



## backdrafting: tips for controlling combustion spillage

Carbon monoxide or other combustion gas spillage into your home can be

deadly. Combustion gas 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. The following appliances have potential for combustion spillage:

- All vented combustion appliances, *except for those that are sealed or power vented, including:*
  - Fireplaces and hearth products
  - Furnaces, boilers and space heaters
  - Domestic hot water heaters

The job of the venting system is to remove combustion gases from your home. However, your venting system will not work properly if it is poorly designed, poorly installed or poorly maintained.

Combustion spillage can also occur when another appliance or system, bathroom fan, kitchen fan or clothes dryer, for example, are being used. The fan draws air from the house and can cause normal chimney flow to be reversed, commonly known as “backdrafting.” Air is drawn back down the chimney or vent and into the house. Then, when the vented combustion appliance turns on, its gases are forced back into the home from this reversal of air flow. 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
  - Sources: 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, boilers, hot water heaters, fireplaces, gas ranges

### Install and maintain carbon monoxide detectors in your home

Carbon monoxide detectors should meet the (CSA) CAN/CGA 6.19 standard or the Underwriters Laboratories (UL) 2034 standard; have a long-term warranty; and be easily self-tested and reset to ensure proper operation. Some carbon monoxide alarms may have dual functions, such as smoke and carbon monoxide alarms. If these dual units were to go into alarm, do not wrongly assume they are malfunctioning in the absence of smoke. Battery powered devices should have the batteries changed yearly. *(Pick a date that you will remember, such as birthdays or holidays for changing batteries.)*

### 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.

If you believe you are being exposed to carbon monoxide, get fresh air immediately. Open windows and doors for more ventilation, but do not open windows or doors on the upper floor of the home, or on the downwind side of the home on a windy day. Turn off any combustion appliances, and leave the house.

#### For further information:

- American Lung Association®:  
[www.LungUSA.org/site/apps/s/content.asp?c=dvLUK9O0E&b=34706&ct=67136](http://www.LungUSA.org/site/apps/s/content.asp?c=dvLUK9O0E&b=34706&ct=67136)
  - American Lung Association® of the Upper Midwest Health House®: [www.HealthHouse.org](http://www.HealthHouse.org)
  - CDC-National Center for Environmental Health:  
[www.CDC.gov/nceh/airpollution/carbonmonoxide/checklist.htm](http://www.CDC.gov/nceh/airpollution/carbonmonoxide/checklist.htm)
  - Consumer Product Safety Commission: [www.CPSC.gov/cpsc/pub/pubs/466.html](http://www.CPSC.gov/cpsc/pub/pubs/466.html)
  - Environmental Protection Agency (EPA): <http://www.EPA.gov/iaq/pubs/combust.html>
  - Local Department of Health
- These tips are brought to you by the American Lung Association® of the Upper Midwest Health House® program. For more information on creating a healthier home environment, visit our Web site at [www.HealthHouse.org](http://www.HealthHouse.org).*



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