year if this trend continues.”

COOKING WITH CAUTION

What causes cooking fires? Fire Lieutenant Michael Ball, Community Relations Director for the Milwaukee Fire Department, has an answer.

“The most common type of call that we get for kitchen fires is generally due to inattentive cooking,” Ball said. “Anytime you have anything on the stove, you should not be leaving the kitchen.”

For food requiring longer cooking times, Ball recommends using a timer, as well as avoiding cooking when under the influence of alcohol or sleep-inducing medicines. Johnson says to keep combustible items like oven mitts and food containers away from stoves.

When children are around, parents should take additional precautions.

“We recommend parents identify a three-foot zone around any hot surface – so in the kitchen that would be the stove – then teaching kids to not go in that zone,” said Lisa Klindt Simpson, injury prevention program manager for SafeKids Southeast Wisconsin. “Also, we recommend that parents do not hold their children while they are cooking; that puts everybody

at risk.”

Another piece of advice from Simpson is that appliances and their cords remain out of children’s reach on countertops. Using backburners on stoves is a great idea to keep curious little hands from heat sources. Additionally, parents should have hot foods on a level surface to prevent tipping and spilling that could scald or burn. Microwaving safety is important to know as well.

“Children should never reach up into a microwave,” Simpson said. “The food is extremely hot, and reaching up can cause the food to spill and burn someone.”

TOO HOT TO HANDLE

Accidents do still happen, despite best efforts. And there are ways to be ready to act.

“Always make sure your lids are handy, so if you have a fire flaring up you can just put that lid on it and turn off the burner,” Ball said.

If the fire moves outside of the cooking vessel, be prepared for the worst while expecting the best.

“Call 911 first to get the fire department on their way then get everyone out of the house,” Ball said. “If you feel comfortable using a fire extinguisher, attempt to extinguish the fire making sure your back is to the exit. If you can’t get the fire out with one extinguisher,



get out of the house and wait for the fire department.”

Burns often occur during cooking, and the proper response is key.

“Run the burned area under cold water immediately for several minutes to get that skin cooled down and help lessen the severity of the burn,” Ball said. “Don’t break any blisters. Then put some antibacterial ointment on the burned area and a sterile dressing. If you start to see any type of blistering, then it’s probably more of a serious burn and you’d want to go into a clinic or an emergency room to have them take a look at the burn and treat it.”

PLAN AND PRACTICE

Preparation and practice keeps families safe in emergencies. Begin by ensuring that there is a working smoke detector just outside of the kitchen to avoid false alarms and airborne cooking matter deadening alarm sensors. Testing detectors monthly, replacing batteries every six months for older models, and replacing the entire detector every 10 years will guarantee the alarm sounds when you need it to.

Next, every kitchen requires an easily accessible fire extinguisher. Over time unused fire extinguishers can get pushed further and further back into cabinets and drawers causing an unnecessary delay during an emergency.

When all else fails, the only option is to leave the home. Having a fire escape plan makes that exit much easier and practicing the plan makes it automatic.

“Have a fire escape plan that everybody is aware of and practices at least twice a year,” Ball said. “When we’re scared, we don’t really think clearly. But if we practice something for a long time, knowing what to do becomes second nature.”

The 2020 pandemic has robbed the world of so many liberties and lives. Don’t allow a fire to rob you of your family, your belongings, or your home.

ATTENTION STUDENTS: ENTER OUR POSTER CONTEST FOR A CHANCE TO WIN



WINNERS
IN EACH GRADE
LEVEL WILL WIN
UP TO **\$100**
FROM THE
FIRE FIGHTERS
FOUNDATION

(2019) Jay, who took 1st place in 3rd grade, is joined by members of Chippewa Fire District.

Help us spread the word about fire safety through art! Students in grades 1st-12th are encouraged to enter a poster submission into our fire safety poster contest. Ideas for poster entries include emphasizing a safety tip, promoting National Fire Prevention Week, or promoting fire safety in general. Your poster may even be recognized in upcoming promotional materials, including in next year’s Newspapers in Education program, on PFFWCF’s website, and on social media.

PRIZES

\$100 for 1st place in each grade level
\$50 for 2nd place in each grade level
\$25 for 3rd place in each grade level

RULES

- Poster must be submitted by a student in 1st-12th grade.
- Any format of art is accepted -- pencil, crayon, ink, watercolor, etc.
- All entries must include the artist’s name, grade, school, teacher, address, telephone number, and email address (a school address, phone number, and email address

are also acceptable).

This information must be included on the back of the artwork or firmly attached for identification purposes.

- Dimensions must be 8.5” x 11” or 11” x 17”
- All artwork must be submitted in hard-copy format. If you are submitting computer generated artwork, it must be printed. Electronic files will not be accepted.
- Only one entry per student.

DEADLINE

- Postmarked by January 8th, 2021.
- Awards will be posted by February 1st, 2021.

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

SEE PAGE 13 FOR ENTRY FORM

For more information visit www.pffwcf.org

TEACHERS: WIN UP TO \$1,500!

The Fire Fighters Foundation encourages all teachers to help prevent fires and burn injuries through educational essays.

*PFFWCF will award **\$500 TO \$1,500 PRIZES** to winners, with half to be used for classroom materials and half for personal use.*

Teachers are invited to write a one-page essay that covers one of the following topics:

- Describes how you used the content from the newspaper in your classroom.
- Explains how you have been incorporating fire-safety into your lesson plans throughout the academic year.
- Describes how you would use the award money to further promote fire-safety in your classroom, school, or community.
- Or choose a fire-safety topic unique to your classroom or school.
- *Optional:* include a photograph of a fire-safety themed bulletin board you put together to accompany your essay.

