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What You Should Know About Space Heaters Used for Supplemental Room Heating

The purpose of this publication is to provide safety information that should assist in the purchase, operation, fueling, and maintenance of space heaters. A space heater is a self-contained, free standing air heating appliance intended for installation in the space being heated and not intended for duct connection. This document is not intended to be all-inclusive, but it is intended to inform the reader about some of the safety aspects associated with using space heaters for supplemental room heating. The U.S. Consumer Product Safety Commission estimates that more than 25,000 residential fires every year are associated with the use of room (space) heaters. More than 300 persons die in these fires. An estimated 6,000 persons receive hospital emergency room care for burn injuries associated with contacting hot surfaces of room heaters, mostly in non-fire situations.

Hazards

Consumers should be aware of the following hazards when buying and using gas, wood, kerosene, and electric space heaters:

1. Fires and burns caused by contact with or close proximity to the flame, heating element, or hot surface area.
2. Fires and explosions caused by flammable fuels or defective wiring.
3. Indoor air pollution caused by improper venting or incomplete combustion of fuel-burning equipment.
4. Carbon monoxide poisoning caused by improper venting of fuel-burning equipment.

General Suggestions for All Space Heaters

CPSC offers the following general suggestions for selection, safe use, and maintenance of gas, wood, kerosene and electric space heaters:

- Select a space heater with a guard around the flame area or the heating element. This will help keep children, pets and clothing away from the heat source.
- When selecting a heater, look for one that has been tested and certified by a nationally recognized testing laboratory. These heaters have been determined to meet specific safety standards, and manufacturers are required to provide important use and care information to the consumer.
- Buy a heater that is the correct size for the area you want to heat. The wrong size heater could produce more pollutants and may not be an efficient use of energy.
- Read and follow the manufacturer's operating instructions. A good practice is to read aloud the instructions and warning labels to all members of the household to be certain that everyone understands how to operate the heater safely. Keep the owner's manual in a convenient place to refer to when needed.
- Keep children and pets away from space heaters. Some heaters have very hot surfaces. Children should not be permitted to either adjust the controls or move the heater.
- Keep doors open to the rest of the house if you are using an unvented fuel-burning space heater. This helps to prevent pollutant build-up and promotes proper combustion. Even vented heaters require ventilation for proper combustion.
- Never leave a space heater on when you go to sleep or leave the area. For fuel-fired heaters, dangerous levels of carbon monoxide could accumulate or uncontrolled burning could cause a fire.
- Never use or store flammable liquids (such as gasoline) around a space heater. The flammable vapors can flow from one part of the room to another and be ignited by the open flame or by an electrical spark.
- Be aware that mobile homes require specially designed heating equipment. Only electric or vented fuel-fired heaters should be used.
- Place heaters at least three feet away from objects such as bedding, furniture and drapes. Never use heaters to dry clothes or shoes. Do not place heaters where towels or other objects could fall on the heater and start a fire.

Specific Suggestions

Different types of space heaters present some different safety problems. You should be aware of important information and advice about these specific types of heaters.

- Have gas and kerosene space heaters inspected annually by qualified persons to ensure that they are properly adjusted and clean. Keep the wick of the kerosene heater clean and properly adjusted. Appliances that are not working properly can release harmful and even fatal amounts of pollutants.
- Be certain that your heater is placed on a level, hard and nonflammable surface, not on rugs or carpets.
- Keep the heater in a safe working condition. Replace missing guards and controls at once. Never operate a defective heater. Have all necessary repairs done by qualified repair persons.

Kerosene Space Heaters

- **Never use gasoline in a kerosene heater.** Even very small quantities of gasoline in the heater tank can cause a fire. Kerosene should never be stored or carried in a container that has had gasoline because the residual gasoline is enough to increase the flammability of the kerosene.
- Only use 1-K kerosene in kerosene heaters. Kerosene should be purchased from a dealer who can certify that it is 1-K grade kerosene. The fact that kerosene is “water clear” does not ensure that it is 1-K, since both 1-K and 2-K can appear clear.
- Never fill the fuel tank of a kerosene heater beyond the full mark because as the fuel warms, it expands and could spill and cause a fire.
- Do not attempt to remove the fuel tank, or refuel the heater when it is operating or hot. The heater should not be moved while it is operating.
- Refuel heater out of doors.
- If flare-up or uncontrolled flaming occurs, do not attempt to move the heater. If your heater is equipped with a manual shut-off switch, activate the switch to turn off the heater. Do not attempt to extinguish a kerosene-heater fire with water or blankets. If activation of the shut-off switch does not extinguish the flame, leave the area and immediately call the fire department.
- Keep kerosene stored outside in a sealed blue container labeled “Kerosene.”

