STATE OF NEW HAMPSHIRE
HAZARDOUS WASTE MANAGEMENT PROGRAM
JUNE 1989

TO THE FISCAL COMMITTEE OF THE GENERAL COURT:

We have conducted a review of the hazardous waste management program in the State of New Hampshire consistent with recommendations made to you by the joint Legislative Performance Audit and Oversight Committee. Our review was conducted in accordance with generally accepted governmental auditing standards and accordingly included such procedures as we considered necessary in the circumstances.

The objective of our review was to determine whether the state's program of hazardous waste management is ensuring effective regulatory control over the generation, disposal, reduction and cleanup of hazardous waste in the state. In addition we examined the state's level of compliance with Title III of the Superfund Amendments and Reauthorization Act of 1986, known as the Emergency Planning and Community Right-to-Know Act. To accomplish our objectives we interviewed officials of the Department of Environmental Services, Department of Safety, Division of Public Health, Office of Emergency Management and the Department of Justice. We examined administrative rules and operating procedures pertaining to hazardous waste management to determine if the administration and application of administrative rules is resulting in effective regulation of hazardous waste.

This report results from our evaluation of the information noted above and is intended solely to inform the Legislative Fiscal Committee of our findings, and should not be used for any other purpose. This restriction is not intended to limit the distribution of this report, which, upon acceptance by the Fiscal Committee, is a matter of public record.

We wish to thank the Department of Environmental Services for their assistance and cooperation during the course of our review.

Office of Legislative Budget Assistant

OFFICE OF LEGISLATIVE BUDGET ASSISTANT

June 1989

STATE OF NEW HAMPSHIRE
HAZARDOUS WASTE MANAGEMENT PROGRAM

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ABBREVIATIONS

CERCLA -	Comprehensive Environmental Response, Compensation and Liability Act of 1980(Superfund)
CERCLIS -	Comprehensive Environmental Response, Compensation and Liability Information System
DES -	Department of Environmental Services
EPA -	Environmental Protection Agency
LEPC -	Local Emergency Planning Committee
NPL -	National Priorities List
OEM -	Office of Emergency Management
RCRA -	Resource Conservation and Recovery Act of 1976
SARA -	Superfund Amendments and Reauthorization Act of 1986
SERC -	State Emergency Response Commission
WMD -	Waste Management Division

EXECUTIVE SUMMARY

New Hampshire's hazardous waste management program consists of a mix of state and federal statutes and resulting program initiatives which set the agenda for the regulation of hazardous waste in the state. Broadly speaking, our evaluation of hazardous waste management considers the effectiveness of legislative and program initiatives in controlling and regulating the generation, disposal, cleanup, reduction and recycling of hazardous waste.

HAZARDOUS WASTE DEFINED

RSA 147-A:2 VII defines hazardous waste accordingly:

> Hazardous waste means a solid, semi-solid, liquid or contained gaseous waste, or any combination of these wastes:
>
> (a) Which, because of either quantity, concentration, or physical, chemical, or infectious characteristics may;
>
> (1) Cause or contribute to an increase in mortality or an increase in irreversible or incapacitating reversible illness; or
>
> (2) Pose a present or potential threat to human health or the environment when improperly treated, stored, transported, disposed of or otherwise mismanaged.
>
> (b) Or which has been identified as a hazardous waste by the division of waste management using the criteria established under RSA 147-A:3 I or as listed under RSA 147-A: 3 II. Such wastes include, but are not limited to, those which are reactive, toxic, corrosive, ignitable, irritants, strong sensitizers or which generate pressure through decomposition, heat or other means. Such wastes **DO NOT** (emphasis added) include radioactive substances that are regulated by the Atomic Energy Act of 1954, as amended.

New Hampshire Code of Administrative Rules section He-P 1905.03(d) specifically excludes "source nuclear, special nuclear or nuclear by-product materials" from coverage under hazardous waste rules. Radioactive waste is subject to regulation under RSA 125-E, 125-F and 125-G. These statutes assign regulatory responsibility for radioactive materials to the Office of State Planning and the Division of Public Health, which are bound by federal regulations of the Department of Energy and the Nuclear Regulatory Commission.

There are approximately 768 chemical compounds listed as hazardous wastes in the appendices to the hazardous waste rules. Some common wastes subject to these rules include cyanide, creosote, degreasing agents and industrial solvents. Typical industries that generate hazardous waste streams include chemical manufacturers, printers, leather processors, paper industries, cosmetics companies, furniture

manufacturers, wood refinishers, and automotive maintenance shops. The Department of Environmental Services (DES), Waste Management Division (WMD) reported that 17,000 tons of hazardous waste was generated during fiscal year 1987 by regulated industries and businesses in New Hampshire.

HAZARDOUS WASTE MANAGEMENT-GOVERNING STATUTES

Hazardous waste management in New Hampshire is governed by RSA 147-A through 147-D, enacted by the legislature as a comprehensive and detailed program of statewide regulation. RSA 147-A:2 VIII defines hazardous waste management as " systematic control of the generation, collection, sorting, storage, processing, treatment, recovery and disposal of hazardous waste." The statutes provide the state with significant powers of enforcement and regulatory control over the generation, disposal and cleanup of hazardous waste through a variety of reporting, permitting, licensing, and notification requirements. The legislation imposes civil, criminal and administrative fines on those who are found guilty of violating state law. State statutes incorporate the requirements of the federal Resource Conservation and Recovery Act (RCRA), passed in 1976 and amended in 1984. The Department of Environmental Services, Waste Management Division has received authorization to administer the RCRA program at the state level. WMD receives about $300,000 a year to administer the program from the Environmental Protection Agency (EPA). This grant requires a 25% match in state funding.

HAZARDOUS WASTE SITES

A broad indicator of the severity of the hazardous waste problem within our state can be measured by the number of National Priorities List (NPL) sites and the number of sites listed on CERCLIS, an inventory of suspected hazardous waste sites that includes potential NPL sites. There are 15 NPL sites in New Hampshire. NPL sites are eligible for financial assistance pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), which authorized the Superfund Program. There are an additional 131 sites on CERCLIS. Approximately 40 CERCLIS Sites are classified as high priority sites or recommended for further action. Several of them may be candidates for the NPL. Most of the NPL sites are located in the southeastern part of the state as illustrated by the map on page six. The hazardous waste cleanup fund, established in 1981 by the state legislature, is used to clean up sites that do not qualify for Superfund assistance. According to WMD, nearly $820,000 was spent by the cleanup fund in fiscal year 1988 for site response and cleanup activities, in addition to regularly recurring expenditures for the household hazardous waste collection program, the hazardous waste facility siting program and administrative expenses.

HAZARDOUS WASTE MANAGEMENT - PROGRAM COMPONENTS

Our review of hazardous waste management in New Hampshire covered a variety of areas including the permitting, licensing, inspection, reporting, waste reduction and enforcement activities related to RCRA, the household hazardous waste collection program, the hazardous waste siting program, management of the Superfund sites and other hazardous waste sites in the state, administration of the hazardous waste cleanup fund established by RSA 147-B:3, and an evaluation of the state's compliance with the Emergency Planning and Community Right-to-Know Law established by Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA).

A brief description of each program component and our related observations and recommendations are summarized on the following pages. Page numbers are noted parenthetically after each observation to aid the reader in finding the detailed discussion related to each observation and recommendation in the body of the report. The reader is encouraged to read the entire report for a complete understanding of our comments. The appendices provide additional information including listings of specific hazardous wastes, NPL site descriptions, CERCLIS sites and their locations, SARA-Title III deadlines, common hazardous wastes in the home, comments of regulated industry and written responses to our report from the Department of Environmental Services, Department of Justice and the Office of Emergency Management.

OVERVIEW OF PROGRAM

SUPERFUND SITES

The remediation and monitoring of Superfund sites in N.H. is expected to continue well past the year 2,000.

As of June 1989, 15 NPL sites were located in N.H. WMD has elected to take the lead on 7 of these sites; EPA has lead responsibility for the remainder. WMD has agreed to provide management oversight for several EPA lead sites. Sites are in various stages of completion. The Gilson Rd. site has progressed the furthest. The treatment plant is complete and the groundwater is being treated and returned to the ground 24 hours a day. This process is expected to continue until at least 1995. The table on page seven lists the NPL sites in New Hampshire. It indicates the date of site discovery and the timing of key stages of cleanup activities as the project progresses toward completion.

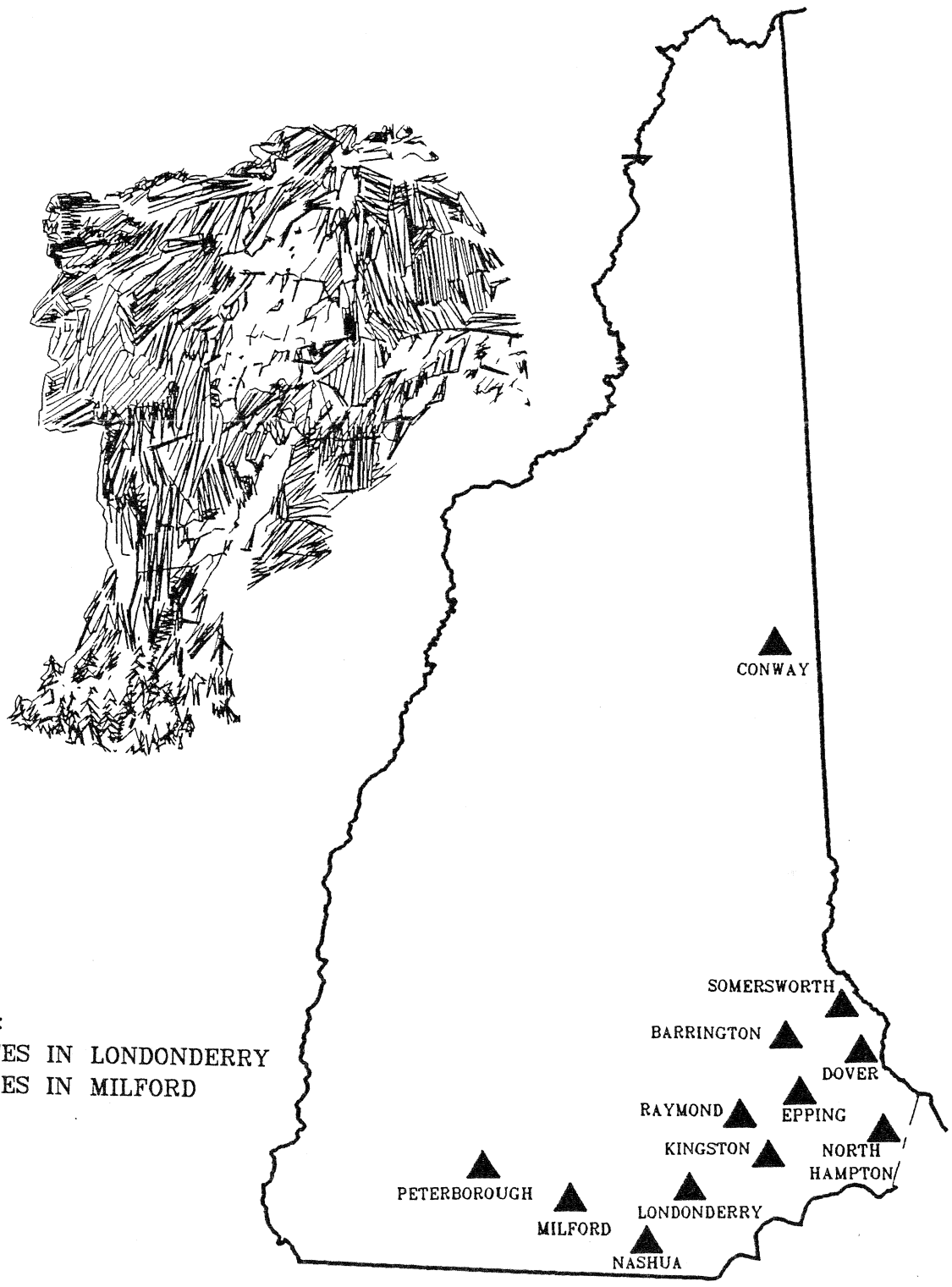
CERCLIS SITES

Human health and the environment may be jeopardized due to prolonged exposure to unknown hazardous waste risks at these sites.

As of June 1989, there were 131 CERCLIS sites listed in N.H. in addition to the 15 NPL Sites. CERCLIS sites are potential candidates for the National Priorities List. Approximately 40 sites are classified as high priority or needing further action. Several of them may be candidates for the NPL according to EPA criteria.

OBSERVATIONS	RECOMMENDATIONS
The remediation of uncontrolled hazardous waste sites is a long, technically complex process. As a result, close project management, long range planning and management oversight are necessary for successful project completion. Project managers must effectively use scheduling, budgeting and reporting in bringing sites to completion. Although WMD has assigned managers to NPL sites where they have lead responsibility, the division has not been successful in holding private contractors to the original contract terms. Superfund sites commonly exceed both time and cost estimates projected in the original contract. (p. 37)	WMD should develop long-term comprehensive plans to help ensure timely remediation of hazardous waste sites at reasonable costs for sites under the division's direct management. The plans should employ established management techniques, such as critical path scheduling methods and cost/time reporting, to resolve budget variances quickly. WMD should closely monitor contracts and their amendments, documenting reasons for additional time and money. This will improve compliance by focusing attention on missed deadlines and by emphasizing management's commitment to contract terms. Contracts should provide performance incentives to improve the level of performance and penalties for unsatisfactory work.
Although emergency removals have occurred at sites where hazardous waste conditions were known to present an imminent threat to human health, sites that have not been investigated to date may present unknown dangers to our health and our environment. Site investigations have not been completed on 19 sites classified as high priority, and on 48 sites classified as medium priority CERCLIS sites. All of these sites were listed in 1987 or earlier, and nearly half of them were listed in 1985 or earlier. WMD has agreed to perform the site investigation for most of these sites as a condition of receiving federal assistance under the multi-site cooperative agreement with EPA. (p. 40)	WMD management should implement and publish a plan to complete site investigations as expeditiously as possible. Human health and the environment may be jeopardized due to prolonged exposure to unknown hazardous waste risks at these sites.

SUPERFUND
NATIONAL PRIORITY LIST
(▲) SITE LOCATIONS



NOTE:
3 SITES IN LONDONDERRY
2 SITES IN MILFORD

STATE OF NEW HAMPSHIRE
OVERVIEW OF SUPERFUND SITES AND THE SUPERFUND PROCESS

SITE DISCOVERY	PREREMEDIAL ACTIVITIES	NPL PROPOSED	REMEDIAL INVESTIGATION	FEASIBILITY STUDY	RECORD OF DECISION	REMEDIAL DESIGN	REMEDIAL ACTION	LONG TERM OPERATIONS & MAINTENANCE	NPL DELISTING
		12/82	6/89						
1977	SOMERSWORTH MUNICIPAL LANDFILL, SOMERSWORTH							ongoing by responsible parties	
		12/82	3/89						
1978	DOVER LANDFILL, DOVER							ongoing by responsible parties	
		12/82	1985		1989				
1978	TINKHAM GARAGE, LONDONDERRY							ongoing by responsible party	
		12/82	1989	1989					
*1979	AUBURN ROAD LANDFILL, LONDONDERRY							expected summer '89	
		10/81	1984	1987	1988				
*1979	KEEFE ENVIRONMENTAL SERVICES, EPPING							expected in Fall 1989	
		10/81	1985	1986	1987				
*1979	OTTATI & GOSS, KINGSTON							delayed - court decision appealed	
		4/85							
*1979	MOTTOLO PIG FARM, RAYMOND							in process by responsible party	
		10/81	1982	1982	1983	1983			
*1981	GILSON ROAD, NASHUA							completion expected 1995	
		9/83							
*1982	KEARSARGE METALLURGICAL CORP., CONWAY							summer 89--->	
		4/85							
*1982	TIBBETS RD., BARRINGTON							in progress	
		9/83	1989						
*1982	SOUTH MUNICIPAL WELL SITE, PETERBOROUGH							expected 7/89-->	
		10/84							
1983	COAKLEY LANDFILL, NORTH HAMPTON							nearing completion	
		9/83	1989						
1983	SAVAGE WELL, MILFORD							in process by responsible party	
		6/88							
*1985	FLETCHER PAINT WORKS, MILFORD							>	
		6/88							
1985	HOLTON CIRCLE, LONDONDERRY							>	

Note: * Site required emergency removal of contaminated soils and/or barrel removal.

HAZARDOUS WASTE CLEANUP FUND

New Hampshire has expended over $5M from the hazardous waste cleanup fund since 1981.