PLEASE MAIL ALL ENTRIES TO:

PFFWCF
321 E Main St, Suite 200
Madison, WI 53703

ESSAYS MUST BE POSTMARKED BY JANUARY 8, 2021

For more information about the Fire Fighters Foundation, please visit www.pffwcf.org

The Fire Fighters Foundation is a 501(c)(3) public charity. We are champions for burn survivors, fire fighters, and safe communities across Wisconsin.

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

The Fire Fighters Foundation would like to thank the following organizations and individuals for their hard work and continued support of this life-saving publication: The Milwaukee Journal Sentinel, Mark Misurelli - NIE Supervisor; Kelly Hignite of designIQ - Graphic Design; PFFWCF, Michael Wos - Executive Director, Aine King - Program Coordinator; the Wisconsin Department of Public Instruction; and Wisconsin Department of Safety and Professional Services.



Brush, Trash and Camp Fire Safety and Burn Prevention

By Lori Mickelson,
UW Health Burn and Wound Center

In 2019, the UW Health Burn Center admitted and treated 33 patients (ages ranged from 1-90) with burns related to outdoor burning. Here are some tips on how to not become a burn victim!

- Never burn with Gas, Diesel or Kerosene. They can have the same explosive power as dynamite!
- Only burn dry materials.
- Be aware of all materials in your burn pile. Prior to fire ignition, remove any contents that could lead to explosion (examples: paint, aerosol cans, fireworks).
- Outdoor fires **MUST** be away from buildings, fences, overhead wires and trees.
- Do **NOT** light fires on windy days!
- Check **BURN BANS** with your local fire department.
- Keep children and pets away.
- If you are physically unable to move away from an uncontrolled environment, then reconsider burning or appoint someone who is more physically fit to complete the job. Keep in mind that impaired physicality can be a barrier to safety.
- Have a bucket of water or garden hose at the ready.
- Put the fire completely out before leaving it. Never leave a fire unattended!



Let's Get Fired Up on a Burning Issue - SCALD BURNS

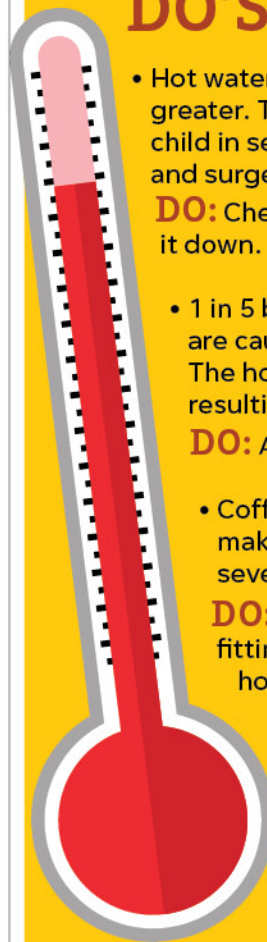
By Jennifer Nielsen,
Columbia St. Mary's Regional Burn Center

Over a half million people in the United States are seen annually in the emergency room, primary care offices and clinics for burn injuries. Approximately every 30 minutes a fire injury happens. Per the American Burn Association, in 2014, there were 3,275 recorded deaths from fire related injuries. Scalding is the most common burn injury in children under the age of 12. Scald burns account for over 200,000 injuries per year.

Nearly 50% of scald burns are from spilled food and drinks. A scald burn is caused by something wet, such as a hot liquid, or steam.

Fire Safety Threats That Are Often Overlooked : DO'S and DON'TS

- Hot water heaters are often set to 120F or greater. This can cause a scald burn in a child in seconds requiring hospitalization and surgery.
DO: Check your hot water heater and turn it down.
- 1 in 5 burn accidents among children are caused by chicken noodle soup. The hot sticky noodles stick to the skin resulting in a much deeper burn.
DO: Allow food to cool before eating.
- Coffee is often served at 175F, making it a high risk for causing severe burns.
DO: All hot drinks should have a snug fitting lid. Do not carry a child while holding a hot drink.
- Steam that comes out of a microwave popcorn bag is hotter than 180F!
DO: Open microwave slowly. Allow food to cool and open away from face.



TREATMENT OF BURNS

By Children's Hospital of Wisconsin Burn Clinic

Specific treatment for any burn will be determined by your child's physician, based on the following:

- child's age, overall health, and medical history
- extent of the burn
- location of the burn
- cause of the burn
- child's tolerance for specific medications, procedures, or therapies
- your opinion or preference



FIRST-DEGREE BURNS (SUPERFICIAL):

First-degree burns affect only the epidermis, or outer layer of skin. The burn site is red, painful, dry, and with no blisters. Mild sunburn is an example. Long-term tissue damage is rare and usually consists of an increase or decrease in the skin color.

First-degree burns usually heal on their own within a week. Treatment may depend on the severity of the burn and may include the following:

- cold compresses
- lotion or ointments
- NSAIDs or Ibuprofen

First-degree burns are usually not bandaged. Consult your child's physician for additional treatment for first degree burns.



SECOND-DEGREE BURNS (PARTIAL THICKNESS):

Second-degree burns involve the epidermis and part of the dermis layer of skin. The burn site appears red, blistered, and may be swollen and painful.

