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PCBs a toxic time bomb lurking in air, soil, water

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They have been found in eagles and fish 11,000 feet below the North Atlantic, in mother's milk and candy boxes. They have caused skin disease in humans, cancer in mice and sterility in monkeys.

To the chemist, they are polychlorinated biphenyls, but most everyone else knows them by their initials — PCB. A tasteless, odorless liquid, PCBs are considered the most pervasive ingredient in the alphabet soup of chemicals contaminating the environment.

The Environmental Protection Agency estimated a few years ago that 91 percent of all Americans have PCBs in their fatty tissue. That isn't surprising, since PCBs have been found in glue on the backs of envelopes and in fish, food, paint, putty, concrete and asphalt.

PCB's "are probably the most widespread chemical contaminant known to mankind," says the Washington-based Environmental Defense Fund (EDF).

Unlike their chemical cousin DDT, PCBs were not sprayed into the environment deliberately. PCBs are everywhere today because of leaks, spills, discharges and vaporizations — a "toxic time bomb waiting to explode," environmentalists say, thanks to a combination of error, ignorance and neglect.

Like many chemicals, PCBs were instrumental in the development of the modern age.

Highly stable, heat-resistant and nonflammable, they have dozens of useful applications ranging from electrical transformers to "carbonless" carbon paper.

But they are also hazardous to health, a substance so toxic, even at low levels, that the federal government banned them in 1979.

In high doses, PCBs have caused liver cancer in rats and reproductive failure in seals and minks. Monkeys fed PCBs have developed skin problems, hair loss, reproductive problems and, among their young, behavioral and learning disabilities.

These primate studies suggest that pregnant women and young children will be particularly sensitive to PCBs, a 1976 federal study concluded. Since 1976, EPA studies in several states have found PCBs in the milk of mothers at levels that caused birth defects in monkeys.

Soon after they were first introduced in 1930 by the Monsanto Corp., workers exposed to PCBs developed acne-like eruptions on their faces and bodies. Others died of liver damage.

In 1968, residents of the Japanese island of Kyusho ate yusho, or rice oil, contaminated with extremely high doses of PCBs after a factory pipe leaked during processing. Doctors identified more than 1,200 people made sick by the rice oil, although estimates of those affected reached 15,000.

Their symptoms: acne and blackheads, dark pigmentation of the skin, nails and mucous membrances of the eyes and mouth, cheeselike discharges from the eyes, loss of hair, fatigue, numbness, stomachache, headache, nausea, dizziness and forgetfulness, menstrual disturbance, deformities of joints and bones.

In 1976, doctors found that workers exposed to PCBs at a Northeast petrochemical plant in the 1950's had developed melanoma, a malignant form of skin cancer.

"That is the only link between PCBs and cancer in humans" that has been established, said Elaine Krueger, a toxicologist with the Division of Environmental Health Assessment of the Massachusetts Health Department.

There are no known studies reported in scientific literature that link PCBs with leukemia, Massachusetts health officials have said. Dr. Loren Koller, a professor of veterinary medicine at the University of Idaho, says that PCBs did not promote or induce leukemia in mice he exposed to PCBs and then inoculated with a leukemia virus in the mid-1970s.

Based on his research, Dr. Koller said in a telephone interview Friday, it is "highly unlikely" that the leukemia cases reported in Fairhaven, Mass., and neighboring towns could have been caused by PCB's.

However, the link between leukemia and PCBs has not been fully investigated, Dr. Koller said.

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