

FURNACE MAINTENANCE & REPAIRS

Modern furnaces—especially high efficiency models—are more complicated than models from decades ago. The efficiency gains are due in large part to the careful balancing of fuel, combustion air, and exhaust gasses. The management of these systems is accomplished through electronic controls, which need periodic adjustment and cleaning for optimum performance. An annual clean and tune of the furnace will keep the systems properly adjusted, and potentially reduce costly future repairs. A qualified technician should:

- Check igniter and flame sensor
- Pull and clean burners
- Inspect heat exchanger for excess rust or cracks
- Blow out condensate line (90%+ models)
- Check system static pressure
- Do a combustion analysis
- Check gas pressure
- Check for gas or venting leaks
- Inspect and lubricate blower motor

Additionally, there are a few things that homeowners can do to keep their furnace operating efficiently and safely:

- **Furnace filter replacement.** A clogged furnace filter reduces the airflow through the system, making the furnace work harder and longer to deliver heat throughout the house. A standard filter (about 1 inch thick) should be replaced monthly, especially under dusty conditions. Larger pleated filters (3-6

inches thick) are designed to remove smaller particles (pet dander, pollen, etc.) and may last several months. It is important to check with the furnace manufacturer to determine what types of filters can be used and how frequently they must be changed.

- **Condensate line.** Higher efficiency furnaces condense water as part of the combustion process. There is usually a plastic/rubber drain line (about an inch in diameter) that leads from the furnace to a nearby drain. If this line becomes plugged, the furnace may not operate properly, and may even shut down. Check the line each time you replace a filter.
- **Air intake and exhaust.** If the furnace cannot get fresh air or exhaust the combustion gasses, it may shut down. Partial blockages can lead to poor performance or dangerous conditions. Inspect plastic pipes that enter or leave the side of the house and ensure there are no insect or animal nests, foliage, or snow blocking the pipes. Furnaces that exhaust through a chimney should be inspected annually for blockages and to ensure the integrity of bricks, mortar, flashing, etc.
- **Adjust thermostat.** Use your programmable thermostat to reduce the operation of the furnace at night and when you are not home.

The dangers of CO

When the by-products of combustion are not properly vented to the outside, it can lead to unhealthy conditions. Among the most dangerous components is carbon monoxide (CO), an odorless, invisible gas that causes illness—and sometimes death—among many Minnesotans every year.

What to look for

The symptoms of CO poisoning are easily confused with those of a flu or cold: headache, nausea, irritated eyes and nose, and—eventually—confusion and lethargy. The physical symptoms may lessen when away from the home. Another clue is moisture build-up in the house, especially condensation on cooler windows.

Causes

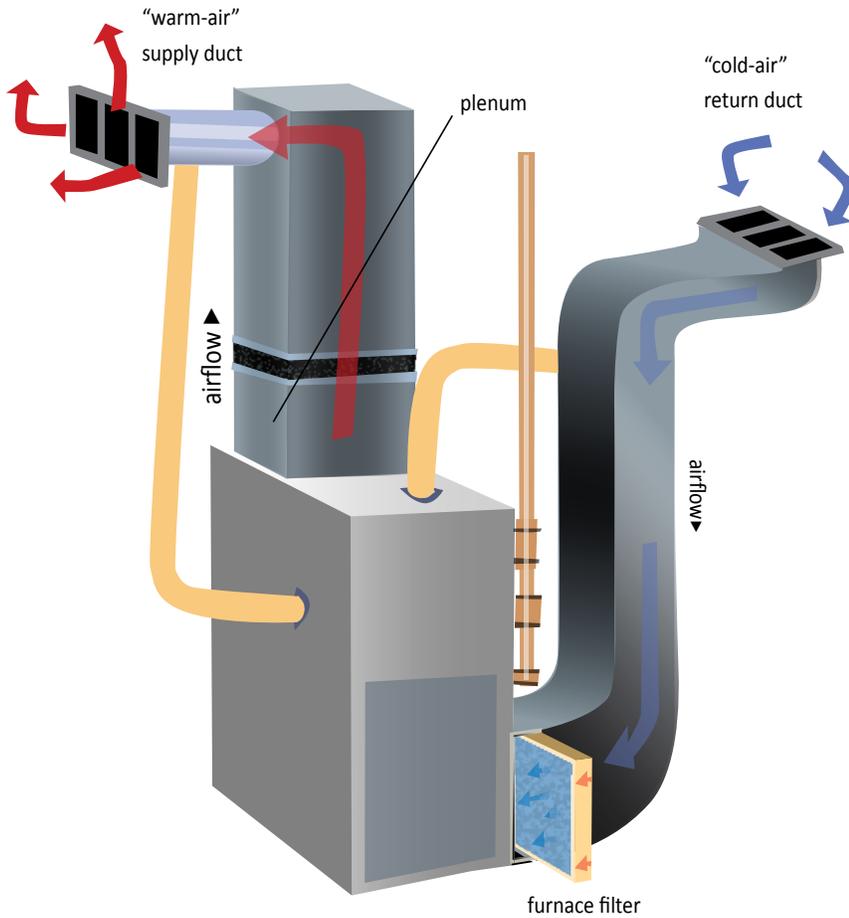
There are several possible causes of CO in a home, but many have to do with problems with the proper venting of flue gasses:

- Cracked furnace heat exchanger
- Blocked or undersized chimney or vents
- Damaged or separated vents
- Insufficient combustion air supply

Preventing CO in your home

These two recommendations will help keep your family safe:

- Install code-required CO detectors near all combustion devices and within 10 feet of all bedrooms
- Have annual inspections with a CO test of all combustion devices (furnace, water heater, fireplace, dryer, range)



Furnace filters

The furnace filter is located between the return duct (sometimes called "cold-air return") and the furnace. The air is returning to the furnace from throughout the house, where it will be heated and redistributed through the supply duct.

Furnace filters have an arrow that indicates airflow direction; make sure it is aligned with the direction that air is flowing from the return duct into the furnace.

Some systems have a filter cover which covers the access to the filter. Be sure that it is sealed tightly to prevent air leaks. If there is no filter cover, seal with metal foil tape.