

Hudson river



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The Hudson River and PCB Pollution

The Hudson River and PCB Pollution The Hudson River is a body of water that stretches for 315 miles from the Adirondack Mountains to the Battery in Manhattan, reaching its deepest point of 216 feet in the Highlands near Constitution Island and West Point and reaches its widest point of 3 miles across at Havestraw. This river is one of the most beautiful and scenic of the Tri-State area. Unfortunately, it happens to be New York's most polluted river. The river has been influenced upon since the early 1600's, when Englishman Henry Hudson commanded the Dutch ship Half Moon on an exploration of the river, certain that he had discovered a trade route to China. It soon dawned that this was no Atlantic-to-Pacific passage but an Edenlike place of awesome potential—a river valley teeming with prospect and spirit that was worth fighting for. In the centuries that followed, the fight for the river and its commerce never stopped, and still continues to the present. Then during the Industrial Revolution, with the advent of hulking manufacturing plants on the riverbanks, everything changed. The river became a sewer, cut off from the people around it by the electrification of the railroads. The 1825 completion of the Erie Canal instantly opened trade to the Midwest by linking Troy to Buffalo and established the Hudson River as the major commerce channel for New York City. Tycoons transformed the landscape in New York and across the country with the railroad, and the Hudson River valley became a hotbed for iron mining, limestone quarrying and clear-cutting. Toward the 19th century, when dynamite blasting was reducing the face of the Palisades to rubble, conservationists became alarmed that something was being lost to progress. In 1900, New York and New Jersey established the Palisades Interstate Park Commission to preserve

the cliffs from further quarrying. Although conservation efforts continued into the 20th century, there was no progress to protect the Hudson River and its banks from industrial pollution. Some of the largest factories in the nation started production on the Hudson River, including Anaconda Wire and Cable in Hastings-on-Hudson and GM in the present day Sleepy Hollow, discharging waste into the river. There are numerous known contaminated sites around the U. S. Among the most dangerous of these, and of particular concern to residents of the Hudson Valley, are the forty "hot spots" in the Hudson River resulting from the dumping and leakage from General Electric plants at Fort Edward and Hudson Falls. From 1947 to 1977, these two plants legally discharged from 500,000 to 1.5 million pounds of PCBs into the Hudson, and unknowingly saturated the bedrock beneath both sites with at least that much again. There are PCBs in Hudson River water, biota, and sediment from Hudson Falls to New York City - 200 miles that comprise the nation's largest Superfund site. Pure PCBs are oozing out of the bedrock to this day, constantly recontaminating the river and over 300,000 pounds remain concentrated in bottom sediments of the river today. The spread of PCBs throughout the Hudson River and the food chain, which it supports, has created one of the most extensive hazardous waste problems in the nation. Polychlorinated biphenyls (PCBs) are a group of synthetic oil-like chemicals (therefore insoluble in water) of the organochlorine family. Until their toxic nature was recognized and their use was banned in the 1970s, they were widely used as insulation in electrical equipment, particularly transformers. Reputable chemists have since concluded, "it was probably a mistake ever to make or use PCBs." These are serious poisons, which have been shown to cause damage to the reproductive, neurological and immune systems of

wildlife and humans and are known to cause cancer. Exposure has also been linked to behavioral damage. Specifically, because PCBs in the body mimic estrogen, women of childbearing age and their infants are particularly susceptible to a variety of development and reproductive disorders. Once in the body, these compounds do one of two things: they block the normal passage of hormones into their receptors, or, mimic the hormone itself and enter the receptor in lieu of the hormone. By doing so can irrevocably alter and damage the development of the organism. Small amounts of PCBs are taken up by microscopic organisms in the riverbed and passed up through the food chain. PCBs accumulate in microorganisms, which are eaten by small fish, which are eaten by big fish, which are eaten by bigger fish still, and so on up the food chain. The process by which PCBs concentrate at higher and higher levels up the food chain is called biomagnification, or bioaccumulation. Once bottom-dwelling organisms absorb the material, PCBs are not readily excreted and remain, in ever-increasing concentration, lodged in the fatty body tissues of fish as they grow, as for humans they persist at elevated levels within the bloodstream, allowing for continuous internal exposure. As one consequence, a once-thriving commercial fishing industry in the Hudson Valley, earning about \$40 million annually is now all but dead. Almost all of the river-dwelling fish are migratory, and the effects are such that the NYS Dept. of Health has issued an advisory telling people to severely limit their consumption, even of fish caught recreationally in the Hudson. Women of childbearing age and children under fifteen are advised to eat none at all. All other individuals are advised to eat no more than one meal per week of many species (like yellow perch) and no more than one meal per month of others (like striped bass). Although humans can be

exposed to PCBs in a variety of ways, eating contaminated fish is by far the most potent route of human exposure, with exposure levels of about 4,000 times greater than from breathing (contaminated air) or drinking (contaminated water). Despite commercial fishery closures and recreational fishery health advisories, exposure to PCB-contaminated Hudson River fish continues to occur! The primary distribution of health advisories in NYS is through publication in recreational fishing licenses. However, because licenses are not required on the main stem of the Hudson or in the marine waters, many recreational anglers never receive health advisories. As long as PCBs remain in the river, the danger of exposure will remain as well. Removing contaminated sediments from the river is the surest way to reduce PCB levels in fish, and in the people who eat Hudson River fish. The NYS DEC is investigating a long-term solution to PCB-contamination at GE's facilities in Hudson Falls and Fort Edward. This will include stopping ongoing migration of PCBs to the Hudson River and remediating both upland sites. At the same time, EPA continues to conduct a Superfund Reassessment of PCB-contaminated sediments. The culmination of this process will result in a Record of Decision, which may recommend dredging contaminated sediments for treatment and destruction. Advanced dredging techniques exist which could remove the contaminated material with minimal dispersal of material into the surrounding water. This has been successfully demonstrated in cleanups around the country. Deposited onshore in a prepared location, the material could then be concentrated and treated biochemically or preferably thermochemically under controlled conditions to break down the PCB molecules into hazardous residues. These are established, proven technologies. Another technique of removal would be

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the usage of a cutterhead suction dredge. This will limit the resuspension of contaminated sediments within the water column by combining the action of a rotating cutter with hydraulic suction. This has been shown to have a more effective and efficient design than other dredging equipment, with the most operational flexibility and the best maneuverability near shorelines. A total project cost of \$280 million has been estimated. This is less than one percent of GE's annual revenues! PCBs will not be removed from the Hudson River without two things: political will and money. There is a strong need for further research of these techniques as well as its effects on the environment within and around it. We can help by writing to the state legislatures or senators, EPA, or, NYS DEC urging them to: Order prompt and comprehensive cleanup of PCBs from the riverbed Use safe, effective and commercially available technologies to permanently destroy PCBs once they are dredged Require GE (the company responsible for the contamination) to pay for a full cleanup. With the help and action of non-profit organizations, environmental groups, as well as the human population, there is hope to defend the river and its once awesome awe renewed. I grew up and lived on the river all my life and it makes me sick to know that this happened, because it affects relatives, friends and myself. I am part of some of the organizations listed in the bibliography and continue to do my fair share of letter writing to save the most serene place in my life, my home-- the river!

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