RSA 147-B established the Hazardous Waste Cleanup Fund in 1981 in recognition of the need to protect public health and safety and the environment from hazardous waste mismanagement. This revolving, non-lapsing, interest bearing account provides money for the safe containment and cleanup of N.H. hazardous waste sites that have not qualified as full Superfund sites. The fund is also used to provide matching grants to local communities for the collection of household hazardous waste and for various studies such as the hazardous waste facility siting project.

RSA 147-B also imposes quarterly fees, which are deposited in the cleanup fund, on generators and treatment, storage and disposal facilities.

OBSERVATIONS	RECOMMENDATIONS
RSA 147-B states that the fund will be used to provide for the cleanup of nonqualifying CERCLA sites. However, WMD has deposited nearly $1.8M in recoveries from Superfund enforcement actions into the fund during fiscal years 1989 and 1988. This practice is inconsistent with the fund's statutory intent and purpose, which does not permit its use for CERCLA sites. (p. 44)	WMD should deposit proceeds from settlements in Superfund enforcement actions in the fund charged for the initial expense. The general fund should be reimbursed for any past expenditure connected with these sites. WMD should not continue to deposit Superfund recoveries into the Cleanup Fund, unless they are to reimburse the fund for past expenditures. RSA 147-B expressly prohibits the use of these funds for CERCLA sites.
During FY 1986, collections of generator fees and fines in the amount of $730,035, intended for the Cleanup Fund, were deposited in an account belonging to the Division of Public Health, Waste Management Engineering Bureau. Expenses related to hazardous waste cleanup activities were also paid through this account during FYs 1986, 1987 and 1988. (p. 45)	WMD should analyze the Waste Management Engineering Bureau account cited in this report to determine if an adjustment should be made to correct the Cleanup Fund balance due to the activity posted to the Waste Management Engineering Bureau Account.
As of June 30, 1989, the Hazardous Waste Cleanup Fund has never been credited for interest income earned on the balance of the fund. The estimated interest income earned since 1981 is approximately $591,579. RSA 147-B:3 requires "interest received on investments made by the State Treasurer" to be credited to the fund. (p. 45)	WMD should request the State Treasurer to transfer accrued interest income earned on the average fund balance since its establishment in 1981 and establish procedures for crediting the fund in the future.
During the course of our review, we had difficulty identifying the total number of hazardous waste sites in the state because WMD does not have a single, comprehensive listing of known hazardous waste sites; nor do they maintain a complete history of state expenditures related to hazardous waste sites. In the past, the division compiled a hazardous waste inventory list; however, this listing has not been maintained in recent years. (p. 46)	DES should develop a comprehensive data base of hazardous waste sites which includes the location of the site, the status of the site, state expenditures related to the site, responsible parties and the individual responsible for management oversight at the state level. Maintenance of a comprehensive listing would assist the division in answering inquiries they receive from the general public and other interested parties, as well as providing management with useful information when litigating against responsible parties or crediting the state for past expenditures related to matching requirements for Superfund sites.

EMERGENCY PLANNING & COMMUNITY RIGHT-TO-KNOW ACT

Effective emergency response preparedness requires the joint efforts of state and local government, private industry and an informed citizenry.

Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA) is also known as the Emergency Planning and Community Right-to-Know Act. This Act places the responsibility for emergency planning and accident responses on industry, local citizens groups and the state, local, and federal governments. Title III requires states to create State Emergency Response Commissions (SERCs) which provide guidance for Local Emergency Planning Committees (LEPCs) which in turn prepare for and respond to chemical emergencies. SERC duties include appointing LEPCs for each emergency planning district in the state, coordinating proposals for and distribution of training grant funds, reviewing local emergency response plans, and receiving and filing reports required under Title III. The law also requires companies to provide information on the chemicals they use which affect the health and safety of the public and the environment. The Office of Emergency Management (OEM) has been designated by the governor as the lead agency for the SERC and the director of OEM as its chairman.

OBSERVATIONS	RECOMMENDATIONS
As of June 1989, only 13 communities out of 165 have submitted emergency plans; 39 are near completion and 113 are in various stages of completion. SARA's deadline for submitting plans was October 17, 1988. As of June 1989, designated LEPCs in N.H. have significantly failed to comply with section 303(a) of Title III. Also, the SERC in N.H. is required to review the plans submitted by the LEPCs. As of June 1989, none of the 13 plans had been reviewed by the SERC. (p. 48)	OEM should work vigorously with LEPCs to provide the guidance and technical assistance needed to bring communities into compliance with the mandates of Title III, section 303(a). In addition, the SERC should fulfill its responsibility to review plans and recommend changes as necessary to ensure coordination with other emergency planning districts.
The N.H. Hazardous Materials Incident Emergency Response Plan, published by OEM, covers training of local firefighters to meet minimal state and federal mandates. It further states that the N.H. Fire Standards and Training (NHFS&T) Commission is responsible for training first responders in skills related to hazardous materials. Although full time firefighters receive approximately 40 hours of hazardous materials training, approximately 6,800 part-time firefighters do not receive any training related to hazardous materials. (p. 49)	With additional resources appropriated in the 90/91 biennium the NHFS&T Commission should execute a comprehensive hazardous material training program that satisfies the needs of firefighters at all levels. The program should be consistent with the requirements of the N.H. Hazardous Materials Incident Emergency Response Plan, published by the OEM, and signed by the Governor in July, 1988.
As of June 1989, OEM has no system in place to identify businesses failing to comply with the law, nor an easy way of compiling the volume of reported data, since they record data manually. (p. 50)	OEM should automate the processing of information returns to facilitate the retrieval of reported data, and should design the system to identify businesses that are not in compliance with reporting requirements.

IDENTIFYING & PERMITTING REGULATED BUSINESSES

Although over 2,000 generators of hazardous waste have notified DES, identifying non-notifiers presents a challenge to the Department.

The Resource Conservation & Recovery Act (RCRA) and state laws require the major hazardous waste handlers, i.e., generators; transporters; and treatment, storage and disposal facilities, to notify WMD of their activities. Facilities and transporters must also obtain permits to operate. As of April 1989, WMD reported 2083 notifying generators, 120 transporters and three storage facilities; N.H. presently has no permitted disposal facilities.

TRACKING & REPORTING HAZARDOUS WASTE

WMD recognizes the need to improve upon the "manifest" information system to effectively utilize information reported on over 30,000 manifests annually.

RCRA requires the tracking of hazardous wastes from initial generation to final disposal with forms called "manifests". WMD generates biennial reports, also required by EPA, which summarize the hazardous waste activities in the state. The division also produces quarterly and annual reports on the activities of each N.H. generator and assesses fees for disposal and generation of hazardous waste based on the volume of reported waste.

OBSERVATIONS	RECOMMENDATIONS
Non-notifying companies can cause serious harm to the environment by improperly disposing of toxic wastes, knowingly or unknowingly. WMD has developed a method of tracking non-notifiers which, when used two years ago, identified 14 generators from a sample of 55 potential generators. WMD now identifies non-notifiers primarily as they surface as the subject of complaints from the general public. Despite fines for other RCRA violations, non-notifiers appear to have little monetary incentive to come forward and notify the state of hazardous waste activity. (p. 55-56)	WMD should make every effort to locate non-notifiers, and should consider establishing a fine up to the maximum amount allowable under current law for companies failing to notify the division of hazardous waste activity, to take effect on a future date, with every day thereafter considered a separate violation. WMD should publicize the notification requirement and a current list of hazardous wastes, and should consider including the commonly-known names of the waste chemicals.
WMD, representatives of regulated businesses, and EPA officials all expressed the opinion that the current manifest and quarterly and annual reporting systems are working reasonably well. In our view, they appear to provide useful mechanisms for tracking hazardous waste; however, the division has not been successful in using the reported data to provide reliable, historical information on the volume and type of wastes generated in the state. (p. 65)	WMD should continue to upgrade and utilize its computer database to provide for more effective and accurate reporting, tracking and analyzing of reported data. We believe that the effectiveness of the computer system is limited and could be improved by upgrading its report utility functions and expanding and integrating a greater number of data files.

COMPLIANCE & ENFORCEMENT

Timeliness and appropriateness of enforcement actions need improvement.

The WMD compliance and enforcement program is designed to ensure that the operations of hazardous waste handlers comply with standards set forth in New Hampshire's Hazardous Waste Rules. The cornerstone of the RCRA compliance monitoring effort is WMD's program of inspections through which division staff discover violations that could endanger human health and the environment. WMD currently has five inspectors to inspect over 2,000 regulated companies. WMD also inspects the three storage facilities in New Hampshire, and, along with the Department of Safety, inspects transporters.

Upon completing an inspection, WMD may initiate its enforcement process if a company or facility is out of compliance. The division uses EPA RCRA guidance to help establish its enforcement response priorities and to assess appropriate penalties. Until the passage of Chapter 22, Laws of 1989 on April 4, 1989, WMD had to refer all enforcement cases to the New Hampshire Department of Justice. While major cases will still be referred to the Department of Justice, the division will be able to handle relatively minor cases by means of its newly-enacted administrative fining capability.

The Department of Safety (DOS), which inspects hazardous material and hazardous waste transporters, assists in RCRA enforcement efforts primarily through its Motor Carrier Safety Assistance Program unit.

OBSERVATIONS	RECOMMENDATIONS
Of the 50 largest generators of hazardous waste in 1987, 42 (84%) have received inspections within the last five years. This rate of inspection for the largest generators exceeds the goal set by EPA for WMD, but is below the division's informal stated goal of maintaining a two or three year inspection cycle. (p. 67)	To make the company selection process for RCRA inspections more systematic, WMD should consider 1) establishing written desired timeframes for the frequency of generator inspections and 2) keeping and periodically updating a list of all inspected companies including the date of the last inspection and enforcement action.
WMD issued many more Notices of Violation/Orders of Abatement (the strongest enforcement actions taken) than Letters of Deficiency (the next level of enforcement action). Yet, most of these companies did not receive fines from the state, even though EPA has stated that high priority violators should be penalized. WMD appears to have had some difficulty deciding when and how much to fine violators. Also, we did not always find a clear basis for the penalty decisions reached by the Attorney General, WMD and the violator. (p. 75)	WMD should consider reserving its use of the Notice of Violation/ Order of Abatement (NOV/OA) for the most serious violations in order to match the highest priority enforcement actions with the most serious violations. WMD should also consider mandatory fines when high priority violators are issued a Notice of Violation. WMD should consider publishing the range of possible fines for the most common violations, so that companies know beforehand the costs associated with violations. WMD should also clearly document in its files major case events and the basis for any penalties.
Of thirteen closed enforcement cases we reviewed, five took over a year for the AG to complete, the longest taking almost three years. Nine additional open cases have been open from one to four years. (p. 74)	The Attorney General should move RCRA penalty cases along more expeditiously with the goal of maintaining consistent progress towards the disposition of each case.
Time and safety constraints, as well as limited equipment, prevent Department of Safety inspectors from sampling waste. Drivers carrying hazardous waste cargo that is not identified as such could be expected not to disclose this to an officer to avoid sampling. (p. 69)	The Department of Safety should explore ways to increase sampling of questionable transporter cargo to assure greater detection of hazardous waste transporter violations.

WASTE REDUCTION

The solution to the hazardous waste dilemma is to reduce hazardous waste production through the use of substitute chemicals, neutralization, and recycling.

One of the stated goals of RCRA legislation is to minimize hazardous waste generation. While EPA does have ongoing initiatives to reduce and prevent hazardous waste in the states, N.H. has not, thus far, received any grants directly. However, the state has participated jointly with other New England states in a proposal through the New England Waste Management Officials Association that resulted in the association's receipt of a $300,000 grant from EPA.

Increased knowledge of waste hazards and rising costs of conventional disposal, along with provisions banning land disposal of toxic wastes, have led both the public and private sectors to explore means of reducing or even eliminating the volume of hazardous wastes in the early steps of the manufacturing process.

OBSERVATIONS	RECOMMENDATIONS
N.H., like most other states, has tried to act on the recognition of the growing need to reduce industrial pollution; however, DES has not elected to treat waste reduction as a high priority, which accounts for the absence of any formalized program. WMD has no system to track the success of waste minimization and has failed to clearly define waste reduction goals and objectives for New Hampshire. Also, WMD has not developed a comprehensive body of information to assist the regulated community. (p. 83)	DES should clearly define its goals and objectives related to waste minimization and should compile and analyze data on waste recycling and reduction over time so that progress on this goal can be tracked and analyzed. WMD should expand, to the greatest possible extent, its effort to access, organize and communicate regulatory and technical information to the regulated community in an effort to disseminate information related to waste minimization. WMD should expand the mailing list for its newsletter, Environmental News, to include registered generators, as a means of reaching the regulated community with relevant information.
Small generators of hazardous waste sometimes find it more expensive to remove their quantities of waste than large generators, as the cost of removing half a drum of waste can equal that of a full drum. (p. 84)	WMD should consider changing state rules to allow 100 to 1000 kg./mo. generators to accumulate wastes for 180 days, as federal regulations allow, rather than 90 days. This could reduce expenses for generators while not significantly increasing risks.

CONCLUSION

Audits are by nature critical, and the comments on the preceding pages highlight those areas of the administration and operation of the hazardous waste program in New Hampshire where we believe improvements can be made. While we believe that improvements can be made to the program, we would like to conclude by stating that several positive aspects of agency performance were apparent during the course of our audit. In the Superfund program, the Gilson Road site is one of the first sites nationwide to begin a remedial action. Also, the fact that 131 sites, in addition to 15 NPL sites, have been identified in the CERCLIS information system shows the state's efforts at identifying potential problem sites. In the RCRA program, the state has received consistent positive reviews from EPA on its fulfillment of RCRA grant commitments. Seminars given by state experts to aid industry in understanding federal and state regulations have been well-received by industry representatives. The state also appears to have achieved acceptance among the regulated community for its manifest and quarterly and annual reporting systems. The manifest system, the key control over the proper disposal of hazardous wastes is operating smoothly without any processing delays. Also, the state is promoting the recycling of hazardous wastes by exempting recycled wastes from the fee structure imposed under RSA 147-B. This exemption is expected to provide financial incentive to recycle hazardous waste, thereby minimizing the overall generation of these materials. These successes can be attributed, in part, to staff who are dedicated to protecting human health and the environment in a field that is both challenging and technologically complex.

STATE OF NEW HAMPSHIRE
HAZARDOUS WASTE MANAGEMENT PROGRAM

INTRODUCTION

A century ago, the amount of waste produced in the United States was small, and its effect on the environment was relatively small as well. However, the industrial revolution of the late 1800's saw the beginning of industrial expansion, which brought about more products and more wastes. The end of World War II signalled the start of a dramatic rise in domestic industrial production. Along with production growth came a tremendous growth in the amount of both hazardous and non-hazardous wastes generated by industries. As a result, hazardous and non-hazardous wastes steadily entered the environment through careless disposal methods that are now known to threaten human health and the environment.

In recent years the private and public sectors have come to recognize the danger resulting from mismanagement of hazardous waste. Starting with the Solid Waste Disposal Act of 1965, the federal government enacted several laws over the next two decades which changed the views of citizens and industry about hazardous waste management. States such as New Hampshire followed with similar related laws to promote proper waste management.

Industrial growth after World War II largely accounts for the volume of hazardous waste in the United States. In 1981, the Environmental Protection Agency (EPA) estimated that hazardous wastes generated nationwide had increased to 264 million tons per year, compared to 500,000 tons at the end of World War II. The latest figures available for New Hampshire show that in 1987 the state's regulated companies generated 17,118 tons of hazardous waste.

At present, a combination of federal and state laws, regulations and rules guide New Hampshire's hazardous waste management program. At the federal level, the two major statutes that deal with hazardous wastes are the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), also known as Superfund, passed in 1980 and amended in 1986, and the Resource Conservation and Recovery Act (RCRA), passed in 1976 and amended in 1984. CERCLA was designed to clean up the nation's worst abandoned hazardous waste sites, while RCRA primarily regulates current and planned hazardous waste disposal activities.

"CERCLA" has several key objectives:

-- To develop a comprehensive program to set priorities for cleaning up the worst existing hazardous waste sites;

-- To make responsible parties pay for those cleanups whenever possible;

-- To set up a Hazardous Waste Trust Fund -- popularly known as 'Superfund' -- for the twofold purpose of performing remedial cleanups of sites where responsible parties could not be held accountable, and responding to emergency situations involving hazardous substances; and

-- To advance scientific and technological capabilities in all aspects of hazardous waste management, treatment and disposal.

