



## **Freaky Fires**

### How to prevent unusual and uncommon fires

Some of the uncommon and unusual causes of fires found during fire investigations, reported to the fire service and insurance companies are listed below. These fires occurred because certain unusual conditions were present. These uncommon fires are preventable by using some common sense and paying attention to fire prevention and life safety messages and information.

#### **APPLIANCES**

##### **Leaking Appliances**

Dishwashers, washing machines, ice makers in refrigerators, freezers, air conditioning units, hot water heaters, and any appliance that uses water can become a fire hazard. Leaks from these appliances can damage heating elements, light fixtures, and electrical wiring and lead to a fire.

Water leaking in to a smoke or carbon monoxide (CO) alarm can cause it to malfunction in several ways. The alarm may sound randomly when there is no smoke or CO present. Even worse, they may not activate when smoke or CO is in the air. Replace any smoke or CO alarm that has come in contact with water.

Water and liquids leaking, dripping, or collecting in light fixtures, outlets, or junction boxes can cause a fire over time. Water can come from condensation on walls and floors, leaking appliances, or items that have overflowed such as bathtubs, toilets, or wash machines. If any part of your electrical system has come in contact with water have it checked by a licensed electrician.

## **Appliances that Produce Heat**

Appliance fires do not start from direct flame contact. Instead, fires start and spread through different types of heat transfer. Toasters, space heaters, coffee makers, and other appliances that heat should be kept away from combustibles. Do not place them under cabinets and do not leave them plugged in when they are stored in appliance ports. Keep bread and other bags away from them, and do not put towels or napkins on top of them.

### **Safety Tips**

- Replace old appliances
- Have vintage appliances checked by an accredited professional.
- Do not leave dryers, washing machines, dishwashers or other appliance running when you are not home.
- Do not leave small appliances you are not using plugged in.
- All appliances should have regular maintenance performed, be cleaned on a consistent basis, and replaced as needed.
- Read the warning labels and follow the manufacturer's instructions.
- Make sure that the sliding doors on appliance ports do not push down levers or flip switches on the appliances stored in the port.
- Use appliances on flat noncombustible surfaces.

### **Product recalls**

Each year thousands of products are recalled. You can check the Consumer Product Safety Commission web site at [www.cpsc.gov](http://www.cpsc.gov). There are also apps that will alert you of recalls.

### **Common items that are recalled:**

- Microwaves
- Indoor Generators
- Ovens
- Washers and dryers
- Lamps
- Computer batteries
- Electronics

## **Vintage Appliances**

Vintage, retro, antique, and collectable appliances are gaining popularity. Fires caused by these appliances are becoming more frequent. These appliances were manufactured under different standards or before safety standards were put in place.

Have them checked out by a reputable appliance repair technician for signs of water damage, outdated safety standards or no safety feature at all. Don't leave older appliances plugged in when they are out of your sight.

If your vintage appliance is for looks only, cut the cords off. If you are going to use them, they should meet UL or other approved standards.

## **ELECTRICAL AND HEAT SOURCES**

### **Light Bulbs**

Light bulbs generate heat. Anything that generates heat has the potential to start a fire. Make sure the proper wattage is used in all lamps or light fixtures and keep globes and lamp shades in place. Do not put any items on top of a lamp shade or close to a light bulb. Make sure night lights are not in an area where they can get covered by blankets, clothing, paper, or anything that would trap the heat from the light bulb.

Lights are mounted under cabinets to light up the counter below. If the lights under your cabinets are hot to the touch they have enough heat to start items stored or stacked under the cabinets on fire. Make sure there is plenty of space between the lights and the tops of appliances, decor items, stacks of papers, and recipe books. Consider changing the lights to LED lights. They are brighter, cooler, and more energy efficient.

### **Loose Outlets**

When an outlet wiggles (or sparks) when you plug something in or pull a plug out, it is a sign that your outlet needs to be replaced. If an outlet or switch feels warm, turn off the circuit and have it looked at immediately.

Use caution when you plug items in and pull plugs out. Over time the blades in an electrical outlet can loosen. Loose blades can generate intense heat and lead to fires.

To avoid issues with outlets always, pull plugs out by grabbing the plug. Never pull plugs out by using the cords.

