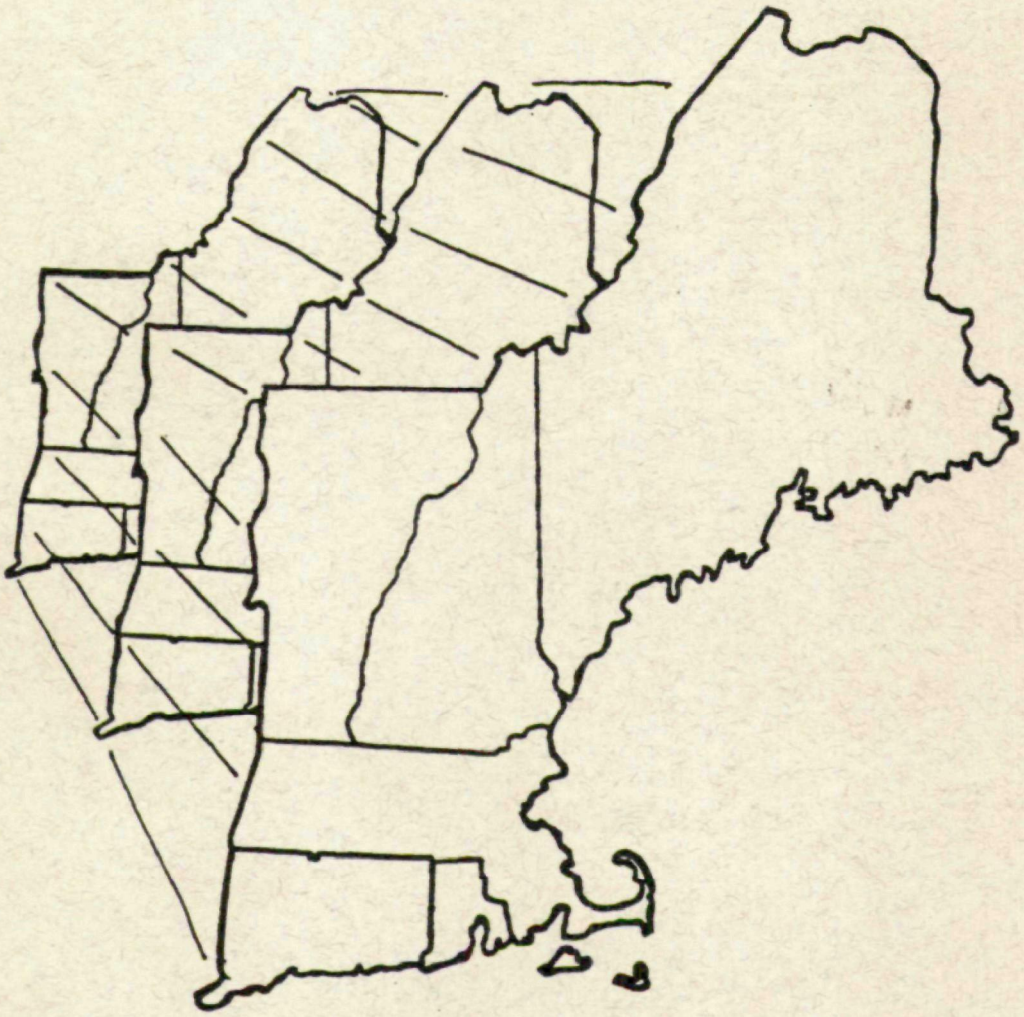
REGION I



EMR 1985

United States
Environmental Protection Agency
Region I

ENVIRONMENTAL MANAGEMENT REPORT

1985

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1985 Environmental Management Report Update
Region I

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PART I

REGIONAL ADMINISTRATOR'S

OVERVIEW/EXECUTIVE SUMMARY

New Englanders are a special breed. We live in the northeastern tip of the United States, in part because we place high value upon the unique quality of life and the clean environment which characterize this area. We jealously guard our independence and way of life. We take pride in our mountains, treasure our accessible open spaces, forests and farmlands, and appreciate the undeniable contribution that clear rivers and lakes and healthy oceans and estuaries make to this quality of life.

The Region I Environmental Management Report (EMR) Update presents issues which are of greatest interest to New Englanders. These issues are all number one priority concerns in the Region and pose serious immediate or potential threats to our public health or environment. In all cases, public awareness and demand for action is high. Finally, while many of the issues fit neatly into media categories, most stubbornly disregard these designations and require creative integrated response strategies.

This EMR Update is notable in that, for the first time, we solicited state and interest group participation in the development of the initial problem list, in reviewing problem statement discussions and in ranking the Region's most significant problems. In all instances, we found these external contributions to be thoughtful and helpful to us in producing a document which is both more complete and reflective of a broader set of perspectives. I hope that this experience can serve as the first step in greater external participation in the range of Agency planning processes.

MOST SIGNIFICANT ENVIRONMENTAL PROBLEMS

Coastal and Marine Environment - The most prominient natural feature in New England is the coastal and marine environments which define our eastern profile. For centuries, industrial and domestic effluents, combined sewer discharges and non-point source runoff have polluted our estuaries and coastal waters. Boston Harbor, a vital commerical, recreational and historical center is grossly polluted as a consequence of outdated and poorly maintained urban wastewater treatment plants and combined sewer overflows.

Because of the importance of shipping to the Region, our harbors, ports and channels require regular maintenance dredging of sediments, some of which are contaminated by conventional and toxic pollutants. The ocean disposal of these sediments poses a complicated environmental engineering problem. Estuarine studies, initiated this year for Long Island Sound, Buzzards Bay and Narragansett Bay, highlight the severe pollution problems confronting New England's bays and estuaries.

Toxics - Over a span of only a few years, EPA has shifted its regulatory emphasis from conventional pollutants to toxic pollutants. Substances commonly referred to as toxic pollutants constitute a broad and varied group. The substances of greatest concern in New England are pesticides and herbicides that can infiltrate surface water or leach into ground water, volatile organic compounds that can be released into the air

from landfills or as by-products of industrial activity, asbestos that was widely used as building material and lead, which is deposited in soils from vehicle emissions and from leadbased paint that has peeled or has been scraped from older, painted wood structures.

In this problem summary, a case study of the Ten Mile River (actually 20 miles long), which receives toxic metals discharges from 18 major industrial and 2 major municipal sources, is presented. During low flow conditions, approximately 90% of the entire stream consists of wastewater effluent.

Ground Water Protection - New England is heavily dependent upon ground water for drinking water. Fully 80% of the region's community water systems utilize ground or combined,ground and surface water sources and an estimated 95% of the rural population relies exclusively upon ground water for drinking water. Over the past ten years there has been steadily mounting evidence that New England's shallow aquifers are vulnerable to contamination from a variety of sources, including; hazardous waste sites, municipal landfills, surface impoundments, pesticide applications, underground storage tanks and, in many areas, pressures from expanding residential and commercial development.

In this problem summary, a case study of the Cape Cod Aquifer Management Plan is emphasized. This innovative project is designed to focus and coordinate local, state and federal efforts to protect one of the region's sole source aquifers.

Waste Reduction, Treatment and Disposal - A critical shortage of environmentally sound waste treatment and disposal capacity in Region I and the continually increasing rate of waste production of all types combine to pose a major waste management problem. The situation is becoming even more urgent as a result of three principal factors - 1) the impending loss of existing facilities which may close rather than comply with stricter RCRA requirements, 2) the rapidly increasing cost of hazardous waste management and transportation and, 3) the increasing public opposition to siting of waste facilities.

In this problem summary, four aspects of New England's waste problem are examined: hazardous waste, wastewater, munipical landfills, and low-level radioactive wastes. A case study on discharge of PCB wastes into the Housatonic River from the General Electric plant in Pittsfield, Massachusetts, is also included.

Long Range Transport - Long range transport of air pollutants is a major problem in New England simply because we are downwind from both the most heavily industrialized regions of the nation and one of the most heavily travelled motor vehicle corridors. It is estimated that 65 to 80% of the acidic deposition in New England is caused by long-range transport. Similarly, on most days when the national standard for ozone is exceeded in Region I, a significant part of the problem is transported ozone. Even though long-range transport poses a major threat to public health and the environment, solutions to the problem have been elusive.

Water-Related Land Management - In New England, a wide range of land-use practices degrade our water resources. The region's water resources continue to be adversely affected by nonpoint sources of pollution resulting from agricultural, construction, and industrial activities. Since the pilgrims first landed in New England, expansion growth has encroached upon our freshwater and saltwater wetlands, which are particularly vital, productive and irreplaceable natural resources. Non-point source pollution and wetland protection are emerging environmental issues of unquestioned significance for New Englanders.

REGIONAL ACCOMPLISHMENTS

We are proud of our accomplishments. In the past year, the Region I team continued to exhibit strong commitment to fulfill our public trust to protect the public health and environment. The following are a few selected highlights of our principal accomplishments.

Enforcement continues to be our number one priority in Region I. In the past year, we built upon our 1984 record setting performance and initiated several new programs aimed at specific sectors of the regulated community. For example:

- To put a stop to the long standing violations of the Clean Water Act by the Metropolitan District Commission (MDC), the Department of Justice, on behalf of Region I, filed federal court action against the MDC, the Commonwealth of Massachusetts, the newly formed Water Resources Authority and the Boston Water and Sewer Commission. This action is essential to ensure that the long delayed Boston Harbor clean up will be implemented, and implemented as fast as possible.

- Successfully implemented the National Municipal Policy, which requires the completion of a schedule for cities and towns to comply with the July 1988 deadline for secondary treatment. Fully 90% of our communities have developed such schedules, and by the end of FY85 we hope to have 100% compliance with this requirement.

- Aggressively conducted an audit program to ensure that communities implementing approved pretreatment programs. The Region has issued several Administrative Orders to communities which are not implementing this critical program.

- Intensified a campaign against fuel switching and tampering with emission control equipment on motor vehicles and installed a toll-free "hot line" for citizens to report violators. Inspections, previously conducted by Headquarters, at dealerships, repair shops, gasoline stations and fleet service operations together with the establishment of toll-free "hot line" has produced information on several important violators that resulted in prosecution.

° Developed a timely and appropriate enforcement policy for federal facilities under RCRA. This policy was subsequently adopted across the nation and incorporated into the 1986 RCRA implementation strategy.

We are equally proud of the many program accomplishments that we achieved in the past year.

° Denied 301(h) waiver applications for Boston Harbor and Salem Harbor in Massachusetts. These decisions ensure that sludge will not be discharged directly into the relatively shallow, basin shaped Massachusetts Bay and will protect many known and unknown potential adverse environmental impacts.

° Initiated comprehensive environmental studies in Narragansett Bay, Buzzards Bay, and Long Island Sound, three of New England's most valued estuaries. These projects are part of the four estuary, multi-million dollar effort funded by a special Congressional appropriation in FY85.

° Established a Ground Water Protection Office and distributed $600,000 in ground water grants to the New England states. Initiated an innovative comprehensive ground water protection plan for the sole source Cape Cod aquifer, which emphasizes contamination prevention not reaction. We are hopeful that this pilot project (which includes strong cooperation with the Commonwealth of Massachusetts the Cape Cod regional planning authority and local officials) will provide many useful lessons, which can be applied to the management of other aquifers.

° Coordinated the development of permit and compliance efforts on the Ten Mile River in Massachusetts and Rhode Island to ensure that individual water discharge permits incorporate toxic limits based upon a complex evaluation of the toxic loading capacity of the stream. This is the first such effort in New England.

° Signed the first cooperative agreement in the country at the Nashua, New Hampshire, Superfund site. The ground water at this site will be cleansed over a two-year period by a mobile treatment facility at an estimated cost of $5.4 million.

° Conducted 15 emergency actions under Superfund this year. Twelve of 13 asbestos emergency response actions in the country were conducted in Region I, and one emergency water supply was installed.

° At the Silresim Superfund site, Region I worked with 204 responsible parties, which formed the nation's first of its kind responsible party trust to conduct the Remedial Investigation/Feasibility Study for this site. At the Ottati and Goss site, completed the nation's first trial on the merits of Superfund. And, at the Keefe Environmental Services site, completed the first major party "cash-out" in the country with 117 responsible parties at a value of $5.7 million.

- Developed a wetlands strategy for Region I. As part of this strategy, the Region will prepare a list of priority wetlands in New England. The Region also initiated a §404(c) process to provide for public review of a proposed Army Corps of Engineers permit to develop a shopping mall in Sweedens Swamp in Attleboro, Massachusetts.

- Testified before the Connecticut Legislature to endorse the defeat of a bill which would have repealed the states Inspection and Maintenance program. This is a particularly important achievement since ozone is a criteria pollutant of greatest concern in southern New England. We also testified before the New Hampshire Legislature to encourage it to institute an inspection and maintenance program for the Nashua area. In both cases, we threatened to withhold federal highway and sewage treatment construction funds and, in both cases, the inspection and maintenance programs prevailed.

- Established one the nation's three Asbestos Information Centers at Tufts University with a $250,000 grant. The Center will develop and implement pilot education programs and informational services geared towards groups that have direct impact on asbestos exposure, including: school and health officials, contractors and building owners, and managers.

- Awarded a joint grant to the New England Interstate Water Pollution Control Commission and the New England States for Coordinated Air Use Management to provide technical assistance and coordination for toxic pollution issues of concern to all New England states. The first product from this new venture was a three-day risk assessment seminar.

- Established a VOC Task Force which has gone through both the state and EPA inventories and identified 591 sources subject to VOC regulations in New England, listed these sources by CTG category and identified the date each source must be in compliance with new emission limitations. We have also initiated a program to train state and federal inspectors to insure that they are familiar with the regulations, methods of control, and inspection techniques.

- Pursued an active recruitment of capable minority employees. In 1985, with an 81% increase, Region I exceeded the performance of all other regional offices and ranked sixth among the twenty-seven offices in the entire Agency.

In concert with our obligation to fulfill EPA's statutory responsibilities, we will continue to work with the New England States and environmental groups to seek creative ways to protect our public health and environment. For example, this Spring I implemented a smoking ban in all Region I offices, and I am working with my colleagues from other Region I federal departments to adopt a government-wide ban. This was a comparatively easy decision to implement - because of the unquestionable health benefit.

