

Harbor Project

Industrial Ecology, Pollution Prevention,
and the New York/New Jersey Harbor



Executive Summary

This is a dynamic time for the entire Hudson Valley watershed, and the New York/New Jersey Harbor in particular. Currently, decisions are being made regarding a number of key environmental topics, including the impact of land-use practices on the quality and quantity of drinking water and the implications of dredging the shipping channels in order to increase capacity of port facilities. These and other decisions will have far-reaching consequences for the economic future of this region.

Industrial pollution of the NY/NJ Harbor looms as one of this region's most pressing environmental problems. If pollution concerns are not resolved in an acceptable way for the broad base of stakeholders, they will compromise human and environmental health and impede the region's economic expansion. The New York Academy of Sciences multi-year initiative aimed at promoting pollution prevention strategies for the Harbor for five contaminants.

Approach

The Academy's approach to developing pollution prevention (P2) was two pronged: (1) a thorough uncovering of the scientific research available and (2) an outreach and communication component to assure that the public is able to participate in the pollution prevention measures recommended. At the center of the project was a consortium of stakeholder institutions (broad-based and includes local, community and environmental groups; industry and small business associations, local, state and federal government and regulatory agencies, academia, labor and conservation sectors) from the entire Harbor watershed. The NY Academy of Sciences started its work with a report on the pertinent scientific, legislative, economic and regulatory information on Mercury and Methylmercury, the first contaminant to be addressed. With this information, and taking into consideration the concerns from communities within the watershed, the consortium promoted specific P2 plans for mercury, as well as four other contaminants using analytical products derived from industrial ecology.

Traditional methods of pollution assessment, such as eco-toxicology, rely on sampling the land or water intensively over space and time, which can be prohibitively expensive, time consuming and inapplicable to entire watersheds. Industrial Ecology uses already available economic and environmental statistics to quantify key points in the contaminant cycle; thus it is both quicker and more cost-effective than traditional methods. After our initial work on mercury and cadmium proved that this strategy can result in tenable P2 strategies, we built on the experience gained, taking on the next contaminants chosen by the consortium (PCBs, dioxins and PAHs).

The mandate of the consortium was to implement the following three project goals:

- (1) to identify the locations in five selected contaminant cycles where pollution prevention would most efficiently contribute to long-term reductions in loadings of contaminants
- (2) to develop the most practical strategies to reduce contaminant emissions by working with all consortium members and the community at large
- (3) to encourage implementation of the recommended actions by working with environmental groups, industries, trade associations, labor, and government agencies

To solve their environmental problems, communities and institutions must participate in both the assessments of the problems and the identification of choices for their resolution. The Harbor Project was designed to provide a forum in which this kind of dialogue could (and indeed did) take place, thus making a significant contribution toward improving the environmental quality and economic viability of the New York/New Jersey Harbor.

Goals

- Develop a quantitative understanding of contaminant cycles in the production and consumption sectors of industries in the Harbor airshed and watersheds.
- Link the cycles of five toxicants in the economy with those in the environment, and (using primarily existing knowledge) estimate fluxes to the Harbor
- Recommend actions to mitigate environmental emissions from these cycles.
- Work with industries, trade associations, environmental groups, academia, labor, and governments to encourage implementation of the recommended actions.

What are the overall objectives?

To develop and implement pollution prevention strategies for five key contaminants entering the New York/New Jersey Harbor through a regional consortium of leadership institutions from the public, private, and academic sectors of the Harbor region, using industrial ecology strategies.

Purpose

The overall purpose of the project is to develop pollution prevention strategies for selected contaminants in the New York/New Jersey Harbor. To address this problem, the pollution prevention endeavor incorporates the analytical tools of industrial ecology. This project emphasizes outreach and communication to arrive at concerted solutions and promotes a course of action agreed upon by a wide base of participants.

How will this be accomplished?

The New York Academy of Sciences has created a regional consortium (the Harbor Consortium) that employs a stakeholder process and uses industrial ecology to define the needed pollution prevention strategies. The consortium is able to produce, publish, and promote specific pollution prevention plans for various contaminants, using analytical techniques derived from industrial ecology.

What is industrial ecology?

Industrial ecology (IE) is a system-based approach through which economic systems and environmental systems are studied in concert. In other words, "industrial ecology is the study of the interactions among industries and between industries and the environment; it seeks to understand what industry is doing to itself and to the environment in which it operates." IE seeks to optimize the total industrial materials cycle from virgin material to finished product to disposal of wastes in order to lessen the industrial impact of these processes on the environment." For additional information on IE and its uses, see the article by Reid Lifset in the [May/June 2000 The Sciences](#) magazine.

Sponsors

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