

Clean Indoor Air

Tip Sheet #1

Backdrafting

Carbon monoxide or other combustion spillage into your home can be deadly. Combustion spillage is the term used to describe the unwanted flow of combustion gases into your home by vented combustion appliances. Combustion appliances are those that burn fuels for heating, hot water, or decorative purposes.

Included are:

- Fireplaces
- Clothes dryers, central vacuum systems
- Bathroom and kitchen exhaust fans
- All operating combustion appliances including hearth products, except for those that are sealed
- Central ventilation systems and heat recovery ventilators, if airflows are unbalanced or the ducts are leaky

These appliances are usually safe. Under certain conditions, however, they can produce combustion spillage that can damage your health, or even kill you. The exact composition and characteristics of combustion gases and the severity of their effect on your home and occupants depends on several factors, including the type of fuel being burned and the condition of your system. The job of the venting system is to remove combustion gases from your home. Your venting system won't work properly if it is poorly designed, poorly installed or poorly maintained. Combustion spillage can also occur when another appliance or system (bathroom fan or range hood, for example) is being used. The fan draws air from the house and causes normal chimney flow to be reversed, commonly known as "backdrafting". Gases are drawn back down the chimney or exhaust duct and into the house. Sometimes evidence of spillage is obvious—for instance, if you have a wood stove or a fireplace, you may occasionally see smoke escaping into the room. In other cases, spillage may not be so obvious, in part because the furnace and water heater are usually located away from the main living areas of the home. In addition, many combustion gases are hard to detect—they are colorless and have little or no odor.

Harmful combustion gases and their sources:

- Carbon monoxide, which can cause headaches, dizziness, nausea, and in some cases death—Source: gas or oil furnaces, boilers, hot water heaters, fireplaces, gas ranges
- Nitrogen oxides, which can damage the lungs and increase susceptibility to colds and respiratory illness—Source: gas fireplaces, gas ranges

Tips on maintaining combustion appliances in your home:

- Start an annual maintenance routine for all your combustion appliances. Get professional assistance to do this. The service person should check for heat exchanger leakage, evidence of start-up spillage, and condensation in chimneys.
- Maintenance should include a tune-up. A properly tuned combustion appliance is less likely to produce carbon monoxide, the most serious threat. Remember that a thorough maintenance check may cost a little more than a simple cleaning, but it is money well spent.
- Ensure that fuel-burning appliances have access to an ample supply of air.
- Replace fuel-burning appliances with sealed combustion units.
- Install certified carbon monoxide detectors in rooms with a fuel-burning appliance.
- Open windows or other openings on the upper floor of the home, or on the downwind side of the home on a windy day.



Helpful websites:

- Centers for Disease Control and Prevention (CDC): <http://www.cdc.gov>
- Environmental Protection Agency (EPA): <http://www.epa.gov/iaq>
- Consumer Products Safety Commission (CPSC): <http://www.cpsc.gov>
- Alaska Housing Finance Corporation (AHFC): <http://ahfc.state.ak.us/>



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These guidelines are for use in maintaining or renovating your home with the goal of improving the quality of the air you breathe indoors. This project is funded by Alaska Housing Finance Corporation. American Lung Association of Alaska and Alaska Housing Finance Corporation are not to be held liable and do not make any guarantees regarding the outcome of consumer implementation of these guidelines. "Healthy Breathing Begins at Home" guidelines are not intended to be construed as medical advice or replace the consultation of a physician or specialist in any way. For answers to lung health questions, you can speak directly with a registered nurse or respiratory therapist at no charge by calling the American Lung Association Call Center at 1-800-LUNGUSA.

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