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OPINION

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AN EDITORIAL SERIES/ PART II



Some say time and nature will remove the Hudson River's PCBs. But the risks of waiting are too great.

The Hudson can't heal itself

The General Electric Co. newsletters and reports are a feel-good campaign to convince the public that the toxic PCBs discharged into the Hudson River by GE are diminishing in quantity and threat.

"Hudson River's health improving," "PCB levels declining," (PCBs pose) "No Harm to Human Health," proclaim company literature.

The campaign is working. The idea that the river is cleansing itself through mysterious biological means is gaining credibility. It doesn't deserve it.

Fifteen years after the last polychlorinated biphenyls were discharged, the chemicals still sully the Hudson's sediments and invade the bodies of its fish and wildlife. GE discharged those chemicals — up to 1.3 million pounds worth — over a 30-year period, and it should pay to take them out. The Federal Environmental Protection Agency, which is studying that very question, should order a cleanup under the federal law that governs nationally designated toxic waste sites.

The alternative: let the PCBs continue to disperse into the river and ocean, enter the bodies of animals, move up the food chain, and, perhaps eventually, end up on dinner plates. While fishing along 190 miles of the Hudson is sharply limited due to PCBs in fish, the chemicals are turning up in ocean fish at levels that may be harmful.

"PCBs," says GE, "are naturally degrading in river sediments throughout the world, a process similar to what occurs in backyard compost heaps."

Breakdown rate unknown

But nobody knows the extent or rate of degradation, which could amount to removing a bathtub's worth of PCBs every year, making it highly impractical to rely upon nature to relieve the Hudson's ills. And though GE has shown it can speed up the process, the technology doesn't exist to apply those findings in the river.

GE is right that buried PCBs in the river are changing, and the company's scientists have done pioneering work to prove it. GE and other scientists say that microbes that live in the river are "eating" the chlorine atoms on the PCB molecules, transforming them from highly to lightly chlorinated PCBs. It is the highly chlorinated variety that have been found cancerous in animals. The so-called lightly chlorinated PCBs are more prone to degrade — if conditions are optimal — which is good.

But research shows that lightly chlorinated PCBs may be hazardous to health as well. The lighter PCBs tend to accumulate in the brains of animals, where, new research by the state Health Department found, they block production of a neurotransmitter essential to proper brain function. Researchers believe the PCBs may be responsible for neurological problems in infants who were exposed to PCBs in fish their mothers ate in pregnancy or,

later, in breast milk.

PCBs in breast milk

It may seem far-fetched to imagine the Hudson's PCBs finding their way into the brains of infants or into breast milk. In fact, PCBs in breast milk from women from Albany and Oswego counties were found in concentrations "approaching an unsafe level of intake," according to a federal report. Both counties have high concentrations of PCB pollution.

Despite the health risks of lightly chlorinated PCBs, the findings of dechlorination in the Hudson River are encouraging. Lightly chlorinated PCBs do not accumulate in organisms at as high a rate as their heavily-chlorinated cousins. They also move through water and evaporate into the air more easily, which nonetheless releases them into the environment. But scientists cannot say how long the process will take or even how far it will go toward ridding the Hudson of its poison.

Chlorine-eating microbes are half of the breakdown process that, GE says, ends with the lighter PCB molecule degrading into harmless elements. But GE's own experiments point up the impracticality of relying on the process to solve the river's PCB problem.

The company has spent \$30 million so far on research into the biological breakdown of PCBs, including a \$2.5 million project in 1991 in which six steel cans were sunk into the river to find out if PCBs could be "biodegraded." They were — largely because sediments were churned up to inject oxygen, and PCB-eating bacteria and nutrients were added.

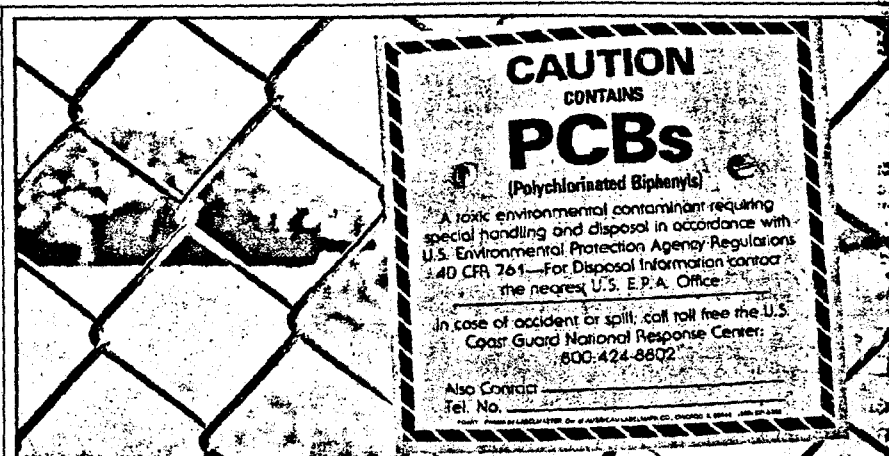
Promising research

As a result, 45 percent to 55 percent of the PCBs in individual cans, called caissons, were broken down, promising findings if the technology could be applied riverwide.

But it could cost billions to install such steel cans in the Hudson's hot spots, which cover 16 percent of the upper river's floor along a 30.5-mile stretch. And churning up river sediments outside of such a confined setting would simply wash PCBs downstream and create more problems than it would solve.

