



## Woodsmoke Pollution

### Oregon's wintertime air pollution problem

We pride ourselves on clean air, but for many communities in Oregon the clear winter skies are actually full of pollution. Smoke from wintertime residential woodburning can be so bad that it exceeds the federal health standard. It's a common myth that industry is the major contributor to air pollution, but the truth is smoke from fireplaces and woodstoves is one of the largest threats to healthful air in Oregon.

### Why worry about air pollution?

Every year air pollution damages our health, our crops, our property and our environment. It degrades the livability of our communities while costing the state important jobs. In neighborhoods everywhere across Oregon, residential woodburning is a significant source of air pollution. Most wood heaters (woodstoves and fireplaces) release far more air pollution, indoors and out, than heaters using other fuels. Woodsmoke also reduces visibility.

The Department of Environmental Quality (DEQ) and your local community are asking you to help clear the air of woodsmoke. Here is information about the air pollutants in woodsmoke, their health effects, how wood burns, why it smokes and how you can produce less wood smoke. You can make a difference!

### Oregon stories

The woodsmoke problem is one which affects Oregon communities both east and west of the Cascades. The communities of Medford-Ashland, Grants Pass, Eugene-Springfield, Oakridge, as well as Klamath Falls, Lakeview and La Grande all have a common threat to healthful air-woodsmoke. However, woodstoves can be a localized problem in neighborhoods in any city.

DEQ recognized long ago that woodsmoke is harmful to health, so in 1986 it began a program to rate woodstoves based on how efficiently they burn fuel, how much smoke they emit, and how much heat they put out. All new woodstoves and fireplace inserts sold in Oregon had to meet new smoke standards for particulate emissions.

### What's in woodsmoke?

Oregon was the first state in the nation to certify woodstoves so consumers could make better buying decisions. It wasn't long, however, before the Environmental Protection Agency adopted these standards nationwide.

Woodsmoke is basically fuel from your firewood that doesn't burn, and becomes air pollution. Complete

combustion gives off light, heat, the gas carbon dioxide, and water vapor. Smoke contains these gases and the tiny particles known as PM10. PM10 stands for "Particulate Matter less than 10 Microns in Diameter." The period at the end of this sentence is about 500 microns across. PM10s are so small that the body's natural defense mechanisms can't keep them from entering deep into the lungs where they can damage and change the structure of lung tissue, which can lead to serious respiratory problems.

PM10 particles are actually made up of very small droplets of wood tars and gases, soot, and ash. Smoke also contains the following unburned pollutant gases:

- **CO - Carbon Monoxide** - reduces the blood's ability to supply oxygen to body tissues. Even small amounts can stress your heart and reduce your ability to exercise.
- **Nox - Oxides of Nitrogen** - which may lower a child's resistance to lung infections.
- **HC - Hydrocarbons** - which can injure the lungs and makes breathing difficult.

### Where does PM10 come from?

There are really only three significant sources of PM10 which occur during the winter: industry, dust from road sanding, and smoke from residential woodburning. While Oregon's industry and the Department of Transportation have worked hard over the last several years to significantly reduce PM10 pollution, people who heat with wood also have a responsibility to do the same. By far the biggest contributor to the PM10 pollution problem is woodsmoke. The reason is, so many people heat with wood.

As the price of other heating sources increased in the 1970s and 80s, so did interest in heating with wood! It is estimated that more than 340 thousand wood stoves fire up each winter in Oregon. And more than 1.5 million tons of wood is burning in Oregon homes each year. While there are some advantages to heating with wood, there are also serious problems. Pollution is one of them.

### Burn smart!

Burn only "seasoned", dry fire-wood (with less than 20 percent moisture by weight). Firewood should dry a minimum of 6 to 12 months after splitting. Hardwoods dry slower than softwoods and may take more than a year to dry. To speed drying: split big logs and stack loosely in a

crosswise fashion to get good air circulation. Stack a foot or more above the ground and away from building in a sunny, well-ventilated area. Cover the top to keep dew, rain and snow off the wood, but leave the sides open to breezes.

