Statement to the New York Academy of Sciences NY/NJ Harbor Consortium by Hudson River Sloop Clearwater and Scenic Hudson regarding Hudson River PCBs

January 18, 2005

Introduction

The aggressive removal of PCB-contaminated sediments from the upper Hudson River is necessary to protect the health of all Hudson River Valley residents and the environmental resources of the entire Hudson River. EPA's comprehensive Reassessment of the Hudson River PCB problem provides unequivocal documentation that PCBs in the Hudson River pose a serious threat to human health and the environment and will continue to do so into the foreseeable future. Clearwater and Scenic Hudson strongly support EPA's Hudson River PCB Superfund Site Record of Decision (ROD) calling for the targeted removal of PCB-contaminated sediments from the upper Hudson River; however, we also believe that additional areas of contaminated sediment must be removed to accelerate the recovery of the river and its resources. A more extensive and thorough cleanup of the Hudson River PCBs Superfund Site than the remedy chosen will result in substantial health, environmental and economic benefits for all Hudson Valley residents.

Even if fully implemented EPA's Hudson River ROD will not fully address the global PCB problem that exists along the upper Hudson River. It is estimated in the ROD that the cumulative total PCB load over the Federal Dam at Troy from 2001 – 2020 would be 942 kg (2070 lbs.) if no action were taken, and under the selected remedy the total PCB load during that same time period will be reduced to 327 kgs (720 lbs.) [p. 76-ROD]. While the remedy will lead to "substantial reduction in the load of PCBs over the Federal Dam...compared to the No Action and Monitored Natural Attenuation (MNA) alternatives" [p. 75, ROD] EPA estimates that their chosen remedy "results in a 38% reduction in the total PCB load compared to MNA. All of the active alternatives assume source control upstream." [p. 75 ROD]

The Hudson River Natural Resource Damage Trustees have noted that current "estimates indicate that the remedy will leave behind approximately 80,000 pounds of PCBs in the upper Hudson River between Hudson Falls and the Federal Dam at Troy. PCB-contaminated sediments in the Lower Hudson River will also remain." [p. 21, HRDA Plan September 2002].

While the primary focus of EPA's Remedial Investigation/Feasibility Study (RI/FS), the proposed plan, and the ROD are on the upper Hudson River, it is critical that the EPA consider the entire 200-mile system when designing and implementing this remedy. Clearwater, Scenic Hudson, and all of the groups participating in the Friends of a Clean Hudson coalition have urged EPA to recognize the damaging impacts that PCBs have already caused to the whole Hudson system – the ecology, the economy and public health. The health and economic vitality of 200 miles of this great river, and Hudson River Valley residents are dependent on the implementation of the final remedy.

Sediments, not the former GE Plant sites, are the Primary Source of PCBs in the Upper Hudson

General Electric has claimed that the plant sites at Hudson Falls and Fort Edward are the most significant source of Hudson River PCBs, and that the remedial efforts at these plants are the answer to cleaning up the River. EPA's findings clearly refute GE's position. While the remedial efforts at the plant sites will help reduce the PCBs being released into the River, these remedial efforts do not address the release of PCBs from contaminated sediments south of the plant sites.

Sediment investigation by the New York State Department of Environmental Conservation (NYSDEC) in 1976-78 and in 1984 revealed 40 areas of high PCB contamination in the upper Hudson River, which are referred to as "hot spots." The "hot spots" are leaking more than a pound of PCBs per day into the Hudson River system. Half, or twenty, of these "hot spots" are in a six-mile stretch of the River called the Thompson Island Pool (located just downstream of the two GE plant sites). EPA estimates that the Thompson Island Pool hot spots contain more than 15, 000 kg (33,000 pounds) of PCBs. [Table 6-3, US Environmental Protection Agency Hudson River PCBs Site Feasibility Study]

Historically, the Thompson Island Pool has been seen as the primary hot spot location with the greatest PCB inventory. The EPA's Low Resolution Coring Report reveals that the two hot spots between the Thompson Island Pool and the Federal Dam at Troy, known as hot spots 28 and 39, show large PCB inventories of 20 and 4 metric tons, respectively. This inventory is greater than that of the entire Thompson Island Pool, which was estimated to be between 14.5 and 19.6 metric tons, based on the 1984 NYSDEC data.