As we wrestle with the complexities of cleaning up our hazardous waste sites and our (Boston) Harbors -- tasks that consume billions of dollars and decades — we must always seek the simple steps that we as individuals can daily take to protect our health and environment.

EMERGING ENVIRONMENTAL PROBLEMS

The future holds many new challenges. The nature of these challenges will be shaped, in large measure, by three factors. First, technological advancements in measuring minute quantities of pollution, down to parts per trillion and even parts per quadrillion, moves at considerably faster pace than our ability to understand the risks associated with exposure to these quantities over long periods of time. Second, public interest and reaction to the discovery of an environmental problem or the need to site an environmental management facility is instant and unyielding. And, third, changing demographic, economic, and social forces will continually create a new and different set of environmental problems compounding the problems we currently face.

These factors contribute to concern for a number of emerging environmental problems in Region I.

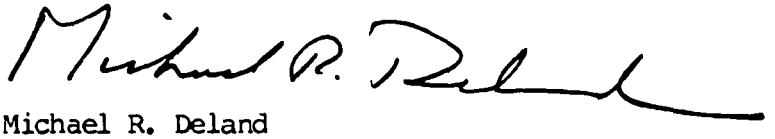
- New Englanders are very concerned about accidental and planned releases of air toxics into our environment. The concern stretches beyond deep concern for industrial releases to a rapidly emerging concern about risks associated with exposure to air toxic emissions in indoor environments.

- Formidable public opposition to the siting of wastewater treatment plants, hazardous waste treatment facilities, low-level radioactive waste sites, and municipal landfills is cause for great concern. Citizens and communities seem unable to resolve the conflict between the desire to manage our wastes in an environmentally sound manner and the need to site a treatment facility. This inability represents one of the greatest political challenges that we face.

- The expanding high-technology economy of New England presents growing concerns about the direct and indirect environmental and public health risks posed by these industries. How will planned releases of new genetically engineered organisms affect public health and how will the exotic array of chemicals used in the research and production of high-technology components affect our environment?

For the most part, we have solved the easiest problems by removing gross amounts of conventional pollutants from our air, water, and land. We are now confronted with toxic pollutants in minute quantities which move freely from one media to another, sometimes as a direct result of clean-up actions that we take.

The Environmental Management Report contains not only the descriptions of our most significant problems and prescriptions for action but it also reflects the ongoing commitment by Region I staff to aggressively protect the New England environment.



Michael R. Deland
Regional Administrator

PART II

REGIONAL

ENVIRONMENTAL PROBLEMS

Ranking Criteria and Problem Ranking
Region I

Ranking Criteria:

1. Nature and size of population potentially affected
2. Seriousness of public health risks posed
3. Nature of environmental resources threatened
4. Immediacy of the problem
5. Level of public concern
6. Magnitude and severity of the problem

Problem Ranking:

1. Air Toxics
2. Hazardous Waste
3. Toxics in Drinking Water
    a) Leaking Municipal Landfills
    b) Underground Storage Tanks
    c) Pesticides
4. Ozone
5. Acidic Deposition
6. Wetlands
7. Boston Harbor
8. Lead Poisoning
9. Bays and Estuaries
10. Municipal Landfills
11. Wastewater Treatment
12. Ocean Disposal of Dredge Spoil
13. Non-Point Source Pollution
14. Low-Level Radioactive Waste

1985 EMR Update — Region I
Problem Ranking and Summary Chart

Rank/Problem	Geographic Scope	Major Sources	Major Impacts	Contaminants of Concern	Level of Public Concern
1) Air Toxics	Regionwide	building materials; bedrock; hazardous waste facilities; woodstoves; WWTPs	Public health: cancer, birth defects, etc.	Asbestos; formaldehyde; radon; volatile organics	High and increasing due to concern about health effects
2) Hazardous Waste	Regionwide	Illegal disposal of industrial wastes	Public Health: cancer, birth defects through exposure to contaminated air and drinking water; damage to water and air ecosystems	Wide variety of toxic and hazardous substances including Dioxin TCE, and PCBs	High; very high in communties adjacent to hazardous waste sites
3) Toxics in Drinking Water	Regionwide: 77% of community water systems rely on ground water for all or part of their supply	Hazardous waste sites; industrial discharges; agricultural activities	Public health: cancer, birth defects, acute toxicity, nervous system damage; closed wells	Organics; Pesticides (Temik, EDB, 2,4-D)	High; increasing with new discoveries of contamination
3a) Leaking Municipal Landfills	Regionwide	Municipal landfills	Public health associated with ground water contamination; closed wells	Hydrocarbons, iron, manganese	High especially among environmental groups

1985 EMR Update — Region I
Problem Ranking and Summary Chart

Rank/Problem	Geographic Scope	Major Sources	Major Impacts	Contaminants of Concern	Level of Public Concern
3b) Underground Storage Tanks (ground water)	Regionwide; especially severe in ME	Underground storage tanks	Public health associated with ground water contamination: cancer, nervous system damage, anemia & kidney disease; closed wells	Benzene & other gasoline components; other toxic compounds	Moderate and increasing
3c) Pesticides	Agricultural areas in N.E.	Pesticide application	Public health associated with ground water contamination; closed wells	EDB, Temik, 2,4-D	Moderate
4) Ozone	CT, RI, MA, so. NH, and so. ME	40% vehicles and 60% statonary; motor vehicle use in NYC-D.C. corridor	Respiratory affects among infants, elderly, and people who suffer from respiratory ailments; possible damage to forests	VOCs and NO_x	Moderate to high; media coverage during ozone season
5) Acidic Deposition	Regionwide; particularly acute in areas with limited buffering capacity	Fossil fuel combusion for electric power generation and industrial processes; automobiles	Widespread, severe, growing, and perhaps irreversible harm to surface water ecology; possible damage to forests and materials; visibility	NO_x and SO_2	Very High

1985 EMR Update — Region I
Problem Ranking and Summary Chart

Rank/Problem	Geographic Scope	Major Sources	Major Impacts	Contaminants of Concern	Level of Public Concern
6) Wetlands	Freshwater wetlands especially in so. N.E., so. NH and central ME	Construction dredge and fill practices	Destruction of valuable habitat; degradation of water quality; loss of natural flood and erosion control	Construction fill	High in so. N.E. and central ME
7) Boston Harbor	43 communities in Boston Metro area; 2 million people (40% of state population)	600/MGD of wastewater and 2500 tons of sludge; 2 poorly operated and maintained WWTPs and 108 CSOs	Public health; aquatic ecosystems; closed beaches, shellfish beds, and fisheries; aesthetics	Bacteria; pathogens; heavy metals; PCBs; organics; nutrients; grease and oils; floatables	Very high; public participation and media coverage
8) Lead Poisoning	Mainly urban areas; Boston has acute lead in soil problem in certain neighborhoods	Soil: flaking and chipping house paint; water: solder and pipes	Public health: brain and nervous system damage especially in children; cardiovascular problems in adults	Lead	Moderate; high in neighborhoods with acute problems (e.g. Dorchester and Roxbury in Boston)
9) Bays and Estuaries	Narragansett Bay Long Island Sound Buzzards Bay	Industrial discharges (metal plating, chemicals, petroleum); CSOs; NPS; malfunctioning WWTPs	Public health; closed beaches, fisheries, and shellfish beds; damage to estuarine ecosystems	Coliform bacteria; heavy metals; organics; PCBs	High; participation in Bays Study management committees

1985 EMR Update — Region I
Problem Ranking and Summary Chart

Rank/Problem	Geographic Scope	Major Sources	Major Impacts	Contaminants of Concern	Level of Public Concern
10) Municipal Landfills	Regionwide	Homes; businesses; municipal trash collection	Shortage of capacity	Non-hazardous solid waste	High about siting
11) Wastewater treatment	Regionwide	WWTPs; CSOs; sludge	Closed beaches and shellfishing areas; degradation of surface waters; public health; adverse affect on recreational and commercial water uses	wastewater: coliform bacteria, gross solids, floatables; sludge: pathogens, heavy metals, toxics	Moderate to high
12) Ocean Disposal of Dredge Spoil	Coastal areas; harbors, channels, and marinas; especially RI and southeast MA	Sediment from harbor, channel, and marina dredging	Adverse impacts on sensitive fish and whale species from improper disposal; delayed dredging projects due to lack of disposal sites	PCBs and other contaminants found in bottom sediments.	High among environmental groups and commercial fishing interests
13) Non-Point Source Pollution	Regionwide	Agriculture; construction; urban runoff; CSOs	Damage to surface water ecosystems; degradation of surface and ground water quality; associated public health risks; closed fisheries and shellfish beds	Organics; pesticides; nutrients, PCBs; heavy metals; oil; hazardous materials	Moderate and increasing

1985 EMR Update — Region I
Problem Ranking and Summary Chart

Rank/Problem	Geographic Scope	Major Sources	Major Impacts	Contaminants of Concern	Level of Public Concern
14) Low-Level Radioactive Waste	Regionwide but especially acute in MA and CT	Nuclear power plants; medical applications; industry; weapons research and production	No disposal facilities	Low-level radioactive substances and contaminated material	High about siting

COASTAL AND MARINE ENVIRONMENT

I. PROBLEM STATEMENT

For centuries, industrial and domestic effluents, combined sewer discharges and non-point source runoff have polluted the estuaries and coastal waters of New England, the predominate natural resource in the Region. Boston Harbor, a vital commercial, recreational, and historical center, has been rendered grossly polluted as a consequence of outdated, and poorly operated and maintained urban wastewater treatment plants and combined sewer overflows. Because of the importance of shipping to the Region, its harbors, ports and channels require regular maintenance dredging of sediments, some of which are contaminated by conventional and toxic pollutants. The ocean disposal of these sediments poses a complicated environmental engineering problem. In addition, estuarine studies that were initiated this year for Long Island Sound, Buzzards Bay and Narragansett Bay have brought attention to the severe pollution problems of New England's bays and estuaries.

Historical patterns of coastal area settlement and industrialization indicate where severe pollution has occurred. The resulting degradation in water quality has seriously impaired recreational and commercial uses of water bodies. Shellfish resources, for example, have been adversely affected by bacteria, heavy metals, and organic chemical contamination from inadequately treated sewage. Public health authorities have also had to prohibit swimming at a number of beaches. In addition, marine pollution also endangers sensitive fish species and some whale species.

Where wastewater treatment plants have been built or combined sewer overflows have been corrected, noticeable improvement in water quality and water use has resulted. These improvements include: reduced bacteria counts and lower human health risks; decreased heavy metals and organics concentrations with a concomitant reduction in toxicity levels in the marine environment, and smaller loads of such nutrients as nitrogen.

Boston Harbor

As of July 1, 1985, the Massachusetts Water Resources Authority (MWRA) assumed responsibility for water and sewer operations from the Metropolitan District Commission (MDC). Serving more than two million people (43% of the states' population) in 43 communities , the MWRA's sewer system discharges 600 million gallons per day (MGD) of inadequatlely treated wastewater from two primary treatment plants and 108 combined sewer overflows (CSOs) into the Harbor. Thirty-four of the CSOs discharge continually. In addition, 2500 wet tons of sludge are discharged into the Harbor daily. Pollutants, including coliform bacteria, floatables, oil, grease, solids, BODs, PCBs and heavy metals, pose public health risks, result in closed beaches and shellfish beds, and in other ways damage the marine environment and adversely affect Harbor aesthetics.

Despite the formulation of a ten year clean up strategy which includes the MWRA's tentative decision to construct a secondary treatment plant at Deer Island, rehabilitation and construction of interceptor sewers, and

CSO correction, and a preliminary treatment plant siting decision, several issues remain unresolved. Secondary treatment will double the volume of sludge produced. Although four sludge management options exist (composting, ocean disposal, landfilling, and incineration), none of them are problem free and, thus far, a strategy has not been developed. In addition, the cleanup program is estimated to cost nearly two billion dollars. At present construction grant levels, local water and sewer rates would have to double in constant dollars over the next decade.

Public concern is high as evidenced by almost daily coverage in the Region's major newspapers, public meetings, the creation of 15 advisory groups, and the attendance of over 4,000 people at public hearings on siting options for the construction of a state of the art secondary treatment plantwhich will serve MWRA member communities. The Harbor problem requires coordination with EPA Region II, numerous other federal agencies, seven State agencies, three local municipalities, the Massachusetts Water Resources Authority, and the Boston Water and Sewer Commission.

Ocean Disposal of Dredge Spoil

Because of natural sedimentation and coastal changes, New England harbors require periodic maintenance dredging to ensure navigation and continuation of marine related commercial activities. Failure to designate a final dredge material disposal site, however, has delayed many public and private projects at sites including federally maintained channels and ports, municipal channels and marinas. Dredging operations are most affected in the Rhode Island and southeastern Massachusetts region where there are no disposal sites. Along the rest of the coastline, dredged materials are currently disposed of at interim sites.

In light of possible impacts on aquatic life including benthic fish species, shellfish and endangered species of whales, and other concerns, several studies have been conducted at potential disposal site locations in Long Island Sound. Other studies are being conducted at interim sites off the coasts of Maine and eastern Massachusetts. PCBs, which have been found in dredged sediments have received special attention.

Because New England's coastline is a critically important Regional resource, public concern is high, especially among fisheries' interests and environmental groups. Commercial shipping firms often require dredging to continue business; fishing interests and environmental groups are concerned with dredged spoils.

Bays and Estuaries

Upper Narragansett Bay in Rhode Island, Buzzards Bay in Massachusetts and Long Island Sound (LIS) in Connecticut have been polluted by industrial and domestic wastes since the 1800s. Metal plating, chemical manufacturing and petroleum transport and distribution comprise the industrial contribution; malfunctioning sewage treatment plants, and numerous combined sewer overflows account for the domestic portion. Non-point source runoff also contributes to the problem.

