

## THE ENVIRONMENT

# General Electric goes to the mat in the PCB wars

Russ Hoyle

"Although the term PCBs has evoked the specter of the grim reaper, at the outset it should be stated that this visceral response to PCBs has at times bordered on the irrational," writes Ron Unterman, chief of scientific research for Envirogen (Lawrenceville, NJ), in the recently published *Bioremediation: Principles and Applications* (Crawford & Crawford, eds., Cambridge University Press, 1996), ". . . it is clear that the publicly perceived toxicity of PCBs almost surely overstates their actual toxicity and health risk, and this controversy continues today."

So it does. And the latest clash—over how readily polychlorinated biphenyls, commonly known as PCBs, succumb to natural biological degradation in the environment—comes from an unexpected quarter. The General Electric Co. (GE; Fairfield, CT), which for more than a decade has poured \$130 million into PCB research, has squared off against the US Federal Government over whether or not to clean up extensive PCB contamination in New York's Hudson River. For GE, the issue is partly the ongoing Clinton administration efforts to reform the ungainly and controversial 1980 Comprehensive Environmental Response, Compensation and Liability Act, or Superfund. But the company's immediate concern is an independent assessment by the US Environmental Protection Agency (EPA; Washington, DC) of PCB contamination in the Hudson and what to do about it.

The hostilities between the EPA and GE, which for years manufactured polychlorinated biphenyls for use as a fire retardant in electrical equipment and hydraulic fluids at factories on the Hudson, flared in September when US Secretary of the Interior Bruce Babbitt met with New York environmentalists and accused company scientists of throwing "so much sand in the process that nothing ever gets resolved." Babbitt's comments were a surprisingly harsh indictment of GE, which in the past has played the role of model corporate citizen by readily acknowledging its environmental sins and working with the government to remedy them. The GE-EPA spat marks a low point in the efforts of Clinton environmental chief Carol Browner to encourage partnerships with industry to solve difficult environmental problems. "It's a PCB war," says a New York-based EPA official.

The current tensions grew out of a then-mysterious increase in the incidence of highly chlorinated PCBs in the upper Hudson in

1991, well after GE's remediation efforts had achieved a widely acknowledged reduction and stabilization of PCB contamination in the river. The chemical compound, which some had compared to dioxin for its supposed toxicity and persistence in the environment, appeared to be sinking into the river's sediment. Moreover, GE researchers, along with university scientists elsewhere, confirmed that PCBs appeared to naturally degrade as much as 10%–20% in the river's sediment through a natural anaerobic process of dechlorination—now received scientific wisdom. Moreover, such dechlorination tended to remove the most highly toxic parachlorine molecules, thus substantially reducing toxicity. GE's ongoing PCB research was a factor in the EPA decision in the mid-1980s to hold off on dredging the river to remedy to PCB problem.

The sudden 1991 spike of PCBs in the river below GE's old Hudson Falls plant threw the developing orthodoxy about how PCBs behave in the environment into disarray. The Hudson Falls problem was traced back to a wooden gate in an abandoned 19th century paper mill situated near the river below the factory. The mill, all parties now apparently agree, had become a huge receptacle for heavily PCB-laden oil that had settled in its foundation over the years. When the gate gave way, apparently in a storm, a flood of PCB-contaminated oil was released into the river. Soon thereafter, GE engineers also discovered that PCB-laced oils had leached through cracks and fissures in the cliff upon which the factory was built and had been leaking into the river for years.

GE, to its credit, immediately set about remediating the old paper mill site as well as the leaching in the rock, removing some 60 tons of oil from the site owned by Niagara Mohawk, a local utility. The company built a state-of-the-art treatment plant at the paper mill site and built barrier walls to plug up the rock fissures.

Five years after the PCB spike was first noticed, contamination below the Hudson Falls site has now returned to pre-1991 levels. But the serious dispute over the scientific data and what it means has just begun. With its PCB remediation assessment two years from completion, EPA scientists are apparently disputing data by GE and other researchers on a number of critical points. That has led GE officials to suspect that the agency is quietly resurrecting the idea of massive dredging to clean up the 40 or so

PCB hotspots spread along some 200 miles of the Hudson.

Though overall PCB levels in the Hudson are down, a proportion of these are highly chlorinated—and thus highly toxic. GE and other private sector researchers say mass chromatographic "footprints" indicate these "fresh" compounds have not undergone dechlorination and likely originated in the 1991 incident.

Skeptical government scientists are not so sure, and have hypothesized that undegraded PCBs have been stirred up from the sediment into the river, a theory GE and many scientists tend to dismiss.

According to the scientific literature, PCBs degrade some 10% over time through natural microbial processes. GE researchers argue that this process of dechlorination reduces toxicity and decreases bioavailability. They believe it is unlikely that highly toxic PCBs are scoured up out of the river bottom, though concede it may be possible under extreme flood conditions.

EPA researchers, for their part, are uncertain that natural PCB degradation is a function of age, but rather of the concentration of toxicity—and both sides agree that concentrations of below 30 parts per million do not readily degrade.

On balance, GE researchers believe that PCB levels in the river will diminish—and that a time-consuming, multimillion dollar dredging operation will result in years of environmental disruption for the river. They may be right. Though EPA officials concede that some degradation takes place, they note that what is left may be dangerously toxic. Like too many disputes over toxic and hazardous waste, the conflict over cleaning up the Hudson is based on uncertain science and virtually no hard data on actual risk to the health and well-being of the environment or humans.

It does not help that GE, like other private sector combatants in the PCB wars, apparently has concluded that high-profile research into the behavior of PCBs in the environment and new methods of bioremediation has reached a point of diminishing returns. This ignores the inconvenient fact, which few dispute, that some PCB contamination under some conditions is probably dangerous. Worse, it tends to limit the available technological options to existing remedies that are prohibitively expensive, politically unpopular, and environmentally questionable. ///