

Probing Question: Is indoor air pollution really a problem?

April 30 2009, By Melissa Beattie-Moss

A popular television commercial from the 1970s shows a Native American man in buckskin and feathers paddling his canoe through ink-black waters, past refineries billowing smoke. He comes aground on a litter-strewn shoreline and finds a freeway clogged with cars and exhaust fumes. Someone chucks fast-food garbage out a car window and it splatters onto his moccasins. The camera zooms in on a single tear streaming down his cheek, while the voiceover tells us "People start pollution. People can stop it."

People have done significant things in the ensuing years to stop some types of air pollution, says William Bahnfleth, director of Penn State's Indoor Environment Center and professor of architectural engineering. For instance, in 1990, Congress expanded the Environmental Protection Agency's (EPA) Clean Air Act, giving the agency the power to enforce regulations reducing air pollutant emissions. However, says Bahnfleth, these air-quality laws only apply to outdoor air. How safe is the air we breathe inside our homes and workplaces?

"Americans now spend on average 90 percent of their time indoors, being exposed to indoor air contaminants," Bahnfleth noted. "The sheer exposure time amplifies the significance of any harmful substances in indoor air — but indoor concentrations of some contaminants may also be several times higher than outdoors." These contaminants are many and varied, including off-gassing of toxic chemicals called Volatile Organic Compounds (VOCs) from building materials and furniture; carbon monoxide; radon; spores and mycotoxins from mold; pesticides;

allergens from pets, insects, dust mites and other sources, and tobacco smoke.

"Visible or not, indoor air contaminants have a tremendous effect on health, productivity, and comfort," said Bahnfleth. "Numerous studies have documented that students learn better and workers are more productive in environments with good air quality." The cost of ignoring this issue is steep: a recent study by William Fisk of Lawrence Berkeley National Laboratory concluded that losses due to sick leave, medical treatment, and lowered productivity may be as high as \$48 billion annually in the U.S. "Radon is now considered to be the second leading cause of lung cancer deaths after smoking," Bahnfleth added. "We also know that thousands of asthma deaths occur annually in which indoor allergens may play a role."

Ironically, tighter construction methods — intended to improve a home's energy efficiency — may contribute to indoor air pollution by reducing the air exchange that happens in older, "leakier" homes. Newer, tighter homes should have ventilation systems to ensure acceptable air exchange rates, Bahnfleth suggested.

Is a building you inhabit at home or work making you sick? The EPA describes Sick Building Syndrome (SBS) as a situation "in which building occupants experience acute health and comfort effects that appear to be linked to time spent in a building, but no specific illness or cause can be identified." Says Bahnfleth, SBS symptoms include headache; eye, nose, or throat irritation; dry cough; dry or itchy skin; dizziness and nausea; difficulty in concentrating; fatigue; and sensitivity. "Because, by definition, there is no apparent cause of SBS, the responses to it may be broad brush, including increasing ventilation rates, looking for contaminant sources that might be a specific cause, and removing contaminant reservoirs such as carpets," he explained. "In the home, the use of scented candles and air fresheners, cleaning fluids, and other

chemicals can be removed to see if symptoms diminish."

While there are fairly clear standards for outdoor air quality, indoor air quality legislation and building codes lag behind and often specify only "the minimum air filtration efficiency and ventilation requirements," said Bahnfleth. "Regulation of indoor smoking and certain other contaminants has helped, but further progress is needed." That progress may hinge upon the ability of researchers to prove "cause and effect" relationships between indoor air pollutants and various illnesses. "Right now, we're limited in how successful we can be in pressing for greater regulation," he admits, adding that "the important factor limiting the effectiveness of regulatory efforts is the lack of data connecting specific indoor exposures to specific consequences."

The good news is that as people become more aware of the problem, change is starting to happen, noted Bahnfleth. "The sustainability movement is having a positive impact on indoor air quality to the extent that it promotes the use of low-emission materials and other good practices."

Individuals can take some steps themselves that can make a big difference, he suggested. Get your home tested for radon, and have it radon mitigated professionally if needed; consider investing in air purifiers that can filter out VOCs and fine particles that can deposit deep in the lungs, as well as dehumidifiers to reduce the likelihood of moisture condensation indoors, which promotes mold growth. Other simpler steps involve replacing toxic cleaning products with natural alternatives, not letting your car motor run while in the garage, and even just opening windows more often in your home.

Perhaps we're due for another Public Service Announcement on television to heighten awareness of indoor air pollution. While the actor named Iron Eyes Cody who played the so-called "Crying Indian" in that

'70s ad was actually Italian-American and his anguished tear was just Hollywood glycerin, the importance of clean air — our most fundamental human need — remains very real.

Source: By Melissa Beattie-Moss, Research/Penn State

Citation: Probing Question: Is indoor air pollution really a problem? (2009, April 30) retrieved 24 April 2024 from

<https://medicalxpress.com/news/2009-04-probing-indoor-air-pollution-problem.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.