



Child Safety Series

Home Fire and Burn Safety

Cooperative Extension Service, Kansas State University, Manhattan

From 1990-95, Kansas had 22,455 residential fires. This equates to a residential fire every two hours and twenty minutes. There were 249 home fire deaths during this time, with children under ten years old accounting for fifty of those deaths. There were 1,191 home fire injuries, with children under ten years old accounting for 124 injuries. In addition to loss of life and suffering from fire burns, Kansans suffered \$195.5 million in losses from residential fires.

Can anything be done to reduce these deaths and injuries?

Yes! Families can recognize how home fires start, make plans to reduce the risks of home fires, and conduct family fire drills.

What is the cause of Kansas home fires? Cooking is the leading cause of fire with 13 percent of the home fires. The next classification is incendiary/suspicious fires at 12 percent. These fires are believed to be caused by arson. Home heating fires are next at 11 percent, followed by open flames at 7 percent. Smoking is the cause of another 7 percent of fires, followed by children playing at 6 percent.

Fire prevention

Nearly all home fires can be prevented. Families can reduce fire risks by following a few rules of fire safety.

- **Matches and lighters:** Keep all matches and lighters out of children's sight and reach. Children are fascinated with flames, whether from candles, fireplaces, or cigarette lighting.
- **Smoking:** Never smoke when you are sleepy or in bed. When guests who smoke leave your home, check for smoldering ashes or cigarettes in sofas or chairs. Keep large ashtrays available for your smoking guests and never dump hot cigarette ashes into trash cans where fires can start. Some families store ashtrays in the kitchen sink overnight instead of emptying them right into the trash.
- **Wiring:** Don't overload outlets or run wires or extension cords under rugs, behind radiators, through door jams or across walkways. A rule of thumb is to limit the use of plugs in outlets to three. Worn cords, fixtures, and blown fuses are a warning that there may be trouble.

- **Combustible liquids:** Combustible liquids should be stored outdoors in a cool place out of reach of children. Storing any amount of gas indoors is asking for trouble. Gasoline and other combustibles expand, causing fumes to escape and spread throughout the house until they reach an open flame such as the pilot light in your water heater, furnace, or oven.
- **Heating equipment:** Many home fires can be traced to defective or improperly operated or installed heating equipment. Furnaces, fireplaces, and portable heating devices should be checked yearly to see that they are operating properly. Use screens and shields to prevent fires from starting.
- **Trash:** A quick check of the attic, basement, and storage areas in and around the home will reveal any excess trash that should be removed. Oily rags and other highly flammable substances should be stored in covered metal containers.
- **Cooking equipment:** Most fire hazards in the kitchen are associated with either cooking or careless use of the kitchen range. Children should be kept away from the range; care should be taken that there are no grease buildups.

Fire escape plans

The time to prepare for fire survival is before a fire—not after. It's one thing to know about fire safety and survival; it's another to perform under the stress of an actual fire.

Think of every possible fire situation and how you would escape. (Incidentally, that's a good habit to continue away from home, in hotels, theaters, and other buildings.)

Develop a fire escape plan for your family and teach it to everyone. Practice it over and over, and be sure babysitters know what to do in cases of fire.

- Every bedroom should have two possible escape routes.
- Sleep with bedroom doors closed to keep out toxic smoke and gases.
- When the fire alarm sounds or if fire is suspected in another part of the house, feel the door. If the door is hot don't open it. Use the window escape route.
- Teach your children to crawl close to the floor to escape smoke.
- Take short breaths and cover your nose and mouth with a damp cloth, if possible.

- Meet at the preplanned point. Do not go back into the house except to save a life. Call the fire department from a neighbor's house.

A good fire escape plan involves the use of certain equipment:

- Properly installed, functional smoke alarms
- Flashlights (one in the bedroom, too)
- Folding ladders for upper floors
- Fire extinguishers for small fires

Smoke detectors

Smoke detectors signal the presence of fire and automatically sound a warning. Many fires start at night, making early warning even more crucial.

Two kinds of detectors are usually sold for use in homes:

Ionization detectors: Ionization units usually offer the earliest warning of fast-burning fires. They respond to the wispy, flaming fires. New models can be fine-tuned to prevent over-sensitivity. These alarms often allow several extra seconds in alarm time.

Photoelectric detectors: Photoelectric units use a light source and an electric eye. When smoke enters the chamber, the photocell notes the difference and triggers the alarm. Generally, the photoelectric detector will respond faster to small amounts of smoke from a smoldering fire but could ignore flaring fires with less visible smoke. Since many home fires are of the first type, this alarm becomes important in areas where smokers may leave smoldering cigarettes.

Combination models: There are a few combination ionization and photoelectric alarms on the market. Some fire researchers suggest two separate alarms may offer more "fail safe" protection.

Electrical with battery backup: The electrical detector with a battery backup gives added protection. There is a chance when the power goes out that a fire could start in your home. Lightning can knock out power and start a fire. The battery backup will provide the warning necessary for times when there is no electricity.