Superficial second-degree burns usually heal in about three weeks, as long as the wound is kept clean and protected. Deep second-degree burns may take longer than three weeks to heal. A second-degree burn that does not cover more than 10 percent of the skin's surface can usually

be treated in an outpatient setting. Treatment depends on the severity of the burn and may include the following:

- antibiotic ointments
- dressing changes one or two times a day depending on the severity of the burn
- daily cleaning of the wound to remove dead skin or ointment
- possibly systemic antibiotics.

Wound cleaning and dressing changes may be painful. In these cases, an analgesic (pain reliever) may need to be given. In addition, any blisters that have formed should not be burst.



THIRD-DEGREE BURNS (FULL THICKNESS):

Third-degree burns destroy the epidermis and dermis. Third-degree burns may also damage the underlying bones, muscles, and tendons. The burn site appears white or charred. There is no sensation in the area since the nerve endings are destroyed.

Treatment for third-degree burns will depend on the severity of the burn. Burn severity is determined by the amount of body surface area that has been affected. The burn severity will be determined by your child's physician. Treatment for third-degree burns may include the following:

- early cleaning and debriding (removing dead skin and tissue from the burned area). This procedure can be done in a special bathtub in the hospital or as a surgical procedure.
- intravenous (IV) fluids containing electrolytes
- antibiotics by intravenous (IV) or by mouth
- antibiotic ointments or creams
- a warm, humid environment for the burn
- nutritional supplements and a high-protein diet
- pain medications
- skin grafting (may be required to achieve closure of the wounded area)
- functional and cosmetic reconstruction



HOLD UNDER COOL WATER



BANDAGE UP



MAKE A COLD COMPRESS



CONSULT A DOCTOR

For more information, please see childrenswi.org/medical-care/burn-program

Fire & Burn Safety: Just as important during COVID-19

By Libbe Slavin,
Safe Kids Wisconsin

**SAFE
KIDS
WISCONSIN**

I bet like me, you've spent more time at home this year because of COVID-19. We already know that cooking and kitchen fires are the biggest reason for fires in our house. With people at home more now than they ever have been, we are seeing many more fires in homes. We might be trying new things like baking or even cooking food and adults are making more meals at home too! We need to make sure we are keeping ourselves as safe as can be. We can do this by following these safety rules when we are in the kitchen.

- Always watch the food you are cooking. Leaving food while it is cooking is the number one reason for fires in the kitchen.
- Make sure all items that could start on fire are away from the stove.
- Keep younger brothers and sisters or friends at least 3 giant steps away from the cooking area.
- If you need to leave the kitchen be sure to turn off the oven or stove.
- Toddlers are curious and like to explore. Keep foods such as hot coffee, tea or soup, out of their reach.

With being home more often, it's also a good idea to plan and practice a fire escape plan. You and your adults might be home working or doing online school in a spot in your home that you didn't use much before. Think about these things when making a plan for how to get out in case of a fire.

- Make sure to find two ways out of each room. If a fire blocks a door you might need to use the window.
- Practice getting out of the house at different times of the day. You never know when a fire could happen and it might be dark.
- Pick a meeting place outside your home that everyone knows where it is. This can help firefighters to know if someone is still inside your house.

I know we all have a lot on our minds and lots has changed around us. Let's make sure fire safety isn't forgotten!

Home Fire Sprinklers Protect People, Pets, Property, Firefighters and the Environment

By Peg Paul, Home Fire Sprinkler Coalition

HOME FIRES ARE VERY DANGEROUS

Fires happen fast and grow quickly! There is little time to escape a fire. In less than two minutes a small flame can grow into a major fire. The reason a house fire spreads so quickly is because our furniture, carpet and electronics are made of synthetic materials. These burn quickly, making poison smoke.

HOME FIRE SPRINKLERS WILL CONTROL A FIRE

Home fire sprinklers control a fire right away. That keeps the poison smoke and flames from spreading.

ONLY THE SPRINKLER CLOSEST TO THE FIRE WILL ACTIVATE

If there is a fire, high heat will cause the sprinkler closest to it to spray water over the flames. The sprinkler will put the fire out or keep it small until firefighters arrive. That prevents the fire from spreading and becoming deadly. Smoke cannot start a sprinkler.

While the sprinkler controls the fire, people in the home and their pets have time to escape. When firefighters arrive, they make sure everyone is safe. They make sure the fire is out and turn off the water. Fire sprinklers also protect firefighters because they do not have to enter a home with deadly fire and poison smoke.

FIRE FIGHTER MATH

Let's say home fire sprinkler systems expel an average of **20 gallons** of water per minute while fighting fires. Fire fighters wielding fire hoses use an average of **150 gallons** per minute.

A fire begins in your home. The closest fire sprinkler to the fire detects heat and begins expelling water. Within two minutes, the flames are under control, but the sprinkler continues for another 10 minutes until fire fighters arrive and shut it off. The sprinkler runs for a total of 12 minutes. If you don't have fire sprinklers, fire fighters arrive on the scene after the fire has already spread and spend 10 minutes putting out the flames with fire hoses. Compare the difference in water usage between the two scenarios.

Water use WITH fire sprinklers = _____
(hint: gallons per minute x number of minutes)
Water use WITHOUT fire sprinklers = _____
Difference in water usage = _____

FIRE SPRINKLERS PROTECT THE ENVIRONMENT

A fire in a home without sprinklers is more harmful to the environment. It causes a lot of air and water pollution. It causes a lot of damage to property.