The cumulative effect of pollutants, including microbiological organisms, man-made organics, and heavy metals, has been the severe degradation of these coastal waters. In Buzzards Bay, high PCB concentrations in sediments have also been discovered. The presence of these pollutants pose a public health risk to consumers of contaminated fish and shellfish, the loss of fishing areas and shellfish beds (e.g., striped bass fishery in LIS). In addition, the presence of very low dissolved oxygen levels (levels near zero have been reported in certain portions of Upper Narragansett Bay) damage estuarine ecosystems.

Public visibility and concern for the Bays is high. Work plans were developed for the EPA Bays Studies with the aid of numerous public meetings and public participation in management committees. Management committees also include representatives from several State agencies and the National Oceanic and Atmospheric Administration (NOAA). The U.S. Army Corps of Engineers, the U.S. Fish and Wildlife Service, the U.S. Geological Survey, and the U.S. Department of Agriculture have also been involved.

II. REGION I AGENDA

Boston Harbor

Since 1980, the Region has issued six Administrative Orders to correct persistent violations of the CWA at the Deer Island and Nut Island treatment plants. The Region has also been providing technical and legal assistance to the Massachusetts Superior Court, as a "friend of the court" in a civil suit filed by the City of Quincy, MA against Massachusetts and the MDC. On January 29, 1985, the Regional Administrator referred the Boston Harbor problem to the U.S. Department of Justice. The case is being heard in the United States District Court, District of Massachusetts, and a decision on liability is expected in September 1985. On March 29, 1985, the Region issued a denial of the MDC's reapplication for a waiver from secondary treatment requirements under Section 301(h) of the Clean Water Act.

Current Actions:

- o Preparing the Final Environmental Impact Statement (FEIS) on treatment plant siting options.
- o Assisting Massachusetts in evaluating near-term and long-term solutions to sludge handling and disposal problems.
- o Preparation of Draft Supplemental Environmental Impact Statement (SDEIS) on sludge management.
- o Requesting the U.S. District Court to oversee the cleanup of Boston Harbor through binding compliance schedules for the construction of necessary treatment facilities and for development of sludge management programs.

Future Actions Needed:

- o Issue a Record of Decision on treatment plant siting alternatives.
- o Press for the near-term elimination of sludge discharges to the Harbor as an interim solution pending final decisions on sludge management.

- o Initiate treatment facilites planning on the preferred alternative. Determine sites for barging and staging locations.
- o Spur early completion of facilities planning and design for the primary treatment facilities, and subsequent completion and operation of secondary treatment and sludge management facilities.
- o Promote the use of mitigation measures to eliminate or offset impacts of proposed projects.
- o Maximize public participation throughout the entire decision making process (e.g., sludge disposal, treatment plant siting, mitigation measures).

Barriers to Overcome:

- o Limited federal construction grants funds to assist in financing the construction of needed treatment facilities.
- o Complications of interregional decisions with regard to the use of Mile 106 ocean disposal site as an interim solution for disposal of sludges now discharged to Boston Harbor.
- o Reluctance of the public and many elected officials to accept impacts associated with potential projects.
- o Resolution of responsibility between the MWRA and its 43 member communities for the correction of CSO problems.

Recommended Headquarters Action:

- o Inform Region I of developing policy and regulatory requirements with regard to sludge disposal practices to assure that Regional decisions will be based on the best available information and consistent with future Agency policy.
- o Assist the Region in addressing interregional issues in connection with the use of the Mile 106 ocean dumping site should that become the selected option.
- o Pursue alternative financing mechanisms to address "big-city" funding problems, such as the use of set-aside or carryover accounts.

The Region's environmental objectives include the elimination of sludge discharges to the Harbor, construction of adequate secondary treatment capacity for all wastewater within the MWRA's area of jurisdiction, and correction of CSO problems which contribute to pollution of the near shore areas of Boston Harbor. Achievement of the objectives will result in substantial improvement in the quality of the waters of Boston Harbor which will be demonstrated by reduced beach closings, reopening of closed shellfishing areas, and increased recreational and tourist activity in and around the Harbor.

Ocean Disposal of Dredge Spoil

The Region's general strategy is to promote continuation and finalization of site designation studies and enter into extended cooperative arrangements with Army Corps of Engineers for funding and field work where possible. The scope of these studies should include land-based disposal alternatives as well as ocean disposal. Currently there is no substantial action being taken due to a lack of funds.

Current Actions:
- o Working with the Corps to arrange cooperative agreement.
- o Assisting the Corps in review of tasks that are being undertaken at the interim ocean disposal sites, until final designations can be made.

Future Actions Needed:
- o Designate three final disposal sites. Include public participation in the decision-making process.

Barriers to Overcome:
- o Insufficient funding for the disposal site designation process.
- o Concerns of environmental organizations and fishing interests about the environmental impacts of ocean disposal of dredged materials.

Recommended Headquarters Action:
- o Provide the funding support to conduct and finalize dredge spoil disposal site designations.

Final disposal sites must be designated in order to facilitate needed dredging operations. At the same time, we must ensure strict adherence to ocean disposal criteria to minimize environmental impacts.

Bays and Estuaries

Narragansett Bay, Long Island Sound and Buzzards Bay are among four estuaries funded by a $4 million congressional appropriation in FY-85. The appropriation is for water quality research, monitoring, and assessment to be used to subsequently develop strategies to protect water quality, marine resources and associated public and commercial uses.

Current Actions:
- o Assist in development of workplans and long-term strategies.
- o Allocate funding for proposals fulfilling workplans.
- o Undertake portions of sampling specified in workplan.
- o Coordinate activities of other Region I programs which address the Bays' issue.

Future Actions Needed:
- o Develop FY86 workplan by September, 1985.
- o Develop wasteload allocation for toxics and conventional pollutants discharged to Upper Narragansett Bay.
- o Determine the extent of toxic contamination of fish and shellfish in Long Island Sound.
- o Determine the potential for low dissolved oxygen concentrations in the western portion of Long Island Sound.
- o Determine sources of microbiological pathogens which lead to shellfish bed closures in Buzzards Bay.

Barriers to Overcome:
- o Lack of coordination among the numerous state and federal programs which affect the individual Bays.

- In Massachusetts, the delegation of regulatory and enforcement powers among a number of local community authorities (e.g., zoning boards, public health agencies) has resulted in a lack of consistency in regulations and lack of regionwide planning.

Recommended Headquarters Action:

- Development of national data management system for estuaries.
- Development of Bays Program QA plan.
- Development of accountability measures for problems having a geographic focus which cuts across program lines.
- Provide funds for implementation.
- Delegate grant making authority to the Regional Administrator.

The result of the Bays studies will be used to develop permit limits for industrial and municipal dischargers and projects to abate non-point source pollution (e.g., urban and agricultural runoff, CSOs), and to establish priorities for inspections of discharger compliance. Analyses of coastal water contamination may also be used to justify the need for additional wastewater treatment capacity. Such measures will serve to protect human health and aquatic resources by reducing the level of conventional and toxic contamination in these waters. The environmental indicators which may be used to measure progress are acres of shellfish beds reopened for harvesting, the number of days the beaches are closed, and background levels of toxicants in finfish and shellfish.

TOXICS

I. PROBLEM STATEMENT

Over the span of only a few years, EPA has shifted its regulatory emphasis from conventional pollutants to toxic pollutants. Substances commonly referred to as "environmental toxics" or "toxic pollutants" constitute a broad and varied group. They include, for example, pesticides and herbicides that can infiltrate water supplies from runoff into surface waters or leach (migrate) into groundwater, volatile organic chemicals that can be released into the air from dump sites or as by-products of industrial activity, asbestos that was widely used as a building material, and the toxic metal lead, which is deposited in soils from automobile emissions and from lead-based paint that has peeled or has been scraped from older, painted wood structures.

Although these and other toxics will vary in terms of their physical and chemical properties, as environmental management problems and as important public health issues, they often share some common attributes.

- Concern focuses on low-level chronic exposure to toxics

  Toxics are usually found in the environment at low concentration. Human health concerns tend to focus on chronic exposure. In the past, toxics were not seen as a significant environmental issue; only recently have we developed the technical capability to detect minute concentrations of environmental toxicants and to estimate exposure rates. There remain major information gaps in our knowledge of toxics substances and their effects — we lack adequate data, for example, about the persistence and effects of toxics in the human body (and in the environment), and we are only beginning learn about the risks that may be posed to human health by prolonged exposure to different toxic agents at low levels.

- Exposures to toxics can be multi-media

  People can be exposed to toxics in a number of ways. Breathing air, drinking water, eating food, contact with the skin are among possible exposure pathways, depending on the characteristics of the particular toxicant under study and where and in what form it is found in the environment. From an environmental management standpoint, some treatment and disposal methods can transfer toxics from one environmental "medium" to another, altering concentrations, characteristics, and exposure pathways, and ultimately, impacts on human health.

- Exposure is to a complex mixture of toxics

  People can be exposed to a wide mix of individual toxic substances. Little is known about the interactions among them in the environment or about the risks or possible effects of simultaneous exposure to more than one chemical.

- Health effects of toxics at these low levels are uncertain

There is widespread public concern that exposure to environmental toxicants can cause cancer, genetic defects, birth defects or other health effects. Research into these impacts continues to be carried out. But given the current limited state of knowledge about toxics and potential human health effects, it is very difficult to establish a "risk-free" level for suspected carcinogens.

For these reasons, risk assessment has become an important technique to decision makers on how to manage toxics in the environment. Risk assessment components play a key role in establishing program priorities, setting national and state standards and determining appropriate regulatory responses to toxic pollution problems.

Air Toxics

The air route of exposure to toxics is coming to be viewed as a major public health concern. While most of EPA's regulatory emphasis has focused on the ingestion of toxics, eg. drinking water and eating food, inhaling toxics may be a problem of equal or perhaps greater importance. Defining the nature of the air toxics situation presents EPA and states with a highly complex problem because of the diverse nature of both the pollutants of concern and the sources of those materials. Some of the major air toxics issues for New England are discussed below.

o Indoor Air Pollution. Human health risks from indoor air pollution may be much greater than from ambient outside air because there can be higher concentrations of pollutants and because continuing, longer term exposure is possible (see Table 1). In particular, indoor radon from either building materials, ground water, or underlying soils and bedrock may pose very serious risks in worst-case areas.

Table I. Indoor Air Pollutants In Buildings

Sources	Pollutant Types
Building contents	
Heating and cooking combustion appliances	CO, NO, NO_2, formaldehyde, particulates
Furnishings	Formaldehyde, other organics, mold and fungi
Well water	Radon
Natural gas	Radon
Copying machines	Ozone
Deodorants	Organics
Liquid marker blackboards	Organics
Carbonless carbon paper	PCBs
Air conditioning systems	Microbes, molds, fungi
Bathrooms, showers	Excess humidity
Flush toilets	Microbes, odors, disinfectants
"Air fresheners"	Formaldehyde, other organics
Human occupants	
Metabolic activity	CO, NH_3, odors, excess humidity
Coughing and sneezing	Microbes
Human activities	
Tobacco smoke	CO, NO_2, POM, nitrosamines, particulates, odors, irritants
Pest removal	Pesticides
Cooking	Organics, particulates, excess humidity
Aerosol sprays	Fluorocarbons, vinyl chloride
Cleaning products	NH_3, pine oil, chlorophenols
Hobbies and crafts	Organic solvents

- o Asbestos. Asbestos is a human carcinogen that until recently was commonly used as a fireproofing and insulating material. Asbestos can be a source of indoor air pollution. It can also be emitted when buildings are demolished or renovated, and can be released from asbestos-contaminated dump sites if not properly contained.

- o Intermedia Transfer. There are a variety of ways toxics can be transferred from other environmental media to the air medium. Hazardous waste sites, for example, may contain volatile solvents that can evaporate into the air or be released air when contaminated soils are moved during site cleanup activities. Volatilization can occur when air stripping is used a treatment method in a water cleanup operation or when industrial wastes with certain toxic constituents are discharged into a wastewater treatment facility. It is possible for toxic air emissions to be released when toxic-contaminated sludges are incinerated.

- o Woodstoves. In many parts of rural New England, woodstoves are a primary source of residential space heating. Stoves can leak potentially toxic particulates and possibly harmful incomplete wood combustion by-products indoors. Toxicological research is underway in this area.

- o Waste Treatment and Disposal. Increased pressure to switch from landfills to waste incineration as a solid waste disposal option may result in increased toxic air emissions.

For these air toxics sources (and others not discussed here), actual exposure and risk data is incomplete or not available. Although some data is available for particular problem sites, air monitoring for toxics is not routinely done because it is technically difficult and expensive.

In addition to these chronic releases of air toxics, the industrial accidents in Bhopal, India, and Institute, West Virginia, have focused attention on the importance of reducing risk from accidental release as well. Current EPA strategy involves establishing an acute hazards list for the chemicals of greatest concern, developing guidance for contingency plans in case of emergencies, and enhancing state and local capabilities to respond to such releases.

Toxics In Drinking Water

Contaminated drinking water is among the more widely known and troubling of environmental and public health problems. In New England, 77% of community water systems serving 20% of the population rely on ground or combined ground and surface waters sources for their drinking water; over 95% of the Region's rural population relies on it exclusively. This reliance, together with a comparatively high water table, make New England especially vulnerable to contamination from hazardous waste sites and leaking underground storage tanks (see Issue #3).