The experiment showed that there was indeed some natural degradation occurring outside of the caissons because the same breakdown products associated with degradation were found in the river as well. But it also proved how limited degradation is: the key to biodegradation is oxygen and there is little or no oxygen in river sediments.

Besides this, there are significant questions about both processes: Is there a threshold, as with any chemical reaction, below which no more changes will occur? Did the changes in PCBs occur when they were first discharged or are they continuing? What's happening to the 130,000 pounds of PCBs buried in sediment in the lower river? Tides and sulfates are



A sign outside a landfill containing PCBs.

Cleaner, but not clean

The Hudson River is undoubtedly cleaner from the days when the General Electric Co. was discharging toxic PCBs. But it is not clean.

Opponents of dredging the chemicals, formally called polychlorinated biphenyls, often point to declining levels of PCBs in fish to suggest great improvements. But the "improvements" are questionable.

The biggest decrease in PCB levels occurred after the discharges stopped on July 1, 1977. Fish levels dropped quickly because the river wasn't being polluted anymore, and hence the level of chemicals was diluted.

PCBs washed downriver or out to sea in the 1970s at the rate of 8,600 to 8,800 pounds a year, moving the contamination elsewhere. A 1992 Consumers Union study showed that nearly half of all ocean salmon tested and a quarter of all swordfish harbored PCBs, some at levels the organization believed unsafe.

Much of the chemical has settled out in the river, where it has been covered by new sediment. The buried sediments continue to pose a hazard.

There's evidence that the PCBs are breaking down so that they are less toxic — but how completely, into what and at what rate are not known. Here's some of the evidence that points to a highly contaminated waterway, 15

years after the PCB dumping stopped.

PCBs levels in silt that falls out of the water column in the lower river have not changed since 1977, meaning a steady diet of PCBs from the upper Hudson River.

Fish in the upper Hudson River exceeded the federal standard of 2 parts per million up to sixfold in 1991; the fat in their bodies ran up to 800 times above it.

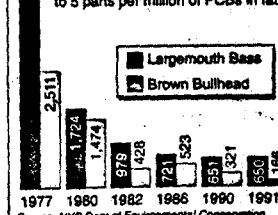
Fish in the lower river are about 50 percent above the standard. Levels have declined but slowly since the mid-1980s, a time of low rainfall and hence little upheaval of sediments that could wash contaminants into the water.

Striped bass, the principal species of commercial fishermen before the fishery was shut down, may soon register levels of PCB below the federal limit of 2 parts per million. But the federal yardstick is too liberal in light of new evidence of the non-cancer effects of PCBs, which can occur at very low levels.

Besides state biologists argue that meeting the guideline — a number arrived at for its economic as well as environmental implications — shouldn't be the goal. Their goal for a healthy river is to see fish levels drop to one-tenth of a part per million.

Residing in the Hudson

Fish that live in the Hudson River year-round harbor high PCB levels in their body fat. The chart shows PCB levels for two resident species in the upper Hudson River. Fish in unpolluted water generally have 1 to 5 parts per million of PCBs in fat.



Source: NYS Dept. of Environmental Conservation

Dean D'Amico/Poughkeepsie Journal

To comment on a cleanup of the Hudson's PCBs, write to Constantine Sidamon-Eristoff, Regional Administrator, U.S. Environmental Protection Agency, 26 Federal Plaza, New York, NY 10278. Send copies to local federal and state representatives, whose support of the cleanup is essential.

believed to impede PCB breakdown there, increasing the urgency to stop the downriver flow of PCBs. And, most significant, how long will these processes take to rid the upper river of PCBs. No one knows.

Weighing the options

If it were a real option, leaving the PCBs in the river to degrade naturally or helping them do that would be the best solution. There is great promise in what scientists call bioremediation: using natural and other means to detoxify contaminants in place. But it's not ready to be tried on the Hudson's scale. The logical next step in GE's research would be to engineer a method of applying biodegradation on a larger scale.

GE has no plans to do that. The corporation prefers to use its findings to argue against a cleanup rather than figure out how to conduct one. The cleanup, says GE, is already occurring, but its experiments offer scant evidence.

Some scientists argue that the cost of a dredging project — estimated at \$280

million — should be put toward a massive research effort into bioremediation. That way, scientists could learn how to apply what occurred inside GE's caissons to the river outside — and to the nation's 184 Superfund sites that are contaminated with PCBs. Indeed the Hudson can be a laboratory of sorts. But cleaning up the river must take priority.

Order GE to dredge

The federal government is studying whether to order GE to clean up the Hudson River's buried PCBs. It should:

Order GE to dredge the areas of greatest PCB concentrations and bury the sediments on land, using time-tested technologies that are known to do the job.

Have GE fund pilot studies to see if the corporation's research can be used on a larger scale to speed up the natural breakdown of PCBs, both in the river and in a secure landfill. If successful, the technology should be applied riverwide. But if, as it appears more likely, it marks a small step forward, dredging the hot spots must proceed.

State health officials estimate that 2 pounds of PCBs annually wash over Troy Dam, thus contaminating the 10 river and eventually the ocean. Events some of it will find its way into the be of people, maybe even the brains of deer.

Nature is offering some help in breaking down the PCBs, but it may be many decades before they reach acceptable levels. The Hudson Valley's people have already waited 15 years to reclaim their river. They should have to wait no longer.

Next week

This is the second in a series of editorials in which the Journal analyzes the Hudson River's massive pollution problem: toxic PCBs discharged by the General Electric Co. Last week, Journal examined the harm of the river and its commercial fishery.

Next Sunday: Dredge the river PCBs.