A home fire sprinkler controls the fire with far less water than the fire department. High-pressure hoses use more than 10 times the amount of water per minute.

A controlled fire means less pollution gets in the air

and in water runoff. It also means less water is needed to control the fire. Preventing fire damage in the home means fewer materials get hauled to the landfill.

Fire sprinklers are simple, reliable and proven. Fire sprinklers protect people, pets, firefighters and property 24 hours a day, seven days a week, 365 days a year.

INFORMATION PROVIDED BY THE HOME FIRE SPRINKLER COALITION



Each sprinkler works on its own. A special plug keeps the water in the pipes when it's not needed. If a fire starts, the high heat in the area below the sprinkler causes the plug to open. That lets water flow on the flames. The sprinkler closest to the fire activates. All the other sprinklers remain sealed.

HOW HOME FIRE SPRINKLERS WORK

A typical home fire sprinkler covers a minimum 12 X 12 foot area.

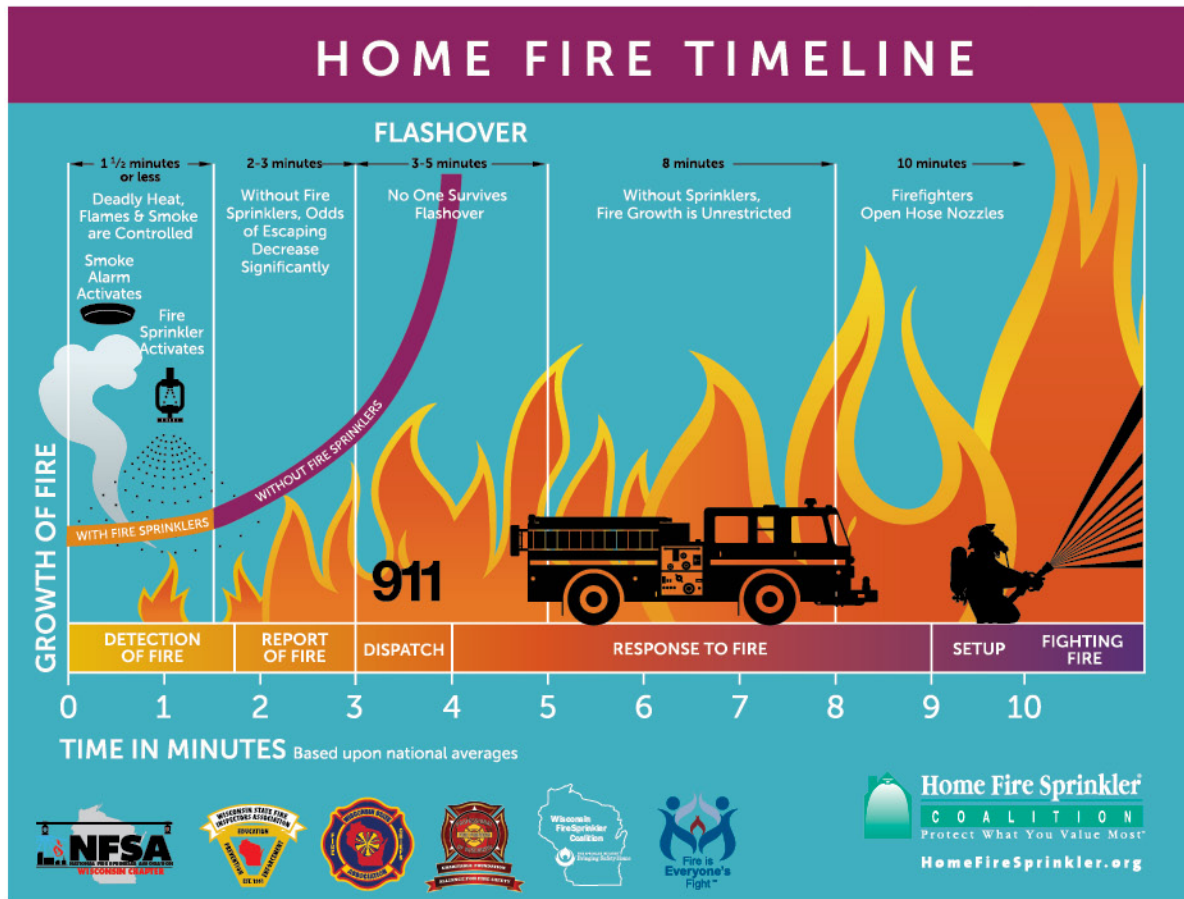
pipe
(connected
to water
supply)

plug
(frees water)

liquid-filled
bulb bursts
at 135° -165°F

sprinkler





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 fire fighters 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. *Fire fighters use more than 2,935 gallons for an average fire. *According to the Scottsdale Report

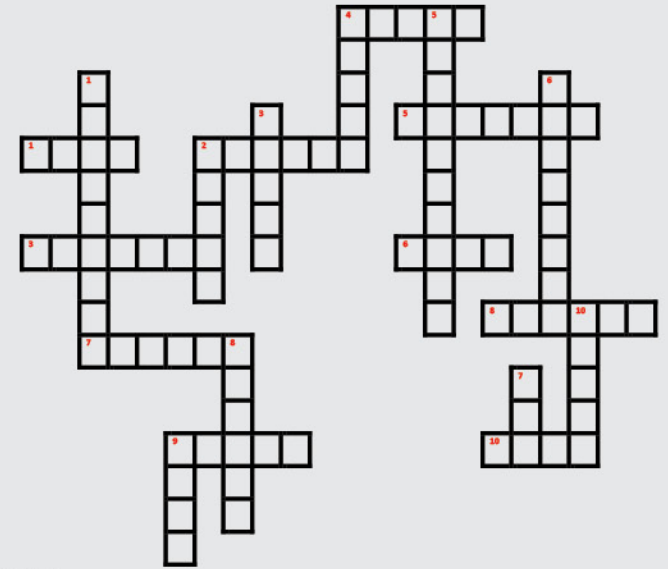
With fire sprinklers, an average fire will cause \$2,166 in damage. Without fire sprinklers, an average fire will cause \$45,019 in damage. A fire like this one is likely to cost more than 10 times that much. Fire sprinklers save lives and property.