Data released by the NYSDEC shows high PCB levels along the upper Hudson floodplain, and provides additional evidence that PCB-contaminated sediments are not being buried at the bottom of the river, but are instead moving through the river system, some of which are settling on the riverbanks. GE's own sediment sampling program found high levels of PCBs within the first 10 centimeters, considered to be the biologically active zone, in hot spot 14 -- levels as high as 611 ppm in the first five centimeters and 1273 ppm at 5-10 centimeters.[1] This data dispels GE's contention that PCBs are safely being buried at the bottom of the River.

GE claims that 3 ounces a day or 68 pounds a year of PCBs come from their plant sites (EPA estimates 5 ounces a day). EPA estimates that 500 pounds per year of PCBs flows over the Troy Dam. That leaves a balance of an estimated 432 pounds that are derived from the contaminated sediment. Even if you use GE's estimate of what is coming over the Troy Dam, 350 pounds [John Haggard, GE Project Manager Testimony before New York City Council Committee on Environmental Protection, March 29, 2001. {p. 35-36.], there is still a balance of 282 pounds that must be coming from the sediments.

GE Plant Sites at Hudson Falls and Ft. Edward are a Continuing Source of PCBs

While contaminated sediments are the primary source of PCBs to the upper Hudson River, the GE plant sites in Hudson Falls and Ft. Edward remain as sources of PCBs to the Hudson River. The ROD recognizes the need to control sources of PCBs from the GE plant sites. "For purposes of EPA's model comparisons of remedial alternatives, source control at the GE Hudson Falls plant was projected to decrease the current concentration of PCBs in the water column of approximately 13ng/L Tri+ PCB, by January 1, 2005. Greater reduction in the upstream loading, through even more effective source control measures near the GE Hudson Falls plant, would serve to further enhance the effectiveness of the remedy." [p. 63 ROD] In addition, "EPA's analysis assumes significant reductions in loading to the river from these sources once the State's plans for remediation are implemented." [p. 97 ROD]

Measures to abate releases of PCBs into the river from external releases, such as the seepage of PCBs through fractured bedrock at GE's plant sites, are an important element of the overall efforts to clean up the Hudson River. GE is currently under consent order from the NYSDEC to clean up these plant sites. Ongoing efforts, including interim remedial measures that have included diver-assisted dredging and clamshell dredging have been an on-going part of this effort.

The NYSDEC removed PCB-contaminated soils from the Ft. Edward shoreline from an area known at Outfall 004. However, in doing so, it found additional seeps coming from the bedrock. The impact of these seeps is currently unknown. The NYS DEC's remedial plans for the Hudson Falls plant site appear to have stalled and the timing of this remediation project is unknown.

EPA's plan to remove the PCB-contaminated sediments, along with the State DEC's proposed remedial actions at the plant sites are both vital to the river's recovery. It is not an either-or decision, both must occur.
Furthermore, while the NYS DEC's proposed remedial action addresses the plant sites, EPA's ROD, which addresses targeted hotspots from Ft. Edward to the Federal Dam, excludes consideration of contributions from Hudson River sediments in the area between Hudson Falls and Ft. Edward.

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[1] QEA Sediment Sampling Program, July 1999.

Remnant Deposits

As is indicated in the 2002 EPA ROD, the 1984 EPA ROD called for "the containment and monitoring of exposed Remnant Deposits (in the area of RM 195 to 196)." Reference to and inclusion of this monitoring data would be useful for identifying all sources of PCBs. Clearwater and Scenic Hudson recommend the establishment of long-term monitoring of the remnant deposits, with full public access to these data.

Floodplains

Concerns have been raised for many years about the PCB contamination in the floodplains of the upper Hudson.

As part of the Hudson River Natural Resource Damage Assessment, in February 2002, the National Oceanic & Atmospheric Administration (NOAA) in association with the New York State Department of Environmental Conservation released a ***Floodplain Soil and Biota Screening Sampling Report.*** The report found detectable levels of PCBs at all eleven sampling locations ranging from 0.018 mg/kg to 360 mg/kg. In general, the highest PCB levels were found at low-lying sites directly adjacent to the Hudson River where there has been previous documentation of high PCB soil concentrations. High PCB levels were also found in floodplain biota.

As part of the 2002 ROD, the EPA indicated that due to concerns related to possible exposure of sediments and ecological receptors to PCB contamination in the floodplains, there would be further evaluation concurrent with the design of the remedy. The EPA is presently in the early stages of that investigation.

Following the removal of contaminated sediments from the upper Hudson River, the floodplain can continue to act as a potential source of PCBs to the Hudson River watershed until floodplain contamination is remediated.

