

Preface

Nearly all the ambient outdoor air pollutants in the U.S. have decreased dramatically over the last 30 years. EPA's most recent air quality trends report confirms this downward pattern – both nationwide and for individual cities. Motor vehicles are now equipped with effective emission control devices and industrial sources have been largely controlled. Large point sources, such as factories and incinerators, have been forced to meet stringent emission standards. But just one important outdoor source of air pollution remains inadequately addressed in most areas – residential fireplaces and wood stoves. Yet this is the one source of air pollution produces fine particles and gases containing a multitude of toxic substances and carcinogens, and fine particles are associated with morbidity and mortality in urban areas.

Wood smoke, like cigarette smoke, is generated by the process of combustion. Like other combustion sources – cigars, cigarettes, diesel engines, incinerators -- it generates hundreds of toxic compounds and many carcinogens. Further, people choose to use their wood stoves and fireplaces during the worst meteorological periods possible – on cold winter nights when there is no wind, and the air stagnates at ground level with strong temperature inversions. A single fireplace operating for an hour and burning ten pounds of wood during that time will generate 4,300 times more carcinogenic polycyclic aromatic hydrocarbons than thirty cigarettes. Fortunately most of the pollutant emissions go up the person's chimney, but with the low wind speeds on cold winter nights, the emitted plumes hug the ground for hours. Soon the particles penetrate into the neighbors' homes, reaching about half the concentration indoors as outdoors. A home with a single wood burning source can elevate indoor particle concentrations at hundreds of surrounding homes in the neighborhood. Despite efforts to tighten windows, close doors, and insulate a home, there is no defense -- the fine particles from a neighbor's chimney penetrate through the barrier of all surrounding walls of residences, entering the lungs of its residents. For those on the receiving end of a neighbor's fireplace or wood smoke, it is often similar to living with a chain smoker. The pollutant exposure is involuntary, repetitive, caused by a tiny minority of burners, and composed of a great array of toxic chemicals and cancer-causing compounds, such as polycyclic aromatic hydrocarbons, dioxins, and metals.

This website is intended to help bring the story of residential wood burning to the layman, the interested member of the public, the thoughtful environmentalist, the government official, the newspaper writer, and to researchers who may not be familiar with combustion forms of air pollution such as the common fireplace or wood stove.

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