- Small is better - Build small, hot fires instead of large, smoldering ones. Open the damper wide to allow the maximum air in to allow the maximum air in to fuel the fire. Leave damper and other air inlets open for 20 to 30 minutes. It's worth the extra time to get your stove up to temperature and establish a good bed of coals before loading on any logs. Don't jam your firebox full of wood, it reduces your stove's efficiency and fuel economy. Keeping your fuel loads modest will minimize air pollution.
- No garbage! - Don't burn anything but clean, seasoned wood in your stove. No garbage, plastics, rubber, paint or oil, no painted or charcoal briquettes, and no glossy or colored paper. Burning things like that can foul your catalytic combustor, your flue, as well as cause serious health problem for you, your family and your neighbors!
- Watch those smoke signals - If you're sending up a lot of smoke, that's a sign you're burning wrong. Apart from the half hour after lighting and refueling, a properly burning fire should give off only a thin wisp of white steam. If you see smoke, adjust your dampers or air inlets to let in more air. Remember the darker the smoke, the more pollutants it contains and the more fuel is being wasted.
- Don't bed it down for the night - Not only is it a fire hazard, but when you "hold" a fire overnight by cutting down the air supply, you create a lot more smoke and creosote. You'll not only pollute the neighborhood, but the smoke can backdraft into the house, causing a very serious indoor air pollution problem. Let your fire burn out completely and rely on your home's insulation to hold in enough heat for the night.
- For safety's sake - Periodic inspection of your stove or fireplace is essential to ensure its continued safe and clean-burning operation. Certified stoves produce less creosote and provide a safer burn. Each year in Oregon there are between 1,000 and 2,000 home and chimney fires caused by woodstoves.

Professionally clean the chimney at least once a year to remove creosote buildup. Clean or replace plugged catalytic combustors according to manufacturer's instructions. Gaskets on airtight stove doors need replacement every few years. If your stove's seams are sealed with furnace cement, check for broken, missing cement.

These steps will not only reduce smoke output, but save you money! That's because proper burning techniques stretch your fuel dollar and provide more efficient heat.

### **New stoves mean less pollution**

Did you know woodstoves that aren't certified waste up to 60 percent of the wood burned in them? No one can afford to waste valuable money on an inefficient heating system. If you own an old inefficient stove, think about replacing it with a newer, cleaner heating system. How can you tell if your stove is uncertified? Look on the back for a certification sticker from the DEQ or EPA. If there isn't one, you have an old, and potentially high polluting stove!

There is a brand new generation of home heating devices that provide good efficiency, with moderate to virtually no smoke emissions. These include natural gas stoves and furnaces, hi-tech zonal oil heaters, EPA phase II certified woodstoves and pellet stoves. Explore your options—a new system will pay for itself in fuel and cleaning savings!

### **Burning questions?**

Look to your local air quality planning organization, or to the DEQ for answers to your questions about burning or other clean air issues. Contact numbers are below. And remember, you are your own best resource for cleaner air for our children and community!

### **For more information**

- About woodstoves: contact the Oregon Department of Environmental Quality Woodstove Certification Program at 503-229-5177.
- On air quality issues - or for copies of this brochure, "Woodsmoke Pollution," contact DEQ's Office of Communications and Outreach at 503-229-6488
- About lung disease: contact the American Lung Association of Oregon at 503-246-1997 or 1-800-LUNG-USA

People with hearing impairments may call DEQ's TTY at 503-229-6993.



## Burning Household Waste

Some people in Oregon still use burn barrels or burn household waste in piles. However, there are several common-sense reasons why Oregonians should choose alternative forms of household waste disposal.

### Burning Household Waste Is Unhealthy

Burn barrels are inefficient and pollute because they create low temperature fires, receive little oxygen and produce a lot of smoke. Smoke from burning household waste is unhealthy to breathe, particularly for small children, pregnant women, older adults and people with asthma or other respiratory ailments:

- Many household products, such as bleached paper products and some plastics, contain chlorine. When burned, chlorine creates dioxin. Exposure to dioxin is associated with cancer and birth defects
- Many household products, such as slick colored papers and synthetic inks, release heavy metals when burned. Human contact with heavy metals is also linked to cancer and birth defects
- Many household products contain chemicals such as hydrochloric acid which are known to irritate the skin and eyes.

Many toxic air pollutants are produced from a burn barrel. Virtually all of the pollutants are released into the air close to ground level where they are easily inhaled.

### Burning Household Waste Harms The Environment

Pollutants released when household waste is burned eventually end up back on the ground and in the water and can build up to dangerously high levels in plants, animals, and people. Health effects after exposure to these pollutants can include cancer, deformed offspring, and reproductive and immune system failure.

### Alternatives To Burning Household Waste

- **Reduce** - Avoid purchasing disposable items. Buy products in bulk or economy sizes instead of in individually wrapped or in single serving sizes. Buy products that can be recharged, reused, or refilled.
- **Reuse** - Donate unwanted clothing, furniture and toys to friends, relatives or charities. Give unwanted magazines and books to hospitals or nursing homes. Mend and repair rather than discard or replace.

- **Recycle** - Separate the recyclable items, such as newspapers, glass and plastic containers and tin cans, from your residential waste and prepare them for collection or drop-off at a local recycling station.
- **Disposal** - Have your household waste picked up by a licensed waste removal company or take it to a licensed disposal facility rather than burning it.

