

Hudson dredging plan stirs debate

PCBs, from 1A

decision in August on the dredging plan before the agency knows precisely how the project can be carried out.

It is still not certain what shore disruptions will result, what ecological damage will be caused or how the millions of tons of contaminated sediment will be moved. A million cubic yards of clean sediment, about the mass of three Empire State Buildings, would be stored in mounds along the riverfront for use as filler.

It is this level of uncertainty that has caused much of the rift. Though the controversy has been greatest among those living in the 40-mile stretch where the dredging would take place, it is more than a localized problem.

The EPA's overall plan and lack of citizen participation were criticized in an analysis this year by the National Research Council, a combined unit of the National Academy of Sciences, the National Academy of Engineering and the Institute of Medicine.

"The river doesn't just affect those of us who live near it," said Ann Powers, professor of environmental law at Pace University Law School in White Plains and a member of the National Research Council. "People use all of the Hudson, and just because you live in Westchester County doesn't mean you don't travel on the Hudson and engage in activities here and further up the river."

In its report, the council said, "The Hudson River community involvement process used by the EPA does not appear to allow community involvement in any decision-making or even in problems formulation phases and does not appear to be responsive to ability needs and frustrations."

The council disputed both the EPA position that dredging all hot spots would resolve the problem of long-term contamination and GE's position that the river would clean itself.

"The current ability to reduce health and environmental risks from PCB-contaminated sediments through technical options alone is limited," the report said. "No remediation technology is effective in removing all sediment contaminants from site, and all remediation technologies result in the production of contaminated residuals and effluents that cannot be eliminated by known or likely technology."

Removing PCB concentrations, the council concluded, poses risks from spillage and the further spreading of PCBs into new areas. Leaving PCB deposits in place in the river mud means these sites are subject to possible exposure in the future and new contamination. It recommends the development of specific remediation plans for each section of the river.

"Dredging may not be best for each site; it may make things worse," said National Research Council member Gilbert Omernik, vice president of the University of Michigan and head of the school's health system. "If the PCBs are absorbed in a stable bed, it may have little prospect of contaminating other living things and would be best left there."

But EPA officials say if their plan is approved, a three-year "design phase" will help answer any



The GE plant in Hudson Falls, where PCBs were originally released into the Hudson.

lingering questions.

So the issue now before Whitman is stark: support the recommendations of EPA staff after a decade of research, or reject it in favor of GE's claim that the river will cleanse itself.

The EPA asserts its plan will produce edible fish throughout the river in about 65 years; but it will take a century for the river to clean itself.

The record is not that definitive. Interviews with GE and EPA officials and consultants, and a review of research from both sides, as well as independent analyses from the U.S. Geological Survey, the U.S. Fish and Wildlife Service and National Research Council reveal:

- There is no consensus on whether continuing PCB contamination comes from embedded deposits or are stirred up or recent deposits.
- All sides agree there will be spillage of PCBs from any dredging operation, but it is impossible to predict how much.
- The spillage will result in a "spike," or elevation, in detected PCB contamination in the lower Hudson, but no one is sure how significant that will be or how long that will last.

- There is no consensus on the ability of marsh grasses in the dredged areas to re-establish themselves and again provide habitat for various aquatic species of fish and mammals.
- The effort to clean the Hudson from continuing contamination of PCBs is, at its heart, a quest for the source of some 500 pounds of PCBs that spill over the Federal Dam at Troy every year and flow into the lower river.

Recorded levels of PCB contamination in the Hudson River have dropped during the past two decades, the EPA and GE said. The decrease was attributed to the end of dumping at two now-abandoned GE plants in Hudson Falls and Fort Edward, about 40 miles north of Troy.

GE's Hudson Falls plant was built above the former Allen Mill paper plant, which has a canal and tunnel that through the bedrock beside the river. Over the years, officials said, PCB-laden sediments built up in the long-unused tunnel, but were held back from the river by a heavy, 100-year-old wood door.

In the view of the National Research Council, some of these deposits may need to be removed, and others should remain buried because they are unlikely to cause further problems.

Council member Omernik, an expert on environmental risk assessment, concluded that there "is no free lunch."

"You can remove the risk from PCBs without causing other risks," he said.

The EPA plan calls for dredging at a rate of 270 cubic yards per hour.

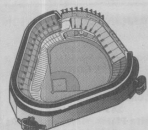
The EPA's Caspe disputes the USGS findings, saying their spill increases in potency when they were uncovered.

