



Focus on **Wood Smoke Pollution**

From the Department of Ecology's Air Quality Program

The 1991 Washington Clean Air Act restricts indoor burning of wood stoves and fireplaces. It emphasizes education and enforcement to control air pollution from wood stoves. This focus sheet explains the problem of wood smoke pollution, how Washington is working to reduce wood smoke, the reasons for indoor burning bans, and how you can reduce pollution from your wood stove.

Wood smoke is an air pollutant

Many people don't think of the smoke from their wood stove or fireplace as air pollution. Some people even like the smell of wood smoke. But wood smoke contains hundreds of air pollutants, including:

- Nitrogen oxides
- Carbon monoxide
- Fine particles
- Organic gases

Many of these substances can cause cancer and other health problems such as:

- Lung diseases like asthma, emphysema, pneumonia, and bronchitis
- Irritation of the lungs, throat, sinuses, and eyes
- Headaches
- Allergic reactions

The most dangerous material in wood smoke may be the fine particles that make up the smoke and soot. Many of these particles are toxic. Most are so small that, when you breathe them, they get past your body's defenses and go deep into your lungs. There, they can cause serious problems such as scarring of the lung tissue. Studies show that death rates in several U.S. cities increased when there were higher levels of fine particles in the air. Wood smoke is most dangerous to the health of infants and children, pregnant women, the elderly, and people with lung or heart disease.

Effects of wood smoke in Washington

Wood smoke is Washington's third leading source of air pollution. It causes about 19 percent of Washington's yearly air pollution. More than half of Washington's households have wood stoves, fireplaces, or other wood burning devices. They put out hundreds of times more air pollution than other sources of heat such as natural gas, electricity, or oil. Some of the reasons wood smoke is such a serious problem are:

- Almost all the wood smoke in Washington is released during winter months. This means it is very concentrated. It takes just three months for wood smoke to become Washington's third leading source of air pollution. Almost 90 percent of the wintertime fine particle pollution in our state is from wood smoke.

- In the winter, we often have weather conditions that cause stagnant air. As a result, wood smoke is trapped close to the ground in neighborhoods. At these times, air pollution in many neighborhoods is unhealthy.
- Studies show that people who heat their homes with wood have more respiratory problems than those who don't. Smoke particles also invade neighboring homes. Research shows that children in wood burning neighborhoods are more likely to have lung and breathing problems.

Washington's wood stove program requirements

Wood fuel must have a moisture content of no more than 20 percent. Wood that is split and then dried for at least a year usually meets this requirement.

Some materials are illegal to burn. It is illegal to burn garbage, treated or painted wood, particle board, plastics, rubber, waste petroleum products, animal carcasses, asphalt products, paints, chemicals, or any substance that normally emits dense smoke or obnoxious odors.

Smoke density is restricted. Smoke plumes can have no more than 20 percent opacity. This means you should see only heat waves coming from your chimney. If you can see any smoke from your chimney it is probably more than 20 percent opacity. (It's okay to have more smoke only when you are starting or stoking a fire.)

New fireplaces built and sold in Washington must meet Washington State emission standards. These standards: (1) require all new or used stoves installed in Washington to be certified by the U.S. Environmental Protection Agency (EPA), and (2) limit smoke emissions from certified new models to:

- 4.5 grams of particulates per hour for non-catalytic models.
- 2.5 grams per hour for catalytic models.

There is a \$30 fee on the sale of new wood stoves. This fee pays for wood stove education and enforcement programs.

Non-wood heat sources are required in new or significantly remodeled construction.

A local air quality agency or Ecology may prohibit the use of uncertified stoves under certain conditions. Usually, this happens when an area fails to meet federal air quality standards.

Local burn bans are called when wood smoke pollution reaches unsafe levels. Burn bans have two stages:

- Stage 1: The use of all uncertified wood heating devices is banned when pollution approaches unhealthful levels.
- Stage 2: All wood heating is prohibited when pollution reaches an even higher level.

These bans do not apply to homes with no other source of adequate heat.

What you can do

If you heat with wood, you can reduce smoke by burning properly:

- Burn only dry, seasoned wood. Be sure your firewood has been split and dried for at least one year. Store it under cover.
- Never burn wet, painted, stained or treated wood; colored newsprint; plastic; garbage; diapers; or magazines.
- Burn small, hot fires. This helps the wood burn completely and cleanly.
- Never allow the fire to smolder. This wastes wood, produces little heat, and causes a lot of smoke.
- Make sure your fire gets enough air. Dampering down too much can cause smoldering. You can tell if your fire has enough air by checking the smoke coming from your chimney. You should see only heat waves. If you see smoke, increase the air supply to your fire.
- Make sure your wood stove is the right size for its space. A stove that is too large for the space it is heating will have to be damped down, causing more smoke.
- Make sure your stove is properly installed.
- Never install an uncertified stove. It is illegal to install an uncertified stove in Washington.
- Don't purchase or install a wood stove until you've considered all other heating choices. Natural gas and electricity are much cleaner ways to heat your home. Insulating and weather stripping can cost less than a wood stove and reduce your heating costs. Many cities, counties, housing authorities, and utility companies offer grants, low-interest or interest-free loans, or free weatherization and conservation programs.

For more information

See the Department of Ecology web site at http://www.ecy.wa.gov/programs/air/outdoor_woodsmoke/wood_smoke_page.htm or contact your local air quality agency:

- **Puget Sound Clean Air Agency** (King, Snohomish, Kitsap and Pierce Counties): 1-800-552-3565, (206) 343-8800, or for recorded information on indoor burning restrictions, 1-800-595-4341.
- **Olympic Region Clean Air Agency** (Thurston, Clallam, Grays Harbor, Jefferson, Mason and Pacific Counties): (360) 586-1044 or 1-800-422-5623.
- **Southwest Clean Air Agency** (Clark, Cowlitz, Lewis, Skamania and Wahkiakum Counties): (360) 574-3058 or 1-800-633-0709.
- **Northwest Air Pollution Authority** (Skagit, Whatcom and Island Counties): (360) 428-1617, or 1-800-622-4627 (Island and Whatcom Counties only).
- **Spokane Regional Clean Air Agency**: (509) 477-4727.
- **Yakima Regional Clean Air Authority**: (509) 574-1410 or 1-800-540-6950.
- **Benton Clean Air Authority** (Richland): (509) 943-3396. For recorded burn ban information, call (509) 945-4489.
- **Ecology's Central Regional Office** (Chelan, Douglas, Kittitas, Klickitat and Okanogan Counties): (509) 575-2490.
- **Ecology's Eastern Regional Office** (Adams, Asotin, Columbia, Ferry, Franklin, Garfield, Grant, Lincoln, Pend Oreille, Stevens, Walla Walla and Whitman Counties): (509) 329-3502.

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