PCB Cleanup Very Important to the "Lower" Hudson River

While the emphasis of the EPA Region 2 Hudson River PCB Reassessment primarily focused on a 40-mile stretch of the upper Hudson from Hudson Falls to the Troy Dam, because PCBs migrate downstream and throughout the River system, the entire ***200 miles*** of the Hudson River, from Hudson Falls south to the Battery in New York City, constitutes a federal Superfund site. EPA has noted that "…the loss of PCBs from the Thompson Island Pool sediments, coupled with the lack of widespread burial of contaminated sediments, are serious because they imply that PCB contamination in sediments is spreading from areas of high concentration into the rest of the river." [reference?] Unless PCB contaminated sediments are aggressively removed from the 'hot spots' in the upper Hudson, they will continue to be redistributed throughout the whole river system and plague downstream waters for generations to come.

While remedial efforts will only occur in the upper 40 miles of this site, **the impacts of PCB contamination on the tidal, estuarine portion of the Hudson River -- a 160-mile section of the River from the Troy Dam to New York City -- must be strongly considered.**

In addition, the Hudson River Natural Resource Damage Trustees have indicated that between 1976 and 2001, PCB concentrations in lower Hudson River sediment have been detected as high as 1,700 ppm. PCB concentrations for water and biota can also be found in this exhibit [Exhibit 2-2, pp 22-24 HRDA Plan September 2002].

New York Harbor Contaminated With Upriver PCBs

Contaminated sediments in the New York Harbor have greatly increased the cost of maintaining the harbor as navigable and have threatened the economic vitality of the Ports of New York and New Jersey.

The New York District of the Army Corp of Engineers and the Port Authority of New York and New Jersey outline in the September, 1999 *DRAFT Dredged Material Management Plan for Port of New York and New Jersey* the tremendous economic importance of this Port to the region and to the world. *The Plan concludes that:*

> "The NY/NJ Harbor is a vital economic and environmental resource both regionally and nationally. According to a PANY/NJ 1995, (updated to reflect 1997 statistics, the Port provides a total of 166,600 direct and indirect jobs) 80,550 to NJ residents and 86,050 to NY residents). The Port serves the largest regional market in the country, and exports to more than 150 countries worldwide, handling over 1.7 million loaded containers annually." [p.2]

Managing of dredged material in the harbor has become much more difficult due to contamination resulting from past and present disposal practices. [2] Every year, 3.7 million cubic yards of material must be removed from New York Harbor. Almost two-thirds or 2.3 million cubic yards is too contaminated for ocean disposal.[3]

PCB concentration in the harbor can range from 10 to 20 ppb to up to 17,000 to 18,000 ppb in the sediment.[4] The benchmark, however, is a PCB concentration of 113 ppb in tissue. The high PCB levels in harbor sediment can bring about unacceptably high concentrations in tissue.

Contamination enters the harbor from different sources. One source of contamination to the harbor is PCB contamination washing downriver from upstream sources. The EPA has found evidence that suggests that General Electric PCBs from the upper Hudson are contaminating the New York Harbor. The contribution is estimated to represent about half of the total PCB loading to the New York/New Jersey Harbor.[5]

Through the year 2040, the maintenance and deepening of the Port could produce an estimated 107.8 million cubic yards that is too contaminated for ocean disposal.[6] The large volume of material unsuitable for ocean disposal has raised the cost of maintaining or deepening the Port's channels.[7] Cost of disposal of contaminated harbor sediments has increased 5-10 times above the historical ocean disposal costs.[8] These costs are associated with the necessity to manage dredge spoils in upland facilities or in confined disposal facilities.

An important element of the New York Harbor Dredge Management Plan is to reduce the load of contaminants that are entering the harbor. [9]

Based on EPA's estimation that **half** of the PCBs in the New York Harbor are GE PCBs from upstream and that approximately half, or 250[10], of the 500 pounds that flow downstream over the Troy Dam

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[2] DRAFT Dredged Material Management Plan for Port of New York and New Jersey, Background and Current Status – www.nan.usace.army.mil/business/prjlinks/dmmp/index.htm
[3] DRAFT Dredged Material Management Plan for Port of New York and New Jersey, September, 1999, p.9
[4] Personal Communication, Scott Douglas, New Jersey Office of Maritime Resources, April 12, 2001
[5] Data Evaluation and Interpretation Report, Hudson River PCBs Reassessment RI/FS, USEPA, February 1997, p. E-7.
[6] Ibid. p. 4.
[7] DRAFT Dredged Material Management Plan for Port of New York and New Jersey, September, 1999, p.9
[8] Personal Communication, Scott Douglas, New Jersey Office of Maritime Resources, April 12, 2001
[9] DRAFT Dredged Material Management Plan for Port of New York and New Jersey, September, 1999, p.9

annually, end up in the New York Harbor, EPA's proposed removal project is an important aspect of the contamination reduction and management efforts for the New York Harbor. Eliminating or reducing the PCBs entering the harbor will lessen the economic and environmental costs associated with managing dredge materials from the harbor.

