

FIRE PITS /OUTDOOR FIREPLACE AND THE HEALTH EFFECTS OF WOOD SMOKE



The smell of wood smoke reminds them of crisp fall days and fond memories for many people, but for others it is a danger.

Wood smoke is especially harmful to children, the elderly, and people with lung and heart disease.

Why is Wood Smoke a problem?

The particles in wood smoke are too small to be filtered by the nose and upper respiratory system, so they wind up deep in the lungs. They can remain there for months causing structural damage and chemical changes. Poisonous and cancer-causing chemicals often enter the lungs by adhering to tiny particulate matter (such as wood smoke particles).

These tiny particles are emitted in neighborhoods, both indoors and out, where people spend most of their time. Unfortunately, wood smoke is not only in the outdoor air we breathe. The particulate matter in wood smoke leaving chimneys and fire pits is so small that it is **not stopped by closed doors and windows, and often seeps into neighbors' houses.**

Wood smoke is more of a problem in the winter when cold, stagnant air prevents it from rising and dispersing. As wood burning increases during these cold periods, the pollutants in the smoke are trapped near the ground. In neighborhoods where wood is burned, houses can have higher indoor smoke levels than houses in neighborhoods where wood is not burned.

Health Effects of Wood Smoke

- **Wood smoke aggravates asthma, emphysema, pneumonia, and bronchitis.**
- **It irritates the eyes, throat, sinuses, and lungs; triggers headaches and allergies; reduced lung function, especially in children; lung inflammation or swelling; increased risk of lower respiratory diseases; and risk of heart attack and stroke.**
- **Long-term exposure may lead to emphysema, chronic bronchitis, arteriosclerosis, and nasal, throat, lung blood, and lymph system cancers.**

Wood Smoke and Cancer

Many substances on the U.S. Environmental Protection Agency's (EPA) priority pollutant list, many suspected human carcinogens, co-carcinogens (cancer initiators or promoters), and cilia-toxic agents (poisonous to the hair-equipped cells which filter most particles out of the respiratory tract) have been identified from wood smoke particles. However, many of the compounds in wood smoke particles have not been identified and even less is known about the toxic organic gases which are also released by wood burning.

Smoke

Smoke is composed of many small particles of carbon compounds from the burning of organic matter. The small pieces of organic matter from smoke, along with dust and other small particles of solid and liquid matter suspended in the air are called "**particulate matter**".

Wood Smoke

Wood smoke contains many organic compounds known to cause cancer (such as benzopyrenes, dibenzanthracenes, and dibenzocarbazoles), and other toxic compounds (such as aldehydes, phenols, or cresols). The particulate fraction is composed of solid or liquid organic compounds, carbon char (elemental or soot carbon – similar to charcoal), and inorganic ash.

Particulate Matter

Particulate matter is regulated by the federal government as one of the principal air pollutants.

Particulate matter larger than 10 microns in diameter collects in the upper respiratory system (throat and nose) and is eliminated by sneezing, coughing, nose blowing, spitting, or the digestive system. The particulate matter from wood smoke is a much more serious health threat due to the small particle size. Wood smoke particles are less than 10 microns (a micron is one millionth of a meter) in diameter. Most of them are less than 2.5 microns in diameter. The period at the end of this sentence is about 500 microns in diameter.

Irritants in wood smoke (such as phenols, aldehydes, quinones, nitrogen oxides, and Sulphur oxides) contribute to health problems in the respiratory tract. Irritants interfere with the cilia and disrupt the flow of the particle-trapping mucus stream, resulting in more particulate matter entering the lungs. Exposure to wood smoke irritants can lead to inflammation and pulmonary edema (swelling of lung tissue). Irritants can also cause allergic reactions and may contribute to long-term health effects.

Limit Wood Burning

It is impossible to keep smoke and odor from fire contained to an individual property. We encourage residents to limit wood burning. Use Smart Burning Practices.

Remember to be mindful of those neighbors who may have difficulty breathing and of those who would like to leave windows open when the weather permits.

Evergreen Park Ordinance:

Sec. 7-3. Open burning and fires; burning of combustible materials.

(c) Open burning of leaves, garbage, construction wood, building by-products and waste is prohibited.

Sec. 20-12. Landscape waste, recycling prohibitions.

It shall be unlawful for any person to:

(5) Burn any landscape waste.

Internet Resources:

Health Effects of Wood Smoke

Washington State Department of Ecology

https://www.michigan.gov/documents/Health_Effects_of_Woodsmoke_WA_2004_142269_7.pdf

How Wood Smoke Effect Your Health

Washington State Department of Ecology

<https://fortress.wa.gov/ecy/publications/documents/91br023.pdf>

EPA

Wood Smoke and Your Health

<https://www.epa.gov/burnwise/wood-smoke-and-your-health>