## **Circuits**

If a circuit trips, investigate what caused it to trip before turning it back on. Turning tripped circuits on after they have tripped can cause a fire at the circuit or the source that caused the circuit to trip.

Make sure appliances like space heaters, water heaters, humidifiers and dehumidifiers are plugged in directly to an outlet. Don't use extension cords.

### **Besides tripped circuits, know the other warning signs of possible electrical issues in your home:**

- Lights dim or flicker when appliances are turned on.
- Several light bulbs have gone out at the same time or in a short time span.
- You hear buzzing.
- You smell burning plastic.

## **Bathroom exhaust fans**

If your bathroom exhaust fan has stopped working or has an unusual noise, replace it or have it repaired. Clean the fan cover and fan motor often. Dust can clog up the openings in the cover and collected around the motor causing mechanical issues or a fire.

## **Technology**

Technology is powered by electricity that traditionally comes from an outlet, port, or battery. Laptops, cell phones, video games, and charging stations use power. That power generates heat that must be allowed to dissipate to keep these items cool.

### **To prevent fires caused by electronic devices, follow these recommendations:**

- Avoid leaving device on the bed or under a pillow.
- Charge device on a hard surface.
- Make sure the device can "breathe"
- Do not place the device near flammable items such as curtains or bedding,
- If the device is overheating, stop using it and turn it off.
- Minimize energy-draining apps like GPS and games, especially while downloading files, streaming music, and/or running other apps that might cause your device to overheat.

## **A CLEAN HOME IS A SAFE HOME**

Keeping your home organized and clutter free helps prevent fires and can slow down fire spread if one should occur.

Items that are stacked up or piled up can fall down or shift. This can result in lamps being tipped over, appliances to overheat, or levers and switches of appliances being turned on.

In the event of a fire, doors and windows should have a clear pathway to them and should open and close easily. Doors to bedrooms and areas where people sleep should be closed before people go to sleep. A closed door can keep the heat and toxic smoke from a fire from spreading into the room.

When the seasons change put seasonal items away. Potting soils mixed with peat for moisture control can cause a fire or catch on fire easily if plants are left to decay in them or they are used as an ashtray. In late fall empty all the pots around the exterior of your home before they start to decay.

After each holiday put the decorations away. Holiday lights are only made to be used temporarily. If used for more than 90 days they can get pulled apart, damaged, or become brittle and expose the wiring. Exposed wiring from a stand of holiday lights can start a fire under the right conditions.

Avoid storing fireworks anywhere on your property. Fireworks are small explosives and during a fire they can create additional hazards and excel the spread of the fire.

### **There are changes you can make to your home that can slow down the spread of a fire should one start:**

- Keep rubbish cleaned out of attics, garages, crawl spaces, and from under steps.
- Patch and cover holes in walls and ceilings.
- Have plates/covers secured on outlets, light switches, junction boxes, and electrical panels.
- Have all dried grass cuttings, tree trimmings, and weeds removed from around your house, garage, shed, and other out buildings.

## **FLAMMABLES**

An alarming amount of household objects are potentially flammable, become flammable when they are mixed together, or have flammable vapors. Deodorant, sunscreen, bathroom cleaner, non-dairy coffee creamer, nail polish, and orange oil all have the potential to cause a fire and accelerate its spread. If you are mixing home remedies or other concoctions you find on the internet, be extra cautious. They can produce toxic fumes, become poisonous, or even melt the container you mix them in.

### **Safety Tips**

- Keep caps and lids on products.
- Clean up any spill quickly and completely.
- Do not mix products together.
- When using multiple products be sure one is dry or removed completely before using another.
- Read labels, follow directions, and heed warnings.
- Keep away from flames, heat, and sunlight.

## **9 VOLT BATTERIES**

What makes a 9 volt battery more likely to start a fire than other batteries is the positive and negative posts are side by side. If a metal object touches the two posts it can cause a short circuit which can make enough heat to start a fire. Even weak batteries have enough charge to start a fire. Because they are small and the positive and negative ends are so close together AAA Batteries can also start a fire.

