
RESOURCES & ENVIRONMENT

A False Alarm Over Asbestos?

"Asbestos: Scientific Developments and Implications for Public Policy" by B. T. Mossman, J. Bignon, M. Corn, A. Seaton, and J. B. L. Gee, in *Science* (Jan. 19, 1990), 1333 H St. N.W., Washington, D.C. 20005.

Environmental and health revisionism continues apace. Saccharine won't hurt you, and oat bran won't help you. "Nuclear winter" would actually be more like nuclear autumn, and people who once worried about the next ice age now fret about the greenhouse effect. Now for the latest change: Asbestos in schools and other buildings is not a threat to health.

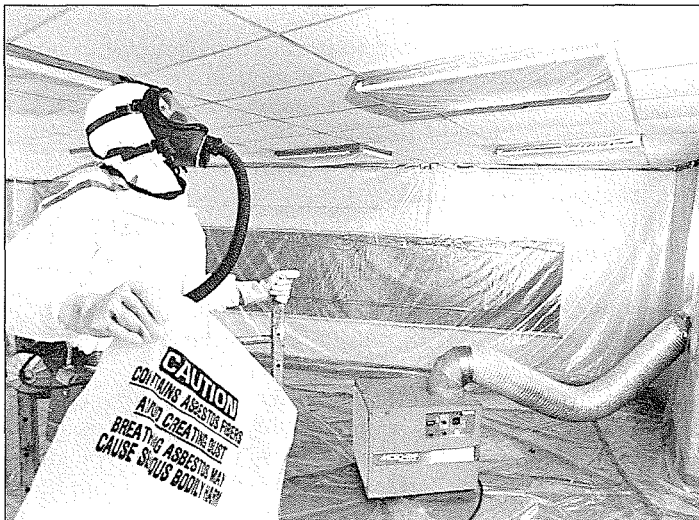
Scientists have known for decades that miners and other workers exposed to airborne asbestos on the job are prone to lung cancer and mesotheliomas (tumors in membranes around the lung, heart, or abdomen). But during the 1980s, fear spread that *any* exposure to asbestos—including asbestos released from damaged roofing, shingles, and pipes in buildings—could cause cancer. Alarmed by the threat to the health of children, Congress in 1986 mandated the inspection of all school buildings in the nation, touching off a frenzied round of inspections and removals.

But according to Mossman, a pathologist at the University of Vermont, and his fellow researchers, the main health threat is to the young workers attracted to the new asbestos removal industry.

Amid all the hysteria, they say, some basic scientific facts have been overlooked. First, asbestos is not one substance but many. These can be grouped into two "families." More than 90 percent of the world's asbestos is a substance called chrysotile, which is in the "serpentine" family. But studies of asbestos miners and other workers show that their illnesses result mostly—perhaps entirely—from exposure to substances in the "amphibole" family of asbestos.

Why can't scientists be sure that chrysotile is not carcinogenic? Because miners who have been definitely exposed *only* to chrysotile are virtually impossible to find. But the latest study shows that chrysotile workers who developed mesothelioma had 400 times as much asbestos in their lungs as cancer-stricken amphibole workers did. (Why are amphiboles so dangerous? Apparently, their shape and composition allows them to survive intact in the body for a much longer period of time.)

Much of the mid-1980s asbestos panic was fueled by the "one fiber" theory, which held that inhaling just a single strand of any kind of asbestos could cause cancer. Always questionable, according to the authors, that theory now looks quite dubious. For example, an ongoing French study of 15,000 people who



Asbestos clean-ups like this one in a Philadelphia school are costly. The bill if EPA requirements are extended to all public and commercial buildings: \$53 billion to \$150 billion.

lived for 10 years in buildings where they were exposed to airborne asbestos has so far turned up no increase in diseases.

At one time, the authors say, asbestos workers were routinely exposed to chrysotile at concentrations of 100 fibers per cubic centimeter. Today, at the federal standard of 0.2 fibers, even asbestos mines and mills pose no threat to health. And in

buildings with exposed asbestos, the concentration is only one percent of the workplace level. In the future, the authors argue, federal standards must distinguish between the hazards of the two asbestos families, as European regulations already do. The last thing we need is to fill the air with cries of panic—and the fibers from asbestos hastily stripped from schools.

Nature's Medicine Chest

"Prospecting for Nature's Chemical Riches" by Thomas Eisner, in *Issues in Science and Technology* (Winter 1989-90), 2101 Constitution Ave. N.W., Washington, D.C. 20418.

Even optimists now concede that plant and animal extinctions are going to occur at an alarming pace well into the next century. "We have yet to comprehend what it is we lose when species disappear," warns Eisner, a Cornell biologist. In the area of medicinal chemistry alone, he says, the implications are staggering.

Overall, nearly one quarter of all medical prescriptions in the United States "are for formulations based on plant or microbial products, or on derivatives or synthetic versions thereof."

Nature continues to provide new medicines. Recent examples include "the anti-cancer agent vincristine (isolated from the Madagascar periwinkle, *Catharanthus roseus*); the immunosuppressant cyclosporin (from a Norwegian fungus); and ivermectin (from a Japanese mold), which kills parasitic worms." The need for such drugs is not insignificant: After only five

years, annual sales of cyclosporin are nearing \$100 million.

Scientists can only guess how many useful drugs remain to be discovered. Consider flowering plants, which occupy only a tiny niche of the natural world. They are the sole source of a major group of biological chemicals called alkaloids. Of the 250,000 flowering plant species in existence, only two percent have been examined for alkaloids. But these have yielded hundreds of anesthetics, analgesics, narcotics, vasoconstrictors, and other drugs.

Conservation is obviously a top priority. But, noting that most chemical discoveries are the result of serendipity, Eisner argues for a crash program of "chemical prospecting" focused on the developing nations of the tropics, where the great majority of extinctions are occurring. The opportunities, he says, are boundless—and, perhaps, fleeting.

ARTS & LETTERS

The Subversive Art

"Photography and the Mirror of Art" by Martin Jay, in *Salmagundi* (Fall 1989), Skidmore College, Saratoga Springs, N.Y. 12866.

When the painter Paul Delaroche heard of Louis Jacques Mandé Daguerre's first successes in photography in 1839, he wailed that "from this day on, painting is dead." That turned out to be more than a bit premature. A full century and a half after its invention, photography has achieved acceptance as a legitimate art form. And

now, writes Jay, a Berkeley historian, it is beginning to subvert the very notion of "legitimate" art.

Artists and critics did not even begin to take the new medium seriously until its defenders elaborated the arguments put forth by the photographer Alfred Stieglitz in *Camera Work* magazine (1903-17).