Many of the key objectives of RCRA relate to the management of hazardous waste and are intended to promote the protection of human health and the environment and to conserve valuable material and energy resources by:

-- assuring that hazardous waste management practices are conducted in a manner which protects human health and the environment;

-- requiring that hazardous waste be properly managed in the first instance, thereby reducing the need for corrective action at a future date;

-- minimizing the generation of hazardous waste and the land disposal of hazardous waste by encouraging process substitution, materials recovery, properly conducted recycling and reuse, and treatment; and

-- establishing a viable federal-state partnership to carry out the purposes of RCRA.

New Hampshire's laws reflect these federal objectives. The state's hazardous waste legislation is largely contained in RSAs 147-A through 147-D, in which the Legislature established the state's hazardous waste management program as a comprehensive and detailed program of statewide regulation. RSA 147-A provides criteria for determining hazardous wastes, sets standards and procedures for waste generation and reporting, and establishes a permit process for treatment, storage and disposal facilities. This section also authorizes inspections of hazardous waste facilities and transporters. RSA 147-B creates a special non-lapsing, revolving Hazardous Waste Cleanup Fund funded primarily by quarterly generator and storage facility fees, as well as

transporter licensing fees. RSA 147-C sets forth a process for reviewing applications for treatment, storage and disposal facilities. Finally, RSA 147-D authorizes towns to levy a Hazardous Waste Fee on operating facilities.

The Waste Management Division (WMD) of the Department of Environmental Services (DES) administers the hazardous waste management program, although other divisions within DES and other state agencies assist WMD with various aspects of hazardous waste management. The state program is tied closely to the federal legislation previously mentioned. Much of the program is financed with RCRA and CERCLA grants. The state is authorized to administer the RCRA program in place of the federal government, as long as it keeps up with changing federal requirements. The state received an award of $300,000 during federal fiscal year 1989 which funds positions in WMD to administer the RCRA program. The federal government administers the CERCLA program, however the state takes the lead on some sites under cooperative agreements with EPA. The state received approximately $3M during FY 1989 to perform various activities related to fifteen Superfund sites in New Hampshire. The state created the Hazardous Waste Cleanup Fund in 1981 to administer its own program for cleaning up hazardous waste sites that are not listed as national priority sites and are, therefore, ineligible for Superfund assistance. This state fund is used to obtain services from the Water Supply and Pollution Control Division for hydrogeological studies and to obtain legal services from the New Hampshire Department of Justice. It has also been used for emergency removals and remedial cleanup activities at approximately 15 sites since 1981. One site has been completely cleaned up using the fund. Approximately $5M has been expended by the Hazardous Waste Cleanup Fund since 1981 for these activities.

DEFINITION OF HAZARDOUS WASTE

In New Hampshire, waste is considered hazardous for regulatory purposes if it 1) is listed in the Hazardous Waste Rules, 2) exhibits certain characteristics (listed below), or 3) is classified as a hazardous waste by another state and is being transported from the generating state into New Hampshire.

Appendices I-IV of New Hampshire's Hazardous Waste Rules (He-P 1905) contain four lists of wastes that are hazardous. The source for all four lists is the Federal Register. In addition, the state also includes paint sludges as a regulated waste. The lists specify acutely hazardous wastes, toxic hazardous wastes, hazardous generic industrial process wastes, and hazardous specific industrial process wastes. (Refer to Appendix B for a complete listing.)

A waste is also considered hazardous if it exhibits one of four characteristics:

-- Ignitibility. Ignitible wastes are easily combustible or flammable. Examples are paint wastes, certain degreasers, and other solvents.

-- Corrosivity. Corrosive wastes can dissolve metals or other materials, or can burn the skin. Examples are waste rust removers, waste acid or alkaline cleaning fluids, and waste battery acid.

-- Reactivity. Reactive wastes are unstable under normal conditions. They can create explosions and/or toxic fumes, gases, and vapors when used with water or other materials. Examples are cyanide plating wastes, waste bleaches, and other waste oxidizers.

-- EP (Extract Procedure) Toxicity. Toxic wastes are harmful or fatal when ingested or absorbed. Wastes are EP toxic if an extract from the waste is tested and found to contain high concentrations of heavy metals (such as mercury, cadmium, or lead) or specific pesticides that could be released into the ground water.

In addition to the above types of waste, New Hampshire considers waste to be subject to its hazardous waste regulations if another state classifies a waste as hazardous and the wastes are transported from the generating state into New Hampshire.

Along with defining what wastes are hazardous, the rules (He-P 1905.03(d)) exclude numerous materials from rule coverage. Examples include domestic sewage, industrial wastewater discharges, irrigation flow returns, and nuclear materials. The rules also provide procedures for listing and delisting hazardous wastes, as well as requirements for recycled materials.

Hazardous waste pesticides may be handled differently than other hazardous wastes. According to the rules (He-P 1905.06(b)(1)(e)), farmers disposing of hazardous waste pesticides they have used are not required to comply with the standards in New Hampshire's hazardous waste rules as long as they "triple rinse each emptied pesticide container and dispose of the pesticide residues on their own farm in a manner consistent with the disposal instructions on the pesticide label, or dispose of the residue by an equivalent method." Chapter 283, Laws of 1989, effective July 1, 1989, has authorized the New Hampshire Department of Agriculture, Division of Pesticide Control to administer and conduct a pesticide waste collection and disposal program for farmers. The law stipulated that $75,000 be appropriated in FY 1990 for that purpose.

Several waste materials that may be considered hazardous by the public but which are not included under New Hampshire's definition of hazardous waste are asbestos, gasoline, waste oils, radioactive materials and polychlorinated biphenyls (PCBs). These materials are not included in the definition either because they are not considered to be waste, or because they are covered under different laws or rules. The responsibility for dealing with the above types of wastes rests with the following organizations:

1) Asbestos -Air Resources Division, DES (for asbestos removal control)
   -Waste Management Division, DES (for asbestos site remediation - solid waste)
   -Division of Public Health Services (for asbestos removal in schools)

2) Gasoline -Water Supply and Pollution Control Division, DES

3) Waste Oils - Waste Management Division, DES

4) Radioactive Materials - Division of Public Health Services and Office of State Planning

5) Polychlorinated Biphenyls (PCBs) - Air Resources Division, DES

OBJECTIVES, SCOPE AND METHODS

OBJECTIVES AND SCOPE

We performed our review of New Hampshire's hazardous waste management program consistent with recommendations made to the Fiscal Committee by the joint Legislative Performance Audit and Oversight Committee. Our study assesses the effectiveness of regulatory control over hazardous wastes in New Hampshire. In it, we reviewed the status of hazardous waste sites in New Hampshire, the state's level of compliance with the Emergency Planning and Community Right-To-Know Act, and New Hampshire's administration of its Resource Conservation and Recovery Act (RCRA) program. Our review addressed the following objectives:

1. Determine the status of current Superfund site activities in New Hampshire, as well as the status of non-Superfund site activities financed by the Hazardous Waste Cleanup Fund established by RSA 147-B.

2. Determine the state's level of compliance with Title III of the Superfund Amendments and Reauthorization Act of 1986, known as the Emergency Planning and Community Right-To-Know Act.

3. Determine the adequacy and effectiveness of New Hampshire's effort to identify all generators and transporters of hazardous waste in the state.

4. Determine the adequacy of New Hampshire's monitoring of quarterly reporting and manifest systems, and the extent to which these systems accomplish the objective of tracking the generation, treatment, transportation and disposal of hazardous waste.

5. Determine the extent to which the state's hazardous waste program is ensuring effective control of hazardous waste through its inspection, permitting and enforcement activities.

6. Determine the extent to which the state has been able to assist generators in reducing their volume of hazardous waste production.

7. Determine the extent to which members of the regulated community are satisfied with the level of regulation and the effectiveness of state efforts to protect human health and the environment from hazardous waste.

METHODS

Our first objective relates to WMD's responsibilities under the federal CERCLA program, as well as their responsibility for other sites in need of cleanup. To meet this objective, we charted the progress made at the sites to date and discussed their progress with division and EPA officials. Additionally we reviewed the Hazardous Waste Cleanup Fund account and discussed its history with the division.

The second objective relates to the state's compliance with statutory deadlines set forth in Title III of the Superfund Amendments and Reauthorization Act of 1986. We discussed and reviewed the state's efforts in this area with the New Hampshire Office of Emergency Management, the designated lead agency for the State Emergency Response Commission.

The next four objectives relate to WMD's responsibilities under RCRA.

In reviewing WMD's efforts to identify generators and transporters of hazardous waste, we reviewed documentation of the division's past attempts to identify non-notifying generators. We discussed various approaches with division staff. We also tested current databases by comparing telephone listings of dry cleaners (a category of industry known to generate hazardous waste) from the largest cities in New Hampshire with WMD's generator list. Additionally, we investigated the feasibility of using other methods to locate non-notifiers. Our review of transporters involved discussions concerning inspection efforts with division staff. We also obtained information on licensing and highway inspections from the Department of Safety.

Regarding the manifest and quarterly reporting systems, we interviewed staff in WMD and obtained a copy of the manifest and the biennial report prepared for the U.S. Environmental Protection Agency (EPA) to summarize RCRA activity. In order to observe the types of problems that surface in the manifest system, we judgmentally sampled twenty-five manifests before they were matched and twenty-five matched manifests. We also sampled 101 quarterly reports and 180 annual reports to see the extent to which errors in reporting occurred. We discussed the adequacy of the system with staff as well as changes in the hazardous waste management process that are ongoing due to changes in federal regulations.

WMD has the primary responsibility for administering the RCRA program, while New Hampshire's Department of Justice (formerly known as the Office of the Attorney General) has a major role in handling enforcement matters. We reviewed policies and procedures followed by the division, as well as forms and checklists it uses to administer

RCRA. Additionally, we reviewed case files on thirteen RCRA enforcement actions concluded from January 1985 to November 1988. We discussed these and eleven other open cases with officials and staff of WMD and the Department of Justice. To see firsthand how inspections are performed, we accompanied inspectors on two hazardous waste generator inspections. We discussed how they select companies for inspection and obtained lists of companies inspected over a five-year period. We also reviewed inspection logs to determine the nature of violations discovered on the inspections. To obtain information on the hazardous waste facility permitting process, we interviewed WMD staff responsible for this activity and obtained permit application forms.

To determine WMD actions to assist hazardous waste generators in reducing the volume of waste they generate, we discussed procedures with division staff, and interviewed representatives of ten companies that generate hazardous waste to obtain their perspective on the division's efforts in this area.

Finally, we discussed all of the above issues with legislators, officials of several companies subject to regulation under RCRA, and representatives of interest groups. To the extent that other state agencies were involved in aspects of hazardous waste management, we interviewed officials of those agencies to obtain an understanding of their role in regulating hazardous wastes and hazardous materials.

In our discussion of WMD's administration of the hazardous waste program in New Hampshire, we will first present a status report on the Superfund sites, as well as the sites listed on CERCLIS, an information system for tracking sites that are potential candidates for Superfund. Because Title III of the Superfund Amendments and Reauthorization Act, also known as the Emergency Planning and Right-to-Know Act of 1986, is so closely associated with a program of hazardous waste management because it involves emergency planning and response to hazardous materials accidents, we have included a discussion and evaluation of the requirements pursuant to Title III following the discussion of hazardous waste sites. We will then review the RCRA program administered by WMD and assess the effectiveness of its efforts to control hazardous waste from "cradle to grave." Where appropriate, we will also discuss the roles and comments of agencies that have a lesser involvement with hazardous waste management, as well as the views of officials at regulated companies and of other interested parties.

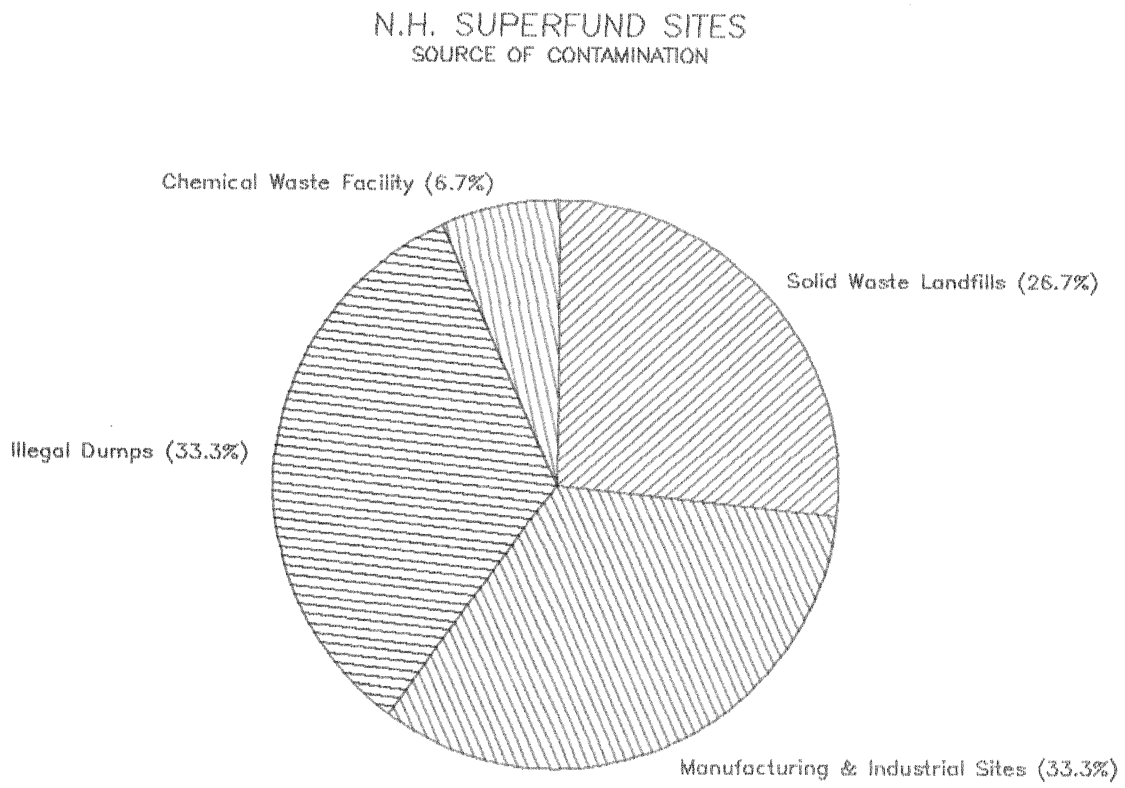
HAZARDOUS WASTE SITES IN NEW HAMPSHIRE

A STATUS REPORT

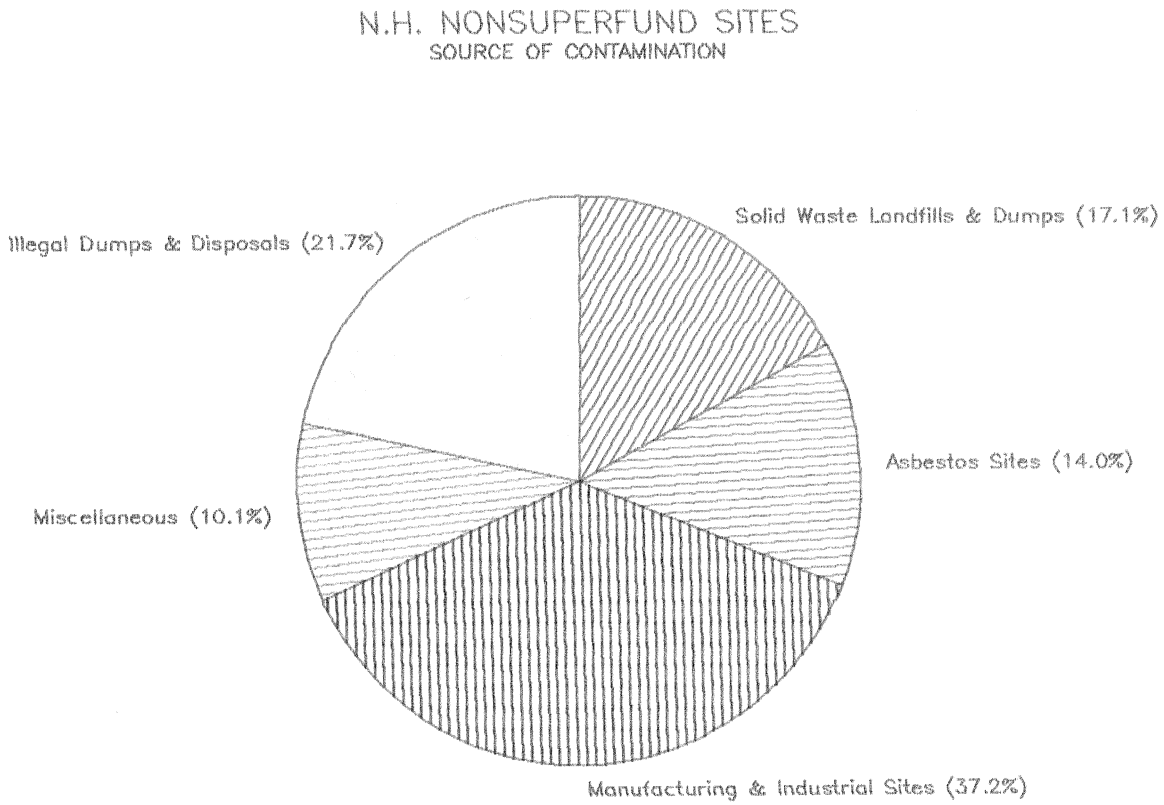
Pink paper goes before page 27

HAZARDOUS WASTE SITES IN NEW HAMPSHIRE - A STATUS REPORT

The Department of Environmental Services (DES), Waste Management Division, (WMD) is charged with the responsibility of administering the hazardous waste laws in the state in order to protect human health and the environment from hazardous wastes which have been previously discharged or disposed of in an environmentally unsound manner. WMD accomplishes this responsibility by participating in the federal Superfund program and by administering RSA 147-B which established the Hazardous Waste Cleanup Fund for hazardous waste sites that do not qualify for Superfund. Sites that qualify for Superfund receive up to 90% in federal funds to clean up the site. As of June 1989, New Hampshire had fifteen Superfund sites. These sites are in various stages of completion. Most of the sites were discovered in the early 1980s. The following pie chart characterizes these sites by the type of activity responsible for their contamination. In general, contamination originates from the percolation of hazardous wastes deposited in solid waste landfills, manufacturing and industrial sites or illegal dumping.