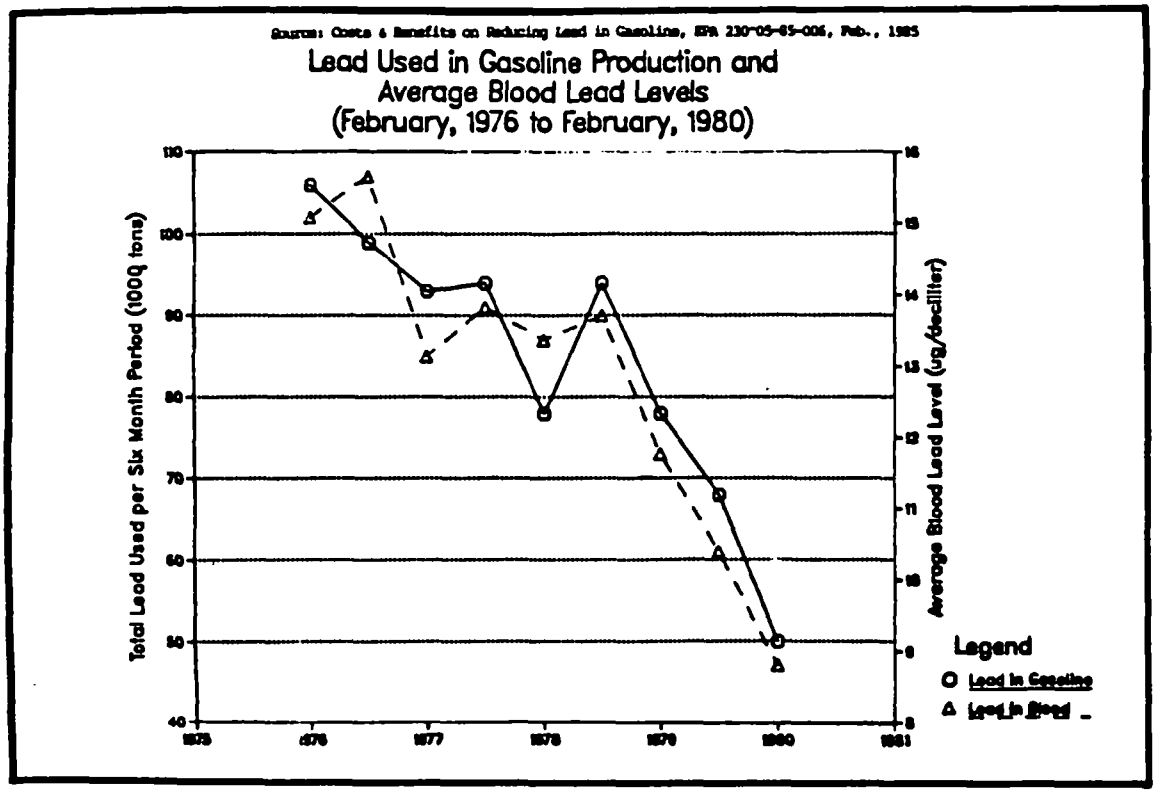
Drinking water contamination can also occur in water distribution system. For example, lead has historically been a concern in the Boston water system, and the use of lead/tin solders is a matter of potential

concern that is currently being investigated problem (lead is discussed in more detail below). Two other significant categories of potential drinking water contaminants are discussed below.

- o Organic Chemicals. The contamination of ground water by organic chemicals is generally associated with a hazardous waste site, an industrial discharge to surface waters or the ground, or a leaking underground storage tank. The impact is most often seen in private wells. The contaminants of concern are generally volatile organic compounds. While there are no final federal standards for these chemicals, EPA has established recommended maximum contaminant levels (RMCL's) for nine compounds for drinking water. As is the case with many chemicals, the health effects from exposure to multiple chemicals at the low levels found in most drinking water supplies are unclear at this time.
- o Pesticides. In New England, there is growing concern about pesticide contamination of ground water, particularly in agricultural areas and along utility and transportation rights-of-way. In one unfortunate incident in Whatley, Massachusetts, 90 percent of the town's private wells were found to be contaminated with EDB and rendered ususable. Residents had to find the financial means to develop a new public system to meet the drinking water needs of the community.

Lead Poisoning

Unlike many toxicants, there is considerable information available relating to the human health effects of lead, and in particular, neurological damage to infants and young children. There is also evidence that lead is linked to cardiovascular problems in adults. EPA has regulated levels of lead in drinking water for several years, and has also set standards for concentrations of lead in gasoline to reduce exposure to lead from



motor vehicle emissions. However, historic emissions of lead into the air, combined with lead from other sources such as paint, have left a legacy of lead accumulation in urban soils that continues to pose a public health problem in spite of our current regulatory efforts.

- o Lead In Gasoline. As shown in the graph, there is a direct relationship between lead content in gasoline and in human blood lead levels. EPA has recently reduced allowable lead levels from 1.1 grams/gallon to 0.5 grams/gallon, and in January 1986 the standard will be lowered to 0.1 grams/gallon.

- o Lead In Soil. Significant numbers of lead poisoning cases continue to be reported as a result of contaminated soil. Lead concentrations in many northeastern soils exceed the 500-1000 ppm threshold of concern established by the Centers for Disease Control, and frequently reach 5,000 to 10,000 ppm. Analysis of thousands of soil samples in Boston over the past five years indicate an average lead content of 600-700 ppm. In the 16 worst-case census tract areas in Boston shown below, the average soil concentration is 2,000 ppm.

Concentrations of Pb-Poisoned* Children

Census Tract	# Poisoned Children	# Blocks	# Poisoned Children/Block	# Streets	# Poisoned Children/Street
802	29	1-2	14.5-29	4	7.3
903	26	6	4.3	8	3.3
906/913	31	5	6.2	7	4.4
913(east)	17	3	5.7	6	2.8
913(west)	36	4	9	8	4.5
914(east)	18	2	9	4	4.5
914(west)	23	3.5	6.6	7	3.3
915(north)	35	4	8.8	8	4.4
915(south)	39	5	7.8	6	6.3
917/918	46	6	7.6	12	3.8
917/920	82	9	9.1	15	5.5
923	43	5	8.6	10	4.3
924(s-w)	49	6	8.2	11	4.5
924(n.)	11	1	11	3	3.7
924(s-e)	26	3.5	7.4	7	3.7
1001	19	4	4.8	6	3.2
1002	30	1-2	15-30	5	6
1004	22	3	7.3	5	4.4
1005(e.)	9	1	9	3	3
1005(w.)	28	3	9.3	7	4
1011.02(north)	48	11	4.4	11	4.4
1011.02(south)	27	4	6.8	7	3.8

Source: Boston Childhood Lead Poisoning Report, Draft, June 17, 1985
Boston Office of Environmental Affairs

* >25ug Pb/dl in blood

Children are exposed to lead in soil in normal hand-to-mouth activities that result in inadvertant soil consumption. Frequency of lead poisoned children in the 16 worst-case Boston lead census tract areas are shown below. In one tract, an average of 7 children per street segment were poisoned with lead.

- o Lead In Drinking Water. The current drinking water standard for lead is 0.05 mg/l. This level may be lowered based on data showing possible health effects at lower levels. EPA has worked with Massachusetts to lower lead in the greater Boston by controlling corrosive water before it enters the distribution system. Problems may persist because of contamination from the materials found in lead/tin solders which are used for piping connections. Preliminary results from a screening done of 285 samples from Region I employees' home drinking water show that 11% of the samples exceeded the current maximum EPA standards for lead. In 1985, Massachusetts became the fifth state in the country and the first in New England, to ban the use of lead solder in potable water systems.

II. REGION I AGENDA

Air Toxics

The Region has focused primarily on providing technical and program assistance to states to develop air toxics control programs. It has also been involved with states investigating problems at particular sites.

Current Actions:

- o Conduct air monitoring and assist in the interpretation of health effects data and lab analysis.
- o Help the states to develop implementation plans and conduct training program for them. The Region has recently hired an expert Air Toxicologist to assist in health effects evaluation.
- o Give greater emphasis in the Regional operation to the intermedia transfer of toxics into the air, particularly from hazardous waste sites being cleaned-up under the Superfund program (See Issue #4)
- o Awarded a grant to NEIWPCC and NESCAUM to hire an air toxics coordinator.

Future Actions Needed:

- o Assist states in developing air toxics problems, monitoring for air toxics, and interpreting the resluts of monitored or modeled levels of air toxics.
- o Improve the understanding of the health effects of air toxics.
- o Implement relevant aspects of the national air toxics plan.
- o Develop better data concerning intermedia transfer.
- o Develop better emissions data for sources of air toxics.

Barriers to Overcome:

- o Lack of sufficient technical information describing

the nature of the problem (eg., ambient air monitoring data).
- o Absence of clear statutory authority to deal with many of the most significant problems of toxics, particularly indoor air pollution.
- o Insufficient resources allocated.

Recommended Headquarters Action:
- o Give greater recognition of air toxic activities in national resource distribution.
- o Increase levels of technical assistance so that regions and states can better understand the nature of the problem and develop appropriate control strategies.
- o Recognize the importance of problems that may be posing significant risks, but which are not currently being addressed, like indoor air pollution.

Toxics In Drinking Water

The Region is currently involved in a wide variety of activities related to drinking water contamination. The Superfund and RCRA programs in particular are devoted in large part to cleaning up and preventing groundwater contamination (See Issue #4).

Current Actions:
- o The Region provides technical assistance to states in risk assessment and the evaluation of public health effects due to drinking water contamination as well as laboratory support for the analysis of drinking water samples.
- o Under FIFRA, the Region provides states with grants to certify pesticide applicators and to enforce application requirements.
- o Implementing the Health Advisory Program for new VOCs
- o Assisting states in their pesticide surveys.

Future Actions Needed:
- o Implement new federal guidelines for VOCs and pesticides as soon as they are promulgated.

Barriers to Overcome:
- o Time delays in setting national standards.
- o Knowledge of health effects from multiple chemical exposures.
- o Inconsistent drinking water guidance levels across states.
- o Inconsistent EPA policies for allowable levels of pesticides levels in drinking water.

Recommended Headquarters Action:
- o Provide regions with rapid turnaround on Health Advisories and other guidance levels.
- o Provide regions with additional support documentation on established criteria.
- o Move faster to establish national standards for organics and pesticides.
- o Assure consistency among EPA's recommended and enforced levels.

Lead Poisoning

Over the past five years, Region I has analyzed soil samples, provided technical assistance to other levels of government on exposure mitigation and exterior deleading techniques, served on many community lead advisory committee and met with many numbers of interested citizens concerned about lead exposure risks.

Current Actions:

- o Working with the Boston Preventive Deleading Committee to identifying the extent of environmental contamination and human exposure to lead in soil.
- o Increase enforcement efforts to prevent the introduction of leaded gasoline in cars designed for unleaded gas.
- o Sampling drinking water for lead to test for a correlation between lead levels in water and the use of lead in solder. Massachusetts has banned this use of lead in solder.
- o Testified before the Massachusetts legislature on behalf of a bill to prohibit the use of lead solder. The bill was recently signed into law.

Future Actions Needed:

- o Evaluate EPA statutory ability to respond to all dimensions of the accumulated lead problem, including lead in soil.
- o Evaluate the Boston Preventive Deleading Committeee proposal, which requests that EPA use Superfund in reponse to lead contamination in targeted areas of the city.
- o Develop and implement strategies to ensure that all current and future EPA participation in this problem is complemented by corresponding state, local, and citizen action to eliminate and/or prevent exposure.
- o Evaluate results of the regional Lead in Drinking Water survey to document the need for either additional studies covering a larger area or to restrict the use of lead/tin solder.

Barriers to Overcome:

- o Lack of clear EPA authority to address the lead issue.
- o Lack of adequate resources.

Recommended Headquarters Action:

- o Evaluate the Boston Preventitive Deleading Committee's statement on the use of Superfund and/or other Agency authority to address problems like lead in soil and resultant human health impacts.
- o Conduct a nationwide sampling program for lead in drinking water to determine if lead/tin solder for piping connections should be banned.

CASE STUDY: TEN MILE RIVER

I. PROBLEM STATEMENT

The Ten Mile River flows for 20 miles through industrialized areas of southeastern Massachusetts and eastern Rhode Island. Almost half of the river is impounded by dams, and a good portion of the remaining length is encased in man-made walls. The Massachusetts portion of the Ten Mile receives waste from 18 major industrial and 2 major municipal dischargers, many of which are associated with the jewelry and metal finishing industry.

Discharges of toxic metallic wastes from these sources are causing major water quality problems for the Ten Mile. Surveys conducted in 1984 found a wide range of metals in the water column and in the sediment including cadmium, lead, silver, and copper. Copper has been found at levels far exceeding EPA's Water Quality Criteria along much of the River's length. In addition, it is estimated that during low flow conditions, about 90% of the entire stream consists of wastewater effluent.

There is substantial public concern over these problems. Three recent public informational meetings were well attended by industry and the public.

II. REGION I AGENDA

The Region is working with Massachusetts and on an intensive study of the Ten Mile River. The goal of the study is to assess the fate and transport of heavy metals, the relationship between metal concentrations and toxicity, and the development of waste load allocations for NPDES permits.

Current Actions:

- o Complete technical work on the River study and issue NPDES permits, associated administrative orders and compliance schedules by the end of FY 85.
- o Hold a public hearing on the draft NPDES permits.

Future Actions Needed:

- o Finalize draft NPDES permits, and oversee the conditions of those permits and the associated order.

Barriers to Overcome:

- o Lack of realistic water quality goals and stream uses for severely polluted streams such as the Ten Mile River.
- o Unresolved treatment requirement issues:
  - Are the treatment requirements technically feasible?
  - How should economic factors be considered?

Recommended Headquarters Action:

- o Ensure that all Regions and states implement consistently stringent water quality based effluent limits so that there are not inequities among different geographic areas.

GROUND WATER PROTECTION

I. PROBLEM STATEMENT

Approximately 20% of New England's population (nearly 3 million people) depend on ground water as their sole source of water supply. Moreover, 2,087 community water systems (80%) utilize ground or combined ground and surface water sources and an estimated 95% of the region's rural population rely upon ground water for drinking water. Over the past 10 years there has been steadily mounting evidence that New England's shallow aquifers are vulnerable to contamination from a variety of sources, including: hazardous waste sites, landfills, surface impoundments, pesticides, and underground storage tanks.

One indication of the extent of ground water contamination is that over 280 private wells and 50 public wells in 5 states (no data was available for Maine) were closed between 1980 and 1982. The New England states reported that in 1983 the ground water in 108 towns was seriously contaminated in at least one location by toxic organic pollutants. These reported incidences are almost certainly an underestimation of the size of the problem.