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

CROSSWORD PUZZLE



What Do You Know About Fire Sprinklers and How They Work?



DOWN

- The point at which everything in a room burns simultaneously is called _____.
- Sprinklers account for only 1-2% of a new home's construction _____.
- The modern furnishings in a home burn much hotter and produce far more _____ gases than in the "old days"
- True or False: In a fire, all the sprinkler heads go off to control the fire
- The risk of dying in a home fire is reduced by 85% when _____ are installed.
- Fire sprinklers reduce firefighter _____ by more than 80%
- You should plan to have at least _____ ways out of every room in your home
- Fire Sprinklers control a fire, giving your family time to _____
- Sprinklers _____ can save more than 99% of property during a fire
- In a home fire, you may have as little as _____ minutes to safely get out of the house

ACROSS

- Fire Sprinklers are activated by _____
- When renting, buying, building, or remodeling your home, you should _____ to install sprinklers to protect your family and pets
- Sprinklers _____ pets and family members who may be unable to escape a fire
- True or False: Smoke will set off the sprinkler system.
- Smoke alarms and fire sprinklers are a _____ combination
- Sprinklers use much _____ water than a firefighter uses to control a fire
- Fire sprinklers greatly _____ the heat, smoke, and toxic gases of a fire
- Fire is fast; sprinklers are _____
- Fire sprinklers control a fire while it is still _____
- The vast majority of fires occur in the _____

To learn more about fire sprinklers and how they can protect your home and family, visit:
firesprinklersbuytime.com • homefiresprinkler.org





FIRE FORENSICS: Claims & Evidence

By Ginger Sommer and Dennis Avelar

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.

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

Welcome to the Fire Investigator Training Academy!

INVESTIGATORS ACADEMY

WHAT IS FIRE?

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

INVESTIGATORS ACADEMY

ELEMENTS OF FIRE

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

INVESTIGATORS ACADEMY

FIRE DEVELOPMENT

The behavior of a fire in an open space (fuel limited)

STAGE 1 - IGNITION

- During a fire, solids and flammable liquids do not burn. Only gases burn.
- In a fire, solids don't burn. And liquids don't burn. So what is burning? 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.

What's needed to create and sustain fire?

A fire requires all three elements. Adjust one of the elements and it changes the fire. But 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.

ELEMENTS OF FIRE - 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.

ELEMENTS OF FIRE - 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.

ELEMENTS OF FIRE - 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.

FIRE DEVELOPMENT - 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.

FIRE DEVELOPMENT - GROWTH

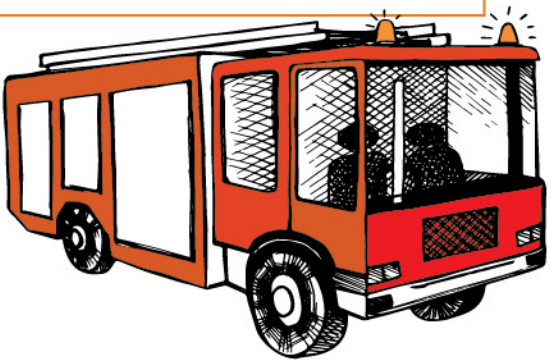
- The fuel load will continue to burn because oxygen is available.
- As long as there's enough oxygen in the room, the fire continues to burn.

FIRE DEVELOPMENT - 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.

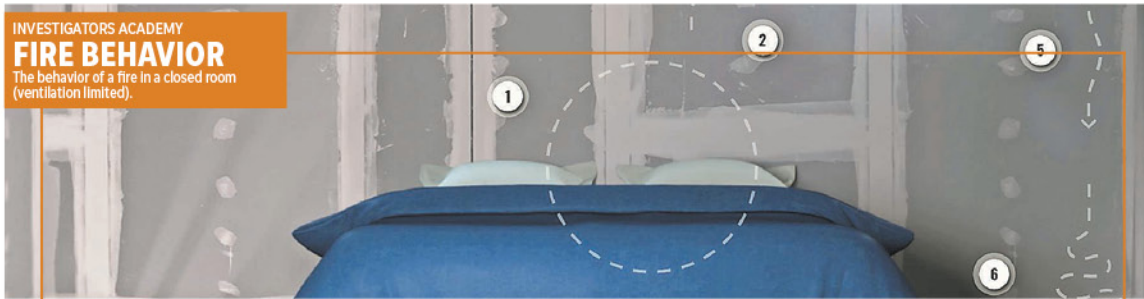
FIRE DEVELOPMENT - DECAY

- 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.



INVESTIGATORS ACADEMY FIRE BEHAVIOR

The behavior of a fire in a closed room (ventilation limited).



