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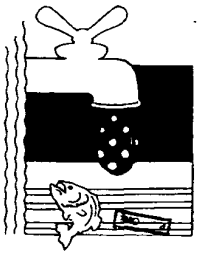
Our water:

The end of PCB's is near, but problems linger



How safe?

By Jim Detjen
Journal staff writer

The General Electric Company stopped dumping PCB's (polychlorinated biphenyls) into the Hudson River July 1. The Monsanto Chemical Corp., the sole manufacturer of the toxic industrial chemical in the nation, is planning to halt all United States production Oct. 31. And the Environmental Protection Agency (EPA) will prohibit the discharges of this long-lived organic compound into all waterways after next Feb. 2.

Aside from a few loose ends then, the PCB problem must be over. Right?

Wrong!

Although all of the above actions are positive steps, officials at both the EPA and the state Department of Environmental Conservation (DEC) acknowledge that the PCB problem is far from over. And some say, in fact, that it may be getting worse.

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Consider, for example, the following:

•At least 12 landfills throughout the state are known to be leaching PCB's into the environment, according to Russell Mt. Pleasant, director of the DEC's Bureau of Monitoring and Surveillance.

In addition, according to a report issued last October by the DEC's Division of Pure Waters, "Millions of pounds of PCB's lie in state in their capacitor coffins in the Ft. Edward (Warren County) landfill, already beginning to migrate in the landfill leachate as rusting releases them. In contrast, the Hudson River sediment may contain about 500,000 pounds of PCB's in total."

•Between 5,000 and 10,000 pounds of PCB's are known to be entering the Hudson River estuary south of Troy each year, according to studies conducted by the General Electric Company.

In addition, tests by the EPA last December found surprisingly high contamination levels of PCB's as far south as Westchester County. Among the more highly contaminated areas were shallow bays near the Tappan Zee Bridge, Foundry Cove near Cold Spring, Hudson, Saugerties and near Albany.

•During the next few decades, the EPA estimates that the amount of PCB's in the environment will increase by 3½ times—from current estimates of 150 million pounds to 540 million pounds—as

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...Several proposals advanced to clean up PCB's in river

many PCB-contaminated objects in landfills back out and so other PCB-contaminated products, such as carbonless carbon paper, are thrown out.

In the Hudson Valley, the center of activity, with regard to PCB's, is the responsibility of which the Hudson River PCB Settlement Advisory Committee, located at the DEC headquarters in Albany.

The committee was established last September as a result of a $7 million settlement worked out in negotiations between the General Electric Company and the DEC. For more than 30 years, GE had been dumping PCB's, a toxic industrial chemical, into the upper Hudson River at manufacturing facilities at Ft. Edward and Hudson Falls.

After discovering that Hudson River fish were highly contaminated with this toxic chemical, the DEC brought a major regulatory hearing against GE in an effort to halt the company's discharges.

This hearing resulted in an agreement in which GE agreed to halt dumping PCB's into the Hudson and to contribute $4 million toward the restoration of the Hudson. The settlement called for was $1 million to be spent on research by GE and a lump sum payment of $3 million, to be matched by the DEC.

Dr. Edward Horn, the executive assistant of the PCB Settlement Advisory Committee, said that the bulk of the money spent between last September and March 1979 will be for contracts with 10 private consulting firms or laboratories to conduct what are the most appropriate and effective ways of restoring the upper Hudson.

The major contractors are O'Brien and Gere Engineers of Syracuse, which is being paid $369,300 to do chemical analyses of fish caught by the DEC to monitor the pollution levels; Malcolm Pirnie, Inc. of White Plains, which is being paid $270,000 to assess the cost, the technological capabilities and the environmental impact of dredging the upper Hudson; and Weston Environmental Consultants of West Chester, Pa. which is being paid $225,000 to evaluate PCB landfill and spoil disposal sites.