New England's soil types are highly permeable and susceptible to the leaching of contaminants through the surficial geology to the bedrock layer. This, coupled with the generally high ground water table, allows foreign materials such as spent solvents, pesticide residues and petroleum products to quickly penetrate the soil layer and reach the ground water.

State agencies have historically been more involved in subsurface regulatory programs than EPA. Their experience combined with a fragmented and limited Federal ground water response, leaves a principal role for the states. In addition, the states have traditionally cooperated with local governmental units, which are the first line of defense for ground water protection activities.

Local governments must be provided the tools for making proper ground water management decisions, specifically in the area of land use control. Along with state and local governments, EPA works closely with the U.S. Geological Survey with its ground water expertise, and U.S. Department of Agriculture (USDA) and Soil Conservation Service (SCS) both of which have involvement in and knowledge of agricultural activities.

Early state and federal response has been required to respond to the variety of potential sources of contamination which threaten New England's ground water resources. Recently, as a result of the Hazardous and Solid Waste Amendments of 1985, our regulatory capacity to respond to hazardous waste sources of contamination has been significantly expanded. The Waste Amendments, for example, provide EPA with the new and broader authority to pursue ground water protection at land disposal facilities. These facilities are of great concern because they are principal sources of ground water contamination in Connecticut and Massachusetts.

The following are brief discussions of the other sources of ground water contamination which are of greatest concern in New England.

Leaking Municipal landfills

Leachate from poorly designed and overloaded landfills contaminates ground water. Among the major contaminants in the leachate are hydrocarbons, iron, and manganese. This emerging problem has primarily resulted from inadequate attention to ground water in siting decisions. In addition, no distinction was made between hazardous and non-hazardous waste prior to the RCRA act, and all landfills could accept hazardous waste until November 1980. Although the problem is region-wide, no systematic effort has been made to investigate and locate these older landfill sites and to monitor the affected ground water. About twenty percent of the NPL sites nationally were, at one time, municipal landfills.

Underground Storage Tanks (UST)

Gasoline and other toxic chemicals leaking from underground storage tanks are among the most common causes of ground water pollution. National estimates for numbers of existing underground gasoline storage tanks range from 1.5 to as high as 10 million (based on a recent analysis by the Steel Tank Institute). An estimated 75,000 to 100,000 of these may be leaking into the ground water and perhaps toward an unsuspecting family's basement or a drinking water supply. It is estimated that there are up to 200,000 tanks in Region I. While all New England states are affected, the problem appears to be most severe in Maine.

Chemical constituents of gasoline are among the most toxic of substances common to our everyday lives. Gasoline may contain up to 1,200 components, of which, about 300 have been identified. A few of these constituents have been shown to induce cancer on laboratory animals and one, benzene, is a known human carcinogen. Toxicological and limited human studies have found gasoline components to cause such health problems as anemia, nervous system disorders, kidney disease, cancer and lead poisoning.

Although fuel tanks are by far the most numerous type of underground storage tank, other hazardous chemicals are stored underground. While there have not been reported cases of leaking solvents from underground storage in New England, there have been several serious incidents reported in the California's high technology Santa Clara Valley. Because of a concentration of similar industries in New England there is also a potential hazard in this region.

A new federal initiative to control UST has been mandated by Congress in legislation passed in November, 1984. The New England states are viewed as national leaders in their attempts to initiate state regulatory programs in advance of future federal efforts.

Pesticides

Although most agricultural pesticides have been properly applied, their residues represent a serious threat to the purity of the ground water supplies in New England. Approximately 16 active ingredients/metabolites of registered pesticides have been found in samples of ground water, seven of which have been identified in one or more New England States resulting primarily from the agricultural application of soil fumigants, insecticides or

herbicides. Several states have utilized existing authorities to reduce the likelihood of future contamination. They are often inhibited, however, by a lack of critical information necessary to more effectively evaluate potential health risks from use of contaminated water having very low residue levels.

Extensive ground water contamination by ethylene dibromide (EDB) and aldicarb throughout New England has posed serious drinking water problems for owners of private water supplies. For example, citizens in the Connecticut River Valley communities of Connecticut and Massachusetts who have levels of EDB in drinking water which exceed the strigent standard often cannot sell their homes because state banks will not write mortgages for these properties.

CASE STUDY: THE CAPE COD AQUIFER MANAGEMENT PLAN

Because of the historic fragmentation of ground water protection efforts, there is a need for better management and improved coordination in the ground water protection area. In addition to the wide range of contamination sources, there has been a proliferation of programs at the federal, state and local levels. Region I's Cape Cod Aquifer Management Plan represents an attempt to consider all sources of pollution, coordinate various government programs and, most importantly, devote full attention to the ultimate goal of long-term ground water protection.

A regional approach to solving the institutional problems and enhancing ground water protection is taking shape through a pilot resource management project on Cape Cod. In this project, we will develop a management structure through which to catalog all possible sources of contamination for the sole source Cape Cod aquifer. The project will also provide a focal point for integrating various programs with current or potential responsibility for ground water protection on the Cape.

In addition to the Region I Office of Ground Water Protection, this project will include participation by the Massachusetts Department of Environmental Quality Engineering and the Cape Cod Regional Planning and Economic Development Commission. Region I also plans to work closely with the U.S. Geological Survey which has extensive data and experience working with ground water. Eastham and Barnstable will be the focal points for this pilot, and will play the key roles because these communities will have to use the information gathered in this project to make tough ground water related land use decisions. The Region is hopeful that this project can serve as a prototype for the management of other aquifers within New England and the rest of the country. In order to broaden the scope of the project and expedite its completion, however, the Region will require additional financial support.

II. REGION I AGENDA

Leaking Municipal Landfills

Monitoring and regulation of current landfill sites are state responsibilities. In most cases, however, the states' monitoring programs are inadequate. Some municipal landfills obtained interim status and have continued to accept limited types of hazardous waste in small designated areas after November, 1980. Under the old statute, EPA was concerned with only that part of the landfill that received hazardous waste. Whereas, under HSWA, all landfills are covered and will be subject to RCRA Subtitle C ground water monitoring requirements. The results of this type of monitoring should help define the scope of the problem caused by municipal landfills.

Barriers to Overcome:

- o Costs associated with the ground water monitoring are very high, including costs for characterizing site hydrology, characterizing the plumes, continued monitoring of sites and developing and implementing remedial plans.
- o Capping or closing a facility requires finding alternative capacity, which is an increasingly difficult problem.

Recommended Headquarters Action:

- o Coordinate national ground water monitoring data from municipal landfills that have obtained interim status in order to assess the environmental threat posed by these facilities.
- o Establish a program to identify old abandoned landfills and to monitor what affect landfill leachate is having on ground water.

Underground Storage Tanks

The key to successful implementation of the new UST program will be strong state programs. The Region will continue to nurture strong partnerships with the New England States individually and through regional organizations like the New England Interstate Water Pollution Control Commission and the New England Council.

Barriers to Overcome:

- o Need to regulate fuel oil which is currently exempt from regulation.
- o The tremendous costs to the oil companies to manage and replace tanks and the likelihood that these costs will be passed on to the consumers.
- o Problems associated with disposal of old tanks.

Recommended Headquarters Actions:

- o Ensure that adequate state grant funds be available in FY 87 and FY 88 to allow the states to staff and implement program.
- o Aggressively complete the regulatory development program by May, 1987, as envisioned in the Agency UST Development Plan.

Pesticides

The states have taken the lead role in regulating the use of pesticides. The Regional Office is committed to helping them wherever possible with additional sampling and analytical support. For example, the Water Supply Branch initiated a sampling/monitoring and analysis study of selected public and private water supplies in western Massachusetts which will supplement the work done by the State's Department of Agriculture and Department of Environmental Quality Engineering. The Region will continue to provide technical assistance in support of state actions involving pesticide contamination and encourage the ongoing use of existing authorities to avoid future problems.

Past state actions:

Connecticut

- o Extensive sampling for EDB - first round of analyses were completed in 1984 and a second sampling will concentrate on discernable increases.
- o State has taken about 3000 samples showing approximately 248 private wells and 50 public supplies contaminated.
- o Performed analysis for 32 pesticides/by products and PCB in 12 towns.
- o Refused registration of the soil fumigant Vorlex with formulations containing chlorinated C_3 hydrocarbons.

Maine

- o Registered Temik for use in Maine only with an additional label restriction prohibiting use within 500 feet of a well.

Massachusetts

- o Extensive EDB study sampled 273 sources with two public supplies and 33 private wells exceeding the state limit of 0.1 ppb.
- o Monitored 164 wells for aldicarb; 5 private wells had levels greater than 10 ppb., the state action level.
- o A monitoring survey of 24 towns in the Connecticut River Valley (with prevalent EDB contamination) has been initiated. The project will encompass mapping agricultural activities, approximating pesticide usage, overlaying all public and private supplies, and then testing the wells with the highest probability of contamination for seven agricultural pesticides.
- o Pesticide Control Board issued an emergency order (90 days) banning the use of Temik in potato fields within 1000 feet of supply wells.

New Hampshire

- o A monitoring system to sample ground water in high pesticide use areas has begun. The first phase of the project will focus on areas abutting apple orchards. During FY 86 the study will expand to examine impacts from 10 sites abutting extensive vegetable growing areas and 10 sites near golf courses.

Rhode Island

- o Extensive study of nearly all public water supplies for Temik contamination. All private wells within 1/2 mile radius of about 130 potato fields were sampled. Two public and 15

private wells were found to be contaminated.
- o State refused to register Temik for the 1985 growing season due to the lack of proper labeling retrictions. The ban may continue into 1986.

Vermont
- o The Health Department conducted a study of herbicides used at three sites, highway guard rail, railroad sites, and utility rights of ways. Ground water monitoring was conducted to determine impacts. Results to date have not detected any herbicides in the ground water.

Barriers to Overcome:
- o Potential resistance from commodity and grower groups fostered by an incomplete understanding of the problems involved.
- o Lack of resources to support increased technical assistance and outreach programs.
- o Lack of resources to support increased training of applicators focusing on ground water and safe use.

Recommended Headquarters Action:
- o Issue health advisories or drinking water standards for pesticides found in ground water.
- o Initiate The National Survey of Pesticides in Ground Water as soon as possible. State monitoring of residues in ground water is at best a small scale effort that has focused on only a few chemicals of high volume use. A more intensive monitoring program is needed to better identify the scope of the pesticide in ground water problem.
- o Support residue monitoring of pesticides likely to migrate to ground water supplies. Soil and climatic conditions favorable to pesticide residue accumulation and migration, especially for degradation-resistant pesticides, should be considered.
- o Amend labels, classify restricted use or cancel use when monitoring data and/or experimentation indicate ground water contamination from pesticides.
- o Develop policy regarding the types of control measures necessary to mitigate the risks from pesticide leaching. Also, develop a plan on how to implement various control measures.
- o Publish chemical fact sheets for pesticides having potential for movement into ground water. These fact sheets should be updated to provide additional information on environmental characteristics and fate depending on climate and soil conditions.

WASTE REDUCTION, TREATMENT AND DISPOSAL

I. PROBLEM STATEMENT

The critical shortage of environmentally sound waste treatment and disposal capacity in Region I and the continuing production of significant quantities of wastes of all types, together pose a waste management problem of major proportion for New England.

The situation has begun to take on a more urgent aspect because an increasing number of presently operating waste treatment and disposal facilities in the Region are shutting down because they cannot conform to stringent state and federal waste management requirements and restrictions.

The New England waste problem cuts across waste and facility types. More and more cities and towns in the Region are struggling with growing volumes of solid/municipal and water treatment sludge wastes and with a shrinking availability of on-line, environmentally sound landfill disposal capacity. Per capita, New England produces a disproportionately large amount of low-level radioactive wastes; a solution to the question of long-term disposal of these materials remains elusive. On the hazardous waste side, too, there is cause for alarm: the Congressional Budget Office recently projected a doubling by 1988 in national demand for hazardous waste treatment and disposal service capacity resulting from the combined impacts of full implementation of the RCRA amendments and the expected heightened Superfund construction activity around the country.

Waste management is to be counted among the environmental and public health issues of greatest concern to members of the public. This concern has placed increased pressure on government at all levels to deal effectively with the range of waste issues now confronting us. A recent EPA-funded study at Dartmouth College concluded that "the ability of the EPA and state agencies to deal effectively with [this problem] is critical to government credibility as protector of public welfare."

Four aspects of New England waste problem are treated here: wastewater, hazardous wastes, municipal landfills, and low-level radioactive wastes.

Wastewater

The massive water pollution control effort that the nation embarked on following the enactment of clean water legislation more than 10 years ago has resulted in significant environmental improvements. Indicators of net gains for the environment include: increases in the percentage of the population served by wastewater treatment technology, better ratios of treated to untreated wastewater volumes, measurable improvements in water quality over more river and stream miles, and the ability of more of our waterways to support fish species, including anadromous, dependent on highly oxygenated waters.

Nevertheless, major problems in the area of waste water treatment and management persist, and much more work lies ahead.

- o Combined Sewer Overflows (CSOs). CSOs result in the discharge of large amounts of untreated sewage into waterways. About 40% of the Region's total population lives in communities that are affected by untreated CSOs.

- o Mandated Treatment Plants. There are insufficient funds, federal, state and local for the construction and operation of wastewater treatment plants needed to meet the water quality standards developed under the provisions of the Clean Water Act.

- o Sludge Management and Disposal. The quantity of sludge produced has grown dramatically in this Region because older treatment plants have been expanded and new plants have been constructed. Secondary treatment requirements and more stringent water quality standards will result in further increases in sludge production. The presence of toxic materials in some sludges can bear on treatment and disposal options, and in certain cases, both land application and incineration of municipal and industrial sludges can result in "pollution transfer". Further, managing sludge has been difficult because legal requirements are fragmented among several federal authorities, and some practices, eg. distribution and marketing, are not regulated.

- o Industrial Pretreatment Program. Industrial discharges to publicly owned wastewater treatment works have the potential to release significant quantities of toxic pollutants into waterways and bottom sediments, and "shock loadings" of some industrial discharges can damage secondary waste water treatment systems. Discharge constituents can bear on choices among sludge treatment and disposal methods. The industrial pretreatment program is the only federal regulatory program available for the control of industrial waste waters being discharged to POTW's.