Portable Electric Space Heaters

Portable electric heaters manufactured after 1991 include many new performance requirements to enhance safety. For portable electric heaters that may present a fire hazard when tipped over, a tip-over switch will turn the heater off until it is turned upright again. New heaters also include indicator lights to let users know that the heater is plugged in or is turned on. Some manufacturers have included technically innovative safety controls such as infrared or proximity sensors, which can turn a heater off when objects come too close, or when children or pets are near. These kinds of controls may prevent burn injuries to children who might play too near a heater, or reduce the risk of ignition of combustible materials that could contact the heater.

- Use heaters on the floor. Never place heaters on furniture, since they may fall, dislodging or breaking parts in the heater, which could result in a fire or shock hazard.
- Unless certified for that purpose, do not use heaters in wet or moist places, such as bathrooms; corrosion or other damage to parts in the heater may lead to a fire or shock hazard.
- Do not hide cords under rugs or carpets. Placing anything on top of the cord could cause the cord to overheat, and can cause a fire.
- Do not use an extension cord unless absolutely necessary. Using a light-duty, household extension cord with high-wattage appliances can start a fire. If you must use an extension cord, it must be marked #14 or #12 A WG; this tells the thickness or gauge of the wire in the cord. (The smaller the number, the greater the thickness of the wire.) For example, a cord sold as an air conditioner extension cord will have these heavy wires. Do not use a cord marked #16 or #18 AWG. Only use extension cords bearing the label of an independent testing laboratory such as U.L. or E.T.L.
- Be sure the plug fits snugly in the outlet. Since a loose plug can overheat, have a qualified repairman replace the worn-out plug or outlet. Since heaters draw lots of power, the cord and plug may feel warm. If the plug feels hot, unplug the heater and have a qualified repairman check for problems. If the heater and its plug are found to be working properly, have the outlet replaced. Using a heater with a hot cord or plug could start a fire.

- If a heater is used on an outlet protected by a ground fault circuit interrupter (GFCI) and the GFCI trips, do not assume the GFCI is broken. Because GFCIs protect the location where leakage currents can cause a severe shock, stop using the heater and have it checked, even if it seems to be working properly.
- Broken heaters should be checked and repaired by a qualified appliance service center. Do not attempt to repair, adjust or replace parts in the heater yourself.

Wood Burning Heaters

- Existing building codes and manufacturer's instructions must be followed during installation.
- Buy wood-burning stoves that are certified as meeting EPA emission standards.
- Check chimney and stove pipes frequently during the heating season for creosote build-up and have them cleaned annually.
- Stoves must be placed on an approved floor protector or fire resistant floor.
- Do not burn trash or anything other than the proper fuel.
- Use a metal container for ash removal.

Gas Space Heaters

- All unvented gas-fired space heaters (manufactured after 1983) should be equipped with an oxygen depletion sensor (ODS). An ODS detects a reduced level of oxygen in the area where the heater is operating and shuts off the heater before a hazardous level of carbon monoxide accumulates. These heaters also have labels that warn users about the hazards of carbon monoxide.
- Always have your gas heater and venting system professionally installed and inspected according to local codes.
- Vented gas-fired heaters can also cause carbon monoxide poisoning if they are not vented properly.

If your space heater is meant to be vented, be sure that the heater and flue are professionally installed according to local codes. Vent systems require regular maintenance and inspections. Many carbon monoxide poisoning deaths occur every year because this is not done. A voluntary standard requirement provides that a thermal shut-off device be installed on vented heaters manufactured after June 1, 1984. This device is designed to interrupt heater operation if the appliance is not venting properly.