### **Here are some tips to prevent fires caused by a 9 volt and other batteries:**

- Do not store loose batteries of any kind together.
- Do not store with paper clips, coins, pens, or other metal objects.
- Do not store in metal containers.
- Do not store in the direct sun or near a heat source where they can easily overheat.
- Do not let old batteries accumulate. Recycle them as soon as possible.
- Put tape on the posts or on the ends of any loose batteries.
- Keep them in their original packaging until they are needed.
- Use the original packing to store them once they are used.

## **REFLECTIONS AND PRISMS**

As a kid, if you remember using a magnifying glass to concentrate the sun's rays to make paper burn than you will not be surprised how reflections and prisms cause several fires each year. When hanging or placing a mirror, glass objects, décor items or any reflective surface do not place in direct view of sunlight or on window sills. Be aware of how the sun reflects off an object at all times of the day. Reflective surfaces intensify the sun's rays, so it's wise to be strategic when you move or add reflective items to your home.

Convex mirrors or spherical glass of any sort have multiple reflective surfaces.

Glass or crystal décor, statues, and figurines can reflect the sun light in unexpected directions.

Be extra cautious when hanging items like holiday decor, stained or blown glass or even bird feeders in windows.

## **ANIMALS AND NATURE**

The creatures among us learn by trial and error and are driven by instinct. They are usually oblivious of the dangers or curious of things they have not encountered before. As humans we have to do our best to prevent fires caused by nature creatures.

Leaving food out, pizza boxes on counters, and garbage stacked up can attract rodents and other creatures into your home.

### **Mice**

When mice are inside or outside your home they can be destructive. Besides chewing through food containers and cereal boxes, they also like to nibble on electrical wiring and appliance cords. Damaged wiring can cause spikes in power or an irregular power supply which in turn can cause appliances, electronics and other items that draw power to overheat and cause a fire. When wiring is protected by plastic insulation it is safe to run through walls, along attic floors, and near the structural parts of your home. When it is exposed, these items can easily catch on fire.

Mice like to build their nests or store their food in warm places like the motors of appliances, the inside of a dryer and in its, and in different areas of motor vehicles. The Excelsior Fire District has responded to two dryer fires caused by mice storing food in a dryer vent in recent years. Your clothes dryer should be inspected and professionally cleaned at least once a year to prevent dryer fires and to check for rodent activity. Another way to protect your home is to prevent the mice from entering it making changes to the area outside your home that make it undesirable to mice. We recommend that you consult with a reputable pest control company to aid you in this process.

## **Pets**

Every year there are reports of pets starting house fires. People leave cookies on the stovetop to cool down after baking, forget about food in pans, or leave spilled sauces and the occasion rogue meatball on the cook top. In many of these incidents a dog has inadvertently turned on a burner jumping up to grab goodies off the stove. Dogs have started fires when they have pushed down toaster controls, turned dials on toaster ovens, and have even started blenders by leaping up to reach food on countertops. The best way to prevent Fido from starting a fire is to remove the temptation. Do not leave food of any kind on the stove or counter, do not store items in the oven or place anything decorative or combustible on the cooktop. Use the 3 foot safety globe to train your pet to stay away from the stove/oven and other appliances that generate heat.

Cats have also caused fires by tipping over lit candles, turning on appliances, knocking over space heaters, and pushing over lamps. Your home is your cat's playground and anything you put on a counter top, window sill, coffee table, shelf, and even the fireplace mantel is fair game. Dozens of fires are caused each year by cats knocking candles on to mattresses, curtains, newspapers, and holiday decorations. It can be challenging, but cats can be taught to stay off of countertops, mantels, and stovetops. However you should always assume that they will misbehave when you're not looking. Unplug appliances that you are not using, be cautious about where you place candles and never leave a lit candle unattended. Purchase space heaters with a safety feature that turns off the heater when it is tipped over and lamps with heavy bases and tightfitting shades.

## **OUTDOORS**

Fires that start on the outside can destroy a home the same way that fires that start on the inside can. These fires can be especially dangerous because there can be a delay in smoke alarm activation, or the exits can be blocked from the outside.

### **Tiki torches**

If you use tiki torches for abeyance or to keep bugs away use caution when using them. Make sure there is a safety zone around them in case the torch gets knocked over. The flames get caught in the wind or the wind can move object like tree branches closer to the flame. Place the torches firmly in the ground or secure them to a noncombustible object. Make sure your dog does not think the tiki torch is a big stick to play with. Never leave tiki torches lit if they are not in sight.