Improper and inadequate treatment of wastewater contaminates the waterways and coastal areas of New England. Pollutants from CSOs can include fecal coliform, gross solids and floatables. Pathogens, heavy metals, and toxics can be found in wastewater discharges and in industrial and municipal wastewater treatment and pretreatment sludges.

These and other pollutants have negative effects on uses of these resources: recreational (e.g., boating, fishing, swimming), commercial (e.g., commercial fishing, process water, shellfish harvesting), ancillary economic activity (e.g., tourist/recreational trade), and general public uses (e.g., surface and underground drinking water supply).

Hazardous Waste

A number of factors contribute to the shape and nature of New England's hazardous waste situation.

There is a serious shortage of treatment and disposal facility capacity to handle the volumes of wastes generated as a by-product of industrial

activity in the Region (500,000 tons annually) and that which is produced in connection with cleanup activities at Superfund sites. In point of fact, there are currently no commercial land disposal facilities in all of the Region.

Second, a number of existing waste management facilities will lose their interim status for failure to meet strict requirements imposed by RCRA and its 1984 amendments, including, in particular, insurance, groundwater monitoring, double liners for surface impoundments, and restrictions on the kinds of substances which may be disposed of in landfills. Other facilities may choose to close rather rather than incur the increased costs of meeting the new RCRA standards.

A related third factor bearing on the hazardous waste situation in Region I is the rapidly increasing costs associated with proper hazardous waste transportation and disposal. The higher costs for generators could induce more illegal disposal activity in New England.

Finally, while there is a clear need for increased hazardous waste treatment and disposal capacity in the Region, public concern remains high, and continued strong local opposition to siting new, or expanding existing waste management facilities is a virtually certainty. These problems, though regionwide, are most serious in Massachusetts and Connecticut where the greatest number of Superfund sites are found and where most of the hazardous waste in New England is generated.

Municipal Landfills

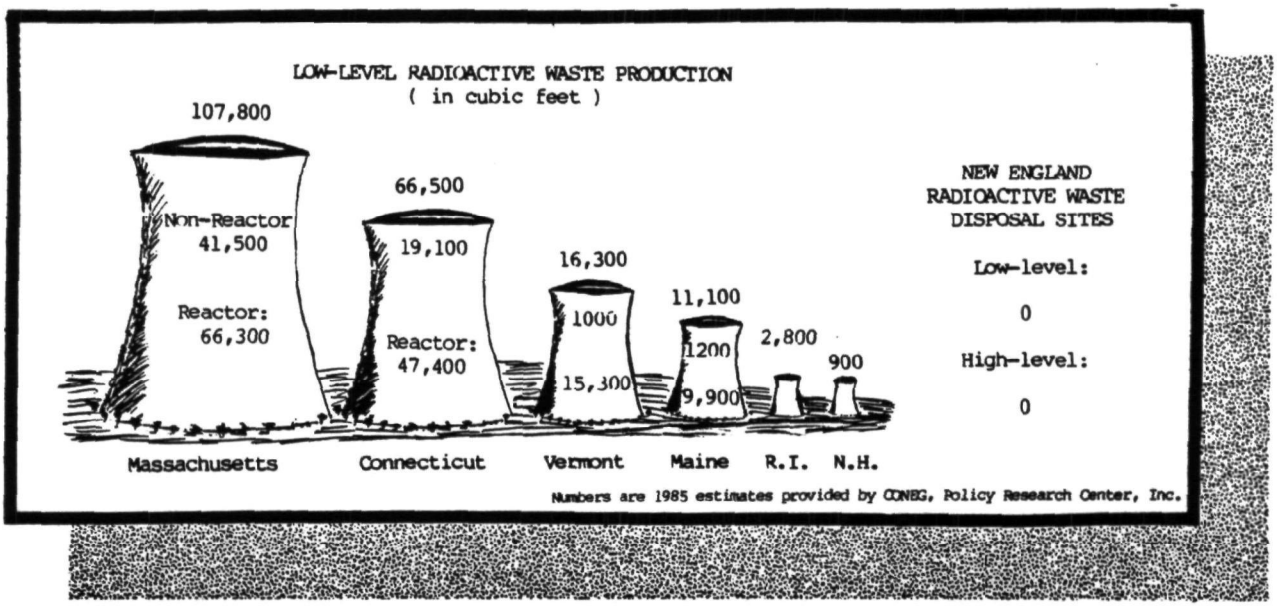
The New England states face major difficulties in meeting their solid waste landfill disposal capacity needs. Landfill contamination and leachate problems are common and represent serious environmental management issues for many communities across the Region. The capacity shortfall is particularly acute in Massachusetts and Connecticut, where current landfill capacity will be exhausted in three to five years. Lead times to develop new waste disposal capacity are expected to exceed five years due to public opposition and budgetary constraints.

Low-Level Radioactive Waste

New England must find a way to dispose of its low-level radioactive wastes. The problem is especially acute in this Region; we produce 13% of the nation's low-level waste yet we comprise only 5.4% of the nation's population. In the past, all of this waste, produced as a by-product of medical and industrial applications, weapons research and production, and nuclear power generation (200,000 cubic feet per year), was shipped out of the Region.

The Low-level Radioactive Waste Policy Act of 1980, stipulates that by January 1, 1986 each state, by itself or in compact with other states, provide suitable facilities for disposal of low-level radioactive waste. After this date, compact states will have the right to exclude or limit the disposal of low-level radioactive waste generated outside the compact borders. Because of state legislative inaction elsewhere in New England, it appears at this time that only one New England state will meet the

January 1986 deadline. Connecticut has entered into a compact with New Jersey, Delaware and Maryland. At the present time, legislation is pending in Congress to extend the 1986 deadline to 1992.



II. REGION I AGENDA

Wastewater

Addressing the wastewater problem has required significant cooperation between the EPA and the state's public health and pollution control agencies. Recently, the Region has delegated the management of construction grants to each of the states, while retaining an oversight role. In 1984, the construction grants program enabled the New England states to upgrade or complete 60 treatment and interceptor facilities. In addition, Congress enacted a new CSO grant program. In FY 84, Region I awarded seven marine CSO grants totaling over 12.2 million dollars (40% of the national total) In FY85 another 4 grants, in a total amount of $4.7 million, will be awarded.

Current Actions:

- o Assisting the states to develop their sludge management programs under proposed 40 CFR Part 501 regulations.
- o Requiring, in conjunction with the states, major municipalities to develop Municipal Compliance Plans. The Region hopes to have received all the MCPs by October 1, 1985.
- o Assisting applicants in obtaining funds for marine CSO projects.
- o Requiring POTW's to complete and implement the industrial pretreatment programs.

Future Actions Needed:

- o Work with state and local governments to implement innovative funding mechanisms (state revolving funds, etc.) to assure continuing construction of municipal wastewater treatment facilities when federal funding is no longer available.
- o Provide specialized training assistance, based on national experience, in various elements of wastewater treatment (operations and maintenance, administration, etc.) to assure that provisions of the CWA are fully implemented.
- o Work with states to finalize planning for CSO projects (including water quality demonstrations if required)
- o Work with states to establish discharge limitations and issuance of NPDES Permits in coordination with above planning actions.
- o Develop strategies to assure that states submit approvable sludge management programs.
- o Develop strategies for situations where states are reluctant to take enforcement actions against local POTWs that are in violation of technical sludge regulations.

Barriers to Overcome:

- o The CWA does not specifically mandate the level of CSO abatement.
- o Lack of funding - The EPA 1984 Needs Survey estimated that approximately $4 billion will be required for wastewater treatment facilities in Region I and 2.9 billion will be needed for CSO control. The Region currently receives $185 million/year based on a $2.4 billion yearly national allotment and the current state allocation formula.
- o States are reluctant to implement Part 501 sludge requirements because of budget constraints.
- o States' hesitancy to take action against violators of state sludge restrictions; there is a low priority on sludge management at the state level.
- o Many POTW's give development and implementation of the industrial pretreatment program low priority and are hesitant to take enforcement action against non-complying industrial sources.

Recommended Headquarters Action:

- o Establish policy, procedures and discharge limitations for permitting CSOs.
- o Work with Congress for more specific CSO abatement language in the Clean Water Act amendments and to amplify the need for additional special CSO funds.
- o Sponsor technical seminars on state of-the-art controls for CSOs.
- o Provide guidelines to the Regions on how to review and approve state sludge management programs.
- o Provide assistance in conducting seminars/workshops on sludge management.
- o Sponsor technical seminars for POTW's implementing the pretreatment program.
- o Implement the recommendation of the Pretreatment Implementation Review Task Force.

In the area of wastewater management, our efforts will be directed at improving surface and ground water quality. We will measure our

progress based on any number of indicators, eg. opening presently contaminated beach areas to swimming and other recreational uses, cleansing acres of currently contaminated shellfish beds to the point that they can be opened for commercial harvesting, improving the aesthetics of currently degraded areas to the point that wider use is possible. We need to ensure that sludge treatment and disposal practices are consistent with federal regulations and sound management practices, and will direct efforts at dealing with the CSO problem in the Region. Over the long term we will base progress on increases in the variety and vitality of aquatic life forms, decreases in benthic deposits and alleviation of the health risks posed by various contaminants in sludges and wastewaters. We will look for improvements in the quality of surface and groundwater used for drinking. We will work for further improvements in the ratio of treated to untreated wastewater, and for increases in the number of POTW's and industries that are in compliance with NPDES permits and pretreatment requirements.

Hazardous Waste

This past year Region I has devoted significant effort to advising the regulated community through letters and seminars of their specific responsibilities under the new RCRA requirments.

Current Actions:

- o Supporting efforts by the academic institutions and communities to exchange information on and/or develop waste reduction options.
- o Carefully evaluating alternative remedial options for Superfund sites because of the new RCRA limitations on off-site disposal.

REGION I Waste Handling Methods
(as reported by RCRA manifest generators)

Physical treatment	44%
Chemical treatment	12%
Surface impoundments	7%
Incineration	7%
Storage	6%
Landfill & Other Land Disposal	5%
Solvent recovery	3%
Biological treatment	1%
Other treatment	8%
Unknown	7%

Source: HQ IEMD/Region I Hazardous Waste Pilot Project (data is from 1983)

Future Actions Needed:

- o Promote waste minimization and source reduction programs.
- o Increase civil and criminal enforcement efforts in order to reduce the incentives to illegally dispose of waste.
- o Sponsor public education/outreach programs to foster acceptance of environmentally sound methods for on-site treatment such as incineration and the siting of new facilities.

Barriers to Overcome:

- o Lack of alternatives to current disposal practices, especially the lack of alternative technologies for on-site disposal or neutralization of waste.
- o Public concern about on-site treatment and new facility siting.
- o Inadequate incentives for waste reduction and resource recovery.

Recommended Headquarters Action:

- o Research and development of alternative technology for on-site treatment of hazardous waste.
- o Better communication to the regions about techniques used and developed in other regions or in private industry especially with regard to on-site treatment technologies.
- o Actively promote source reduction/waste minimization programs that have been implemented in private industry. This should include cataloguing successful programs and making this information easily available to others.

The short term and long term environmental objectives this area are to reduce production of wastes, to move away from land disposal, and where possible make safe and effective use of alternative treatment technologies such as incineration, nuetralization, air-stripping, and carbon absorption. We will be making progress when the amount of hazardous waste produced declines, the number of land disposal sites decreases and if new, effective, alternative technologies can be developed and placed on-line.

A CASE STUDY: GENERAL ELECTRIC — PITTSFIELD, MA

The General Electric transformer plant in Pittsfield, Massachusetts discharged PCB wastes into the Housatonic River for many years. EPA, by means of a RCRA 7003 Order, required GE to ascertain the scope of the problem including the level and extent of contamination in fish and sediments, and the extent PCB transport downstream into Connecticut.

The investigation revealed considerable contamination. For more than 12 miles of the River, PCBs were found at levels exceeding 50 parts per million. PCBs were in evidence over a considerably longer stretch, but at lower levels of concentration.

GE, with Region I support, is holding a number of public meetings and presented the remedial action options to the public. Dredging,

rechanneling or covering in place are being discussed but potential problems have been identified for each of these alternatives. An innovative alternative, the use of aerobic and anerobic bacteria that biodegrade PCBs, is being included in GE's study of remedies. Pilot studies are now being planned to determine the feasibility of this approach to contamination cleanup.

Headquarters should more aggressively promote the development of new waste management technologies, such as here, encouraging private industry to explore the possibilities of biological and other alternative waste treatment technologies. In addition, the Agency needs to systematically disseminate information about promising new treatment and cleanup technologies.

The GE Pittsfield case illustrates how Agency/industry cooperation can lead to the development of new and innovative ways to manage toxic waste contamination.

Municipal Landfills

States are chiefly responsible for managing non-hazardous municipal waste disposal. These efforts include expanding existing landfills and promoting recycling and other waste minimization programs. Because of strong negative public opinion and a climate of fiscal austerity, development of long-term solutions to the problem has been difficult. EPA aided states in developing new facilites under Subtitle D Urban Grants until 1981 when the Agency stopped funding this program.

Current Actions:

- o Helping revise the criteria for facilities that can receive hazardous household wastes.

Future Actions Needed:

- o Spur the exploration of recycling, resource recovery, and source reduction as management options by public officials and private sector managers in New England.
- o Improve training programs for state personnel to 1) review design characteristics of resource recovery facilities and 2) review proper landfill design.

Barriers to Overcome:

- o No funding of Subtitle D
- o Public opposition to new landfills and the expansion of older ones.
- o Lack of information, trained staff and funds at the state level.

Recommended Headquarters Action:

- o The states have specifically asked for EPA to 1) develop a checklist of criteria that could be used to evaluate proposed landfill designs 2) evaluate resource recovery hardware on the market and 3) provide funding and technical assistance.
- o Provide guidance and incentives to the states on developing comprehensive recycling programs.
- o Help increase public awareness for the need to build resource

recovery and other facilities for managing solid waste.

