

PERSPECTIVE

The Emperor's New Clothes and the USEPA's Decision to Dredge Hudson River PCBs

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Once lived an emperor who thought so much of new clothes that he spent all his money to obtain them. When swindlers presented the emperor with an imaginary new suit, his courtiers admired it. No one wished to let others know that he saw nothing. "But he has nothing on at all," said a little child at last . . . "But he has nothing on at all," cried the whole people at last.—Hans Christian Andersen, Aesop's Fables, "The Emperor's New Suit," 1837.

For decades, the United States Environmental Protection Agency (USEPA) has considered dredging the Hudson River to remove polychlorinated biphenyls (PCBs). The cost would be hundreds of millions of dollars initially, and over a billion dollars cumulatively, for limited PCB "hotspot" dredging. The USEPA now has postponed dredging to 2007, allowing time to consider whether dredging constitutes the best use of funds. For example, would greater health benefits be obtained more inexpensively by presenting each household along the Hudson with a treadmill? Would greater *per capita* benefits be obtained by establishing a research institute addressing local epidemiological issues?

The reward for doing river restoration is that a river becomes in some sense "fixed." Although this reward would have to be especially large for the Hudson to justify the enormous price of "fixing" it, the reality seems different. Whereas we should be rewarded with clean sediments and water, only PCB hotspots will be dredged, leaving PCBs in sediments, biota, and water elsewhere in the river and also leaving virtually all non-PCB contaminants in sediments, biota, and water.

Whereas we should be rewarded with an uncontaminated sport fishery and safe-to-consume fish, in fact, fish advisories limiting consumption of Hudson River fish

cannot possibly be rescinded, because all other Hudson River pollutants will survive PCB hotspot dredging. Whereas we should be rewarded with only *de minimis* air pollution arising from river water, in fact mobilization of PCBs by dredging will increase PCB release to the air for many years, and other pollutants also will become airborne after dredging. Indeed, USEPA recently acknowledged underestimation of PCB mobilization by dredging. Whereas we should be rewarded with only a vanishingly low incidence of adverse health effects that seem to be caused by airborne PCBs, in fact such health effects (if really caused by PCBs) would increase for many years before decreasing.

Some people see light at the end of the tunnel, when dredging really will reduce PCBs in sediment, biota, water, and air and really will eradicate PCB-associated human disease. Others see the same light at the end of a different, longer tunnel, when continued natural burial of sediment-borne PCBs by sediment loading from runoff into the river will work toward doing the same job. Continued natural dechlorination of buried PCBs, along with their further degradation by physical, chemical, and biological processes acting beneath the sediments, will finish the job even if we do not dredge.

Science is relevant to some aspects of choosing the better route to a clean Hudson River. Most notably, science can—but has not—determined whether PCBs are harming health and/or whether the effects are sufficiently serious, and risks sufficiently high, to justify urgent action. Recall that Love Canal was urgently evacuated, whereas such precipitous action would be deemed inappropriate today. Indeed, that over-reaction spawned the modern Superfund Act, and Love Canal became its first site.

If sediment-borne PCBs indeed are the source of PCBs in air and/or biota, and if such PCBs are harming people's health now, will dredging exacerbate their effects by further mobilizing sediment-borne PCBs? If PCB-mediated health effects are deemed unacceptable now, their prolonged exacerbation due to dredging would be deemed unacceptable squared. Additional measures to protect populations clearly would have to be contemplated, presumably short

of evacuation but, also presumably, expensive. Conversely, if PCB health risks are acceptable today, what would motivate the decision to dredge PCBs when natural processes eventually will remove them anyway?

My scientific interest in dredging is focused primarily upon its health impacts and primarily because USEPA's environmental impact statement¹ systematically understates the amount of PCBs that will enter the atmosphere from river water and, therefore, understates the public health consequences. The USEPA:

- excludes dissolved and colloidal PCBs, and also monochlorinated and dichlorinated PCBs, from the inventory of PCBs in river water;
- overestimates the rate at which clay particles would remove adsorbed PCBs from river water via precipitation; and
- underestimates PCB concentrations in surface water, the rate at which PCBs at a given concentration on the surface would enter the atmosphere, and the temperature contribution to PCB volatilization, especially in cooling towers along the densely populated shores of the river, because water in cooling towers is typically 100° F (38° C) hotter than in the river.

Without credible scientific resolution of the issues raised above, I conclude that the dredging decision lacks scientific merit. The emperor who loves new clothes, in fact, has no clothes.

Notes

1. United States Environmental Protection Agency, 1999 (revised November 2000), "HRA, Mid- and Upper Hudson River, Phase 2 Report—Further Site Characterization and Analysis," Volume 2F—A Human Health Risk Assessment for the Mid-Hudson River, Hudson River PCBs Reassessment FS, TAMS Consultants, Bloomfield, NJ, 30 pp. plus appendices.

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