Location and installation

The purpose of smoke detectors is to wake you from a deep sleep if a fire should start. Therefore, install at least one detector per floor near the bedroom area. Install a detector in a centrally located hall of a small, one-story home; use two units for a large, sprawling home, especially if bedrooms are in separate parts of the house. Install a unit at the head of stairs. Ceiling locations offer the quickest, surest, fire detection. As an alternative, install on a wall as recommended by the manufacturer. Avoid outside walls as cold and hot temperatures may interfere with a detector's efficiency. Also avoid damp, humid, dusty, and insect-infested areas as locations for your detectors.

Many fire protection authorities suggest one ionization and one photoelectric detector may offer minimal basic protection for each sleeping area. Follow the manufacturer's sug-

gestions for installation. Plug-in types must not be plugged into a switch-controlled circuit. Use the plug's special hold-down clip to prevent children (and adults) from unplugging the unit and forgetting to plug it in again.

Put the alarm closer to adults than children since children are often deep sleepers. If anyone is a light sleeper, put the alarm closest to this bedroom.

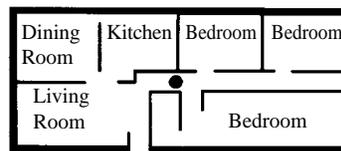
Maintenance

Test the unit after installation as suggested by the manufacturer. All family members need to recognize the alarm sound. Some photoelectric detectors should be vacuumed and filters cleaned as directed. Check for and remove insects that have crawled into the detector housing. Their presence can cause false alarms. Some models have built-in filters to reduce the need for cleaning the sensing chambers.

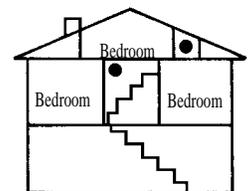
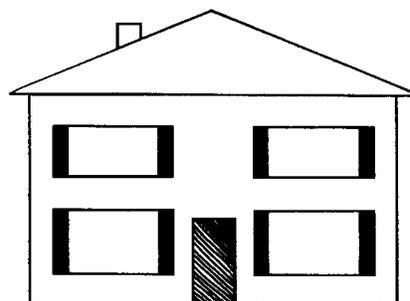
Check the operation of the detector once a week. Some models provide a test button or lever; others require that smoke from a cigarette or a snuffed candle be blown into the unit. Plug-in units should be tested after lightning storms to make sure that a lightning-caused voltage surge has not damaged the detector.

Fire extinguishers

Families should have at least one fire extinguisher mounted in a centrally located area of the house. A good type would be a 2½-pound or larger, multipurpose, dry chemical extinguisher that can be used on grease, electrical, or common combustible fires. Family members should be taught how and when to use extinguishers.



In a floor plan with only one sleeping area, place the smoke detector between the sleeping area and the rest of the house. Another detector near the rear bedrooms would offer more protection.



In homes with more than one sleeping area, install a smoke detector for each sleeping area. Smoke from a lower level will travel up the stairwell.



Fire needs three ingredients to burn: fuel (grease, paper, wood, etc.), oxygen, and heat. A small fire such as an ignited pan of grease can be extinguished by closing off the oxygen by placing a lid over the pan. Other fires can be extinguished by cooling the combustibles to extinguish the fire, such as using water on a paper fire. Electrical fires should be smothered, by removing the oxygen, using a chemical.

The person who is faced with a fire in the home should stay calm, see that all family members have been evacuated, and determine if the fire can be extinguished without help from the fire department. If the person decides to extinguish the fire, care should be taken to avoid being overcome by smoke. When using an extinguisher the operator should remove the safety pin and direct the current of the retardant toward the base of the flame. Families may want to rehearse use of fire extinguishers in conjunction with evacuation drills.

A system of fire classification has been devised to help people know how to extinguish fires. Class A fires consist of ordinary combustible materials: wood, paper, and textiles, which can be extinguished by cooling and quenching. Class B includes fires of flammable liquids, such as grease, gasoline, oils, and paints, which can best be extinguished by smothering. Class C fires are electrical and require a nonconducting agent capable of extinguishing a fire in material which may cause electrical shock.

A variety of fire extinguishers are available for home use. A multipurpose, dry chemical extinguisher contains several different types of flame-retardant chemicals to

smother “A,” “B,” and “C” fires. Some multipurpose extinguishers are listed as “1A-10B-C.” A multipurpose extinguisher is recommended for home use.

Burn safety

Fire is not the only source of burns. Hot liquids, chemicals, and electrical currents can burn an unaware child. Many of these accidents can be prevented with a few safety precautions. Following these safety steps can help insure a safe and protected environment for your child.