Our aim in this area is to encourage waste stream reduction and to promote waste materials recovery and recycling, in the hope of dramatically reducing the volume of waste that needs to be landfilled. An effective resource recovery program could have the potential to reduce the volume of new waste by 95%. The environmental impacts of particular waste recovery proposals must be investigated fully.

Low-Level Radioactive Waste

Current Actions:
- o Establish criteria for low-level waste disposal sites.

Future Actions Needed:
- o The major role of Region I and the EPA in the future will be to 1) provide technical assistance to the states and 2) help inform the public that sites which are selected wisely and run competently will not present a health hazard to surrounding populations.

Barriers to Overcome:
- o Political and emotional opposition to the siting of radioactive disposal facilities, even when proposed facilities would be environmentally sound.

Recommended Headquarters Action:
- o Issue criteria for low-level radioactive waste disposal sites with ample opportunity for public comment.
- o Investigate whether EPA should have a role in encouraging industrial and institutional generators to implement source and volume reduction programs.

Our goal is to obtain sufficient environmentally sound low-level radioactive waste disposal capacity that will not pose unacceptable health or environmental risks.

LONG RANGE TRANSPORT

I. PROBLEM STATEMENT

Long range transport of air pollutants is a major problem in New England because we are downwind from both the most heavily industrialized portions of the nation and one of the most heavily travelled motor vehicle corridors. It is estimated that 65 to 80% of acidic deposition in New England is caused by long range transport. Similarly, on most days when the National Ambient Air Quality Standard (NAAQS) for ozone is exceeded in Region I, a significant part of the problem is transported ozone. Yet, while long range transport poses a major threat to public health and our natural environment, solutions to the problem have been elusive. The Clean Air Act, with its focus on individual state plans for air pollution control, is not well suited to dealing with pollutants that cross state and regional boundaries. This section discusses in detail the long range transport issues relating to acidic deposition and ozone. While separate phenomena, they are linked by complex atmospheric chemistry and potentially synergistic effects on our environment.

Acidic Deposition

The phenomenon popularly called "acid rain" is more correctly termed "acidic deposition." The acidic material is deposited not only in rain or snow, but also in dry form as an aerosol (particle) or gas. The major contaminants in the deposition are gaseous sulfur dioxide (SO_2) and nitrogen dioxide (NO_2), sulfate and nitrate aerosol, precipitation droplets containing sulfuric and nitric acids, and assorted trace metals. Volatile organic compounds (VOC) and oxidants (e.g. ozone) are also involved in the conversion of SO_2 and NO_2 to aerosols and acids. Acidic deposition affects all of New England and Eastern Canada and is now affecting many other parts of the U.S.

Acidic deposition has major aquatic, terrestrial and atmospheric impacts. Acidification of freshwater ecosystems has reduced the abundance, production and growth of bacteria, algae, fish and amphibians. In addition some acid sensitive lakes can no longer support fish populations. Valuable commercial and recreational fisheries have been lost in certain areas. Acidity also increases the ability of groundwater to leach metals and other chemicals from soils, affecting both aquatic and terrestrial ecosystems and potentially degrading drinking water supplies. Acid deposition is also known to cause material deterioration such as the weathering of building surfaces and monuments. A potential major terrestrial impact is the uncertain role of acidic deposition in significant forest decline in the Northeast, exemplified locally by the red spruce decline on Camel's Hump in Vermont. Finally, sulfates in the atmosphere can directly impair visibility, affecting some of the most pristine areas in northern New England.

Large fossil fuel burning sources contribute almost all of the SO_2 emissions in the eastern U.S. and in New England. However, the actual SO_2 emitted by the New England states together represented only 3% of 24 million tons annually emitted in the U.S. In contrast, certain states

along the Ohio River each contribute more than 5% of the national SO_2 inventory. While mobile sources are significant contributors of NO_2 and VOC, stationary sources still contribute more than half the national emissions for both pollutants.

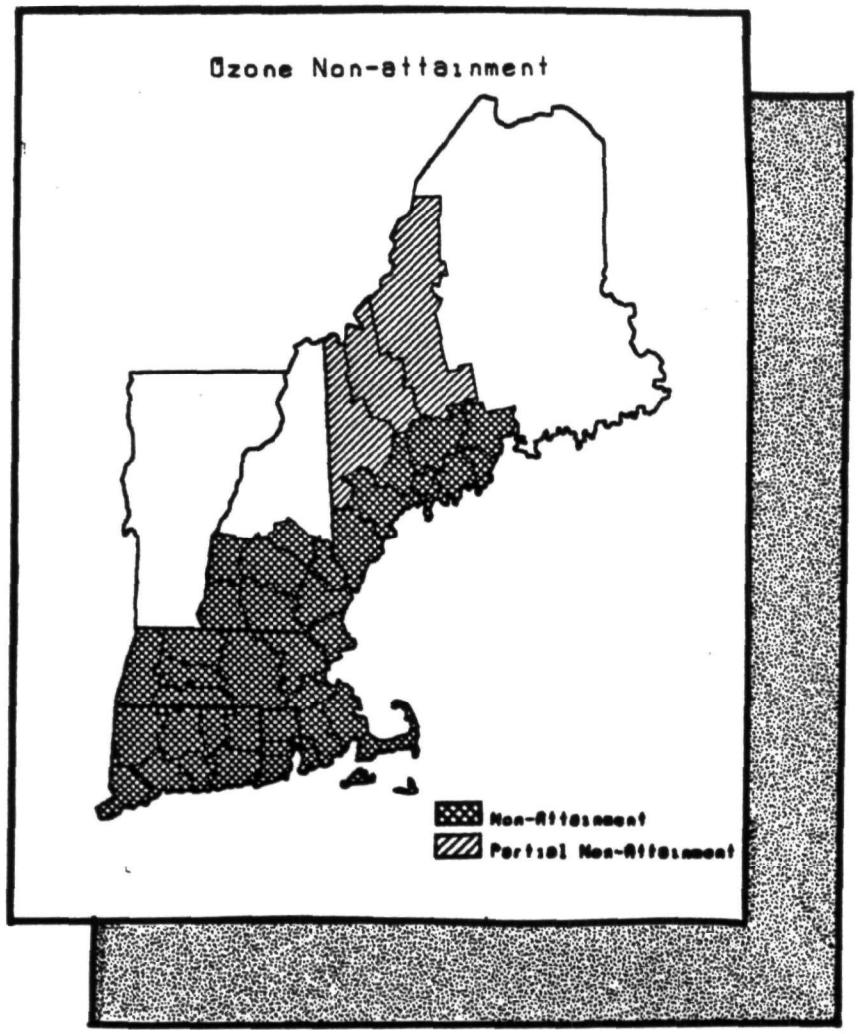
Because major uncertainties remain regarding the scope and cause of the acid deposition problem, the Agency's role remains one of research through the National Acid Precipitation Assessment Program (NAPAP). NAPAP, which began in 1980, is a ten year interagency program whose funding has grown from $11 million in FY 1980 to a proposed $85.5 million for FY 1986. Some of the major technical issues being researched under NAPAP include: sources of acidic precipitation, atmospheric processes, and evidence of the effects of acidic deposition. A major project funded by the NAPAP is the national lake survey. This study, which includes about 600 lakes in New England, is designed to document baseline conditions using uniform sampling procedures. As a result, NAPAP will be able to characterize aquatic conditions and to improve the validity of, and confidence in, acidification trends research. The first sampling results will be available in the fall of 1985.

Public concern over acidic deposition in New England was most visible in Manchester, NH during a three day conference in January 1984 entitled "Acid Rain 84". Although planned for 200, more than 500 individuals attended. Concern over acidic deposition remains at a high level today as reflected by resolutions adopted at city and town meetings, at the state legislative level, at meetings of the New England Governors, and at their meetings with the Eastern Canadian Premiers. The Governors and Premiers have adopted a regional sulfur dioxide reduction plan which will be the basis of reduction plans for states and provinces in the area.

Ozone

Ozone is formed when volatile organic compounds (VOC) mix with oxides of nitrogen in the presence of sunlight during the warm months, generally May through September. Mobile sources contribute about 40% of the region's VOC emissions while stationary sources account for the remainder. The stationary sources can be further broken down into large point sources (10% of total VOCs) such as chemical plants and bulk gasoline terminals, and small sources (50% of total VOCs) such as dry cleaners and gas stations.

Except for Vermont, all New England states have sites which exceeded NAAQS standards for ozone (0.12 ppm) on at least 15 days in 1984. One site in Connecticut had 28 violations. On most of the days when violations occur, a substantial amount of the ozone is transported into the region from upwind sources. Although the number of violation days was less than in 1983, the magnitude of the highest violations did not decrease significantly. In fact, both the number of violation days and the second highest ozone levels recorded during the summer of 1984 exceeded the 1981-1983 three year average for these indicators.



When the ozone standard is exceeded, a high proportion of the "at risk" population experiences difficulty in breathing. On days with concentrations well above the standard, the "at risk" population is advised to stay indoors and to restrict activity. In New England, the "at risk" population includes about two million people, or about 15% of the entire population. Scientists also believe that ozone may be a primary cause of recent forest decline in the Northeast.

Public concern is evidenced by local Lung Associations' activities and heightened publicity during the ozone season. All states with ozone violations and their regional organization, the Northeast States for Coordinated Air Use Management (NESCAUM), have been involved in a major ozone study (Northeast Corridor Regional Modeling Project or NECRMP) and have been strong advocates for its completion.

II. REGION I AGENDA

Acidic Deposition

Because EPA does not believe that enough is known about acidic deposition to propose controls at this time, Region I's actions are primarily focused on research activities and information exchange. This

includes encouraging the funding of local research, disseminating research information, and reporting regional research developments and public concerns to EPA Headquarters. The states' involvement includes research, legislative action, and participation in the national State Acid Rain (STAR) program. Funded by a $3 million grant from EPA, this program is examining issues which might arise if a national plan is implemented.

Current Actions:

- Provide Regional oversight of the STAR program which provides $560,000 for projects conducted by the states including:
  1) a Vermont study of emission inventories and maintenance of emission levels for low emission states
  2) a Connecticut study of how the public and industry can contribute to strategy development
  3) NESCAUM studies of SO_2 control techniques and the form a maintenance plan could take
  4) a New Hampshire study of strategy development and the assessment of economic and environmental impacts
  5) Massachusetts studies of strategy development and emission trading options.
- Participation in NAPAP activities including national meetings, emission inventory workgroups and the lake survey.

Future Actions Needed:

- Compile an accurate 1985 SO_2 emission inventory for NAPAP. Region I and the states will be working together to collect and submit the data.
- Participate in national workshops addressing inventory and control plan implementation issues.

Barriers to Overcome:

- Uncertainty over whether the benefits of controlling emissions, as indicated by scientific documentation of the current severity and causes of the problem, outweigh the cost of controls including increased utility rates and reduced coal miner employment.
- Uncertainty about the causes and mechanisms of acid rain damage.
- Debate over the distributional effects (both geographic and sectoral) of any emissions reduction policy.
- The inadequacy of the existing Clean Air Act in addressing non-criteria pollutants.
- Limited funding. Authority, funding and grants are available mainly for research, not operating programs.

Recommended Headquarters Action:

- Ensure that adequate resources are committed to long-term research projects and environmental monitoring. The ORD acid rain budget must be fully funded and monitored. Findings must be reported in a timely manner with widespread circulation.
- Use regulatory review and approval experience to guide

program planning and assure efficient coordination of acid rain issues. The Office of Air and Radiation must continue to analyze potential issues and control options.
- o Consider local input in establishing regional research projects.
- o Keep regions and states abreast of important developments and provide a forum for discussion of research findings and strategy developed by government, industry and the public.
- o Encourage state and regional strategies that would lead to control plan implementation.

Continued research of the acidic deposition problem should reduce the existing uncertainties and help EPA to formulate and implement a national acid rain control program. When such a program is implemented, the resulting decrease in sulfate and nitrate deposition should retard acidification of ecosystems and help alleviate other environmental problems such as materials damage, visibility impairment, and high ambient levels of fine particulates. While emissions data may be used as surrogate indicators of our progress, trend data from the lakes survey will be invaluable.

Ozone

Region I has developed a comprehensive strategy to combat the ozone problem. It includes analysis of existing data, development of complete and accurate inventories, aggressive enforcement of stationary and mobile source controls, and evaluation of long range transport impacts. Stationary source emissions are being reduced by requiring industrial sources to either install add-on controls or to switch from VOC-based coatings to water-based coatings. Mobile source emissions are being controlled through new car emission standards, inspection and maintenance (I/M) programs in Connecticut and Massachusetts, and an aggressive inspection program to combat tampering with auto emission control systems and the use of leaded gasoline in vehicles designed for unleaded fuel.

Current Actions:
- o Working with the states to ensure that affected sources are aware of regulatory requirements and are in compliance.
- o Formation of a VOC Task Force which has 1) identified 591 sources subject to VOC regulations and compliance dates for each source and 2) developed a regional compliance enforcement strategy.
- o Initiation of a program to train state and federal inspectors to ensure their familiarity with VOC regulations, methods of control and inspection techniques.
- o Initiation of inspections at auto dealerships, repair shops, gas stations and fleet operators to:
  1) check unleaded gas for lead contamination
  2) check for proper nozzles on gas pumps
  3) check for tampering with emission control equipment.
- o Institution of a toll-free "hot line" available for the public to report cases of suspected tampering and misfueling. Tips received assist in establishing inspection priorities.

- Participation in a major photochemical dispersion modeling study of the Connecticut-New York-New Jersey area. The study will evaluate the effectiveness of various control strategies in bringing the area into attainment.

Future Actions Needed:

- Focus EPA inspection activity on the 315 stationary sources that should now be in compliance while providing technical assistance to the states to bring the remaining sources into compliance on schedule.
- Work with the states to definitively determine the compliance status of approximately 25 potentially significant violators already identified.
- Refer mobile source violators to EPA Headquarters for subsequent enforcement action.
- Work with New Hampshire in implementing an I/M program in the Nashua area and with Connecticut and Massachusetts to enhance their I/M programs. Work with states to initiate or expand anti-tampering and anti-fuel switching programs.
- Participate in a national Ozone Task Force addressing all aspects of the ozone nonattainment problem. Assuming lead role for long range transport and SIP development issues.