Also hired have been the U.S. Geological Survey, at a cost of $170,000, to monitor the flow of PCB-contaminated sediments; Lawler, Matusky and Skelly of Tappan, N.Y. who are being paid $107,000 to study what would happen to the river biologically if no restoration work were done; and Normandeau Associates, Inc. of Bedford, N.H. which is being paid $98,686 to survey and map the extent of PCB contamination in the river's sediments.

Approximately $1.3 million of settlement money has been set aside to use for whatever actions are decided upon when the studies have been completed.

Dr. Leo Hetling, the director of the DEC's Bureau of Water Research, said it is conceivable that the committee could conclude that it will cost as much as $20 million to restore the Hudson by the removal of the 458,000 pounds of PCB's estimated to be present in the upper Hudson.

"And if that's the case, I feel the money should be spent to do it," he said. " After all, we have spent billions constructing sewage treatment plants. Can't we spend $20 million, if need be , to restore the Hudson ?"

Dr. Horn said that many of the studies have only recently begun and that the committee has reached no conclusions about what should be done. "I'd guess that by the early part of 1978 we will have a pretty good handle of what we should do, how much it will cost and what the environmental impact will be," he said.

Dredging, however, is seen as the leading contender for removing the heavily-contaminated sediments from the upper Hudson. According to the detailed work plan of the restoration project, written by the DEC's Bureau of Water Research last June, "at the present moment, dredging is the only proven technology which could be applied in the immediate future."

"We are closely watching this summer a dredging operation going on near Ft. Edward to see if PCB-laden sediment can be removed without disrupting the environment," said Dr. Hetling.

Dr. Horn added that the PCB-spoiled sediment is being taken to a specially-designed landfill site in the Town of Moreau, Saratoga County. "We are trying to minimize any rainwater leachate and are closely monitoring what is happening there."

"I'd guess now that the indicators are that we may begin some dredging work next summer," said Dr. Hetling. "And since the highest concentration of PCB in the Hudson's sediments is in the Thompson Island area, that's probably where it will be done."

According to DEC officials the levels of PCB's in sediments near the Thompson Island dam range from 136 parts per million to 3,707 parts per million, averaging 986 parts per million.

Dr. Hetling said that one alternative to dredging that was seriously looked at was the biological harvesting of fish. Since fish concentrate PCB's in their tissues to such a great extent, DEC officials thought it might be possible to remove PCB's by capturing fish.

"But we found out that for every 10 pounds of PCB's you would remove, you would have to harvest one million pounds of fish," Dr. Hetling said. "And then you have to figure out what to do with the fish!"

It was a decision made by the DEC, which may have caused a significant amount of PCB-contaminated sediment to move into the lower Hudson River.

In the early 1930's, the Niagara Mohawk Power Co. asked both the DEC and the Federal Power Commission for permission to remove a 500-foot-long dam across the Hudson at Fort Edward which had been used to generate hydroelectric power.

Both agencies granted the utility permission to remove the rock-filled timber-crib dam and beginning in July 1973 the dam was removed.

"It was a real blunder," Dr. Hetling said. "They blew up the dam and much of the sediment behind the dam began to move downstream. It was extremely contaminated with PCB's."

He said that not only did the dam's removal result in the large scale migration of PCB's downriver, but it ripped open Fort Edward's water line and clogged much of the barge canal system.

The following year the state legislature appropriated $5 million to clean up the debris and reopen the channel to traffic. But it was too late to stop the PCB's.

"We have hired Lamont-Doherty Geological Laboratory to use Cesium-137 to seek to determine whether the PCB's found in the lower Hudson arrived since the dam was removed or whether, in fact, they have been there for a long time," said Dr. Hetling. By measuring the extent to which Cesium-137 , a radioactive isotope, has decayed, scientists can determine how recently a natural phenomenon occurred.

Other factors are also believed to be involved in the spread of PCB's downriver. One of these is the spring 1976 flood which is believed to have washed a substantial quantity of PCB-laden sediment over the Federal Dam at Troy.

But while it looks now as if dredging is the likely choice as the best method for removing upper Hudson, Dr. Horn said a wide spectrum of other possibilities are also being looked at.

