

Wood stove Willamette Valley's top polluter

The wood stove is at the peak of its popularity this century.

But it gets low marks from an Oregon State University engineer who has headed the university's Air Resources Center since 1979 and who is a former president of the international Air Pollution Control Association.

Richard W. Boubel said that the wood stove, and not the automobile, is the number one air polluter in the Willamette Valley, and in many other parts of the country.

"The emissions that come from a smoldering wood stove fire definitely are hazards to human health," he points out. "But the question, of course, is how serious is the hazard? Is it a hazard to one person out of a million, or one out of a hundred, or one out of ten? Time will tell."

Research conducted last year at OSU by Boubel and David C. Junge, then director of the university's Energy Research and Development Institute, showed "significant levels" of polynuclear organic materials (POM) given off by burning wood and bark residue fuels.

"POMs are the reason the surgeon general of the United States ordered warning labels to be put on cigarettes," Boubel noted. "POMs are generally considered to be the most potent cancer causing materials that are emitted into the environment. And the compounds given off into the air from wood stoves are the same as found in smoking cigarettes. They're common to all combustion."

Fireplaces add to Valley air pollution woes, according to Boubel, but are "not nearly as bad as wood stoves."

"Design control" may be the best possibility, Boubel

said. "The popular wood stoves being sold today—particularly the airtight types—are heavy emitters of pollutants, not just POMs but also carbon monoxide and particulates (solid bits of material in the air), and just plain smoke that is irritating to many people."

Wood stoves have become major sources of air pollution in Portland and Medford, Boubel observed, but the problem extends to other cities in the Valley and to the Willamette Valley as a whole, Boubel believes.

"We're dealing essentially with an uncontrollable source because the Department of Environmental Quality right now has no regulations concerning wood burning stoves in residences," the engineer said.

"But public welfare, the good of all, must be considered," Boubel said. "And some sorts of controls appear appropriate for wood stoves because of the health hazards involved plus the impossible negative impact on establishment of new businesses and industry."

"This would require stoves sold in the state to be certified as acceptable to DEQ, which handles air pollution matters in Oregon."

"It's essentially what we have done with cars," Boubel explained. "An automobile to be sold here has to be acceptable in terms of meeting certain emission standards. Naturally, manufacturers aren't happy about this sort of thing. It puts the burden of proof on them, increases their costs, and puts the product under constant scrutiny."

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"It's possible," Boubel explained, "that wood stove emissions could put pollution at such a level that no air dilution capacity would be left for new businesses that could provide jobs but that would have to operate under such strict emission controls that meeting them would be nearly impossible, or at least impractical, for the industry."

DEQ is in essentially a "no win or Catch 22" situation, Boubel believes.

Wood, of course, is a renewable energy source. In the past there has been an abundance of forest slash or waste wood residue. It has been cheap and accessible.

But things are changing, Boubel said. The amount of free wood that can be cut is relatively limited now and the supply is steadily shrinking.

Boubel doubts that pay-

ing \$100 a cord for wood is a wise buy. "It's less efficient than other fuels, is becoming in short supply, and it has the air pollution concerns as well." Even the costs of so-called free wood need to be examined in terms of travel and time factors, he suggested.

The kind of wood being burned is not as critical as the moisture content of the wood, Boubel observed. "If you get real wet wood, it tends to smoke more and burn slower with more emissions. Dry wood burns with a hotter fire and you have less pollution," he added.

The famed wood cookstove of early days smoked up things but it was designed to get hot quickly, making the combustion of the wood relatively complete. The new airtight wood stoves are designed to burn on low temperatures for a long

time. This sort of wood burning is convenient but inefficient and leads to heavy emissions of hazardous materials.

Boubel sees a solution for all of the wood fuel problems, including pollutants, in centralized systems where wood is burned in the big furnaces—boilers that permit emission controls.

"The city of Eugene is well known for its environmental concerns and its battles with field burning. What is less well known is that the major portion of downtown Eugene is heated by steam generated in a central wood fired boiler system. Businesses buy steam for heating at reasonable costs while pollution is kept in check at the same time with the efficient central systems."

England is discovering the same joys of a central

steam generation system, according to Boubel.

In the movie "Mary Poppins" much attention was paid to chimney sweeps who provided an essential public service because one residence might have a half dozen chimneys serving flats or individual apartments on separate floors.

"Now, Britain has been forced to move to central heating facilities and flats have thermostats and meters that record steam use, but no stoves or fireplaces. People seemingly are warmer, happier and air pollution is in check, it is reported."

Condominiums are a natural for such central wood boiler heating. Boubel reports. Aspen, Colo., for a time prohibited wood burning devices in housing units, he noted.

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