In addition to the 15 sites administered through Superfund, there are approximately 131 sites that have been identified as containing some degree of contamination resulting from the improper disposal of hazardous waste. These sites are listed on CERCLIS, a management information tracking system, maintained by EPA but also used by WMD as a management tool to track the status and progress at these sites. WMD and EPA are jointly responsible for evaluating the severity of contamination and deciding upon the most prudent course of action to take in the interest of protecting human health and safety and the environment. All of these sites undergo an evaluation known as a preliminary assessment and an eventual classification as high priority or medium priority sites. They can also be classified as requiring no further action if the preliminary assessment indicates that hazardous wastes are not present at the site or that the wastes are contained on site. The following chart breaks out the types of activities that were responsible for the contamination of the sites currently included on CERCLIS. Once again, solid waste landfills, manufacturing activities and illegal dumps are predominant.



The cleanup process and the progress made to date towards cleaning up these sites are discussed in further detail on the pages that follow. The discussion is broken down between Superfund sites and the remaining sites listed on CERCLIS.

SUPERFUND - A NATIONAL DIRECTIVE

In 1980, the U. S. Congress enacted the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), commonly known as Superfund. This legislation was enacted specifically to provide funding and a national directive to identify the worst hazardous waste sites in the nation and design and initiate remedial action to clean them up. The project was initially funded with $1.6 billion for a five year period beginning in 1980. This legislation was reauthorized and amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA). SARA continued the Superfund program for another five year period and provided an additional $8.5 billion to accomplish cleanup projects at approximately 1100 sites listed on the National Priorities List (NPL) as of 1988. The greatest concentration of the sites is located in the eastern half of the nation.

By many accounts, including a report recently released by the U.S. General Accounting Office (GAO), the cost to clean up these sites is expected to exceed $100 billion given current technology and past experience. Clearly, the cost of cleaning up hazardous waste sites is staggering and places a substantial financial burden on both the federal and state budgets, since states must share in the cost of cleaning up these sites as a condition of receiving federal assistance. EPA estimates that the average cost of cleaning up an NPL site is $8.8 million, plus an additional $4 million for long-term maintenance and operations.

Theoretically, the entire cost of cleanup should be recovered from the parties originally responsible for contamination of the site. Enforcement provisions included in Superfund legislation hold each responsible party strictly liable for the cost of cleaning up the site. Each responsible party can also be held jointly and severally liable. However, in many instances responsible parties have not been identified or are no longer going concerns. Many have declared bankruptcy and left the cost of cleaning up the site to the federal and state government. Unfortunately, in these cases, we have no alternative but to bear the cost of cleaning up the site in the interest of public health and safety.

The success of the Superfund program has been the subject of recent concern and congressional review resulting in severe criticism. An article published in Inside E.P.A. Weekly Report on February 3, 1989 summarized the congressional review which points at widespread mismanagement on the part of EPA which impacts negatively on personnel practices, project monitoring efforts, cost estimates, federal/state relationships, enforcement efforts, procurement and contracting operations and research and development activities. The review accused EPA of failing to provide "sustained leadership" in research and development to solve the complicated problems related to successful and

permanent treatment of hazardous waste. The review recognized that EPA has available proven technologies that can be used to minimize the level of environmental and health risks, however, the demands for treatment continue to exceed the existing technological capabilities in many instances.

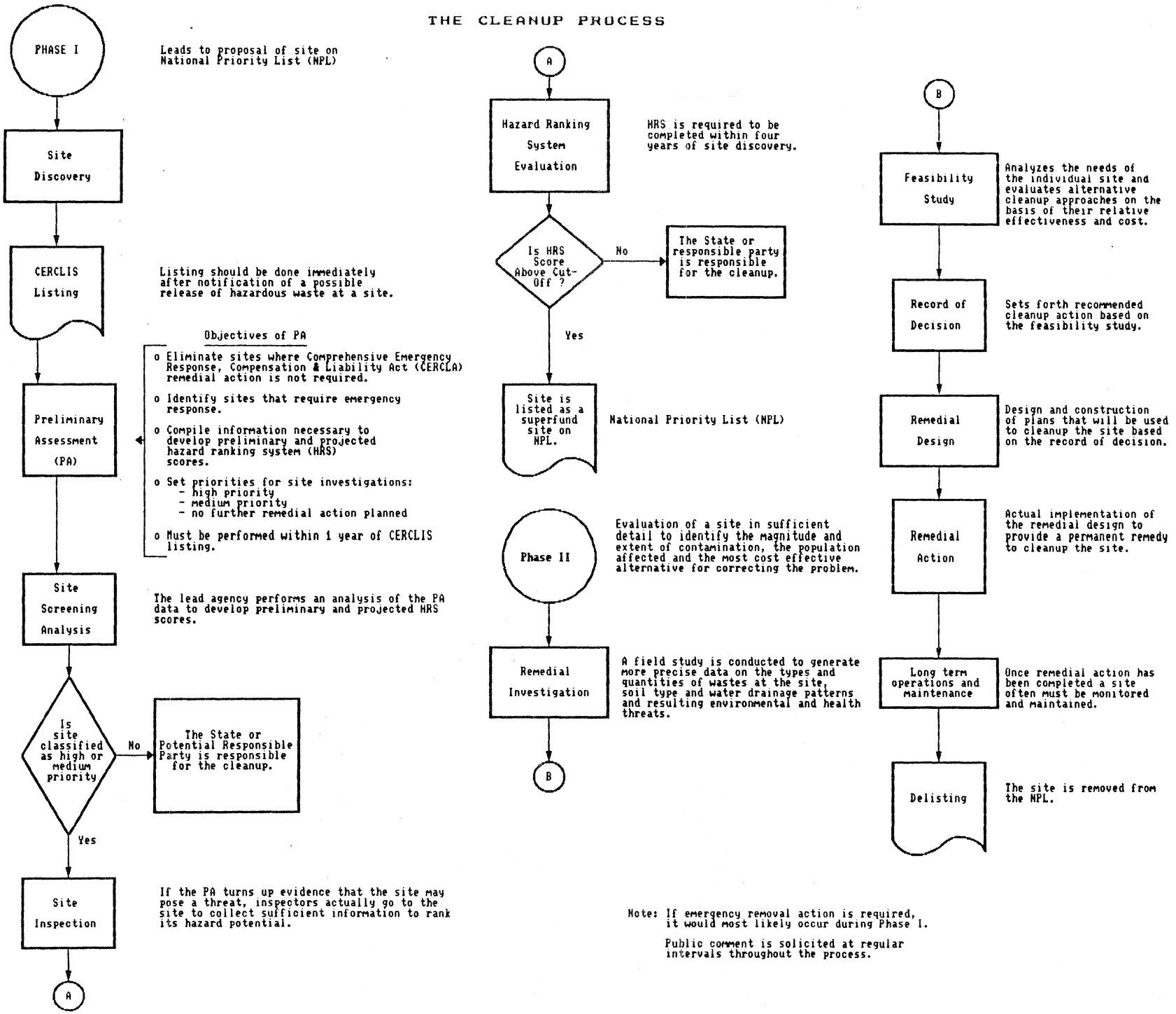
SUPERFUND SITES IN NEW HAMPSHIRE

Although New Hampshire is one of the least populated states in the country, we have more than our proportionate share of NPL sites. Massachusetts is the only state in New England that has more NPL sites than New Hampshire. New Hampshire has the distinction of having the first site ever covered by a cooperative agreement with EPA (Gilson Road, Nashua). This site is one of a few sites nationwide where remedial action is underway. The treatment plant constructed at the Gilson Road site in 1986 operates 24 hours a day. WMD estimates the pump and treat operation will continue until 1995, at which point it will begin the long term maintenance and operations phase of the cleanup process. Unfortunately, this is the only site in the state that has reached this level of completion. Most of the remaining sites are still being investigated and studied to determine the best approach to take to clean them up.

THE CLEANUP PROCESS

The flowchart on the following page illustrates the process that each site follows in the course of being cleaned up. It begins with the site discovery. The activity following site discovery is directed at obtaining the information necessary to determine the severity of contamination at the site and the level of risk that it poses to human health and to the environment. Once the site investigation is complete, there should be enough information and data from sampling results to rank the site according to the hazard ranking system. This system is referred to in SARA as a means of identifying the sites that pose the greatest risk to human health and the environment in the nation. If the site data leads to a scoring greater than a specified cut-off level in the hazard ranking system, that site will be added to the NPL. If not, the decision of what action will be taken at that site is left up to the discretion of the individual state involved. If the site qualifies for Superfund, it proceeds into Phase II of the process which includes Remedial Investigation, a Feasibility Study, a decision of how to proceed documented in the Record of Decision, public hearings to obtain public comment, remedial design and action, long term operations and maintenance, and eventual delisting from the NPL.

THE CLEANUP PROCESS



Note: If emergency removal action is required, it would most likely occur during Phase I.

Public comment is solicited at regular intervals throughout the process.

STATUS OF SUPERFUND SITES IN NEW HAMPSHIRE

The time line on the following two pages lists the fifteen NPL sites in New Hampshire and provides an indication of where these sites fall within the cleanup process. The heading at the top of this continuum follows the cleanup process described on page thirty. Actual and expected completion dates for various stages of completion are provided as indicated along the continuum. An examination of this continuum makes it apparent that the process of cleaning up a hazardous waste site is a long, drawn out series of events. Most of these sites were listed as NPL sites in 1983 or earlier, and only four have progressed to the Record of Decision which documents the intended remedial action after full consideration is given to the alternatives examined in the Feasibility Study. The Record of Decision is always approved by EPA, however, the responsibility for project management of specific sites is shared between EPA and the state depending on available resources and general agreement as to which organization can provide the most effective management for that particular site.

The sites are referred to as state lead or EPA lead, depending on which agency has the administrative responsibility to manage a project to completion. Project management generally includes the responsibility to select, monitor and oversee independent contractors selected to perform the work necessary to accomplish cleanup at the site. The state has agreed to take the lead on seven of the fifteen NPL sites and is also responsible for performing preremedial work on sites covered under the multi-site cooperative agreement with EPA. Preremedial work includes completing preliminary assessments and site investigations for sites listed on CERCLIS. The state has also agreed to provide project monitoring and oversight assistance under separate cooperative agreements for selected sites. A brief site description and narrative concerning each NPL site is contained in Appendix C of this report.

COST OF CLEANUP

Historically, the cost of cleaning up a site has exceeded initial estimates. In most instances, original contracts for each phase of the cleanup require contract amendments to cover the cost of unforeseen developments as the cleanup proceeds. For example, the original cost projection for the Gilson Road site was $8.7M as reported in the Record of Decision in 1983. The cumulative cost to date has exceeded $16M. Reportedly, this kind of variance from original projections is not uncommon, and in fact, has come to be expected at sites throughout the country. The table on page thirty-four presents actual costs incurred through March, 1989 at the Superfund sites in New Hampshire, broken down between state and federal expenditures.

STATE OF NEW HAMPSHIRE
OVERVIEW OF SUPERFUND SITES AND THE SUPERFUND PROCESS

SITE DISCOVERY	PREREMEDIAL ACTIVITIES	NPL PROPOSED	REMEDIAL INVESTIGATION	FEASIBILITY STUDY	RECORD OF DECISION	REMEDIAL DESIGN	REMEDIAL ACTION	LONG TERM OPERATIONS & MAINTENANCE	NPL DELISTING
		12/82	6/89						
1977	----------	----------	----------	----------	----------	----------	ongoing by responsible parties		
	SOMERSWORTH MUNICIPAL LANDFILL, SOMERSWORTH								
		12/82	3/89						
1978	----------	----------	----------	----------	----------	----------	ongoing by responsible parties		
	DOVER LANDFILL, DOVER								
		12/82	1985		1989				
1978	----------	----------	----------	----------	----------	----------	ongoing by responsible party		
	TINKHAM GARAGE, LONDONDERRY								
		12/82	1989	1989					
*1979	----------	----------	----------	----------	----------	----------	expected summer '89		
	AUBURN ROAD LANDFILL, LONDONDERRY								
		10/81	1984	1987	1988				
*1979	----------	----------	----------	----------	----------	----------	expected in Fall 1989		
	KEEFE ENVIRONMENTAL SERVICES, EPPING								
		10/81	1985	1986	1987				
*1979	----------	----------	----------	----------	----------	----------	delayed - court decision appealed		
	OTTATI & GOSS, KINGSTON								
		4/85							
*1979	----------	in process by responsible party							
	MOTTOLO PIG FARM, RAYMOND								
		10/81	1982	1982	1983	1983			
*1981	----------	----------	----------	----------	----------	----------	completion expected 1995		
	GILSON ROAD, NASHUA								
		9/83							
*1982	----------	summer 89--->							
	KEARSARGE METALLURGICAL CORP., CONWAY								
		4/85							
*1982	----------	in progress							
	TIBBETS RD., BARRINGTON								
		9/83	1989						
*1982	----------	----------	----------	expected 7/89-->					
	SOUTH MUNICIPAL WELL SITE, PETERBOROUGH								
		10/84							
1983	----------	nearing completion							
	COAKLEY LANDFILL, NORTH HAMPTON								
		9/83	1989						
1983	----------	in process by responsible party							
	SAVAGE WELL, MILFORD								
		6/88							
*1985	----------	>							
	FLETCHER PAINT WORKS, MILFORD								
		6/88							
1985	----------	>							
	HOLTON CIRCLE, LONDONDERRY								

Note: * Site required emergency removal of contaminated soils and/or barrel removal.

SUPERFUND - A NATIONAL DIRECTIVE (Continued)

NPL SITES
CUMULATIVE STATE AND FEDERAL EXPENDITURES
AS OF MARCH 31, 1989

SITE	FEDERAL EXPENDITURES[1]	STATE MATCH [2]	TOTAL
GILSON RD.	$ 14,824,272	$ 1,209,252	$ 16,033,524
SOMERSWORTH LANDFILL	562,914	70,364	633,278
DOVER LANDFILL	859,239	76,304	935,543
TINKHAM GARAGE	2,018,415	-0-	2,018,415
AUBURN RD.	3,018,409	-0-	3,018,409
KEEFE ENVIRONMENTAL SERVICES	3,979,278	115,332	4,094,610
OTTATI & GOSS	4,221,240	-0-	4,221,240
MOTTOLO PIG FARM	774,172	-0-	774,172
KEARSARGE METALLURGICAL CORP	18,265	-0-	18,265
TIBBETS RD.	1,958,609	-0-	1,958,609
SOUTH MUNICIPAL WELL	285,613	-0-	285,613
COAKLEY LANDFILL	883,722	-0-	883,722
SAVAGE WELL	262,305	-0-	262,305
FLETCHER PAINT WORKS[3]	928,348	-0-	928,348
HOLTON CIRCLE[3]	28,841	-0-	28,841
TOTAL EXPENDITURES	$ 34,623,642	$ 1,471,252	$ 36,094,894

[1] Source: U.S. Environmental Protection Agency, Region 1, as of March 27, 1989

[2] Source: New Hampshire Department of Environmental Services - Financial Status Reports as of March 31, 1989 - excludes costs incurred by New Hampshire Department of Justice and expenditures from Hazardous Waste Cleanup Fund.