- Lower your water heater temperature to 120 degrees Fahrenheit. Always check the bath water before bathing a child. A child’s skin will burn more easily than the skin of an adult.
- Keep hot foods and drinks away from the edges of counters and tables. Do not put them on a tablecloth that little hands can pull.
- Turn pot handles in towards the back of the stove. Use the rear burners whenever possible. Install stove knob covers.
- Tie up loose and dangling appliance cords, and use electrical outlet covers.
- Use only safety matches and keep them out of sight.
- Do not hold your baby and something hot at the same time.
- Always test your child’s heated food and bottles. Food heated in a microwave can cause serious burns.
- Never leave children alone in the bath tub. Small hands can turn on hot water.

First aid

Minor burns

- Cool the burn immediately in water for at least 15 minutes.
- Cover the burn with clean gauze.
- Avoid using butter or creams; these will only hold the heat in and aggravate the burn.

Serious, substantial burns

- Call 911 or your local ambulance.
- Lie the child down.
- Treat the child for shock.
- Do not remove clothing; the burned skin can stick to it.

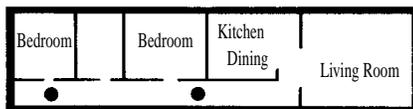
Electrical burns

- Turn off the power source and move the child away from it with rubber or wood.
- Call 911 or your local ambulance service.
- If the child is not breathing, call an ambulance and begin CPR.

Objectives

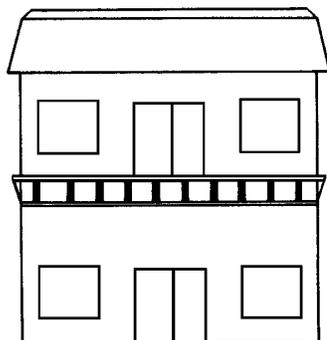
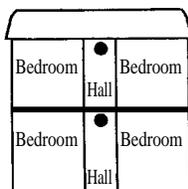
After studying the contents of this fact sheet, the family members should be able to:

- Recognize common fire hazards in the home.
- Design an emergency escape plan for a home or apartment.



In a mobile home, detectors should be installed on the ceiling or interior wall. Avoid exterior walls that may become cold in winter. Detectors near bedrooms are recommended first; a unit in the living room would offer additional protection.

If a fire warning system is not provided in the apartment, install a system between the bedroom and living areas. A battery-operated unit could be installed easily in an apartment.



- Describe the features and placement of smoke detectors?
- Select a fire extinguisher for the home.

Discussion questions

1. What are the most common causes of house fires and why?
2. What are some basic things we can do to prevent fires in our home?
3. What are the basic features of a good fire escape plan?
4. What type of fire extinguisher do you need for your home?

References

- Home Fire Safety*, Dorothy G. Blackwell, Extension Specialist, Home Management, Oklahoma State University.
- Be Fire Smart*, Insurance Information Institute. New York, New York 10038, 1981.
- Community First Aid and Safety*, The American National Red Cross. Mosby Lifeline, St. Louis, Mo., 1993.

Prepared by Michael H. Bradshaw, Extension Specialist, Health and Safety, Kansas State University.



Kansas Fire Injury Prevention Project

Produced by the Office of Injury and Disability Prevention, Bureau of Chronic Disease and Health Promotion, Kansas Department of Health and Environment, which is funded, in part, by Project Grant #U17/CCU711079 01 #483, Fire/Burn, Kansas Fire Injury Prevention Project, Centers for Disease Control and Prevention.

Fire and burn safety checklist

(Make a check by those items you answer "yes" to and plan to correct the deficiency immediately.)

Fire safety

- _____ Do you or a member of your family smoke when sleepy or in bed?
- _____ Are there any electrical outlets serving more than three appliances?
- _____ Do you have any extension cords that are frayed, under rugs, behind radiators too lightweight for their use?
- _____ Are there any unexplained electrical problems that have not been checked by an electrician (blown fuses, faulty outlets, defective appliances motors)?
- _____ Do the cooks in the family wear loose-fitting clothing while cooking that could catch fire, or do they turn pot handles outward where children can reach them?
- _____ Is there a buildup of grease on walls near the kitchen range?
- _____ Are any combustible liquids stored in the home or garage?
- _____ Does anyone use flammable cleaning fluids such as gasoline, turpentine kerosene in the home?

Fire evacuation

- _____ Do you have a smoke detector outside or inside the sleeping area of your home?
- _____ Does each member of the family have two escape routes from his or her other bedroom?
- _____ Does your family hold frequent fire drills, including some at night, so everyone will know what to do if there is a fire?
- _____ Has a meeting place been set so all members of the family will know where to meet if there is a fire?

Burn safety

- _____ Is your hot water at 120 degrees Fahrenheit? (Check it with a candy, meat, or water thermometer.)
- _____ Do you keep hot food and drinks away from the edges of counters and tables?
- _____ Do the cooks in the family turn pot handles in toward the back of the stove and use the rear burners whenever possible?



Cooperative Extension Service
Kansas State University
Manhattan, Kansas