Keep the area around your gas meter clear. Do not plant or allow trees to grow around your gas meter. Over time the growing tree can move the gas meter and bend or crack the gas lines. If the gas has a leak under the ground the gas can collect in void spaces, creep into your home, and ignite when it makes its way to an open flame or something that causes a spark. During the winter months do not allow icicles to form around or above your gas meter. When icicles fall onto the gas meter they can damage the meter and cause it to leak.

## **Propane tanks**

Propane tanks should never be stored inside your home or garage. In the event of a fire the propane tank can become a torch when the tank is heated up and the relief valve opens. Keep this in mind when using or storing a propane tanks. When using or storing a propane tank point the relief valve in a direction that will have the least potential of doing damage or spreading fire.

## **SMOKING**

Discarded cigarettes are responsible for hundreds of structure fires and grass fires each year. Cigarettes that are carelessly thrown to the ground are starting the exteriors of the structures on fire when they roll under or next to the outside walls. A cigarette can burn to temperatures up to 700 degrees and can smolder under or next to a structure for hours before a fire starts. Because the fire starts in-between the walls or on the outside of a structure, smoke alarms cannot detect the fire until the smoke and heat have made their way into the structure. A fire on the outside of a building can be undetected for an extended amount of time.

Structure fires are not the only danger related to people smoking outdoors. Grass, wild land fires, and fires along roadways can be cause by people tossing their cigarettes out the window or drivers attempting to have a smoke free vehicle by hanging their cigarettes out of the windows. Any fire involving brush, wooded areas, grass, leaves, and other organic materials can threaten homes, businesses, people, and wildlife. Even areas that appear to be green can hide years of dry underbrush beneath them.

A fair amount of fires are started every year by smokers who use items not intended to be ashtrays. People walking in to public buildings will put their cigarettes out in potted plants. If the soil contains peat the soil can start on fire and spread to the building. Smokers will also use dock pillars at marinas which can start the dock pillar on fire and the fire spreads to the boats.

**Preventing fires that are uncommon and unusual can be a challenging. Here are some tips to help you understand fire and prevent the unexpected:**

- Respect fire as a tool used for cooking, heating, and other constructive purposes.
- Understand the fire tetrahedron (also known as the fire triangle). It is made up of fuel, heat, and oxygen. These three components, along with an uninhibited chain reaction must be present for a fire to start.
- Remember that heat starts and spreads fire, and flames do not need to be present to start or spread a fire.

## **HEAT TRANSFER**

Having a basic knowledge of heat transfer can help one understand how fires can start and spread. Heat is thermal energy. It can be transferred by one of three different methods - conduction, convection, and radiation.

**Conduction** - Metals are good conductors of heat. Heat energy is conducted from the hot end of an object to the cold end.

**Convection** - Convection occurs when particles with a lot of heat energy in liquid or gas form move and take the place of particles with less heat energy.

**Radiation** - Heat can be transferred by infrared radiation. Unlike conduction and convection - which need particles - infrared radiation is a type of electromagnetic radiation that involves waves. Because no particles are involved, radiation can even work through the vacuum of space. This is why we can still feel the heat of the Sun even though it is 150 million kilometers away from the Earth.

## **FINAL THOUGHTS**

When you are using open flames or other heat source always make a safety zone.

Think about how heat sources and flames will affect the items that are around them, as well as above and below them.

Consider how heat sources and flames will be affected by pets, children, drafts, the wind, movement, vibrations, door openings and closings, etc.

Try to anticipate outcomes. For example if you place a candle on a shelf, ask yourself what could knock it over or get blown into the flame.

Many of these unusual or uncommon fire causes could be prevented by being observant and aware of changing surroundings. Take notice of new pets and what they get into. Be observant of such things as flickering lights, and deal with such issues immediately.

Establish a regular maintenance schedule for all of your appliances.

Pay attention to fire prevention and life safety messages. Most messages are based on fires that have already occurred. They are based on data collected from fire investigations, firefighter experiences, as well as eyewitness accounts.

This article is dedicated to Fire Investigator Jamie Novak and his passion for fire prevention and saving lives.

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