One of the possibilities is the use of activated carbon, which has the ability to absorb PCB's. According to a report prepared for Dr. Hetling by H. Kirk Horstman, the cost of this alternative, at $300 to $3,000 per acre, would be substantially less that dredging which could cost about $9,500 per acre.

Battelle-Northwest Laboratories of Richland, Washington is currently using activated carbon to remove Kepone, another highly toxic organic chemical, from the James River in Virginia. Battelle has suggested using a belt-type system, pulled behind a barge, to absorb the PCB's out of the sediments.

Other possibilities, according to Horstman, include the use of ultraviolet light and ozonation to degrade the PCB's in order to reduce their toxicity. This technique , however, has been primarily used to remove PCB's from municipal water supplies.

Other alternatives include the use of bacteria to break down the PCB's; erosion control to prevent PCB-laden sediments from moving downriver; and covering the PCB-laden sediments with a cap material to prevent them from entering the water or environment.

One of the more intriging possibilities, however, involves the use of discarded automobile tires. According to a proposal made by the O'Brien and Gere Engineers, Inc. group, scrap discarded tires are capable of absorbing heavy metals from stormwater runoff.

Horstman notes that discarded tires could serve a two-fold purpose. First, since they are readily and economically available, large quantities could be used to cover the PCB-laden sediments and absorb the toxic chemicals. Second, they would serve as a form of barrier system in the river to reduce the river's velocity near the sediments and hence cut down on the scouring of the sediments.

How safe is it to eat fish from the Hudson?

By Jim Dwyer
Journal staff writer

QUESTION: What's the best way to play Russian Roulette with your health ?

ANSWER: Catch a walleye or brown bullhead from the upper Hudson River, saute it in butter, and begin eating.

According to the Food and Drug Administration (FDA), 10 per cent of the typical American's consumption of PCB's is in the form of fish. One of the reasons that fresh water fish are often highly contaminated is because they have the ability to absorb PCB's from polluted waters and increase the PCB contamination level in their own bodies by a factor of 75,000 or more.

Under current FDA guidelines the maximum lifetime consumption of PCB's that is considered safe is 200 milligrams (one fifth of a gram). This level is one tenth of the 2,000 milligram contamination level found in Japanese villagers in 1968 who became ill with Yusho disease after they ate rice oil accidentally contaminated with PCB's.

Yusho disease symptoms included severe acne, eye discharges, ulcers of the uterus and the darkening of the skin. Pregnant women suffered miscarriages and stillbirths and the surviving infants suffered from abnormal pigmentation. Five of the 1,000 persons who became ill have died of liver cancer.

If you eat one seven-ounce serving of a typical upper Hudson River walleye (with a PCB contamination level of 109 parts per million), you will have consumed 10 per cent , or 20 milligrams, of your lifetime limit. If you are a child, you will have consumed 40 per cent of your lifetime limit at one serving, since for children no more than 50 milligrams is considered safe.

PCB consumption of food and water are considered cumulatively because the body cannot excrete any significant level of this chemical. It just slowly builds up in the fatty tissues of the body such as the abdomen and breast.

Each pass gives more of a problem. An eel recently caught at Stillwater had a PCB contamination level of 559 parts per million.

This means that one eel could easily give you half of your entire lifetime's safe level. Ten meals of Stillwater eel could conceivably cause your skin to erupt, your eyelids to swell and possibly even give you liver cancer, a disease always fatal within one year.

However, many feel that the "safe" lifetime level for PCB's is really too high. "Upon further study of the Yusho victims we found that most became ill at levels of 1,000 milligrams--about one half the level we previously thought," explained Barbara Campbell, a consumer safety officer at the FDA.

As a result of recent studies the FDA has currently proposed to lower the maximum allowable level of PCB's in fish at two parts per million. The current limit is five parts per million.

"But when you are sport fishing," one environmental official asked, "How do you know the fish you caught has two parts of 200 parts per million ? What you are really doing is playing Russian Roulette with your health."

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