### Regulations On Burning Household Waste

State of Oregon regulations prohibit the open burning of any material that creates dense smoke or noxious odors. This includes the following materials:

- Plastics, like foam cups, meat trays and egg containers
- Tires or other rubber products
- Garbage and food waste
- Wire insulation
- Waste oil and other petroleum products
- Automobile parts, including frames
- Dead animals

In addition, burning household waste is prohibited altogether in certain areas by DEQ rules or local city and county ordinances.

Additional information on regulations regarding burning household waste in Oregon can be found in Oregon Administrative Rules, Chapter 340, Division 264. These rules are located on DEQ's web page at: [www.deq.or.us/aq/rules/index.htm](http://www.deq.or.us/aq/rules/index.htm). For further information on Oregon's open burning rules and your city or county recycling contact person, call your local DEQ office.

	Open Burning Information	Recycling Information
NW Oregon/ Portland	503-229-5545	503-229-5529
Upper Willamette Valley & Coast	503-378-8240 x278	503-378-8240 x277
Mid-Willamette Valley & Coast	503-378-8240 x278	541-686-7838 x252
Southern Oregon Coast	541-269-2721 x22	541-776-6010
Southern Oregon	541-776-6010 x237	541-776-6010
Central Oregon	541-388-6146 x245	541-388-6146 x228
Eastern Oregon	541-278-4626	541-278-4618
Klamath Falls	541 883-5603	541 388-6146 x228



## Landfill Bans in Oregon

### What is banned?

It is illegal to dispose of these materials in solid waste disposal sites in Oregon:

- discarded or abandoned vehicles;
- large home or industrial appliances;
- used oil;
- tires; and
- lead-acid batteries.

The intent of this ban is to divert reusable and/or recyclable materials from Oregon's landfills, especially materials that are toxic and can harm the environment if improperly disposed of.

### If your trash is picked up at the curb:

You should make separate arrangements for disposing of these materials so they aren't accidentally mixed with your garbage. Because they may have value as recyclables, check first with your garbage hauler, your local government solid waste department, or DEQ.

### If you haul your own trash:

You can be held liable for disposing of any of these materials at a solid waste disposal site. You may, however, leave them for recovery or storage for recycling at a recycling depot located at a landfill or transfer station or other collection site that accepts them.

### There may be better options than disposal.

In addition to the resources listed, contact DEQ for information about recycling these materials.

- vehicles and home or industrial appliances (also called "white goods," such as water heaters, refrigerators, kitchen stoves, dishwashers, washing machines and clothes dryers): scrap metal dealers, and most landfills and transfer stations, will accept these materials for their scrap value. A fee may be charged for accepting certain appliances since recyclers often need to process the appliances to remove non-recyclable or hazardous parts. Scrap metal recyclers and garbage haulers also often offer pick-up service for scrap metal. They too may charge a fee for this service.
- used oil: for information on recycling household amounts, contact your garbage hauler, transfer station, or landfill. If the oil has been mixed with solvents, paint thinner, or other liquids, it must be disposed of at a

household hazardous waste collection site or event. To recycle a large quantity of oil, such as that generated by a business, look in the Yellow Pages of your telephone book under "Oils: Waste" or call DEQ.

- tires: some transfer stations and drop-off depots will accept tires for recycling, and many volume tire dealers around the state will accept used tires for a minimal fee. (Off-road tires such as earth movers and other solid tires not allowed on highways, and tires chipped to Department standards, still can be landfilled.)

If you have large quantities on your property, check with DEQ's Waste Tire Program. The program is designed to clean up tire piles before they become health and safety hazards.

- lead-acid batteries: under a law passed by the 1989 Oregon Legislature, battery retailers and wholesalers are required to accept used batteries for recycling. You can trade in as many used lead-acid batteries as you purchase from the retailer. In addition, through 1993, retailers must accept at least one lead-acid battery from you for recycling, even if you do not purchase a new battery.

Batteries also may be taken to a wholesaler, collection or recycling facility, or to a state- or EPA-permitted secondary lead smelter. Anyone who disposes of lead-acid batteries by any method other than recycling may incur a civil penalty.

### If you are a disposal site operator:

The 1991 Recycling Act states that you can be held liable if you knowingly accept the materials listed above for disposal. You can, of course, continue to accept them for storage for recycling or recovery purposes. If self-haulers utilize your landfill, you may want to update signs and flyers to advise the public to separate and place these items in the recycling area, rather than in the landfill.

In addition, new municipal solid waste landfill regulations (Subtitle D) will affect all disposal site operators. The Environmental Protection Agency has issued new regulations on location, design, operation, ground water monitoring and corrective action, closure and post-closure care and financial assurance criteria. For information, please contact DEQ.