"The Fox River was telling," said GE spokesman Mark Behan. "If we apply that experience to the Hudson, remobilizing 2.2 percent of the PCBs (polychlorinated biphenyls) would release more than 2,000 pounds of PCBs and a sharp increase in PCB levels in the water and fish in the upper and lower Hudson. It would eliminate any benefit from dredging."

And if the larger Hudson project were dredged at the same rate

Did you know?

The 2.65 million cubic yards of silt dredged from the Hudson River would fill Yankee Stadium twice. It is the equivalent in weight to three Empire State Buildings at 365,000 tons a piece.



Backfill

The dirt that must be returned to the river bed after the dredging is complete will be 1 million cubic yards. Equal in weight to three Empire State Buildings at 365,000 tons each.



"That door broke in 1991," said Edward LaPointe, the GE engineer in charge of its cleanup operations, during a tour of the area last week. "It flushed tons of PCBs out onto the river. Those PCBs that spilled out that door are lodged in the upper two inches of the sediment in this portion of the river."

Almost immediately, the EPA and GE noted an increase in detectable PCBs in soil samples and fish in the area and in the lower Hudson. PCB readings rose again in 1995, when the federal dam at Fort Edward was removed, uncovering more long-buried PCBs. The heaviest concentrations of PCBs are in the Thompson Island Pool above the Federal Dam at Troy.

GE removed more than 45 tons of PCB oils and sediment from the canal and tunnel at Allen Mill, though over the years an unknown quantity seeped into the shale bed beneath the plant.

"And it's the upper 2 inches of sediment that moves with the currents and washes downstream," over the Federal Dam, GE's La-

Point said. "That's what accounts for most of the PCBs found downstream. The PCBs seeping from the rock account for the rest."

But the EPA says the flowing sediments don't provide enough PCBs to account for the amount traveling over the dam every year.

"Basically, their math doesn't add up well," said the EPA's Douglas Tomchuk of GE's assertions. Tomchuk is project manager of the Hudson River PCB site for the federal agency, which regularly samples sediments above and below the dam.

GE's position, Tomchuk said, is that the EPA sampling missed much of the contaminated sediment that collects above the Federal Dam, then spills into the lower Hudson.

"We've taken everything into account, but that sediment is contributing between one and one and a half pounds of PCBs every day," said Richard Caspe, director of the EPA's emergency and remedial response division.

The only area of agreement is the extensive engineering project GE has launched to prevent the PCBs from escaping from hundreds of feet of shale under the plant and the river.

LaPointe has supervised the installation of hundreds of oil wells throughout the Hudson Falls property, mapping the location's fault lines and bends in the shale layers and extracting tons of PCB oils from 35 producing wells.

Another series of wells were installed in front of Bakers Falls, a hotspot that curves in front of the Allen Mill plant. Drilling for the oil in the shale cut the leak of contaminants at the site to about 3 to 5 ounces per day. EPA and GE officials agree the pollution cannot end until this, too, is capped.

The plan for removing the remaining oil from the shale, said LaPointe, is a novel program of reverse drilling. A series of horizontal, 14-foot-wide tunnels will be cut through the bottom layer of the oil-bearing shale, 120 feet under the river.

Collection wells will be drilled up into the shale every 50 feet. Gravity, said LaPointe, will force the oils into the low-pressure wells at a rate of 100 gallons per day.

If LaPointe's plan works, the only PCBs in the upper Hudson will be from the two spills in the early 1990s and deposits in the Hudson under varying depths of sediment.

In the view of the National Research Council, some of these deposits may need to be removed, and others should remain buried because they are unlikely to cause further problems.

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But sides lack scientific proof in PCB debate

Cathy O'Donnell
The Journal News

Dr. David Carpenter worries about people who live along the Hudson River, uncertain whether toxic chemicals called PCBs have poisoned their back yards, their trees and their bodies, even if they've never eaten a contaminated fish.

The trouble is, no one really knows.

"PCBs can migrate off the river and into communities," said Carpenter, professor at the University of Albany's School of Public Health. "We need to check the blood level of people who simply live near the river. But hardly any research is being done in that area."

Thirty years after the government banned PCBs, scientists and researchers still have many questions about the chemical's effects on humans. They don't know whether PCBs, or polychlorinated biphenyls, harm people who simply live along the river. They need more research to link PCB exposure with cancer. They also lack long-term studies on how PCBs affect aquatic ecosystems.

Even so, many scientists and researchers agree that PCBs pose extreme risks to humans and the environment, ranging from lower IQs to cancer. But conclusive scientific evidence, at least in humans, has eluded health officials.