[3] Expenditures as of July 21, 1989

TREATMENT ALTERNATIVES AND METHODS

SARA provides a clear and explicit directive to use permanent treatment remedies to the maximum extent possible. The objective is to eliminate contaminated soil and groundwater expeditiously, effectively and permanently, without transferring risk from one community to another by simply removing hazardous wastes from one site and shipping them to landfills. Permanent treatment solutions require remedies that go beyond common land disposal and containment procedures. In fact, the Hazardous and Solid Waste Amendments of 1984 (RCRA reauthorization) imposed prohibitions on land disposal of certain hazardous wastes. These restrictions will require treatment of many Superfund wastes that previously may have been placed untreated into land disposal sites. There are four treatment alternatives that are in use today that can result in permanent treatment solutions. They include the following:

THERMAL TREATMENT- Wastes are incinerated at very high temperatures to destroy the hazardous substances. Mobile incinerator units can be moved from one site to another to accomplish on site treatment of wastes.

CHEMICAL TREATMENT- Wastes are chemically altered and broken down into non toxic compounds.

BIOLOGICAL TREATMENT- The introduction of biological organisms such as fungus can be used to breakdown hazardous substances. Microorganisms have been used successfully to treat cyanide in the mining industry.

PHYSICAL TREATMENT- This is the least preferred method since the hazardous nature of the material is not altered. For example, concrete is often used to immobilize and contain hazardous waste mixtures. These materials are then placed in landfills.

It is largely recognized that additional methods are needed to successfully treat the myriad of conditions at hazardous waste sites throughout the nation. EPA has been severely criticized by the U.S. Congressional Office of Technology Assessment for failure to provide leadership in research and development technology and for relying too heavily on land disposal and containment approaches. In response, Congress directed EPA to establish a program to perform research and development of alternate and innovative treatment technologies. EPA has responded with a program known as the Superfund Innovative Technology Evaluation (SITE) Program. This program is intended to develop and enhance the commercial availability of innovative and emerging technology for use at Superfund sites.

SUPERFUND - A NATIONAL DIRECTIVE (Continued)

In New Hampshire, only four Superfund sites have reached the stage where treatment methods have been selected. This decision is made in the Record of Decision and requires the approval of EPA with the concurrence of WMD. Treatment methods, estimated cost and time projections for remedial action at these sites are summarized below:

		ORIGINAL ESTIMATE	
SITE	TREATMENT METHOD	COST	TIME (Years)
GILSON ROAD, NASHUA	Slurry wall, 20 acre surface cap, groundwater treatment plant	$ 8.7M	6.2
KEEFE ENVIRONMENTAL SERVICES, CONWAY	vacuum extraction of contaminated soils, pump & treat groundwater	$ 6.1M	5.0
TINKHAM GARAGE, LONDONDERRY	dual vacuum extraction method, groundwater treatment using Town of Derry treatment plant	$ 1.2M	2.0
OTTATI & GOSS, KINGSTON	excavation & incineration of soils, construction of groundwater treatment plant at site.	$14.7M	7.0

ENFORCEMENT ACTIONS

The backbone of Superfund enforcement action is the legal authority granted to EPA and the U.S. Department of Justice. EPA is empowered to compel responsible parties to clean up the site or to pay for the cost incurred by EPA to clean it up after the fact. EPA is also entitled to recover all incidental costs, including legal costs. Superfund legislation holds responsible parties "jointly and severally liable" for the total cost of the cleanup. Generally, there is more than one responsible party, especially in the case of solid waste landfills and illegal dumps, which can make enforcement actions complicated and lengthy. Simply searching for the potentially responsible parties (PRPs) can take years. EPA conducts a PRP search for every site where Superfund dollars have been spent. The U.S. Department of Justice takes the lead on enforcement actions and the New Hampshire Department of Justice works along with them to represent the interest of the

state. The state's Attorney General insures that expenses incurred by the state are adequately recovered in any negotiations and settlements, and that cleanups are performed properly in accordance with state rules.

CONCLUSIONS

Our review of project management practices over NPL sites has resulted in the following observations and recommendations:

OBSERVATION - PROJECT MANAGEMENT

o The remediation of uncontrolled, hazardous waste sites is a technically complex process of long duration. Because of the complexities, constraints, and numerous parties involved in a site remediation project, close project management, long range planning and oversight are necessary for successful project completion.

EPA guidance defines project management as "the bringing together of individuals, institutions, firms, technologies, money, equipment, time and other resources in accordance with a plan, to achieve a set of objectives." Responsibilities include planning, monitoring, controlling, directing, coordinating and communicating. In order to successfully perform the role of project manager, one must be experienced in and employ the use of management techniques such as scheduling, budgeting and reporting.

Although WMD has assigned project managers to every NPL site where they have lead responsibility, management practices are not sufficient to ensure results on time and within budget. For example, a contract to perform a Remedial Investigation and deliver a report for the Dover and Somersworth sites with an original expiration date of October, 1985 was extended until December, 1987. This contract was not extended beyond December, 1987. The Dover Remedial Investigation was delivered in March, 1989 and the Somersworth Remedial Investigation was delivered in June, 1989. However, the contractor was paid the contract price except for a small retainer. Although these two sites represent the most serious examples of contractors not abiding by the terms of their contract, most of the other sites have also had multiple amendments and price increases that add years to the terms of the contract and hundreds of thousands of dollars to the cost.

RECOMMENDATION

- We recommend that WMD develop long-term comprehensive plans to help ensure the timely remediation of hazardous waste sites at reasonable costs for all sites where the Division has assumed the responsibility for direct project management or management oversight responsibilities. These plans should employ formal management techniques such as critical path scheduling methods, budgeting and regular reporting of time and cost variances to the budget. Variances should be investigated and resolved in order to reduce the possibility that these variances will continue in the future.

  WMD should closely scrutinize contract amendments, documenting the reasons that justify additional time and money. Contracts should be written that provide incentives for timely performance and penalize unsatisfactory performance. Closer scrutiny and monitoring by top level managers, which requires explanations for slippages, could promote improved compliance by focusing attention on missed deadlines and project milestones and emphasizing management's commitment to compliance with the terms of the contract.

CERCLIS SITES IN NEW HAMPSHIRE

As mentioned previously, CERCLIS is a management information system administered by EPA which tracks the status of sites that are potential candidates for the NPL. EPA can enter sites into the system as a result of investigating complaints or WMD can refer a site to EPA. WMD will propose the addition of a site to CERCLIS if there is no apparent party that can be held responsible for correcting the hazardous conditions at the site. CERCLA Section 105(d) requires that a preliminary assessment be completed within one year of site identification and entry on CERCLIS. The completion of a preliminary assessment results in the ability to classify a site according to the potential severity of contamination and assigns priority to sites which pose the greatest threat to public health. Upon the completion of a preliminary assessment sites should be classified according to Preliminary Assessment Guidance published by EPA in January 1988 as follows:

- HIGH PRIORITY- This category should generally comprise sites that are likely to score above the cut-off upon application of the current hazard ranking system at the end of a site investigation. If a site scores above the cut-off level during the HRS test it is eligible for Superfund.

- MEDIUM PRIORITY- This category should generally comprise those sites with a potential to score above the cut-off upon application of the current hazard ranking system at the end of the site investigation.

- NO FURTHER REMEDIAL ACTION PLANNED- This category represents all other sites and should generally include:

  1) Sites that never received CERCLA hazardous substances;

  2) Sites where the CERCLA hazardous substances are clearly not releasing and have no potential to release into the environment, and where no removal action is required;

  3) Sites where EPA is not legally authorized to respond to the release; and

  4) Sites with no reasonable potential to score above the cut-off upon application of the current hazard ranking system at the end of a site investigation.

CERCLIS SITES IN NEW HAMPSHIRE (Continued)

In addition to the 15 NPL sites, there were 131 CERCLIS sites classified accordingly as of June 30, 1989:

COMPLETED PRELIMINARY ASSESSMENTS:	
HIGH PRIORITY SITES	21 SITES
MEDIUM PRIORITY SITES	49 SITES
COMPLETED SITE INVESTIGATIONS - (RECOMMEND FURTHER ACTION:)	
HIGH PRIORITIES	24 SITES
NO FURTHER REMEDIAL ACTION PLANNED	25 SITES
PENDING PRELIMINARY ASSESSMENT	12 SITES
TOTAL SITES	131

Once the sites are classified by priority, the next step is to perform a site investigation for all sites that are classified as high or medium priorities. WMD and EPA are jointly responsible for ensuring that preliminary assessments and site investigations are performed for all CERCLIS sites. The purpose of a site investigation is to gather more information about that site with the ultimate objective of determining the severity of contamination at the site. Refer to the flowchart on page thirty-one for a more descriptive explanation of the cleanup process. The sites that are listed as pending preliminary assessment are those sites where the preliminary assessment is under review by the Division or by EPA. The sites classified as needing no further remedial action will not be handled by Superfund but may receive further action at the state level. Refer to Appendix D for a complete listing of CERCLIS sites in New Hampshire, as of June 1989, excluding NPL sites.

OBSERVATION - SITE INVESTIGATIONS OF CERCLIS SITES

- Although emergency removals have occurred at sites where hazardous waste conditions were known to present an imminent threat to human health, sites that have not been investigated to date may present unknown dangers to our health and our environment. Site investigations have not been completed on 19 sites characterized as high priority sites on CERCLIS and 48 sites characterized as medium priority CERCLIS sites. WMD has assumed the responsibility to perform the site investigation for most of these sites. According to guidance issued by EPA a classification of high priority indicates that there is a high probability that a site is eligible for listing on NPL and medium priority sites are those that may potentially score high enough for listing on the NPL. All of these sites were listed on CERCLIS in 1987 or earlier, and nearly half

of them were listed in 1985 or earlier. Many were identified in 1980 and 1981. In our opinion, these time frames, measured in years, are excessive given the Division's responsibility to protect human health and the environment from hazardous wastes.

RECOMMENDATION

- Management should implement and publish a plan of action to complete site investigations as expeditiously as possible. Human health and the environment may be jeopardized due to prolonged exposure to unknown hazardous waste risks at these sites.

HAZARDOUS WASTE CLEANUP FUND

RSA 147-B:1 established the Hazardous Waste Cleanup Fund in 1981 in recognition of the need to protect public health and safety and the environment from the threat presented by "hazardous wastes which have been previously discharged or disposed of in an environmentally unsound manner and by the possibility of future improper disposal or spills of hazardous wastes." The fund was established as a special non-lapsing, interest bearing revolving account to provide for the adequate and safe containment and cleanup of sites within New Hampshire where hazardous waste disposal threatens the public health or the environment. In 1985 the purpose of the fund was restricted to cleaning up only nonqualifying CERCLA sites. RSA 147-B delineates the following as allowable expenditures from the fund:

- household hazardous waste collection program
- hiring of consultants and personnel
- purchase, lease or rental of necessary equipment
- other necessary expenses directly associated with the containment and cleanup of hazardous wastes or hazardous materials
- administrative expenses associated with the fund
- development and implementation of a hazardous waste facility siting program

In addition to annually recurring expenditures for the household hazardous waste collection program and the facility siting program, expenditures from the fund generally consist of costs connected with hydrogeological investigations of CERCLIS sites and remedial action and emergency removal of wastes for sites that are not listed as a national priority and do not have viable, cooperating responsible parties. Emergency removals and investigative work financed by the cleanup fund have occurred at approximately fifteen sites in the state since 1981. Transfers are also made annually to the Attorney General's office to support litigation related to hazardous waste sites.

In addition to establishing the hazardous waste cleanup fund, RSA 147-B:8 imposed fees on generators of hazardous waste and on hazardous waste treatment, storage and disposal facilities. Collections from these fees are deposited into the hazardous waste cleanup fund. Additionally, by statute, any fines or penalties imposed for failure to pay or for providing faulty information shall also be deposited into the fund. Fees are collected quarterly, based upon the volume of hazardous waste reported by the generator or storage facility under the manifest system (RCRA program) discussed in detail beginning on page sixty of this report.

FUND ACTIVITY

The activity of the fund since it's establishment in 1981 is summarized below. The fund was initially funded with general fund appropriations of $200,000 in fiscal year 1981, $60,000 in fiscal year 1982 and $62,000 in fiscal year 1983.

STATE OF NEW HAMPSHIRE
HAZARDOUS WASTE CLEANUP FUND *
SELECTED FINANCIAL INFORMATION

FISCAL YEAR	REVENUE	EXPENDITURES	AVAILABLE BALANCE
1981	$ -0-	$ -0-	$ 200,000
1982	59,187	117,989	165,492
1983	248,354	245,364	111,390
1984	210,529	433,435	917,426
1985	357,472	1,006,539	2,712,922
1986	4,720	358,435	885,320
1987	533,104	319,446	818,789
1988	789,834	1,118,673	678,376
1989	2,200,059	1,470,550	1,891,073
TOTALS	$ 4,403,259	$ 5,070,431	$ N/A

* The above table shows selected cleanup fund activity from the Statement of Appropriations. It excludes year-end encumbrances, transfers, general fund appropriations, balance forwards, and lapses. Therefore, it is not intended to present a complete history of cleanup fund account activity.

HAZARDOUS WASTE CLEANUP FUND (Continued)

Chapter 469:58, Laws of 1983, provided bonding authorization in the amount of $1.5M for Remedial Investigation and remedial cleanup costs involved pursuant to RSA 147-B. Expenditures of the fund have exceeded this amount and the fund has required general fund appropriations in addition to restricted revenue collections from generators and storage facilities of hazardous waste in the 88/89 biennium of $146,269 in fiscal year 1988 and $126,890 in fiscal year 1989.

We offer the following observations and recommendations related to the hazardous waste cleanup fund.

OBSERVATION - SUPERFUND RECOVERIES

- RSA 147-B:6 states that "the fund shall be used to provide for the adequate and safe containment and cleanup of nonqualifying CERCLA sites.... Moneys shall be expended from the fund only for those projects which do not qualify for assistance under the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (Superfund)." During our review we noted that WMD has deposited nearly $1.8M in recoveries from Superfund enforcement actions into the hazardous waste cleanup fund during fiscal years 1989 and 1988. Superfund settlements generally include recovery of past expenditures plus an amount to cover future projected costs at the site. The practice of depositing Superfund recoveries in their entirety to the cleanup fund is questioned because it is inconsistent with the established intent and purpose of the fund, which restricts the use of the fund to nonqualifying CERCLA sites.

RECOMMENDATION

- WMD should deposit the proceeds from settlements in Superfund enforcement actions in the fund that was charged for the initial expenditure. The general fund should be reimbursed for any past expenditure connected with these sites by transferring recoveries deposited in the Hazardous Waste Cleanup Fund in an amount equal to the past expenditure incurred by the general fund. In addition, WMD should not continue to deposit the proceeds of recoveries related to Superfund sites in the Hazardous Waste Cleanup Fund, unless they are intended to reimburse the fund for past expenditures, since RSA 147-B expressly prohibits expending these funds on future costs related to cleaning up qualifying CERCLA sites.

OBSERVATION - ACCOUNTING FOR FY 86 RECEIPTS

- During FY 1986, collections of generator fees and fines in the amount of $730,035, intended for the Cleanup Fund, were deposited in an account belonging to the Division of Public Health, Waste Management Engineering Bureau. Expenses related to hazardous waste cleanup activities were also paid through this account during FYs 1986, 1987 and 1988.

RECOMMENDATION

- WMD should analyze the Waste Management Engineering Bureau account cited in this report to determine if an adjustment should be made to correct the Cleanup Fund balance due to the activity posted to the Waste Management Engineering Bureau Account.

OBSERVATION - INTEREST ACCRUALS

- RSA 147-B:3 states that, "All moneys not currently needed to meet the obligations of the Waste Management Division shall be deposited with the state treasurer who shall keep this money in a separate fund, designated the New Hampshire Hazardous Waste Cleanup Fund..." It further requires, "Interest received on investments made by the state treasurer shall also be credited to the fund." The Hazardous Waste Cleanup Fund was established on June 23, 1981. As of February 28, 1989 the fund has never been credited for interest income earned on the balance. The chart below shows estimated interest earned on the average fund balance from July 1, 1981 through June 30, 1989:

Fiscal Year	Average Fund Balance	*Average 90-Day T-Bill Rate	Interest Earned
1981	$ 100,000	14.0 %	$ 14,000
1982	183,485	10.5	19,266
1983	203,701	8.6	17,518
1984	876,322	9.4	82,374
1985	1,505,245	7.3	109,883
1986	1,346,505	5.9	79,444
1987	1,301,860	5.8	75,508
1988	1,317,705	6.7	88,286
1989	1,619,995	6.5	105,300
		TOTAL INTEREST EARNED	$ 591,579

*Calendar Year

HAZARDOUS WASTE CLEANUP FUND (Continued)

RECOMMENDATION

- The Waste Management Division should request the State Treasurer to transfer accrued interest income earned on the average fund balance since its establishment in 1981 and establish procedures so that the fund is credited for all future accrued interest income in accordance with RSA 147-B:3.