FIRE BEHAVIOR - STAGE 1



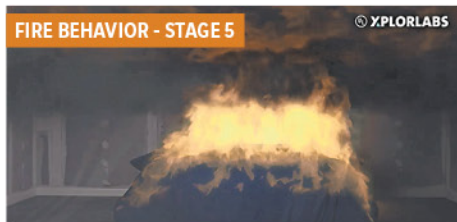
- During a fire, gases and smoke move because of differences in temperature, density, and pressure.
- During a fire, heat is transferred to gases in the room. This results in the gases expanding.

FIRE BEHAVIOR - 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.

FIRE BEHAVIOR - 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.

FIRE BEHAVIOR - STAGE 2



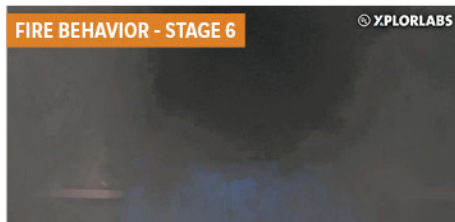
- As the gases are heated and become buoyant, they flow upward, forming a thermal plume.
- Heated gas is less dense than the air surrounding it. Because the surrounding air hasn't been heated at this stage, a thermal plume – a column of smoke and hot gases – moves upward.

FIRE BEHAVIOR - 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.

FIRE BEHAVIOR - 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.

INVESTIGATORS ACADEMY VENTILATION

The impact of outside air on fire growth.



VENTILATION - 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.

VENTILATION - 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.

VENTILATION - 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!

You've graduated from the Fire Investigator Training Academy! 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 @www.ulxplorlabs.org

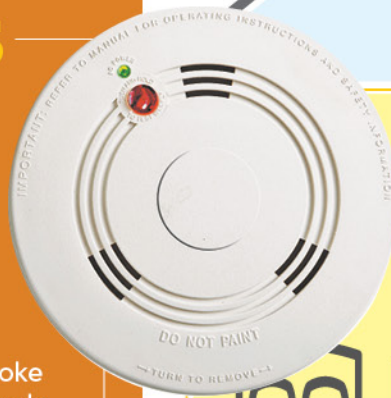
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SMOKE ALARMS at HOME

Smoke alarms are a key part of a home fire escape plan. When there is a fire, smoke spreads fast. Working smoke alarms give you early warning so you can get outside quickly.

SAFETY TIPS

- Install smoke alarms in every bedroom. They should also be outside each sleeping area and on every level of the home. Install alarms in the basement.
- Large homes may need extra smoke alarms.
- It is best to use interconnected smoke alarms. When one smoke alarm sounds, they all sound.
- Test all smoke alarms at least once a month. Press the test button to be sure the alarm is working.
- Current alarms on the market employ different types of technology including multi-sensing, which could include smoke and carbon monoxide combined.
- Today's smoke alarms will be more technologically advanced to respond to a multitude of fire conditions, yet mitigate false alarms.
- A smoke alarm should be on the ceiling or high on a wall. Keep smoke alarms away from the kitchen to reduce false alarms. They should be at least 10 feet (3 meters) from the stove.
- People who are hard-of-hearing or deaf can use special alarms. These alarms have strobe lights and bed shakers.
- Replace all smoke alarms when they are 10 years old.



Scan the QR code above
or visit www.sparky.org
for interactive and fun online activities!

FACTS

- ❗ A closed door may slow the spread of smoke, heat, and fire.
- ❗ Smoke alarms should be installed inside every sleeping room, outside each separate sleeping area, and on every level. Smoke alarms should be connected so when one sounds, they all sound. Most homes do not have this level of protection.
- ❗ Roughly 3 out of 5 fire deaths happen in homes with no smoke alarms or no working smoke alarms.



**NATIONAL FIRE
PROTECTION ASSOCIATION**

The leading information and knowledge resource
on fire, electrical and related hazards

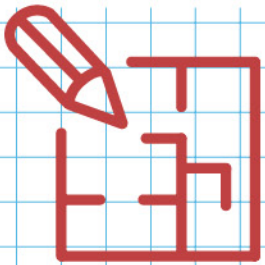


MAKE A HOME FIRE ESCAPE PLAN



STEPS:

- 1.____Draw a floor plan or map of your home. Mark all doors and windows.
- 2.____Find and mark two ways out of every room.
- 3.____Identify all of the smoke alarms in your home. Remember, you should have a smoke alarm in every bedroom, outside of every bedroom, and on each level of your home.
- 4.____Agree on a meeting place outside of your home with your family and draw this on your map.
- 5.____Practice your fire escape plan at least twice a year.



I, _____, CERTIFY THAT I KNOW 2 WAYS TO GET OUT OF MY HOUSE IF THERE IS A FIRE.

CHAMPIONS FOR BURN SURVIVORS, FIRE FIGHTERS AND SAFE COMMUNITIES.

5 TIPS TO LEARN HOW TO PREVENT HOUSE FIRES

by American Family Insurance



When it comes to fire safety, it's always good to prepare, but it's better to prevent. Remembering to blow out candles and give space heaters...well, space, are good places to start. Consider these how-to's for preventing fires from starting or spreading, and keep these fire safety tips top-of-mind to keep you and your loved ones safe.

1 EDUCATE EVERYONE ON FIRE RISKS AND SAFETY

The first and most important thing you can do is make sure everyone in the household is educated on fire safety measures, including children. How many of us leave the kitchen with food cooking on the stove? The answer is probably most of us. It's unsafe, and yet we do it anyway. Utilize your resources, including your local fire department, to educate your family on household fire safety and make small but preventative changes around the house — like turning the stove off every time you leave the room — even if it's just for a moment to answer the door or load the washer.