"The question is do you wait until you have all of the perfect studies done, or do you say, 'Let's assume that it's harmful and do something about it,'" said Anne Golden, a public health researcher at the Mount Sinai School of Medicine in New York City.

Opponents of dredging contend the Hudson isn't as dangerous as environmentalists and public health officials claim. Those opponents say Hudson River water is clean enough for swimming and for public drinking water in such communities as Poughkeepsie, Watford and Rhinebeck. During droughts, a portion of Manhattan takes its drinking water from an intake pump near Newburgh.

"PCB levels in fish and water have been reduced by 90 percent over the past 20 or 30 years," said Mark Behan, spokesman for General Electric Co., one of two companies responsible for dumping the chemicals.

But those arguments ignore scientific facts, said Manna Jo Greene of Hudson River Sloop Clearwater, an environmental group based in Poughkeepsie. Most PCBs aren't water-soluble, which allows them to settle into the sediment and exposes the chemical to organisms, such as plankton at the bottom of the food chain. Once fish eat contaminated organisms, PCBs travel up the food chain to humans.

"People can have one million times the concentration of PCBs in their fatty tissue than the original organism," Greene said.

Scientists from the National Research Council say in an upcoming report that there's evidence linking PCB exposure to developmental defects in children, immune system problems, hormonal changes and increased risks of liver, gallbladder, lung, brain and skin cancers. In animals, PCBs affect the reproductive process, cause slowed learning and memory loss, and lead to cancer and "wasting-away syndrome."

The council report, ordered by the Environmental Protection Agency and Congress, evaluated the risks of removing PCBs from the nation's rivers, including the Hudson. In the end, the council said it couldn't make a recommendation because the EPA hasn't studied the possible risks of removing the chemicals from the Hudson or any other river.

"Clearly, there needs to be more research," Greene said.

PCBs have been polluting 200 miles of the Hudson River for decades, forcing the Environmental Protection Agency to declare the entire waterway a Superfund site in 1984. They are a group of 209 chlorinated chemicals manufactured by Monsanto from 1929 until the EPA banned their use in 1977. The chemicals, still found today in electrical equipment, were used in everything from old fluorescent lighting fixtures to television sets.

Now, the EPA wants to remove PCBs from the upper Hudson, a project with an estimated price tag of \$460 million. The project, which has polarized Hudson River communities, raises questions about the risks of dredging contaminated sediment from the river, processing it on land and transporting it to a landfill.

The river's pollution began just after World War II when two General Electric plants in upstate New

Polychlorinated Biphenyls (PCBs)

- PCBs are a group of chemicals manufactured by Monsanto from 1929 to 1977. There are 209 chemicals, and they are either oily liquids or solids. They consist of two carbon rings bound together and joined with chlorine atoms.
- They were used for electrical systems transformers, electrical insulation and as a coolant; as hydraulic fluids and lubricants, as well as in plastics, coatings, dyes, adhesive and carbonless copy paper.
- An estimated 700,000 tons of PCBs was manufactured in the United States.
- PCBs still exist in electrical equipment. A 1998 report by the Environmental Protection Agency found that 15.74 transformers across the United States contained 54,000 pounds of PCBs. An additional 141,000 tons of PCBs were in other electrical equipment.
- Scientists say PCBs cause developmental defects in children, cancer, hormonal problems and reproductive abnormalities.

York dumped PCBs directly into the water, a practice that continued until the federal ban. Those discharges, which GE maintains were legal at the time, left more than a million pounds of PCBs in the Hudson. The chemicals also came from plants owned by Niagara Mohawk Power Corp.

Today, more than two decades later, the contamination continues. Three ounces of PCBs seep every day through the layered shale bedrock and into the upper Hudson. Every year, 500 pounds of PCBs float over the Federal Dam in Troy and get carried downstream to places such as Haverstraw, Peekskill and Tarrytown.

General Electric officials say they understand the urgency of stopping the leaks, which has become part of the company's ongoing project to remove the chemicals. So far, the company has spent \$200 million, removing 139 tons of PCBs from its Hudson Falls plant and 31 tons from its Fort Edward facility, and trying to stop the underground leaks.

But GE opposes dredging and argues the EPA has overstated the health risks. The company cites an EPA analysis showing that a person would have to eat a half ton of contaminated fish over 40 years before the risk of cancer increases. GE officials also cite recent studies from Yale and Harvard that they say show no direct link between PCBs and cancer.