OBSERVATION - INVENTORY OF HAZARDOUS WASTE SITES

- During the course of our review, we had difficulty identifying the total number of hazardous waste sites in the state because WMD does not have a single, comprehensive listing of known hazardous waste sites nor do they maintain a complete history of state expenditures related to hazardous waste sites. In the past, the division compiled a hazardous waste inventory list, however this listing has not been maintained in recent years.

RECOMMENDATION

- DES should develop a comprehensive data base of hazardous waste sites which includes the location of the site, the status of the site, state expenditures related to the site, responsible parties and the individual responsible for management oversight at the state level. Maintenance of a comprehensive listing would assist the division in answering inquiries they receive from the general public and other interested parties, as well as providing management with useful information when litigating against responsible parties or crediting the state for past expenditures related to matching requirements for Superfund sites.

EMERGENCY PLANNING AND COMMUNITY RIGHT-TO-KNOW ACT

TITLE III

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EMERGENCY PLANNING AND COMMUNITY RIGHT-TO-KNOW ACT - TITLE III

Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA) created the Emergency Planning and Community Right-to-Know Act. Title III is unique because it places responsibility for emergency planning and response to accidents or spills of hazardous chemicals on citizens, industry, public interest groups, and the local, state and federal government. Under the provisions of Title III, each of these groups has a vital role to play in making this law work to benefit everyone. The law requires facilities to provide information on the presence of hazardous chemicals in communities directly to the people who are most affected, both in terms of exposure to potential risks and the effects of those risks on public health, safety and the environment. The law brings the responsibility to prepare for and respond to chemical emergencies down to the local level and assigns the Local Emergency Planning Committee (LEPC) as the focal point responsible for developing a plan to prepare for emergency releases of hazardous chemicals in their community. The law also requires that the state provide oversight and advice to assist the LEPC in discharging their responsibility under the law, through the formation of the State Emergency Response Commission (SERC). The major provisions and requirements of Title III are summarized on page fifty-one.

STATE EMERGENCY RESPONSE COMMISSION

Title III required each state to set up a State Emergency Response Commission by April 17, 1987. This commission was appointed in New Hampshire on January 26, 1987. The Director of the Office of Emergency Management has been named the Director of the Commission. Approximately forty additional members were appointed to the Commission, including the Governor, the Speaker of the House, and the Senate President. The Office of Emergency Management has been assigned the responsibility of coordinating the duties of the SERC which include:

- designating local emergency planning districts within the state
- appointing a local emergency planning committee to serve each of the designated districts
- coordinating and supervising the activities of the local committees, through regular communication and contact
- coordinating proposals for and distribution of training grant funds
- reviewing local emergency response plans annually, making recommendations for any needed changes
- notifying EPA of all facilities in the state that are either covered under emergency planning requirements, or have been designated as subject to these requirements by the SERC or the governor

EMERGENCY PLANNING AND COMMUNITY RIGHT-TO-KNOW ACT - TITLE III (Continued)

- providing a forum for coordinating all Title III information and assisting in understanding and communicating to the public associated chemical risks in their community
- establishing procedures for receiving and processing public requests for information collected under the Act
- receiving and filing the reports required under Title III
- taking civil action against facility owners or operators who fail to comply with reporting requirements.

Pursuant to Title III section 301(b), the State Emergency Response Commission has designated emergency planning districts within the state in order to facilitate preparation and implementation of local emergency plans. In New Hampshire, each municipality has been designated as a planning district. Each district is required to submit an emergency plan if it contains any extremely hazardous materials identified by EPA. One hundred sixty-five districts in New Hampshire should file a plan pursuant to these requirements, according to the Office of Emergency Management.

OBSERVATIONS

- As of June 1989, only 13 communities out of 165 have submitted completed emergency plans, 39 are near completion and 113 are in various stages of completion. SARA imposed October 17, 1988 as a deadline for submitting these plans to the SERC which is charged with the responsibility of reviewing and recommending improvements to each plan as submitted by the LEPC. As of June 1989, the designated LEPC's in New Hampshire are in substantial noncompliance with section 303(a) of Title III.

- The SERC is required to review the plans submitted by the Local Emergency Planning Committees and make recommendations on revisions of the plan that may be necessary to ensure coordination of the plan with other emergency planning districts. As of June 1989, none of the thirteen plans submitted to the SERC has been reviewed.

RECOMMENDATION

- The State Emergency Response Commission should work vigorously with the LEPC's to provide the required guidance and technical assistance needed to bring the communities into compliance with the requirements of Title III, section 303(a). In addition, the SERC should fulfill its responsibility to review the plans and make recommendations as necessary.

EMERGENCY PLANNING AND COMMUNITY RIGHT-TO-KNOW ACT - TITLE III (Continued)

TRAINING PROGRAMS

In addition to providing oversight and technical assistance to the LEPC's, the SERC is required to administer training grant funds to educate the communities about their responsibilities under Title III. The N.H. Office of Emergency Management has delivered various training programs to approximately 1100 participants. The N.H. Fire Standards and Training Commission is responsible for providing training to firefighters who may be required to respond to hazardous material accidents and emergencies.

OBSERVATION

The N.H. Hazardous Materials Incident Emergency Response Plan, published by the Office of Emergency Management, states that "training should be conducted to meet federal, state and local guidelines for minimal training." This plan further states that the NH Fire Standards and Training Commission is "responsible for training of first responders in protection, tactics and related skills dealing with HAZ-MAT (hazardous materials) which include, but are not limited to: rescue of injured or endangered persons, prevention of container failure, containment techniques for neutralizing hazard, extinguishment of ignited material and protection of exposures." The NH Fire Standards and Training Commission has four levels of hazardous material training that includes (1) awareness (2) first response (3) technical training (4) specialist training. Although the Commission has provided hazardous material training to approximately 1,200 full-time firefighters, after our discussions with the Commission we note the following deficiencies with the hazardous materials training program:

- The state has approximately 6,800 part-time firefighters who must pass a firefighter I certificate training program. This program does not include hazardous material training.

- The Commission does not have the equipment or trained personnel to offer technical training in hazardous materials to firefighters.

- As of June 1989, the specialist training course has been offered only twice. According to the NHFS&T Commission this is due to shortages in funding and personnel.

RECOMMENDATION

- With the additional resources appropriated in the 90/91 biennium, the NHFS&T Commission should execute a comprehensive hazardous material training program that satisfies the needs of firefighters

at all levels. The program should be consistent with the requirements of the N.H. Hazardous Materials Incident Emergency Response Plan published by the Office of Emergency Management and signed by the Governor in July, 1988.

REPORTING

As the designated state agency responsible for assisting the State Emergency Response Commission, the Office of Emergency Management (OEM) has been receiving and filing information reports submitted by regulated businesses subject to Title III. OEM has conducted several informational mailings to over 10,000 businesses in the state informing them of their responsibilities pursuant to Title III. As a result, OEM has received hundreds of information returns from businesses filing material safety data sheets, chemical inventory forms and toxic chemical release forms.

OBSERVATION

- OEM is not equipped with automated data processing equipment to handle the processing and retrieval of information received from businesses filing information pursuant to Title III. Given the volume of information reported, automated processing is the most efficient way of storing and retrieving the reported information. As of June 1989, OEM does not have a system in place to identify businesses who are not complying with the law, nor an easy way of accumulating reported data, since they are manually processing the information returns.

RECOMMENDATION

- OEM should automate the processing of information returns to facilitate the retrieval of information accumulated from the reported information. Additionally, the system should be designed to identify businesses who are in noncompliance with reporting requirements.

STATUTORY DEADLINES

SARA imposes a series of deadlines to promote compliance with the terms of the law. The deadlines pertaining to Title III are listed in Appendix E in chronological order. The information contained in the two right-hand columns of Appendix E was provided by the New Hampshire Office of Emergency Management in March, 1989.

EMERGENCY PLANNING AND COMMUNITY RIGHT-TO-KNOW ACT: SUMMARY OF MAJOR PROVISIONS

MAJOR PROVISIONS	RESPONSIBLE ENTITIES	REQUIREMENTS
PLANNING FOR EMERGENCY RESPONSE TO CHEMICAL ACCIDENTS AND SPILLS (Section 301-303)	Local Emergency Planning Committees (LEPCs) appointed by State Emergency Response Commissions (SERCs).	-Identify the facilities and transportation routes where hazardous substances are present. -Establish emergency response procedures, including evacuation plans, for accidental chemical releases. -Establish notification procedures for emergency respondents, and for the general public. -Develop methods to determine the severity of a release, and to identify affected areas and populations. -Identify available community and facility emergency equipment. -Schedule and conduct training programs for local medical and emergency personnel. -Schedule and conduct exercises (simulations) to test elements of the emergency response plan. -Designate community and facility coordinators to carry out the plan.
EMERGENCY RELEASE NOTIFICATION (Section 304)	Industry notifies SERCs & LEPCs of accidental releases. SERCs & LEPCs provide public information.	-Provide the name(s) of the chemical released. -Indicate the location of the release. -State the amount of the substance released. -Show the time and duration of the release. -Indicate the environmental medium (air, water, soil or combination) into which the chemical was released. -Describe the known or anticipated health risks and necessary medical treatments. -Specify the proper safety precautions, such as evacuations. -Provide the name of a facility contact person.
REPORTING OF HAZARDOUS CHEMICAL INVENTORIES (Section 311-312)	Industry submits material safety data sheets (MSDS) to SERCs, LEPCs & local fire depts.	-Provide the amounts, locations, and potential effects of hazardous chemicals used or stored in facilities within the community. -Submit material safety data sheets (MSDSs) specifying physical properties and health effects of chemicals. -Make MSDSs available to employees exposed to chemicals. -Submit annual inventories of hazardous chemicals to the LEPC, SERC & local fire department.
TOXIC CHEMICAL RELEASE REPORTING (Section 313)	Industry submits annual reports on toxic chemical releases to SERCs & EPA which in turn provide public information. EPA creates national toxic chemical release inventory.	-Report the toxic chemicals released into the environment during the preceding year. -Show the amount released into the air, water and land. -Indicate the amount transported from the site facility for disposal. -Describe the methods of treatment for on-site chemical wastes. -Evaluate the efficiency of those treatments.

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NEW HAMPSHIRE'S "CRADLE TO GRAVE"

HAZARDOUS WASTE MANAGEMENT SYSTEM

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NEW HAMPSHIRE'S "CRADLE TO GRAVE" HAZARDOUS WASTE MANAGEMENT SYSTEM

Subtitle C of the Resource, Conservation and Recovery Act (RCRA) specifically addresses hazardous waste management. In effect, the law requires "cradle to grave" management of hazardous waste and encourages the states to develop their own programs for this purpose. New Hampshire is authorized to administer this program for the federal government. The state is responsible for identifying and permitting regulated businesses, tracking and reporting on hazardous waste activity in the state, ensuring compliance with and enforcing state and federal regulations, and assisting regulated industries in minimizing their waste.

RCRA encourages the states to develop and manage their own hazardous waste programs as an alternative to direct EPA management. In EPA's view, states are closer to and more familiar with the regulated community and are, therefore, in a better position to serve local needs effectively. For a state to have the authority to manage its own hazardous waste program, it must receive EPA approval after showing that its program is at least as stringent as EPA's. New Hampshire received authorization from EPA to operate its program on January 3, 1985. In order to maintain authorization, New Hampshire must continue to revise its program to conform to changes made to the RCRA law and regulations.

As part of the process of updating the state program, the state receives lists of federal requirements that must be adopted by the state program. The requirements are changes in regulations pertaining either to RCRA or the Hazardous and Solid Waste Amendments of 1984 which amended RCRA. Because the federal regulations keep changing to address specific wastes or ways of regulating them, the state is constantly trying to keep up with the changes. Such a process is confusing enough for WMD, but can be even more confusing for hazardous waste generators that are expected to comply with state requirements and federal requirements not yet adopted by the state.

Most rule changes have not resulted in major implementation problems for the division. However, according to WMD, a recent federal change could present problems. The change requires WMD to regulate a new group of wastes -- radioactive mixed wastes -- while not providing any additional federal resources to do so. This change could also create a confusing mix of organizational responsibilities (the Nuclear Regulatory Commission now regulates radioactive wastes, while the state regulates hazardous wastes) and material handling requirements (for example, storage requirements of nuclear materials differ from those for hazardous wastes).

While this serves as an example of the complications that can result from EPA-mandated changes, WMD maintained that most rule changes, while inconvenient, do not pose major problems for the state.

IDENTIFYING AND PERMITTING REGULATED BUSINESSES

RCRA regulations and New Hampshire Hazardous Waste Rules are designed to ensure proper management of hazardous waste from the time waste is generated until the time it is disposed of. Requirements contained in the regulations and rules address the three types of companies that are major handlers in the hazardous waste life cycle: 1) generators; 2) transporters; and 3) treatment, storage, and disposal facilities ("facilities"). All of these handlers, with the exception of small quantity generators, must notify WMD of hazardous waste activities. Transporters and facilities must obtain permits. WMD also has two ongoing studies that address New Hampshire's potential locations and capacities of future hazardous waste facilities.

NOTIFICATION

An important first step in the regulatory process is the determination of the universe of regulated businesses. Under federal regulations and New Hampshire rules, notification of ongoing regulated activities is the responsibility of the hazardous waste generator, transporter, or the owner or operator of a facility. According to section He-P 1905.02 (c)(1) of New Hampshire's rules,

> All hazardous waste generators, transporters, and owners or operators of hazardous waste facilities shall notify the division or EPA of all hazardous waste activities covered under these rules. All new generators, transporters, or operators of hazardous waste facilities shall notify the division or EPA of their activities before they begin any activity regulated in these provisions. If a new waste is added to the hazardous waste list by the division, any generators, transporters or operators of facilities handling the waste that have not previously notified the division or EPA shall do so within 90 days.

Notification shall be done by completing a form obtained from the division and shall include the name and address of the responsible party, the type of activity and description of current practices and the type of waste and estimated quantity generated per month.

After the regulated businesses have notified WMD of their hazardous waste activities, the division must fulfill its responsibility. According to section He-P 1905.02 (c)(2) of New Hampshire's rules:

> Within 90 days of notification of hazardous waste activities, the division shall with EPA assistance issue an EPA identification number to each owner or operator of a generating facility, transporter, or hazardous waste facility. The number shall be used on all forms, manifests, and reports that are required. (Receiving an EPA identification number does not constitute a permit.) No generator, transporter, or owner or operator of a

facility shall generate hazardous waste, transport, or treat, store, or dispose of hazardous wastes without an EPA identification number.

As of March, 1989, WMD reported that 2083 generators had notified them of hazardous waste activity. Some of these were small quantity generators that are not required to notify. Small quantity generators produce less than 100 kgs./mo. and accumulate less than 100 kgs./mo. of hazardous waste, and produce less than 1 kg./mo. and accumulate less than 1 kg./mo. of acutely hazardous waste. Additionally, 120 transporters hold state permits, as do three storage facilities. New Hampshire does not presently have any permitted disposal facilities. Generators must, therefore, ship their hazardous waste out of state. In its New Hampshire 1987 Biennial Report, WMD reported that in fiscal year 1987 New Hampshire companies sent wastes to twenty different states and Canada.

NON-NOTIFIERS

If companies, particularly generators, do not submit the required notification, WMD will not know of the company's hazardous waste activity unless a transporter or disposal facility reports it, WMD receives a complaint on the company, or WMD discovers the company through its non-notifier search procedures. Non-notifying companies could be causing serious harm to New Hampshire's environment by knowingly or unknowingly disposing of hazardous wastes improperly.

OBSERVATIONS - PURSUING NON-NOTIFIERS

- In an effort to identify and educate non-notifiers, WMD from late 1986 to early 1988 developed a methodology for tracking down likely non-notifiers through the use of standard industrial codes and statewide employer listings. The project was funded by a special RCRA grant. After categorizing companies that were most likely to be generators, staff selected a sample to inspect. Of 55 companies inspected, 56% were found to be involved in a hazardous waste generation activity — 25% were full generators (more than 100 kgs./mo.) and 31% were small quantity generators (less than 100 kgs./mo.). The fact that so many full generators were discovered not notifying the state or EPA of their activities leads to a conclusion that, potentially, many more non-notifying generators may be operating in the state.

