

What You Should Know About Residential Wood Smoke Pollution

Smoke from wood burning stoves and fireplaces is a major contributor to wintertime air pollution in the Bay Area. It's hazardous to human health and damaging to the environment. To be a good neighbor—and to be environmentally responsible—consider eliminating wood burning. Here are some things you may not know about wood smoke pollution.

Wood smoke produces particulate pollution: Scientific studies have now linked particle pollution to a litany of health problems that include asthma attacks, diminished lung function, respiratory ailments, heart attacks, and stroke. **The fine particles generated by wood** are too small to be filtered out by the nose and upper respiratory system, so they end up deep in the lungs. Fireplaces produce 30–50 grams of particulate matter per hour, and old wood stoves produce up to 50 grams of particulate per hour. For comparison, a new 300 HP diesel truck, running full throttle, produces about 18 grams of particulates per hour. **Wood smoke gets around the neighborhood:** During the winter heating season, inversion layers trap air pollution near the ground. Wood smoke particles are so tiny that they seep into houses—even through closed doors and windows. In fact, wood smoke pollution indoors can reach up to 70 percent of the outside pollution levels even in homes that do not burn wood. Neighbors of wood burners unwittingly breathe smoky air, even if they do not burn wood indoors themselves. The regional overall air quality can be good, but if your neighbor is burning wood and you can smell smoke, you're breathing pollution. **Scientific studies show that wood smoke pollution is harmful to human health:** Wood smoke reduces lung function, especially in children; increases the severity of existing lung diseases, such as asthma, emphysema, pneumonia, and bronchitis; aggravates heart disease and stroke; increases susceptibility to lower respiratory diseases; irritates the eyes, lungs, throat, and sinuses; and triggers headaches and allergies. Long-term exposure can lead to chronic obstructive lung disease and chronic bronchitis. Animal studies show that it increases the risk of cancer and genetic mutations.

Wood smoke contains toxic compounds: The chemicals in wood smoke include benzene, benzo(a)pyrene and dibenz(a,h)anthracene, carbon monoxide, formaldehyde, organic gases (including aldehyde gases and other respiratory irritants), nitrogen oxides, polycyclic aromatic hydrocarbons (PAHs), and dioxin. All of these are toxic.

Wood smoke vs. cigarette smoke: EPA estimates suggest that a single fireplace operating for an hour and burning 10 pounds of wood generates 4,300 times more carcinogenic polyaromatic hydrocarbons than 30 cigarettes. The components of wood smoke and cigarette smoke are quite similar, and many components of both are carcinogenic. EPA researchers estimate the lifetime cancer risk from wood smoke to be 12 times greater than from a similar amount of cigarette smoke.

Wood smoke contains black carbon which is implicated in global warming: Studies by NASA, NOAA, and the EPA show, according to Stanford environmental engineering Professor Mark Z. Jacobson, “Soot, or black carbon, may be responsible for 15 to 30 percent of global warming.”

For more information, visit FamiliesForCleanAir.org