2 TEST YOUR SMOKE ALARMS

The U.S. Fire Administration suggests **testing smoke alarms** once a month and changing their batteries twice a year. But a lesser known detail is that it's best to replace the alarm itself every 10 years.

When that time comes, consider upgrading to smart detectors. These connect to Wi-Fi and send alerts to your phone when an alarm goes off or the batteries need to be replaced. They can also be integrated with a larger smart home system that can then notify emergency services of the fire. Upgrading to a **smart smoke or carbon monoxide alarm** could also qualify you for the **American Family Insurance Smart Home discount**.

Keep in mind, every level of the house and every bedroom or sleeping area should have a working smoke detector.

3 KEEP LAWN CLIPPINGS AND OTHER FLAMMABLE ITEMS IN SAFE PLACES

Built up lawn clippings and dry leaves can create heat and start fires. After a hard day of yardwork, keep the debris a safe distance from the house and dispose of it as soon as possible.

Other common flammable household items include:

- **RUBBING ALCOHOL** Store rubbing alcohol in a temperature-stable environment away from sparks and open flame. Keep the cap tight on the bottle to avoid evaporation.
- **HAIRSPRAY AND OTHER AEROSOL CANS** Keep all aerosol cans away from open heat or flame. Baking spray should be kept far from stovetops and ovens, and hairspray should never be used to light a fire — no matter what action movies tell you.

- **GASOLINE AND PAINT THINNER** Store gasoline and paint thinner out of the rain and in a covered, well-ventilated area, but not in your house. Never smoke, light a match or build a fire near flammable containers.

- **COOKING OIL** Store cooking oil in cool, dry places that maintain a steady temperature. Don't leave it on the stovetop while cooking, and don't pour it down the drain when you're done with it. Dispose of cooking oil in a sealed container — preferably non-recyclable — and throw it out with your regular garbage.

- **FLOUR** Flour should never be used to put out a grease fire as it is highly flammable and possibly explosive. Store it away from hot surfaces and other heat sources, like gas burners, and take care when cooking roux or choux pastry that may require flour be added directly into hot pans.

- **NAIL POLISH** Make sure the cap is securely on the bottle. Store it in a cool, dark place with even temperatures to prevent discoloration and destabilization of the formula inside. It'll keep you safe from fire hazards and preserve your nail polish for longer.

4 KEEP PETS CONTAINED

When you're not home it's best to keep pets, especially new, untrained pets, in a crate or a safe room where they can't mistake electrical cords as chew toys or a bathroom. This will also prevent your little fur babies from nestling into tight spots, like the refrigerator motor.

5 CHECK YOUR HOME APPLIANCES AND WIRING

Lastly, perform regular checks around your home and keep up with maintenance. It's easy to forget out-of-sight areas, like crawl spaces and ventilation shafts. Here are some areas to keep in mind:

- Electrical wiring may have frayed over time or been damaged by pests. Check crawl spaces, attics and basements, and bring in a licensed professional to replace faulty wiring.
- Make sure your air conditioner and heating unit are cleaned regularly and functioning properly. Also, avoid using extension cords for air conditioners.
- Have your chimney inspected and cleaned at least once a year and use a screen to prevent embers from flying out into the living space while in use.
- Use only dried/seasoned hardwoods in your fireplace that have aged for 2-3 years.
- Keep your stove and oven free of built up grease and clean the vent hood regularly.
- Clear the lint trap of the clothes dryer after every load and keep the outside vent clean.

Sparky's HIDDEN PICTURE PUZZLE



The following objects are hidden in this picture: ☐ battery, ☐ smoke alarm, ☐ candle, ☐ flashlight, ☐ pencil, ☐ sailboat, ☐ banana, ☐ golf club, ☐ bell, ☐ sock, ☐ ruler, ☐ ring, ☐ cup, and a ☐ button!

For more FUN STUFF, visit SPARKY.ORG

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puzzle & quiz answers on page 15

2020 Fire Safety Newspapers in Education Quiz

Out of the Frying Pan, Into a Fire

- The number one cause of residential fires is _____.
- Every kitchen requires an easily-accessible _____.

Camp Fire Safety

- Burning wet materials is _____ safe than burning dry materials.
- You should always have a bucket of _____ next to your fire.
- Gas, diesel, and kerosene have the same explosive power as _____!

Treatment of Burns

- _____-degree burns are the most serious.
- Mild sunburn is an example of a _____.

Fire Safety During COVID-19

- The number one reason for fires in the kitchen is _____ food while it is cooking.
- Stay _____ steps away from the cooking area.
- Before leaving the kitchen, _____ the stove or oven.

Let's Get Fired Up on a Burning Issue

- _____ is the most common type of burn injury in children under 12.
- Over half of scald burns are caused by _____ food or drink.

Home Fire Sprinklers

- If there is a fire, heat will cause the sprinkler _____ to the fire to spray water over the flames.
- Home fire sprinklers use _____ water than fire hoses.

Fire Forensics

- The three elements of fire are:
 1. _____
 2. _____
 3. _____

Smoke Alarms at Home

- Smoke alarms should be installed:
 1. In every _____.
 2. Outside of each _____.
 3. On _____ floor of the house.