Be aware that older gas-fired space heaters may not be equipped with the safety devices required by current voluntary standards, such as an ODS or a pilot safety valve that will turn off the gas to the heater if the pilot light should go out. If the pilot light on your heater should go out, use the following safety tips:

- Light the match before you turn on the gas to the pilot. This avoids the risk of a flashback, which could occur if you allow gas to accumulate before you are ready to light the pilot.
- IF YOU SMELL GAS, DO NOT ATTEMPT TO LIGHT THE APPLIANCE. Turn off all controls and open a window or door and leave the area. Then call a gas service person. Do not touch any electrical switches.
- Remember that LP-gas (propane), unlike natural gas supplied from the gas utility distribution pipes, is heavier than air. If you believe a leak has occurred, go to a neighbor's phone to call your gas distributor or fire department. Do not operate any electrical switches or telephones in the building where the leak has occurred because a spark could cause an explosion.

Health Effects of Combustion Products

Carbon monoxide (CO) is a colorless, odorless gas that interferes with oxygen availability throughout the body. Exposed individuals and physicians may not recognize some symptoms as CO poisoning due to their similarity with viral illnesses such as influenza. Individuals with heart disease, chronic respiratory ailments, such as emphysema, and anemia, and also fetuses, infants, and young children have an increased susceptibility to CO poisoning. Low levels of CO can cause fatigue and chest pain in people with chronic heart disease. As CO exposures increase, symptoms progressively worsen through headaches, drowsiness, nausea, vomiting, confusion and disorientation. At very high CO exposures, loss of consciousness and death are possible.

Nitrogen dioxide can irritate the skin and the mucous membranes in the eyes, nose and throat. Depending upon the level and duration of exposure, respiratory effects range from slight irritation to burning and chest pain, coughing, and shortness of breath. In addition, repeated exposure to elevated levels of nitrogen dioxide may contribute to bronchitis. Children who are exposed to low levels of nitrogen dioxide, often show increased

susceptibility to respiratory infections. Others who may be especially sensitive to nitrogen dioxide exposure include people with chronic respiratory disease including bronchitis, asthma and emphysema.

Reducing Exposure to Combustion Products in Homes

Take special precautions when operating unvented space heaters. Consider potential effects of indoor air pollution when deciding to use unvented kerosene or gas space heaters. Follow the manufacturer's directions, especially about using the proper fuel and about providing fresh air while the heater is in use. This can be accomplished by keeping doors open to the rest of the house from the room where the heater is being used. In addition, keep the heater properly adjusted. Choose a space heater properly sized for the room you wish to heat and make sure that it is installed correctly. Keep flues and chimneys in good condition. Leaking chimneys and damaged flues can result in the release of harmful or even fatal concentrations of combustion gases, especially carbon monoxide. If operating any combustion type appliance, including space heaters, install a CO alarm. Use alarms that meet the current requirements of UL 2034 or IAS 6-96.

General Home-Safety Information

Regardless of the method you use to heat your home, the Commission encourages you to:

- Equip your home with a least one smoke alarm on each floor and outside sleeping areas.
- Install a CO alarm that meets the requirements of the current UL standard 2034 or the IAS 6-96 standard in the hallway near every separate sleeping area of the home.
- Keep at least one dry-powder operative, ABC-type fire extinguisher in the home at all times.
- Keep areas around heat sources free of papers and trash.
- Store paints, solvents and flammable liquids away from all heat and ignition sources.
- Develop a fire-escape plan before a fire occurs. Be certain that all members of the household understand the plan and are able to carry out the plan in case of emergency.
- Be sure the plan includes a predetermined meeting place outside the house.
- If your clothing does catch fire, don't run! Drop down immediately, cover face with hands, and roll to smother the flames. Teach your family how to do this.
- Have annual safety checks on all home heating equipment.

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The U.S. Consumer Product Safety Commission is charged with protecting the public from unreasonable risks of serious injury or death from more than 15,000 types of consumer products under the agency's jurisdiction. Deaths, injuries and property damage from consumer product incidents cost the nation more than \$700 billion annually. The CPSC is committed to protecting consumers and families from products that pose a fire, electrical, chemical, or mechanical hazard or can injure children. The CPSC's work to ensure the safety of consumer products - such as toys, cribs, power tools, cigarette lighters, and household chemicals - contributed significantly to the 30 percent decline in the rate of deaths and injuries associated with consumer products over the past 30 years.

To report a dangerous product or a product-related injury, call CPSC's hotline at (800) 638-2772 or CPSC's teletypewriter at (800) 638-8270, or visit CPSC's web site at www.cpsc.gov/talk.html. To join a CPSC email subscription list, please go to www.cpsc.gov/cpsclist.asp. Consumers can obtain this release and recall information at CPSC's Web site at www.cpsc.gov.