

The Health Harms of Fuel-Burning Home Appliances

What is residential combustion?

Residential combustion refers to burning fuel inside of your home. Chances are, this applies to you — two thirds of U.S. households burn fuel in their homes. This means burning methane (so-called “natural” gas), wood, propane, heating oil or other fuel to heat your home and water, dry your clothes and cook your food.

Common home appliances that may burn fuel include:



Stoves



Water heaters



Dryers



Furnaces



Woodstoves



Fireplaces

What's the alternative? Electric appliances. Electric stoves, furnaces, water heaters and dryers don't burn fuel inside the home.

How does residential combustion contribute to air pollution?

Burning wood, natural gas, oil and other fuels inside of homes produces emissions that are harmful to human health and the environment. Some types of appliances, including gas stoves, release their emissions directly into the home. Other appliances, such as gas furnaces and water heaters, release their emissions outside, where they contribute to outdoor air pollution and climate change.

Indoor levels of pollutants can be two to five times — and sometimes more than 100 times — higher than outdoor levels. Most people spend 90 percent of their time indoors. Policies and practices that reduce indoor air pollutants, including from residential combustion, are critical for protecting health.



How does air pollution from residential combustion harm health?

Some pollutants that can result from residential fuel-burning include:

- Carbon monoxide, a dangerous gas that when inhaled can interfere with blood's ability to carry oxygen from the lungs to the rest of the body
- Nitrogen oxides, a respiratory irritant that causes airway inflammation, coughing, wheezing and increased asthma attacks
- Particulate matter, also called soot, a mixture of microscopic solids and liquids that affects multiple body systems and can increase the risk of premature death
- Air toxics, including ammonia, formaldehyde, polycyclic aromatic hydrocarbons and volatile organic compounds, that can cause cancer, birth defects and other serious health harms

Outdoor exposure to air pollutants such as particulate matter, ozone, nitrogen oxides, carbon monoxide and air toxics contributes to premature mortality and increased risk of illness in children and adults, including asthma attacks, heart disease and stroke, COPD, lung cancer, type 2 diabetes, premature birth and respiratory infection.

Breathing air pollution is unhealthy for anyone, but many people are at increased risk, including children, people living with lung or heart diseases, individuals who are pregnant, older people, people of color, people in low wealth communities, and people in rural communities.



Spotlight: Woodstoves and fireplaces

Burning wood in the home can greatly increase indoor levels of carbon monoxide, nitrogen oxides and air toxics. Wood stoves and fireplaces also release large amounts of deadly particulate matter. Woodburning contributes to unhealthy levels of outdoor pollution, too.



Spotlight: Gas stoves

Gas kitchen appliances can emit substantial amounts of carbon monoxide and nitrogen oxides, plus some particulate matter and polycyclic aromatic hydrocarbons.

A research review from the American Lung Association found that indoor exposure to pollutants from cooking on a gas stove can worsen asthma symptoms and reduce lung function in children.

How can you help protect yourself and your family from residential combustion?

If you burn fuel in your home, there are some immediate steps you can take to reduce your risk from exposure to harmful pollutants:

- Make sure any and all fuel-burning appliances in your home are in proper working order.
- Install carbon monoxide monitors.
- Whenever you cook on a gas stove, always use ventilation - either a range hood that vents to the outside or an open window or both.
- For homes that rely on wood burning for heat or cooking, an air cleaning device that uses HEPA filtration can provide some protection from the soot and smoke.

There are additional steps people can take to reduce pollution from indoor combustion:

- Reduce or eliminate unnecessary wood burning in your home.
- If your circumstances allow, you can replace gas appliances with electric appliances.
- If you own your home, you can take advantage of incentives programs available from utilities and governments to purchase safer and cleaner heating systems, water heaters, clothes dryers, and stoves.
- Public and private entities, including schools, employers and building owners and managers, can assess the impact of combustion pollutants on indoor air quality in their facilities and take steps to reduce or eliminate them.

Learn more at [Lung.org/residential-combustion](https://www.lung.org/residential-combustion)