Removal of the upriver sources of PCB contamination would be wise and efficient for helping to maintain the Hudson and its ports as a navigable.

> "The NYDCE (New York District Corp of Engineers), the states, the Port business community and, ultimately, the public are beneficiaries of the lower costs of managing dredged material, and the reduction of environmental exposure to contaminants, associated with a successful contaminant reduction program."[11]

PCB Dump Sites

In 1997, Scenic Hudson released a report entitled ***Forgotten PCB Dump Sites of the Upper Hudson Valley***. None of these sites have been remediated, therefore identifying and mapping these PCB-contaminated sites is important to fully understanding the PCB loads to the entire River system.

Hastings

The NYSDEC has determined that Atlantic Richfield Co. is responsible for a $62.8 million cleanup of PCBs from the Hastings-on-Hudson waterfront. ARCO's predecessor, the Anaconda Cable & Wire Co., made copper wires at the site. The Hastings State Superfund site encompasses two operable units that are highly contaminated with PCBs.

Operable Unit 1 is the land-based portion of the site comprising approximately 26 acres. The highest detection of PCBs (primary Aroclor 1260) were found in the northwest corner of the site, 381,000 ppm – 12 to 14 feet deep. Operable Unit 2 is the Hudson River portion of the site approximately 21 to 22 miles upriver from the harbor. The site extends 400 feet out from the shoreline. Based on known extent of contamination, the site encompasses 35 acres. The primary mixture found is Aroclor 1260 and the highest contamination levels were found off the Northwest corner shore at 5,200 ppm PCB. There were several detections in the subsurface sediment greater than 1000 ppm in the fill unit. This site may be the "source of higher molecular weight PCBs in the southern portion of the estuary." [p. 23, November Working Draft]

Clearwater and Scenic Hudson recommend close monitoring and tracking of PCBs from this site.

Additional Recommendations

As reflected in the June 29, 2004 meeting minutes, John Haggard, Manager of the Hudson River Program for General Electric, stated that "keeping an arbitrary schedule is less important than minimizing the impacts of remediation, including the issue of PCB resuspension." While the schedule that is currently set is not arbitrary, the cleanup should be conducted in a timely fashion and GE, assuming they agree to implement the remedy, should take a precautionary approach to resuspension and use available engineering and other protective measures to minimize resuspension.

- Continued monitoring of PCBs coming over the Troy Dam.
- Require the use of engineering controls such as sheet piling and silt curtains or other engineering methods as a precaution in controlling the resuspension of PCBs during remediation of PCB-contaminated sites.

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[10] Personal Communication, Bill McCabe, USEPA, March 27, 2001

[11] DRAFT Dredged Material Management Plan for Port of New York and New Jersey, September 1999, p.13.

- Remnant deposits, contaminated floodplains, and PCB dredge spoil dumps should continue to be monitored and investigated as a source of PCBs to the NY/NJ Harbor and for possible remediation.

- Ensure that the upper Hudson PCB dredging project meet all performance standards established to complete the project in a timely fashion, protect environmental quality and minimize impacts to local communities.

Volatization of PCBs

Clearwater strongly believes that the ROD minimizes contributions to air from shoreline sediments that are repeatedly covered and exposed throughout the Hudson seasonally and diurnally in the estuary. The ROD also emphasizes consumption of contaminated fish as the primary route of exposure, however ingestion is not only way humans and animals are exposed; inhalation is a significant and involuntary route of exposure. PCBs lost by volatilization, while quickly dispersed by wind and weather, travel across local region before being transported to the Arctic or elsewhere. It has been estimated that, over the course of a year, people living near highly contaminated upriver sites take in the equivalent of one toxic fish meal just by breathing.

