Chapter 1

Introduction

During the past two decades, the U.S. Environmental Protection Agency (EPA) has focused its water pollution control efforts on protecting water quality within the water column. This has been accomplished primarily by controlling municipal and industrial point sources. More recently, EPA has begun to direct its efforts toward identifying and controlling other threats to the aquatic environment, including the accumulation of toxic chemicals in sediment. Because many different Agency program offices are involved in addressing the nationwide problem of contaminated sediments, EPA established an Agency-wide steering committee in 1989 to oversee the development of a Contaminated Sediment Management Strategy (CSMS). The purpose of the proposed CSMS is to coordinate the Agency's efforts to assess, prevent, and remediate contaminated sediment that poses environmental and human health risks.

EPA's Office of Science and Technology (OST) initiated work several years ago on the development of a National Sediment Inventory (NSI) through a series of pilot inventories, planning meetings, and national workshops. Recently, various data indicative of sediment quality have been compiled into an integrated data set. The evaluation of the sediment quality data was documented in the *National Sediment Quality Survey* (USEPA, 1996b), a report to Congress on the extent and severity of sediment contamination (hereafter referred to as the Site Inventory). The Site Inventory evaluation serves as a means of screening and targeting, and it identifies 96 watersheds as containing areas of potential widespread sediment contamination (APCs). OST's Site Inventory and the Office of Policy, Planning, and Evaluation's (OPPE's) National Goals Report both call for further evaluation of these watersheds. Further evaluation entails performing additional site characterization based on sediment chemistry and related biological data, determining temporal trends, assessing human health and ecological risks, identifying potential sources of sediment contamination, and determining whether potential sources are adequately controlled. The end result of these efforts should be a judgment whether natural recovery is a feasible option for risk reduction.

To proceed with the identification of potential sources of sediment contaminants, OST initiated two related efforts to identify, characterize, and evaluate the potential importance of nonpoint and point source discharges of pollutants that might contribute to sediment contamination. The nonpoint source assessment effort focuses on collecting information on contributions primarily from agricultural lands, inactive and abandoned mine sites, urban areas, and atmospheric deposition. The corresponding effort to assess active point source releases and to identify watersheds where such releases might contribute to sediment contamination is the focus of this report.

OST is leading EPA's efforts to complete a National Sediment Contaminant Point Source Inventory. Collection and analysis of data describing sources of contaminated sediment will help provide an understanding of the potential magnitude and extent of contamination problems in the Nation's freshwater and estuarine sediments. The inventory will be

useful to help locate potentially contaminated sites for additional monitoring and to integrate sediment sampling into existing water quality monitoring programs. The Point Source Inventory will also be a useful source of information for identifying pollution prevention opportunities and other source control efforts.

Objectives of Point Source Inventory and Analysis

Identifying, locating, and assessing all potential sources of sediment contamination on a nationwide basis is a major undertaking. Potentially significant sources of sediment contamination include municipal sewage treatment facilities, storm water discharges and combined sewer overflows, urban and agricultural runoff, industrial discharges of process wastewater, leachate from hazardous waste sites, and atmospheric deposition from point and mobile source emissions. Industrial dischargers that are no longer active, poor-quality effluent in years prior to effective treatment, and spills are important historical sources of existing sediment contamination that are difficult to identify. The Point Source Inventory is a compilation of the most recent available documented releases of known sediment contaminants from active municipal, industrial, and federal facilities. The major objectives of this inventory and the analysis presented in this report are as follows:

- Generate a relative ranking of chemicals and industrial categories based on 1993 Toxic Release Inventory (TRI) and 1994 Permit Compliance System (PCS) chemical release data.

- Prioritize watersheds for collection of additional information that might lead to the identification of additional monitoring needs or pollution prevention opportunities.

- Establish a baseline to which additional or future inventories can be compared.

Chapter 2 of this report describes the data sources used to develop the Point Source Inventory. Chapter 3 describes the data sources, assumptions, and algorithms used to develop the screening-level sediment hazard scores. Chapter 4 presents a summary of the results in relationship to chemicals and chemical classes, watersheds, and industrial categories. Appendix A contains the data used to develop hazard scores for individual chemicals. Appendix B presents the results of the watershed priority groupings, and Appendix C includes detailed results of the analysis by industrial category.

Anticipated Uses

EPA's proposed Contaminated Sediment Management Strategy (CSMS) calls for the Agency to compile data, perform analyses, and develop tools that will allow integration of sediment contamination concerns into existing EPA program office activities, including:

- Targeting further evaluations

- Evaluating alternative control options

- Enhancing current assessment approaches

- Evaluating environmental benefits.

This evaluation has identified watersheds where point sources could contribute to sediment contamination. It is anticipated that states, in cooperation with EPA and other federal agencies, will proceed with further evaluations of the top-priority watersheds. This effort is especially important for those watersheds also identified from the Survey as containing areas of potential widespread sediment contamination (APCs). The purpose of additional evaluation should be to determine whether existing technology-based controls or water quality-based discharge limits adequately protect downstream sediment quality and do not compromise natural recovery of contaminated areas.

The sediment hazard analysis described in this report is currently the most comprehensive assessment of national point source releases of sediment contaminants. The sediment hazard analysis and data compiled for this report can be powerful tools for water resource managers at the national, regional, state, and watershed levels. This report provides a wealth of information that can be integrated with other data characterizing the quality of aquatic sediment and other contaminant sources. For example, point source release data and hazard analysis results could be incorporated into the Agency's recently developed PC-based geographic information system (GIS) for watershed modeling and assessment. This system, called BASINS (Better Assessment Science for Integrating Point and Nonpoint Sources), provides the framework to integrate and analyze spatially related data, such as land use, stream hydrography, ambient contaminant levels in water and sediment, and discharger locations and release amounts. This system also allows the user to augment or replace data with additional or more appropriate information at the regional or local level. This is an important feature when contemplating use of PCS or TRI data, which cover a limited segment of all dischargers and might contain erroneous data, for specific local analyses.

The Point Source Inventory can be used to track risk reduction achieved through reduced surface water loadings. This supports activities such as the EPA Office of Policy, Planning, and Evaluation's National Goals Report, which is an effort to develop and track progress toward the Clean Water Act and other environmental legislation goals. Although not a direct measure of environmental quality, the Point Source Inventory provides a mechanism to track discharge of sediment contaminants.