Home Fire Escape Plan

- You should have _____ ways out of every room.
- Agree on a _____ with your family where you can meet after a fire.

Tips to Prevent House Fires

- You should replace your smoke alarms every _____ years.
- Lawn clippings and dried leaves in your yard are flammable

True or False

Energy Safety

- Electricity + Water = _____
- Before you dig, make sure you _____ the Digger's Hotline.
- Natural gas smells like _____.

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:



Natural gas smells stinky — like rotten eggs.

If you smell natural gas, do not use a light switch or even a phone, which could make 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.

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.

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, have an adult call Diggers Hotline at 811 to have the electric and natural gas lines in the ground 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.

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.



we

Go to [we-energies.com](https://www.we-energies.com) for more energy safety information.

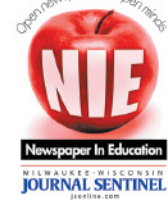
Energy you can depend on

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 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.



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Poster Contest Entry Coupon

Only students in 1st-12th grade 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

FIRE SAFETY QUIZ ANSWERS

The number one cause of residential fires is **COOKING**. Every kitchen requires an easily-accessible **FIRE EXTINGUISHER**.

Burning wet materials is **LESS** safe than burning dry materials. You should always have a bucket of **WATER** next to your fire. Gas, diesel, and kerosene have the explosive power as **DYNAMITE**.

THIRD-degree burns are the most serious. Mild sunburn is an example of a **FIRST-DEGREE BURN**.

The number one reason for fires in the kitchen is **LEAVING** food while it is cooking. Stay **THREE** steps away from the cooking area. Before leaving the kitchen, **TURN OFF** the stove or oven.

SCALDING is the most common burn injury for children under 12. Over half of all scald burns are caused by **SPILLED** food or drink.

If there is a fire, heat will cause the sprinkler **CLOSEST** to the fire to spray water over the flames. Home fire sprinklers use **LESS** water than fire hoses.

The three elements of fire are **OXYGEN, HEAT, and FUEL**.

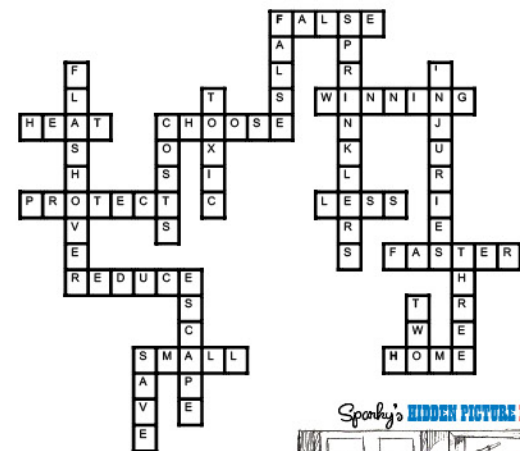
Smoke alarms should be installed
1. in every **BEDROOM**
2. outside of each **SLEEPING AREA**
3. on **EVERY** floor of the house.

You should have **TWO** ways out of every room. Agree on a **MEETING PLACE** with your family where you can meet after a fire.

You should replace your smoke alarms every **10** years. Lawn clippings and dried leaves in your yard are flammable. (**TRUE**)

Electricity + Water = **DANGER**. Before you dig make sure you **CALL** the Diggers Hotline. Natural gas smells like **ROTTEN EGGS**.

CROSSWORD PUZZLE ANSWERS



Sparky's HIDDEN PICTURE PUZZLE ANSWERS



FIRE FIGHTER MATH ANSWERS

Water use **WITH** fire sprinklers = **240** gallons

Water use **WITHOUT** fire sprinklers = **1,500**

Difference in water usage = **1,260**

27th Annual

Summer Camp for Burn Injured Youth

Every year, the Fire Fighters Foundation hosts our Summer Camp for Burn Injured Youth, or "Burn Camp" for short. This free, week-long, overnight summer camp experience provides a fun continuation of care program for kids ages 7-17 with life-changing burn injuries. Burn Camp is a place where kids can continue to heal from the emotional trauma of their burns, grow their lifelong support system, and navigate life beyond their injuries. Each year, our steering committee works year-round to plan a new Burn Camp theme that makes each child's experience fresh, unique, and more

impactful. This year's theme was "Reversed: A New Perspective," focusing not on what we cannot control, but rather on what we can control by making the best out of a given situation. The hard work and participation of over 100 burn survivors and volunteers make Burn Camp special for everyone who attends.

We need your help to spread the word about Burn Camp so we can support more young burn survivors who may not know about camp!

Please contact us for more information or to refer a burn survivor.

(608) 630-8440 or Melissa@pffwcf.org



This program is recommended by the Wisconsin Department of Safety and Professional Services to comply with s. 101.14(1)(c) Wis. Stats, regarding a form of a course of study in fire prevention for use in public schools.

Newspaper in Education salutes the contributions of our sponsors!

This educational supplement is designed to provide the public with general information on fire safety. The Fire Fighters Foundation, Milwaukee Journal Sentinel, and sponsors of this section assume no liability for any actions taken by persons based on the information contained herein.

NIE Supervisor: Mark Missurelli



CONNECT WITH US!

The Professional Fire Fighters of Wisconsin Charitable Foundation is a 501(c)(3) public charity. We are champions for burn survivors, fire fighters, and safe communities statewide. For 23 years, the Milwaukee Journal Sentinel has been a partner on this award-winning program that saves lives through fire-safety education. The fun and engaging content within these pages teaches 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, at your school, and in your community.

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