Barriers to Overcome:

- Lack of regional control strategies to address long range transport.
- Inadequate resources to fund mobile source inspection activity and the application of sophisticated photochemical models to evaluate control strategies.
- Problems with state data concerning significant violators.
- Inexperience at state and federal level in inspecting VOC sources.
- Lack of public awareness concerning 1) serious health threats associated with ozone and 2) the relationship between automobile use and ozone levels.

Recommended Headquarters Action:

- Provide resources at the regional and national level for large scale modeling studies to evaluate control strategy effectiveness.
- Continue the work of the Ozone Task Force and encourage the development of a firm new policy, consistently applied throughout the country.
- Facilitate an aggressive enforcement posture by funding additional training for inspectors and mobile source inspection activity.
- Provide a regulatory framework for implementation of regional scale control strategies to combat long range transport of ozone.

Achieving and maintaining ambient ozone standards will require working with the states in order to develop air quality implementation plans by 1987. Because of the long range transport dimension of the problem, however, achieving meaningful progress will be difficult unless the issue is addressed on a national basis.

WATER-RELATED LAND MANAGEMENT

I. PROBLEM STATEMENT

In New England, a wide variety of land-use activities contribute to the degradation of our water resources. The Region's surface and ground waters continue to be adversely affected by non-point sources (NPSs) of pollution resulting from agricultural, construction, and industrial activities. Dredge and fill practices associated with construction and development have destroyed much of the Regions's valuable wetlands. In order to restore and/or preserve our high quality surface and ground water systems, we need to aggressively advocate the implementation of best management practices (BMPs) for NPS control. The broad array of water resource damaging, land-related practices combined with development pressures, ingrained habits, and lack of public awareness, however, make the design and implementation of BMPs difficult.

A threat to both water quality and recreational and commercial water uses, NPSs include agricultural runoff and pesticide use, utility and transportation rights of way, urban runoff, construction sites, waste management facilities, landfills, and petroleum transportation and storage facilities. A priority problem associated with NPS pollution, which has emerged in recent years, is ground water contamination (See Issue #3).

Since the colonial era, human settlement has encroached upon the Region's fresh-water and saltwater wetlands, a particularly vital, productive and irreplaceable natural resource. Although wetlands comprise a small percentage of New England's surface area, they are essential to the health, nurturing, and survival of fish and wildlife populations including several endangered species and two thirds of the commercial fish species harvested off the Atlantic coast. When left undisturbed, wetlands also perform a number of important hydrological functions. First, they protect surface and ground waters from NPS pollution. It is increasingly recognized that wetlands maintain water quality through filtration of sediment and uptake of nutrients and pollutants. Secondly, they serve as critical ground water discharge and recharge areas. Finally, wetlands act as flood storage areas, and they provide a buffer against storm damage and erosion in coastal areas.

Non-Point Source Pollution

While pollution from non-point sources occurs throughout New England, it is most severe in lake watersheds, headwater streams, estuaries, and critical aquifers. Agricultural runoff from manure handling, cropping practices, and pesticide use can contaminate water resources with toxic organics, concentrated nutrient loads, and high levels of biological oxygen demand. Particularly severe in areas undergoing rapid urban, commercial, industrial, and resource development, improperly controlled construction activity can foul local waterways with debris and sediments. Effluent from urban runoff and combined sewer overflows (See Issue #4) pollute urban rivers, bays, estuaries, and other coastal waters. Old landfills, abandoned waste disposal sites, and in-place sediments (sludge deposits generated by past industrial activity, usually found

behind old mill ponds) also contaminate surface and ground waters. In addition to agricultural wastes, sediments and debris, NPS pollutants include heavy metals and oil and hazardous materials.

Although the EPA has successfully implemented programs designed to address point source pollution, abatement of NPS pollution has proven to be elusive. Because non-point sources result from such a wide variety of practices and processes, mitigation of NPS pollution would, in many cases, require adoption of methods and implementation of controls for a broad array of activities, affecting the everyday routine of individuals, groups and businesses. In addition, NPS pollution often occurs as the result of unpredictable and sporadic events such as heavy rain storms. Its diffuse and intermittent nature also makes it difficult to recognize NPS water quality impacts and design effective abatement strategies. In New England, the diverse topography poses additional challenges because it requires the development of control methods for specific types of landscapes. Finally, NPSs are not covered under the NPDES permit system.

New Englanders, in general, care deeply about the quality and future of their water resources. In light of the visible effects of NPS pollution including closed beaches, prohibitions on shellfish harvesting, and closed drinking water wells, public concern for this issue is increasing. In addition, a number of federal agencies (e.g., the Department of Agriculture and the Department of Tranportation), state and local governments, zoning boards, and private construction companies have addressed NPS pollution.

Wetlands

Despite their value and relative scarcity, our wetlands continue to be lost at an alarming rate. Although encroachment upon tidal wetlands has been largely arrested, destruction of valuable freshwater wetlands has eluded control. Areas of special concern include the Route 128 and I-495 belts in Massachusetts, southern New Hamphire, the Burlington, Vermont vicinity, Hartford and Middlesex counties in Connecticut, and peatland resources in central Maine.

The loss of wetlands has had a number of adverse impacts. With the destruction of valuable wildlife habitat, there has been a concomitant decrease in wetland animal and plant species' populations. The loss of wetlands has also been accompanied by long-term degradation of downstream water quality and increases in the severity and frequency of downstream flooding. There is also a reduction and, in some cases, an irreversible loss of educational uses and aesthetic value.

Although the Clean Water Act provides for wetlands protection through Section 404 permits, fundamental and longstanding disputes between EPA and the Army Corps of Engineers at the national level have hampered the operation of the program. For instance, as a result of a five year disagreement over the definition of fill material, many discharges into wetlands are not regulated. In addition, the Memorandum of Agreement (MOA) between the two agencies has expired. EPA doesn't want to renew it unless improved conflict resolution procedures for environmentally damaging projects are incorporated. In Region I, the most recent 404

controversy involves the construction of a shopping mall on a wetlands site in South Attleboro, MA. EPA has initiated 404(c) "veto" proceedings because another, upland site for mall construction exists nearby.

The 404 program suffers from other weaknesses. Most importantly, there are several ways to avoid federal jurisdiction. For example, while the 404 program regulates many kinds of fill operations, draining a wetland, a common agricultural practice, is not covered. There are some estimates which state that 50% of all wetland loss, nationwide, has resulted from such unregulated activities.

Public concern for the wetlands issue varies across the Region with residents of Massachusetts, Connecticut, and Rhode Island having the strongest sentiments. These areas have been most affected by the loss of wetlands resulting from development pressures. In rural northern New England, encroachment upon wetlands has been a less severe and widespread problem and thus there is a lower level of public concern. A notable exception to this pattern has occurred in central Maine, where the prospect of harvesting peat from the peat bogs for energy purposes has stimulated considerable interest and concern among conservationists and developers.

II. REGION I AGENDA

Non-point Source Pollution

The Region's emphasis is on integrating preventive measures such as Best Management Practices (BMPs) into the diverse activities affecting nonpoint source runoff and seepage. These efforts entail providing leadership to other federal agencies, working with the states, and working with regional and local agencies and interests. The Region has also undertaken programs to clean up water bodies contaminated by NPS pollution.

Current Actions:

- o Preparing a Regional analysis and summary of the NPS problem, based on the Association of State and Interstate Water Pollution Control Administrators (ASIWPCA) Assessments, Mid-year reviews, and other information.
- o Working with the states to develop, refine, and updating state NPS Management Programs called for in the EPA National NPS Strategy and in the NPS provisions in pending CWA Amendments.
- o Arranging federal agency assistance and insuring consistency of federal actions to meet state concerns and needs to carry out NPS strategies.

Future Actions Needed:

- o Develop prototype NPS programs for Estuarine and Cape Cod Aquifer programs.
- o Integrate NPS programs into Regional Wetlands Strategy and apply to priority wetlands.
- o Develop general permits for urban runoff.
- o Assess measures to control pollutants released from in-place

sediments and implement them at priority sites.
- o Conduct workshops on critical technical and policy issues such as agricultural chemical contamination of ground water, urban runoff, road salt, in-place sediments, and emerging issues as identified.

Barriers to Overcome:
- o The diffuse, intermittent nature of NPSs makes it difficult to recognize their water quality impacts and mount effective abatement strategies.
- o The diversity of management agencies requires coordinated efforts to implement control measures, touching many activities and interests.
- o BMPs involve changing ingrained habits and operations, entailing a prolonged transition process.
- o Diminishing support funds discourage abatement efforts.
- o Negative attitude of private sector interests towards increased government regulation.

Recommended Headquarters Action:
Headquarters can line up support for NPS implementation through interagency coordination at the National level, as follows:
- o Work with other federal agencies and national organizations to reach the diverse interests involved in NPS control.
- o Assure federal installations, projects, grants, and loans incorporate BMPs.
- o Ensure that agricultural cost-sharing programs incorporate the Agency's water quality objectives.
- o Provide funding, tax incentives and other incentives for demonstration projects.
- o Develop state-local-private sector capability by furnishing model legislation, guidance, and technical assistance.
- o Support Regional positions and budget for NPS activities.
- o Enlist the services of seasoned experts to provide assistance to national and regional programs.

Protecting our water resources will necessitate more careful management and effective control of activities which may result in runoff, aquifer contamination, or other types of non-point source pollution. Through clean up programs in the short-term and promotion of BMPs in the longterm, we hope to maintain high levels of water quality and reduce violations of water quality standards criteria (e.g., turbidity, nutrient loads, toxics, and microbiological contaminants).

Wetlands

Current Actions:
- o Develop comprehensive regional wetland protection strategy which will increase the effectiveness of 404 and regional programs.
- o Continue to closely review proposed 404 permits to insure that no significant, avoidable or unmitigated losses of wetlands occur.

Future Actions Needed:

- o Increase Region I enforcement activity in coordination with the Corps, Fish and Wildlife Service, and National Marine Fisheries Service during FY-86.
- o By FY-86, use Section 404(c) authority and Advanced Identification of Sites system to protect candidate wetlands identified on May 1985 Priority Wetlands List.

Barriers to Overcome:

- o Resource constraints, in particular, availability of staff time to undertake new initiatives.
- o Continued EPA/Corps disputes and divergent policies vis a vis federal wetland protection.

Recommended Headquarters Action:

- o Renegotiate EPA-Corps national MOA in a manner which promotes wetlands protection.
- o Reach accord with Corps on definition of "Fill Material".
- o Delegate 404(c) decision making authority (permit veto power) to EPA Regions.

The protection of wetlands from non-water dependent fill projects and full mitigation for all necessary and unavoidable wetlands impacts necessitates that EPA work towards increasing the effectiveness of the 404 program and improving cooperation with the Corps. In order to monitor our progress, we should track changes in wetlands acreage, the population of selected indicator species dependent on a wetlands habitat, and hydrologically related measures such as downstream water quality and severity and frequency of flooding.

PART III

REGIONAL RECOMMENDATIONS

FOR THE

AGENCY PRIORITY LIST FY 87-88

Region I Recommendations for the Agency Priority List FY87-88

The Priority List: Process and Purpose

1. The priority list seems to mix headquarters programs, regional programs, and agency principles together. We suggest categorizing priorities according to agency objectives with a further breakdown between regional and headquarters activities.

2. The list must reflect a sequential order of actions. In some cases, certain HQ functions were listed lower on the list than regional activities which are dependent on the HQ action.

3. We have difficulty in comparing priorities for protecting public health from exposure to contaminants from air emissions, drinking water, and the improper waste disposal.

4. Program offices in the regions would like more specific information as to how Headquarters uses the Agency Priority List.

Suggested Changes

1. The Ground Water Protection Strategy (#12) should be raised. This vital drinking water source is threatened by hazardous waste facilities, USTs, pesticide applications, and landfills.

2. Because of immediate public health considerations, raise Drinking Water Contaminants (#23).

3. Protections of Wetlands (#14) should receive higher priority. Development pressures in the Region threaten these valuable water resources.

4. Because toxic industrial discharges to wastewater treatment systems are outstripping our ability to control them, we should give greater emphasis to the Pretreatment Program (#16).

5. Raising Multimedia Pollution (#22) will enable the Region to place a high priority on geographic specific areas such as Boston Harbor and Buzzards Bay.

6. Lower the priority of RCRA Regulation Promulgation (#6). Although this is a priority activity at HQ it does not affect top regional priorities.

7. Lower the Reissuance of NPDES Permits (#11). This is an ongoing program which requires no special emphasis. The current backlog should be eliminated by the end of FY 86.

8. Long-Range Transport (broader than acidic deposition) needs to appear near the top. It should encompass acidic deposition , ozone, and other tranportable materials that threaten public health, buildings and structures, waters, and crops, trees, and vegetation. New reports and studies point to the need for controls and for reasearch. We should be in an implementation stage by 1986-87.

9. We need to include Indoor Air Pollution. This is a particularly important public health issue where energy conservation measures have reduced the ventilation of air. High energy costs have also led to an increased reliance on wood and coal burning stoves, further exacerbating the situation. High radon concentrations inside New England's residences is also very important from a public health perspective.

10. Achieve and Maintain Compliance with Air Quality Standards (#9) should be raised to #4 dropping 4-8 down one. This change is justified by the following reasons: (1) ozone is a criteria pollutant for which there is a health based standard; (2) ozone non-attainment affects over 20 major urban areas in the U.S.; (3) the 1987 attainment deadline is not expected to be met in these 20 areas and (4) ozone nonattainment is due in part to excessive VOC emissions, many of which are toxic.

11. Add a phrase to #26 so the first sentence reads "Complete the regulatory control program for control of exposure to radioactive wastes and finalize guidance on exposure to non-ionizing radiation."