"The EPA has based its studies on rats, not people," Behan said. Many researchers dispute GE's claims, saying they have enough evidence to support public health warnings. They also argue that dredging is the only way to eliminate PCBs, the sixth-most hazardous chemical on the nation's list of toxic substances. PCBs, they say, can remain in the river forever if they're not removed. Citing a state report released two weeks ago, researchers are more worried than ever that the chemical, once confined to fish, has made its way up the food chain from insects to birds, turtles, minks and humans.

Because a human body stores PCBs, the effect of eating one contaminated fish could have life-lasting results. If a 10-year-old girl eats one contaminated fish, half of the PCBs she consumed will remain in her body for a decade, Carpenter said.

Along the Hudson, researchers are beginning to study the effects of PCBs on humans. One study focuses on residents over age 50 who have lived along the upper Hudson for their entire lives. Another study by Mount Sinai School of Medicine, includes an expanded study on anglers who fish in the lower Hudson. Golden said they already found fishermen with PCB levels that were higher than normal.

Researchers admit, though, that gathering irrefutable proof hasn't been easy, mainly because PCBs come in different forms and mixtures.

"To explain one type of outcome from PCB exposure is unrealistic," Golden said. "Based on our research and findings, we believe there is real evidence on the health effects of PCBs."

SPEAK UP

The Environmental Protection Agency will take written public comments on its plan to dredge the Hudson River until Tuesday. Afterward, the EPA expects to make a final decision in August. To submit comments, write to: Alison Hess/Doug Tomchuk, Hudson River PCBs Public Comment, U.S. Environmental Protection Agency, 290 Broadway, 19th Floor, New York, NY 10007-1866 (Must be postmarked by Tuesday). Or send an e-mail by Tuesday to: HudsonComment.Region2@epa.gov

Dredging in Wisconsin raises PCB rate in Fox River

U.S. agency calls project effective; GE says it failed

Roger Witherspoon
The Journal News

The demonstration project to remove PCBs from a 7-mile stretch of the Fox River in Wisconsin had something for everyone.

To the U.S. Geological Survey it was a success, despite a number of problems and a PCB spillage rate ranging from 2.2 percent to nearly 9 percent.

"Environmental dredging is an effective mechanism for removal of contaminated sediments" from the lower Fox River, said the agency's January 2000 report.

To General Electric Co., which opposes a massive dredging project in the Hudson River, Fox River was a failure.

"If success means you show some benefit from the project, then I don't see how you can show any benefit from that one," said Brad Cushing, a GE consultant with the Philadelphia firm of Applied Environmental Management.

"They did not get the PCB levels down enough to show improved levels in the fish, their production rate was low, and a substantial amount of PCBs went downstream despite their silt cur-



John Connel/The Journal News

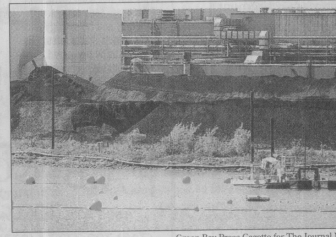
tain. It is certainly not a model for a larger project," he said.

To the Environmental Protection Agency, it was a useful exercise.

"We think Fox River has been a successful project, but we don't think the study by the USGS was correct," said Richard Caspe, director of the EPA's emergency and remedial response division. "It showed what can be done."

That depends on the perspective.

In 1999 and 2000, contractors for seven Wisconsin paper companies attempted to remove 81,000 cubic yards of PCB-contaminated sediment from the Fox River near Green Bay. Results of



Green Bay Press-Gazette for The Journal News

the hydraulic dredging operation were mixed.

The dredging averaged 41 cubic yards per hour, and the USGS found that buried sediments increased in potency when they were uncovered.

"The Fox River was telling," said GE spokesman Mark Behan. "If we apply that experience to the Hudson, remobilizing 2.2 percent of the PCBs (polychlorinated biphenyls) would release more than 2,000 pounds of PCBs and a sharp increase in PCB levels in the water and fish in the upper and lower Hudson. It would eliminate any benefit from dredging."

And if the larger Hudson project were dredged at the same rate

as the Fox River, it would take more than 15 years to remove the contaminated sediment.

The EPA's Caspe disputes the USGS findings, saying their spill increases in potency when they were uncovered.

"We question how they came up with that," Caspe said.

The EPA plan calls for dredging at a rate of 270 cubic yards per hour. "We can say what we think can be done and why we believe it can be done," Caspe said. "But that is where it stops. We haven't designed it yet. We are at a proposed plan and it is a conceptual design. Those details will be worked out in the design phase."