In 1987, Dr. Eric Dewailly went to the a pristine area in the northern Canadian Arctic to work with a community of Inuit people, who would serve as a control group to study an exposed group living near a PCB-contaminated site on the St. Lawrence River. He was shocked to discover elevated levels of PCBs in breast milk of Inuit mothers living far from any industrial sources. Scientists have since attributed this to the pattern of volatilization and redeposition that has distributed PCBs to the far corners of the globe by atmospheric and oceanic transport.

While EPA has developed comprehensive, peer-reviewed Engineering Performance Standards to try to prevent resuspension of contaminated sediment in the Hudson River PCB Superfund remediation project, it has been less rigorous in its commitment to preventing volatilization in its non-peer reviewed Quality of Life Performance Standards for air. In both cases, prevention of sediment resuspension/remobilization (sediments can be resuspended, contained and removed without being remobilized) and volatilization, EPA takes a non-proscriptive approach -- monitor and then take increasingly more protective actions if releases above a series of thresholds are discovered -- rather than building prevention into the design. It is left to the responsible party and their contractor to meet these standards by any means they choose.

Toxicity and Health Risks of PCBs Underestimated

The possibility of adverse health effects from PCBs were documented and known by Monsanto, General Electric and others as early as 1937 with the publication of the Harvard study, which demonstrated that PCBs caused liver tumors in rats.[12] This information was overlooked for more than 30 years, while companies, including GE, knowingly allowed workers to flood fill equipment without using any personal protective equipment -- not even gloves -- during manufacture of capacitors and transformers.

Dr. David Carpenter's work documenting the full range of human health effects has been widely published. In a 1998 paper on PCBs and Human Health, Dr. Carpenter, who is Director of the University of Albany's Institute for Health and the Environment, states that "PCBs interfere with many biological functions, including the immune system, the nervous system, and several endocrine systems, and the fetus appears to be particularly vulnerable to these actions."[13] He goes on to conclude that:

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[12] Cecil K. Drinker and others, "The Problem of Possible Systemic Effects From Certain Chlorinated Hydrocarbons," THE JOURNAL OF INDUSTRIAL HYGIENE AND TOXICOLOGY Vol. 19 (September, 1937), pgs. 283-311.

[13] International Journal of Occupational Medicine and Environmental Health, Vol. 11, No. 4 , 291-303, p. 291.

"PCBs are a complex mixture of biologically active substances. PCBs are persistent in both the environment and within biological systems and tend to bioaccumulate in the food chain due to their lipophilic nature. The various PCB congeners, differing in the number and position of chlorines around the biphenyl rings, may have unique biological effects, which enormously complicate the evaluation of human health effects predicted on the basis of knowledge of serum PCB levels. The best documented effects of PCBs in humans are irreversible effects on brain development and IQ following exposure during gestation. PCBs are also immunosuppressants, and have been shown to cause certain kinds of cancer. Certain congeners disrupt both the thyroid and sex steroid endocrine systems. Because of their long and multiple uses, their persistence and the fact that they can volatilize and be transported over long distances, PCBs contaminate even remote regions. The degree to which PCBs constitute a human health hazard is unclear, but recent studies demonstrating particular vulnerability of the developing fetus raise the likelihood that theses substances constitute a greater hazard to human health than previously appreciated." [14]

A more recent report by Dr. Carpenter cites numerous studies showing a wide variety of health effects of PCBs in humans, including dose-dependent correlations with pancreatic cancer, elevated risk of breast cancer in specific populations, immunosuppression mediated by activating the Ah receptor, correlations to lowered testosterone levels, possible erectile dysfunction and reduced sperm motility in males, hypothyroidism, and arthritis.[15]

Health studies have long warned of the dangers of eating PCB-tainted fish, but a University of Albany study by Dr. Carpenter published in December, 2004 points to another possible risk: breathing in PCBs from the Hudson River, and simply living near to the Hudson River or any other PCB-contaminated waste site. A review of eight years' worth of hospital records in New York showed a 20 percent higher rate of treatment for respiratory disease in the ZIP codes bordering the Hudson, from Westchester and Rockland counties north to Hudson Falls, and bordering hundreds of waste sites, compared with other areas. Because residents living along the Hudson River have been shown to smoke less and have healthier diets than people who don't, "This is some of the first really direct evidence that simply living near a PCB-contaminated site is a risk of exposure — probably through breathing in contaminants," reports Dr. Carpenter.[16] Evidence that humans can absorb PCB by breathing in air containing them has been shown by DeCaprio et al, where it was shown that the PCB congener pattern present in air could be identified in the blood of young adults.[17] In a previous study Baibergenova et al. showed that simply living near to a PCB-contaminated waste site increases the risk of giving birth to an infant with low birth weight.[18] Previous investigations have documented that women who were employed in the GE plants in the upper Hudson were at increase risk of having a low birth weight baby, [19] but in this circumstance exposure could not be a result of either occupation or fish consumption, neither of which are defined by the zip code in which the mother lives, and therefore the exposure must have come from inhalation of PCBs coming from the sites. The conclusion that residence near to polluted sites does not come only from New York or US investigations. Knox has shown that in the UK there is greater than a two-fold elevation in risk of childhood cancer if the child was exposed to air-borne contaminants before birth.[20]