  We performed our own test to check the potential for non-notifiers in an industry that is known to produce hazardous wastes. We compiled a list of 97 dry cleaners from New Hampshire telephone books and then checked WMD's notifier lists to see if the dry

cleaners appeared on them. For over half of the businesses, no record existed. While some of these businesses may be satellite sites for a parent firm or small quantity generators which are not subject to notification requirements, some of them could also be non-notifying generators.

Another potential source of non-notifier information is the material safety data sheets that must be provided to the State Emergency Response Commission under Title III of the Superfund Amendments and Reauthorization Act. The data sheets contain information on hazardous materials. It is possible that hazardous waste generators could be identified by determining what hazardous materials are likely to create hazardous waste streams and by matching this information with the company names on submitted data sheets.

- WMD identifies non-notifiers primarily as they surface as the subject of complaints. Despite the success of earlier efforts at non-notifier identification, the division has not continued to use its research methodology to sample other industry sectors.

  Also, despite the existence of fines for other RCRA violations, non-notifiers do not appear to have enough of a monetary incentive to come forward and notify the state of hazardous waste activity.

RECOMMENDATIONS

- WMD should make every effort to locate non-notifiers. The division should expand use of its standard industrial code methodology to cover more industries, target known groups such as dry cleaners, and explore the use of material safety data sheet information reported to the Office of Emergency Management, which administers the Superfund Title III program.

- WMD should consider establishing a fine of up to the maximum allowable under current law for regulated companies failing to notify WMD of hazardous waste generation, to take effect on a certain future date, with every day of non-notification past that date constituting a separate violation. WMD should publicize the notification requirement, and a current list of hazardous wastes, and should consider including the commonly-known names of the waste chemicals.

PERMITTING

In addition to their notification responsibilities, hazardous waste transporters and treatment, storage, and disposal facilities are required to obtain permits to operate in New Hampshire. In the case of transporters, the permit is a relatively simple paperwork process, compared to the very complicated facility permit process.

Transporter Permits

New Hampshire requires permits for all persons transporting hazardous waste into or within the state. Permit applicants must have the required personnel training, contingency plan and emergency procedures, emergency preparedness and prevention controls (if storing waste), and insurance coverage. When a transporter has multiple vehicles or vessels, the permit must reflect all the vehicles or vessels that will be transporting the waste. Transporter permits are good for one year, after which they are renewable. Of the 120 transporters permitted in New Hampshire, six handle the bulk of New Hampshire's waste, according to the division.

Facility Permits

While the state rules describe transporter permit requirements in four pages, there are forty-six pages of rules for permitting hazardous waste treatment, storage, and disposal facilities. The specific information requirements for facility permits are too numerous to mention here; categories include general information, information about the facility and its business, planning and operational information, hazard prevention information, site descriptions, and technical storage and treatment standards.

Any company seeking a hazardous waste facility permit first obtains an application from WMD. The company must then answer the application questions and prepare supporting documents before submitting the package. WMD reviews the application package for completeness. If the paperwork is complete, WMD places a notice in state newspapers and allows thirty days for public comment. If the application is incomplete, WMD returns it to the company for corrections.

Before 1984, the state carried out the permit process by itself; however, federal regulation changes occurred which have led to separate but similar state and federal permit procedures (since the state has not yet adopted all of the new federal procedures). When the state reviews permit applications, it determines whether the applicant has fulfilled both federal and state requirements.

Rules and technical requirements for hazardous waste facility permits were characterized by WMD staff as being very complicated and restrictive. These factors, as well as the expense of the permit process are likely reasons why WMD has not received any new facility permit applications for several years. WMD staff also related the problems faced by the last two applicants for such permits that gave up because of the public resistance of communities where the sites would have been located. Lack of siting criteria was given as one reason for public confusion and resistance at the time in addition to limited market demand.

Currently, New Hampshire only permits three facilities to store wastes beyond ninety days. No facilities have permits to treat or dispose of hazardous wastes. Two of the three permitted facilities have final five-year permits. The other, New Hampshire's only commercial facility, still has an interim permit and is attempting to fulfill requirements for a final one. While around seventy companies were permitted to store hazardous wastes on an interim basis in the early 1980's, most abandoned their permits, not wanting to deal with the tougher federal requirements that were being developed. These companies must now abide by the 90-day rule for storage of these wastes.

SITING AND CAPACITY ASSURANCE STUDIES

The locations and capacities of future potential hazardous waste management facilities are being addressed in two ongoing studies: the Hazardous Waste Facility Siting Study and the New Hampshire Capacity Assurance Plan.

Siting Study

Pursuant to RSA Chapters 147-B:4 IV and 4-C:1 et seq., WMD and the Office of State Planning must "survey the state to identify potential sites within the state which conform to siting criteria adopted under RSA 147-A:3" for hazardous waste facilities. In its progress report dated January 1, 1989, WMD reported that it had taken the siting criteria outlined in He-P 1905.08 (g) of New Hampshire's Hazardous Waste Rules and applied them to selected regions of the state. Eleven of the fourteen criteria designed to protect human health and the environment when siting a facility were identified and mapped in the initial study area, the seacoast counties. Geological and analytical studies are now going on using various mapping and computer modeling techniques. Preliminary data indicate that the land remaining to be developed in many of the areas surveyed thus far may not be favorable for potential sites. WMD will be undertaking further studies of other areas in the state for potential site analysis. Efforts will be made to locate sites in flat areas away from water supplies.

Capacity Assurance Plan

While the Capacity Assurance Plan was a requirement contained in the Superfund Amendments and Reauthorization Act of 1986, it is actually relevant to the current and future waste management concerns of RCRA. The Superfund amendments required development of such a plan to assure that states would be able to properly dispose of their hazardous wastes. New Hampshire, along with the other states, must submit an acceptable plan to EPA by October 17, 1989 in order to remain eligible for Superfund money.

WMD considers the development of the Capacity Assurance Plan to be a priority and has hired an employee to work full-time to develop the plan. This individual receives the part-time assistance and oversight of several other individuals both within the division and outside the division. EPA has allowed DES to use funds allocated to the Superfund program through the CORE grant for this purpose. EPA has encouraged groups of states to work together to develop plans and has employed a consultant to assist states in EPA Regions I, II, and III, or the "Northeast States" group. EPA recently issued guidance for proposing the plan, and staff efforts are now underway to plan and organize state activities and to gather appropriate data. The project schedule calls for public meetings in September and early October, culminating in the final plan by October 17, 1989.

TRACKING AND REPORTING ON WASTES

EPA requires the tracking of hazardous wastes by means of forms called "manifests." New Hampshire uses the manifests to generate biennial reports to EPA summarizing hazardous waste activity. In addition, WMD generates quarterly and annual reports on the activities of each generator.

MANIFESTS

A key part of the "cradle to grave" management system for the safe handling of hazardous wastes is the manifest. RCRA and New Hampshire law allow generators to store their own wastes on-site for up to ninety days without a permit. (The federal law allows generators of 100-1000 kgs./mo. to store wastes for 180 days or longer in some cases, but the state does not have this provision in its laws). When wastes need to be shipped off-site, the generator prepares a Uniform Hazardous Waste Manifest which describes the wastes and identifies the transporter and destination of the waste. The manifest must accompany the waste wherever it travels. Each individual handler of the waste must sign the manifest and keep one copy. The New Hampshire manifest contains eight copies; the copies must be filed with the appropriate parties as the process is completed. Generators; transporters; and treatment, storage, and disposal facilities must all use the form.

The distribution of the copies is as follows:

COPY 1: The facility mails this copy to the state where the facility is located.

COPY 2: The facility mails this copy to the state where the waste was generated.

COPY 3: The facility mails this copy to the generator of the waste.

COPY 4: The facility retains this copy with on-site records.

COPY 5: The transporter retains this copy for its records.

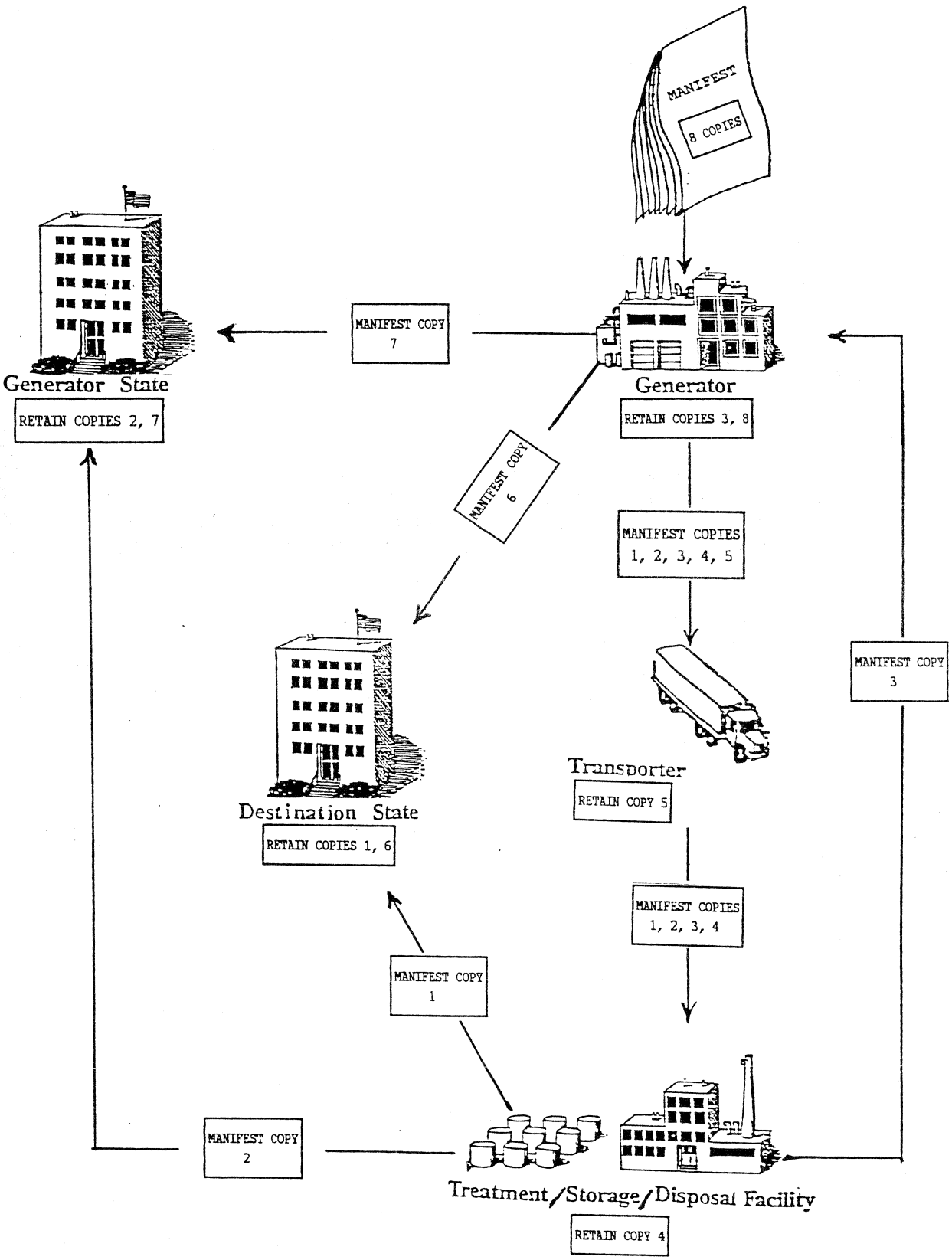
COPY 6: The generator mails this copy to the state where the designated facility is located.

COPY 7: The generator mails this copy to the state where the waste was generated.

COPY 8: The generator retains this copy of the manifest with its records.

Generators, transporters, and facilities should follow the manifest process as stated above. According to state rule He-P 1905.04(c), generators must file exception reports to WMD upon finding that the manifested waste was not delivered to a facility, or that discrepancies exist in the type or quantity of wastes delivered. WMD staff reported that although they do not often receive formal exception reports, discrepancies are resolved through telephone contact with the generator and through the reconciliation of reported information in the quarterly billing and annual reporting cycle. (See page 64.)

HAZARDOUS WASTE MANIFEST SYSTEM FLOW CHART



The Waste Management Division received 33,952 manifests in FY 1989. WMD is responsible not only for collecting the manifests, but also for entering data into the management information system, compiling statistics, formulating biennial reports for EPA from the data, manually matching manifest copies, compiling the quarterly and annual reports from manifest data, and following up on discrepancies in the matched manifests and the quarterly and annual report copies received back from businesses.

Because New Hampshire is a state that generates waste but only has one commercial storage facility that handles the waste of other companies, and no disposal facilities, most copies of the manifest it receives are those due the generator state. WMD receives two copies of the manifest—one completed when the transporter picks up the waste, and one completed when the waste arrives at the facility. The copies arrive unmatched. When the first copy arrives, it is filed until the next copy comes in. When the second copy arrives, it is manually matched with the first to identify differences or problems. The division reported that companies often do not fill out manifests correctly. Examples of problems cited include missing or inaccurate information and incorrect waste codes. The staff must follow up on problem manifests if a matching copy is not received, EPA identification numbers or other required data are missing, the wrong waste number is on the manifest, or signatures are missing. Manifests with problems are set aside and are usually followed up on within a day, according to staff.

Our testing of manifests resulted in no noteworthy observations or comments. Most problems we found in our samples could be quickly resolved with a phone call or letter to the company concerned. The manifest system has already been in place a number of years, though, and many companies continue to make the same types of mistakes.

When WMD resolves the manifest discrepancies or deficiencies, data are entered into the computerized system. The manifest data were computerized starting in July 1987. Since then, the staff has been working to correct computer system errors. Within the next two years, the division hopes to be able to computer-match the manifests.

In early June of 1989, the division reassigned a computer programmer to develop the computer system serving WMD. In order to develop the current system, the programmer will enhance the capabilities of the existing software, the Professional Application Creation Environment data management system (PACE). PACE, according to the programmer, will expand files in the manifest tracking database and improve its report utility functions; the present system allows for the combination of only two files at a time, and limits the types and formats of reports. PACE is expected to resolve these problems by allowing access to any number of files at the same time.

TRACKING AND REPORTING ON WASTES (Continued)

EPA has been in the process of developing the Resource Conservation and Recovery Information System (RCRIS) to replace its current Hazardous Waste Data Management System. According to a March 27, 1989 EPA document, state users of RCRIS will be able to "perform intrastate and intraregional analyses, handle management information" and provide data to states and EPA Regions. EPA intends the new system to improve the accuracy of data, and to be easily amenable to future RCRA changes.

New Hampshire was the first state in Region I to request and receive EPA pilot state status for the RCRIS program. In selecting New Hampshire, EPA cited the technical readiness of the bureau, as well as the excellence of the data management staff. The state submitted its RCRIS implementation plan on March 22, 1989. EPA has, in turn, scheduled New Hampshire to begin work on RCRIS in December 1989, according to a WMD official, while EPA set the goal of full national implementation in the fall of 1990.

QUARTERLY AND ANNUAL REPORTS

In addition to collecting and reconciling the manifests, WMD staff also generate reports from the manifest data. Major reports generated are the biennial report of hazardous waste activity for EPA and the quarterly and annual reports on generated wastes that are prepared for each generator.

The most recent biennial report to EPA was for 1987. Information in the report included statistics on numbers of regulated generators, hazardous waste facilities, and quantities of generated wastes. Also, the report provided listings of generators and transporters.

The quarterly reports on waste activity are the means by which New Hampshire receives its fees from generators and facilities. According to the hazardous waste rules, the generator fees are as follows:

$.018 per lb. per quarter from generators of 661.5 lbs. or more of hazardous waste per quarter (or 300 kg./quarter)

Minimum fee per quarter = $50
Maximum fee per quarter = $6,000

Quarterly fees are also charged to hazardous waste facilities receiving wastes from out-of-state sources at the rate of $.003 per lb. per quarter. The proceeds of the quarterly fee collection process go into the Hazardous Waste Cleanup Fund. (See page forty-two) The division reported collections of $300,679 in FY 1987 and $264,840 in FY 1988 from generators of hazardous waste.

TRACKING AND REPORTING ON WASTES (Continued)

WMD generates the quarterly and annual reports by computer for each company, summarizing the generating activity as reported on the manifests received by the state during the quarter or year. (The annual report has essentially the same format as a quarterly report, although other information on recycled wastes and changes to waste figures that had not been made on the quarterly reports are added to the annual report.) The companies then must reconcile their numbers with those of WMD. Our review of 101 quarterly reports and 180 annual reports found that report errors are such that they can usually be corrected with little effort by WMD and the companies.

