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PCB New York

Removal of PCB's Is a Complex Problem

By NELSON BRYANT

Those charged with removing and safely disposing of polychlorinated biphenyls (PCB's) from the Hudson River have encountered new problems.

They have learned, said John Sanders, Ph.D., of Barnard College's Department of Geology and chairman of the PCB Settlement Advisory Committee, in a recent interview, that the toxic chemical tends to concentrate in the river's marshes, or wetlands. They also have discovered that, because PCB's are volatile, they can escape from some landfills into the air.

The Hudson's PCB's are largely the result of industrial waste from two General Electric Company capacitor-manufacturing plants on the river's upper reaches. PCB's, developed by chemists in 1880, are fire-resistant and used, among other things, as electric insulators in capacitors and transformers, as well as in printing inks and duplicating paper. Their manufacture in this country has ceased, and by June it will be illegal to "process or distribute" PCB's in this country for any purpose.

Dangers of PCB's

In precedent-setting litigation in 1975 and 1976, G.E. agreed to contribute $3 million to the state for research and cleanup and to allocate an additional $1 million for its research on the problem. The state agreed to match the $3 million with money and manpower.

The group that Sanders heads was created to help give direction and impetus to the cleanup effort.

PCB's are known to cause cancer and to damage reproduction in laboratory animals. The levels that would do the same to humans are not known, but it is felt that small doses over a long period would achieve the same effect.

Saw Mill River Problem

In addition to the PCB's that entered the river directly from the aforementioned manufacturing plants, there is also the problem of contamination from poorly-designed landfills. These landfills, made before the PCB problem was recognized, involved either the dumping of old capacitors and transformers or the spoils from navigational dredging in the river. These landfills may leak PCB's either into the groundwater or nearby streams (which is apparently very rare) or into the atmosphere.

At some bad landfills, Sanders and his associates have found PCB's on vegetation, PCB's that escaped through cracks in the earth and settled on leaves and grasses.

The subterranean PCB leakage problem has emerged on the Saw Mill River, the water supply for Yonkers, according to Sanders. Above Elmsford, the river is clean, downstream of the town for an undetermined distance, bottom sediments contain up to 100 parts per million of PCB's.

Yonkers takes its water from below Elmsford, but Calvin E. Weber, assistant commissioner of health for Westchester County, says that 2½ years of study, culminating in a report in May 1978 revealed that bottom sediments just upstream of the Yonkers water supply intake showed very low concentrations of PCB's. New studies are planned, he said.

The basic technique to rid the Hudson River of PCB's at the moment is to remove the sediment containing it by mechanical or hydraulic dredging and to encapsule it in an impermeable, clay-lined, clay-covered pit.

The so-called PCB hotspots extend from below Fort Edward about 30 miles downstream to Troy, and contain 50 parts per million, or higher, of PCB's. The Hudson River is the "hottest"-stream in the country by a factor of 10.

Those studying the problem originally thought that the PCB's buried in the river bottom would not be washed downstream except in times of high water. This, it turns out, is not the case. During periods of low water, tugboat propellers achieve the same effect.

Praise for Cooperation

An ebullient, energetic man, Sanders is high in his praise of not only his committee members but also of state and G.E. scientists. "This effort," he said, "has been a remarkable demonstration of how state agencies, concerned private individuals, environmental groups and a big industry can work together in a harmonious and constructive way."

The first major achievement came last summer when 30 or 40 thousand cubic yards of PCB-laden sediment, including rotting timbers from an old dam, were removed from the river at Fort Edward and placed in a proper landfill at Moreau, which is west of Fort Edward.

PCB's are not soluble in water. They can be destroyed at 1,800 degrees Fahrenheit in furnaces, but this, because of the fuel consumed, would be incredibly expensive. One possible way to dispose of PCB's has been found by Canadian scientists who discovered that if they are introduced into a cement kiln they not only are broken down by the heat but also, because of the byproducts created, produce a better cement.

There are also some bacteria in the river that apparently can break down PCB's.

Another possibility, Sanders said, is to circulate methanol through a landfill to "scrub out" the PCB's.

Sanders estimates that the cleanup of the Hudson hotspots could take from 7 to 10 years at a cost of $30 million, and added that more than half the hotspots are prime wetlands. Studies will be launched to determine whether PCB's are metabolized into the atmosphere through marsh plants or whether they are conveniently incarcerated, that is, immobilized, by the root structures, and perhaps best left alone. If the former is true, then wetlands dredging, a little at a time to allow the disrupted areas to form new growth, probably would have to take place. This slow approach would be necessary, for wetlands are the basis of aquatic life.

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