



Combustion Appliances

What Are Combustion Appliances?

Combustion appliances are those that burn fuels for heating, cooking, or decorative purposes. Examples include space heaters, ranges, ovens, stoves, furnaces, fireplaces, water heaters, and clothes dryers. Common fuels used by these appliances are natural or liquefied petroleum (LP) gas, fuel oil, kerosene, wood, or coal. Usually these appliances are safe. However, under certain conditions, these appliances can produce combustion pollutants that can damage your health, or even cause death.

What Are the Major Health Effects?

Combustion pollutants are gases or particles that result from burning materials. The types and amounts of pollutants produced depend on the appliance, how well the appliance is installed, maintained, and vented, and the fuel it uses. Major combustion pollutants and the health effects of exposure include the following:

- Carbon monoxide interferes with the delivery of oxygen in the blood to the rest of the body. It can cause fatigue, headaches, dizziness, weakness, nausea, vomiting, increased chest pain in people with heart disease, confusion and disorientation, and, at high levels, death. According to Consumer Product Safety Commission (CPSC), there are an average of 166 carbon monoxide deaths each year. Because the chemical is odorless and some of the symptoms are similar to common illnesses, the effects may not be recognized until it is too late. Those most at risk are the elderly, infants, fetuses, and people with anemia or with a history of heart or respiratory disease.
- **Nitrogen dioxide** is a colorless, odorless gas that can cause irritation of the respiratory tract, shortness of breath, and increased incidences of respiratory illness. There is evidence from animal studies that repeated exposures to elevated nitrogen dioxide levels may lead, or contribute, to the development of lung disease such as emphysema. Children and individuals with asthma and other respiratory illnesses are at greater risk from exposure to nitrogen dioxide.
- **Particulates** can cause eye, nose, throat, and lung irritation, and can increase respiratory problems, especially in those with preexisting medical conditions, such as cardiovascular illness and immune system diseases. Certain chemicals attached to the particles may cause lung cancer if they are inhaled. The risk of lung cancer increases with the length and amount of exposure. The health effects from inhaling particles depend on many factors, including the chemical makeup and size of the particles.
- **Sulfur dioxide** irritates the eyes, nose, and the respiratory tract at low levels of exposure. At high levels, it causes the lung airways to narrow. This results in chest tightness, wheezing, or breathing problems.

Combustion always produces water vapor. Although water vapor is not usually considered a pollutant, it can act as one. It can result in high humidity and wet surfaces. These conditions encourage the growth of biological pollutants such as house dust mites, molds, and bacteria.

How Can I Reduce My Exposure to Combustion Pollutants?

- Avoid using unvented, fuel-burning devices in enclosed spaces. Unvented, fuel-burning space heaters should only be used in emergencies. Follow the manufacturer's directions, especially instructions on the proper fuel and proper adjustment. While a space heater is in use, open a door from the room where the heater is located to the rest of the house and open a window slightly.
- Install and use exhaust fans over gas stoves and ranges and keep the burners properly adjusted. A persistent yellow-tipped flame is generally an indicator of maladjustment and increased pollutant emissions. Ask your gas company to adjust the burner so that it is operating properly. If you purchase a new gas stove or range, consider buying one with pilotless ignition, so there will not be a pilot light burning continuously. Also, never use a gas stove to heat your home.
- Keep woodstove emissions to a minimum. Make certain that doors in old woodstoves are tightly fitting. Use aged or cured wood only and follow the manufacturer's directions for starting, stoking, and extinguishing the fire in woodstoves. Do not burn pressure-treated wood indoors. If you are purchasing a woodstove, choose a properly sized new stove that is certified as meeting EPA emission standards.
- Always make certain the flue in your fireplace is open when the fireplace is in use.
- Obtain annual inspections for central air handling system components, including furnaces, flues, and chimneys, and promptly repair cracks or damaged parts. Blocked, leaking, or damaged chimneys or flues release harmful combustion gases and particles, and can release fatal concentrations of carbon monoxide. Strictly follow all service and maintenance procedures recommended by the manufacturer, including those that tell you how frequently to change the filter. If the manufacturer's instructions are unavailable, change the filters once every month or two during periods of use.
- If you suspect that combustion pollutants are causing adverse health effects, consider turning off any combustion appliances, and contact the appliance service company or fuel company to inspect and, if needed, adjust the appliance. See a doctor to determine if symptoms may be caused by the combustion pollutants.