EPA's Revised Human Risk Assessment demonstrates that the risks associated with PCB contamination of the upper Hudson River are orders of magnitude above EPA's range of acceptable risks. This analysis

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[14] International Journal of Occupational Medicine and Environmental Health, Vol. 11, No. 4 , 291-303, p. 303.
[15] D. Carpenter, Supplemental Report on Risks of Disease from Exposure to Polychlorinated Biphenyls,.. Unpublished. 2004.
[16] Environmental Toxicology and Pharmacology 18: 249-251: 2004, Respiratory Disease in relation to patient residence near to hazardous waste sites. Dec. 2004.
[17] Polychlorinated biphenyl (PCB) exposure assessment by multivariate statistical analysis of serum congener profiles in an adult Native American population. Environ Res, In press.
[18] Low birth weight and residential proximity to PCB-contaminated waste sites. Environ Health Perspect 111: 1352-1357: 2003
[19] Taylor et al., Am J Public Health 74: 1153-1154: 1984
[20] EG Knox, Childhood cancers and atmospheric carcinogens. J Epidemiol Community Helath 59: 101-105: 2005

was extensively peer-reviewed by a panel of experts that supported its findings and conclusions. EPA's human and ecological risk assessments, which were revised to address peer review comments, present an inescapable conclusion – a proactive cleanup involving the dredging and removal of contaminated sediments is necessary to substantially reduce these risks within a reasonable time frame. However, certain elements of EPA's risk assessment underestimated the full extent of risks to both people and wildlife, both now and in the future.

Risks associated with the consumption of PCB-contaminated fish from the Hudson River are underestimated because the EPA Human Health Risk Assessment did not sufficiently consider that:

- risks to certain sub-populations, such as subsistence fishers
- risks to "most-at-risk" or most sensitive populations, such as women and children
- PCBs bioaccumulate and pre-existing body burdens of PCB may be present

Additional factors that tend to underestimate risk include:

- EPA's predictions of risk include an assumed decline in PCB concentrations that is more rapid than that observed in monitoring conducted by NYSDEC [*HHRA*, Section 2.3.1]. Moreover, EPA has acknowledged that its modeling contains several biases that lead to river recovery rates (e.g., declining river water concentrations) that are too rapid. Using too steep a decline will result in underestimation of long-term exposure and risk.

- While EPA has found that other routes of exposure (other than fish consumption) such as dermal contact are within acceptable limits, the adequacy of these protective levels is questioned. Data recently released by the NYSDEC underscores the threat that PCBs continue to pose to the health of those that live near and recreate on the Hudson River. High levels of PCBs in the floodplains of the upper Hudson are indicative of more substantial threats to human health to the people using the River for recreation.

PCBs in Wildlife: As PCBs bioaccumulate up the food chain, they have increasingly adverse effects on wildlife, however the description earlier in this document doesn't indicate the severity of the problem, particularly in mammals. Mink have virtually disappeared from the shores of the Hudson. Polar bear in the Arctic don't simply suffer reproductive disorders, they are threatened with extinction due to their severely compromised ability to reproduce (coupled with habitat changes secondary to global warming).

Summary

An analysis of the potential inputs of PCBs to the NY/NJ Harbor cannot assume that the estimate of the 50 percent PCB loading coming from the upper Hudson will be fully addressed by the EPA's upper Hudson River dredging project. Residual contamination, the GE plant sites, remnant deposits, PCB dredge spoil landfills, contaminated floodplains and remaining sediment contamination can all continue to be sources of PCBs to the Hudson River and hence the NY/NJ Harbor.

PCBs have already caused severe impacts to the whole Hudson system – the ecology, the economy and public health. The health and economic vitality of 200 miles of this great River, and Hudson River Valley residents are dependent a comprehensive look at the problem.

The comprehensive and aggressive removal of PCB-contaminated sediment from the upper Hudson is one element of the recovery of the river and its resources.