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Energy Facts: Fireplace Safety  
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# ENERGY FACTS

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Michigan State University

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## Fireplace Safety

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If constructed properly, fireplaces will perform safely and dependably. Improperly designed or constructed fireplaces can be both a nuisance and a safety hazard. Fireplaces, just like anything else, wear over a period of years and need to be maintained to extend their life. Here are check lists to follow for safely installing, maintaining and operating a fireplace.

### Safe Installations

- Check to determine that the fireplace complies with all building codes in your community, including special requirements such as earthquake construction.
- Be sure the flue is of adequate size, equal to at least 1/10th the area of the fireplace opening for chimneys more than 15 feet tall and at least 1/8th the area of the fireplace opening for chimneys less than 15 feet.
- Extend the chimney at least 3 feet above the highest point where it passes through the roof and at least 2 feet higher than any portion of the building within 10 feet. If the roof is flat, the chimney should be at least 3 feet above the roof.
- Be sure the flue is tight, well-built and well-maintained, with a smooth interior. Each fireplace needs its own flue, but more than one flue may be located in the same chimney.
- Extend the hearth in front of the fireplace at least 16 inches into the room and at least 8 inches on either side of the fireplace opening. Use brick, stone, tile, concrete or other non-combustible, heat-resistant material at least 4 inches thick.
- Support the chimney and fireplace properly. Wall-hung chimneys and fireplaces are apt to put undue weight on walls and partitions, cause the floors to settle and cause masonry flues to crack. A masonry chimney should rest on its own foundation below the frost line.
- Install metal flashings to protect areas where the flue goes through the roof, and keep them in good repair.
- Install a metal spark arrester on top of the chimney to keep sparks from setting the house afire.
- Be sure prefabricated metal fireplaces and chimneys are approved by the Underwriters' Laboratories (UL) and installed as specified by the instructions. Free-standing fireplaces should be at least 3 feet from unprotected walls, drapes or other flammable materials. Use necessary wall protection to protect walls closer than 3 feet. Place a pad of brick or insulated fireproof material on the floor beneath the fireplace. (See Current Information Series No. 485, Wood Stove Installation and Safety.)
- Be sure that pipes connecting free-standing stoves and fireplaces to a chimney are at least No. 24 gauge steel, UL listed and installed in accordance with the listing. No pipe should be longer than 10 feet nor more than 75% of the vertical height of the chimney, whichever is less.
- For a modified fireplace (a firebox inserted into an existing fireplace), select one with a steel liner at least 1/4-inch thick to decrease the likelihood of it eventually rusting out.
- Install bird and animal guards on the chimney. Squirrel and bird nests can stop up chimneys.
- If you choose a natural gas "log," follow instructions for installation and use. Look for the American Gas Association (AGA) label.

## Maintenance for Safety

- Keep the fireplace in good condition by repairing cracks in the flue lining, bricks and mortar. (See Current Information Series No. 479, Chimneys.)
- Keep the flue clear of soot, creosote and obstructions. Inspect the fireplace and chimney at least once a year to prevent creosote buildup. (See Current Information Series No. 480, The Creosote Problem.)

## Safe Operation

- Equip the house with fire-warning devices.
- Install a type ABC fire extinguisher near the fireplace.
- Install a screen that completely covers the fireplace opening to keep sparks from flying out. Keep combustible materials such as carpets, furniture, paper, logs and kindling at least 3 feet away from the fireplace.
- Arrange andirons so logs can't roll out.
- Use only enough fuel to keep the fire at the desired temperature. Avoid "roaring" fires. They can start chimney fires from soot and creosote deposits in the flue.
- Do not use gasoline or other flammable liquids to kindle or rekindle a fire because the flammable vapors can explode. Never use fuels near a fire; explosive vapors can travel the length of a room.
- Keep the damper open while the fuel is burning to provide for efficient burning and to prevent accumulation of poisonous or explosive gases.
- Never burn Christmas tree greens. They cause many sparks when burning and can cause a chimney fire.
- Remove colored comic sections before rolling newspapers into logs. The colored inks contain lead and can produce toxic gases.
- Do not use coal, charcoal or polystyrene packaging in a fireplace unless the fireplace is designed to handle the excess heat and smoke which occurs when burning these materials.
- Do not treat artificial logs (made from sawdust and wax) the same way you treat real wood logs.

Use only one at a time. If you use more, they can produce too much heat for some fireplaces to withstand.

- Keep children away from the fire because their clothing can easily ignite. Warn the entire family about this hazard.
- Be sure that all ashes have thoroughly cooled before you dispose of them. Put ashes in a lidded metal container to prevent a possible fire and provide a sturdy place to store them. Ashes make good fertilizer in gardens, flowerbeds, etc.
- Be sure the fire is out completely before retiring for the evening.

## Safe Supply of Air

A fireplace fire requires about 5 times as much air as most houses need for liberal ventilation. With today's tightly-constructed houses incorporating weather-stripped doors, caulked windows and self-closing exhaust vents, a fireplace can set up reverse draft and suck poisonous carbon monoxide fumes from combustion-type (natural gas, etc.) water heaters or furnaces and discharge them into the living area. In tight homes, the fireplace may also consume enough oxygen from the air in the house to cause problems to occupants. To be safe, a positive source of outside air should be supplied to all fireplaces and wood-or-coal burning stoves to bring in enough fresh air for efficient burning. This can be provided by installing an outside air vent or opening a window when the fireplace or stove is being used. To keep smoke from entering the room, turn off kitchen and bathroom exhaust fans and close the registers of forced air heating systems which are near the fireplace.

**Be aware of the symptoms of carbon monoxide poisoning: sleepiness, headaches, dizziness, blurred vision, irritability and inability to concentrate. More severe cases cause nausea and vomiting, shortness of breath, convulsion, unconsciousness and death. The best first aid for carbon monoxide poisoning is lots of fresh air followed immediately by a visit to a doctor.**