OBSERVATION - ENHANCED DATA PROCESSING AND REPORTING

- WMD, representatives of regulated businesses, and EPA officials all expressed the opinion that the current manifest and quarterly and annual reporting systems are working reasonably well. In our view, they appear to provide useful mechanisms for tracking hazardous waste; however, the division has not been successful in using the reported data to provide reliable, historical information on the volume and type of wastes generated in the state.

RECOMMENDATION

- WMD should continue to upgrade and utilize its computer database to provide for more effective and accurate reporting, tracking and analyzing of reported data. We believe that the effectiveness of the computer system is limited and could be improved by upgrading its report utility functions and expanding and integrating a greater number of data files.

COMPLIANCE AND ENFORCEMENT

WMD's compliance and enforcement program encompasses small quantity generators, generators that produce over 100 kg./mo. of hazardous waste, transporters, owners and operators of facilities that store hazardous waste more than 90 days, and facilities undergoing closure and post-closure procedures. The program is designed to ensure that operations of generators, transporters, and facilities comply with standards set forth in New Hampshire's Hazardous Waste Rules (He-P 1905). These rules are consistent with federal regulations contained in Title 40 of the Code of Federal Regulations. In addition to these criteria, WMD also relies on EPA's RCRA penalty and enforcement response policies for guidance in determining enforcement actions and civil penalty assessments for hazardous waste violations.

In order to maintain compliance with hazardous waste rules and satisfy EPA grant commitments, WMD staff conduct RCRA inspections, complaint investigations, non-notifier inspections and declassifications of companies that have ceased to generate hazardous waste. Staff also provide assistance to the New Hampshire Department of Justice regarding case development and limited technical assistance to regulated entities.

INSPECTION SELECTION

The cornerstone of the RCRA compliance monitoring effort is the inspection program. Through inspections, the division discovers statute violations that could lead to the endangerment of human health and the environment. New Hampshire rule He-P 1905.10 contains the explicit right of inspection, as it states:

> The division is authorized to inspect any property or premises in order to investigate either actual or suspected sources of potential harm to human health or the environment. The division may also inspect facilities and transporters to ascertain compliance or non-compliance with these rules.

While EPA decides the number of activities it will require for its grant commitments, WMD can select the particular companies that will receive an inspection. Inspection candidates may be subjects of complaints; subjects of tips from individuals in other state agencies or other offices within DES; companies thought to be non-notifiers; or companies known by the inspector.

The RCRA grant mandates that all treatment, storage and disposal facilities must have a yearly inspection. For generators, EPA has set a desired inspection rate of 7% a year for large quantity generators (more than 1,000 kg/mon of hazardous waste). At this rate, a state could inspect these generators once every fourteen years to satisfy EPA. WMD officials, on the other hand, would like to inspect all

large generators every two or three years and small generators every four to five years. WMD currently has six inspector positions (one of which is vacant), to inspect over 2000 regulated companies.

GENERAL INSPECTION PROCEDURE

A general description of the process follows:

-- An inspection candidate is selected and assigned to WMD staff.

-- At DES, inspectors review files on the company and check manifests, quarterly reports, and annual reports.

-- Inspectors have a pre-inspection meeting with company representatives to discuss inspection procedures, the production process, and waste disposal procedures.

-- Inspectors view the company's hazardous waste management practices and complete a checklist to cover all inspection elements.

-- A post-inspection meeting is held with company officials to summarize inspection findings and consider explanations offered by company officials.

-- The inspectors write up a brief of the inspection, taking special care to document the situation at the company for possible enforcement cases.

OBSERVATION - INSPECTION CYCLE

o To determine the frequency of inspections over the last five years among the state's largest generators, we identified the fifty largest generators on WMD's 1987 Biennial Report. We checked the number of generators on WMD's listings of inspections from April 1, 1984 to March 31, 1989. Of the fifty generators, forty-two (or 84%) of them had received inspections, while eight (or 16%) had not. This rate of inspection for the largest generators is above EPA's desired inspection rate, but is below the division's informal desired rate of maintaining a two or three year inspection cycle. We did not determine the rate of inspection for generators who were not among the fifty largest generators.

RECOMMENDATION

- To make the RCRA inspection selection process more systematic, WMD should consider:

  1) establishing written desired timeframes for the frequency of inspections of both large and smaller quantity generators as a stated goal of the division, and

  2) keeping and periodically updating a list of all inspected companies in alphabetical order, with notations beside each name indicating the date of the last inspection and the enforcement action taken. This would enable WMD to easily access information on the frequency and results of past company inspections and enforcement actions and to keep track of corporate name changes.

TRANSPORTER INSPECTIONS

While the Waste Management Division performs occasional inspections of hazardous waste transporters, the Department of Safety also performs inspections as part of their normal commercial carrier inspection program. The Department of Safety's six-man hazardous material response unit has the major responsibility of responding to emergency situations involving hazardous waste, while the six-man Motor Carrier Safety Assistance Program unit is primarily responsible for inspecting hazardous materials and hazardous waste carriers. Also, as of July 1, 1989, the department's Division of Motor Vehicles has a role in licensing drivers to carry hazardous materials.

The Department of Safety inspectors have the authority to stop vehicles, inspect them, break the seal on the cargo, and sample the materials. Vehicles will be taken out of service if inspectors consider them imminently dangerous or if the vehicles have serious safety violations. Vehicles are supposed to remain out of service until the violations are corrected. Inspectors also may order drivers out of service if they are unfit to be driving the vehicle. Violators may also be fined by the Department of Safety.

Until this year, only the Motor Carrier Safety Assistance Program unit of the Department of Safety's highway inspectors filled out inspection sheets as a matter of course. Now the Department of Safety is telling all inspectors to do so. Statistics are only available, therefore, for vehicles inspected by the six-man unit. In 1988, the unit reported total "Level 1" inspections (for commercial carriers over 10,000 lbs. or smaller vehicles that are placarded) of 5996 commercial vehicles. Of these, 480 were hazardous material carriers. (This category includes carriers of hazardous raw materials and hazardous wastes.) Of the 480, 124 vehicles and 64 drivers were taken out of

COMPLIANCE AND ENFORCEMENT (Continued)

service. A total of 1032 violations were discovered on hazardous material carriers during 1988 by inspectors. These figures and those of previous years are contained in the following table:

Department of Safety
Motor Carrier Safety Assistance Program Unit
Workload Report

	1986*	1987*	1988**
Total Haz Mat Level 1 Inspections	130	222	480
Total Haz Mat Vehicles Out of Service	30	40	124
Total Haz Mat Drivers Out of Service	18	16	64
Total Haz Mat Violations Discovered	286	518	1032
Total Haz Mat Out of Service Violations	132	168	204

* Manually generated data for federal fiscal year
** Computer generated data for calendar year

Until July 1989, a regular commercial driver's license was the only license required to transport hazardous materials. However, on July 1, 1989, the New Hampshire Commercial Driver Safety Program became effective. The program, which is a requirement of federal law, imposes new thorough testing and licensing standards for renewal and original license applicants. Under the new system there will be separate types of written tests for different license categories, including a written test specifically for drivers transporting hazardous materials. A code on the license will indicate that the driver has passed the test.

OBSERVATION - HIGHWAY INSPECTIONS

- Because of the time, equipment, and safety constraints, materials being transported are often not sampled unless they are leaking or the inspector knows that the company is likely to be taken to court as a result of the violation. If a driver states that he is carrying a non-regulated material, the inspector often has to rely on the driver's word if the inspector is not equipped to take a sample. This would seem to be a loophole in the system, as drivers carrying hazardous cargo without identifying it as such could be expected not to disclose this to an officer in order to avoid having it sampled.

RECOMMENDATION

- The Department of Safety should explore ways to increase sampling of transporters of questionable cargos to assure greater detection of hazardous waste transporter violations.

ENFORCEMENT PROCESS

Upon completing one of its RCRA inspections, WMD may initiate its enforcement process if a facility has been designated out of compliance. This process, which EPA Region I deems to be an acceptable RCRA process, uses a tiered structure of enforcement documents, which is described as follows.

-- A Letter of Warning applies in situations where WMD may have to clarify procedures or policies regarding a company's inconsistent application or minor infraction of state rules. This letter is used sparingly as an enforcement tool, and only in those circumstances where higher levels of enforcement are not warranted. If a company receiving a Letter of Warning fails to comply with WMD's recommendations and a subsequent inspection reveals continued non-compliance, WMD will escalate enforcement to the next level.

-- A Letter of Deficiency applies when a company is deemed out of compliance for failing to provide the adequate quality and quantity of information necessary to meet the intent of New Hampshire rules. Most of these letters have a thirty-day compliance schedule for correcting deficiencies. Failure to correct the deficiencies in the appropriate time frame precipitates escalation to the next enforcement tier, for which the Notice of Violation/Order of Abatement applies.

-- A Notice of Violation/Order of Abatement is issued to inspected facilities that have major omissions or infractions of state rules in their hazardous waste program. This document becomes effective upon receipt, but an appeal mechanism allows the company thirty days to request a hearing if it is aggrieved by the notice. If the facility fails to abide by the provisions of the notice within the prescribed compliance period or the violations are serious enough to warrant an immediate Request for Enforcement, a request is submitted to the New Hampshire Department of Justice. Compliance with the order is achieved by means of injunctive relief and/or civil or criminal penalties of up to $50,000 per day for each day of occurrence.

COMPLIANCE AND ENFORCEMENT (Continued)

WMD performs a follow-up inspection if violations pertain to unsafe physical conditions at the facility. WMD acknowledges the company's compliance with a Letter of Deficiency or Notice of Violation/Order of Abatement by issuing a compliance letter.

The following page shows the nature of hazardous waste violations determined through RCRA inspections from January, 1984 to September, 1988. According to the division, reasons for the decrease in reported violations in 1987 and 1988 include staff shortages, emphasis of quality over quantity in investigations, and the performance of non-notifier inspections and complaint investigations that require substantial staff time but may not uncover as many violations as regular RCRA inspections.

COMPLIANCE AND ENFORCEMENT (Continued)

NEW HAMPSHIRE
HAZARDOUS WASTE VIOLATIONS
CALENDAR YEARS 1984 TO 1988

TYPE OF VIOLATION:	1984	1985	1986	1987	1988
STORAGE	69	74	81	40	24
PREPAREDNESS/PREVENTION	32	31	52	15	2
CONTINGENCY PLAN	29	34	34	21	8
PERSONNEL TRAINING	31	32	32	18	10
INSPECTIONS	28	34	36	23	7
TRANSPORTATION	11	3	4	0	1
MANIFESTS	6	5	16	17	9
WASTE ANALYSIS/DETER.	7	3	8	8	3
REPORTS	3	6	5	8	2
FINANCIAL	6	1	0	1	0
GROUNDWATER MONITORING	3	3	0	0	0
NOTIFICATION/GENERATION	2	3	5	3	0
NOTIFICATION/SPILL	4	1	0	0	0
INAPPROPRIATE DISPOSAL	3	2	0	4	3
CLOSURE/POST CLOSURE	2	1	2	3	0
EPA ID #	1	1	2	1	1
STORAGE W/O PERMIT	2	0	0	9	0
RECORD KEEPING	2	0	1	0	0
PUBLIC HEALTH STANDARDS	0	1	0	2	0
LANDFILL STANDARDS	0	1	1	0	0
TREAT./DISPOSAL W/O PERMIT	0	0	8	2	0
ORDER/PERMIT/VARIANCE VIOLATION	0	0	3	1	5
TOTAL VIOLATIONS	241	236	290	176	75**
Total Number of Inspections	* 58	82	58	49	55**

* nine months ending December 31, 1984
** as of September 9, 1988

Source: Waste Management Division, DES

COMPLIANCE AND ENFORCEMENT (Continued)

The following table shows the enforcement actions resulting from the violations uncovered during inspections from 1984 to 1988.

RCRA ENFORCEMENT ACTION TAKEN BY THE STATE OF NEW HAMPSHIRE
1984 - 1988

	1984	1985	1986	1987	1988**
NOTICE OF VIOLATION/ ORDER OF ABATEMENT ISSUED	41	42	41	23	17
LETTER OF DEFICIENCY ISSUED	16	18	11	6	5

** as of September 9, 1988

Source: Waste Management Division, DES

Until the passage of Chapter 22, Laws of 1989 on April 4, 1989, WMD had to refer all enforcement cases to the New Hampshire Department of Justice. While major cases will still be referred to the Department of Justice, the division will be able to handle relatively minor cases by means of its newly-enacted administrative fining capability. Whether a case is being handled through the Department of Justice or through WMD, WMD staff must support the cases with inspection documentation. The case file must also contain an explanation of how the penalty amount was calculated.

The following chart shows the amounts collected in penalties by New Hampshire from 1983 to 1989:

RCRA Penalties Collected by N.H., 1983-1989

Fiscal Year	Civil	Criminal
1983	$ 5,000	$ -0-
1984	20,500	15,000
1985	62,094	10,000
1986	46,000	-0-
1987	34,000	-0-
1988	-0-	-0-
1989	70,450	-0-
	$ 238,044	$ 25,000

Source: N.H. Department of Justice, Memo dated 3/7/89

OBSERVATIONS - TIMELINESS AND APPROPRIATENESS OF ENFORCEMENT ACTIONS

In order to assess the timeliness of enforcement activities, and the extent of penalties imposed by WMD, we reviewed case files for all thirteen RCRA enforcement cases completed from January 1, 1985 to November 8, 1988. The cases resulted from routine RCRA inspections, highway inspections, chemical spills, and illegal dumping of waste. All cases were processed through WMD before being referred to the Attorney General for court action. The Environmental Protection Bureau, a bureau within the New Hampshire Department of Justice staffed with seven lawyers, handled the referrals. The bureau settled all cases without having to proceed to trial.

- To check on the timeliness of enforcement activities, we obtained the dates of various actions taken by WMD and the Department of Justice from case files. We looked at two timeframes to ascertain the timeliness of the process:

  1) the time from the date of inspection/incident occurrence to the date of WMD's case referral to the Attorney General; and

  2) the time from the date of the case's referral to the Attorney General to the date of the case's disposition.

  At the time these thirteen cases were being processed, WMD was responsible for following EPA's enforcement policy of 1984. As described in a 1988 report by the U.S. General Accounting Office (GAO/RCED-88-140), the policy required the state agency to refer cases for high priority violators to the state's Attorney General within 135 days after a company's inspection. The EPA policy also appeared to allow a great deal of flexibility for exceptions to this criterion. New EPA criteria that became effective in October 1988 allow less deviation from guidelines.

  WMD referred ten of the thirteen cases to the Attorney General within the 135-day timeframe. Considering the circumstances surrounding the cases that took longer than the optimal timeframe and the fact that most cases were referred to the Attorney General within acceptable timeframes, we believe that WMD has processed cases in a timely manner.

  The second timeframe we reviewed was the time taken from acquisition of a case until final disposition by the Attorney General. Five of these cases took from one to almost three years to complete from the time they were referred. Also, we noted that nine additional cases referred to the Attorney General before 1988 were still listed as open as of November 8, 1988. These cases had been open from one to

four years at that time. The EPA criteria since 1984 have stated a guideline of sixty days for resolution of cases after referral, while allowing flexibility to take more time when circumstances warrant it. However, both Department of Justice and WMD officials consider the sixty day criterion to be unreasonable for most cases.

Reasons given by the Department of Justice for case delays include the following:

-- additional time needed for investigation and negotiation;

-- complicating factors such as bankruptcies and simultaneous enforcement actions with the same company;

-- a relatively low priority assigned to some of the cases; and

-- limitations on attorney time to deal with these cases.

While the above reasons undoubtedly contributed to case delays, the delays should not go on for years. Case delays have also been a source of frustration to WMD staff who prepare case documentation for the Attorney General. A Department of Justice official conceded that the delays did exist with the RCRA cases and stated that the office has been taking steps to speed the process.

o In addition to reviewing the thirteen previously-discussed completed RCRA cases for timeliness concerns, we also assessed the appropriateness of the enforcement action taken. To accomplish this we looked at two factors: what type of enforcement action was taken, and whether a penalty was imposed.

The chart on page seventy-three shows that, regarding enforcement actions taken against inspected companies, the number of Notices of Violation/Orders of Abatement (the top tier of enforcement actions) far exceeds the number of Letters of Deficiency. Yet despite receiving the top tier enforcement action, most of these companies did not receive fines from the state.

A WMD official explained that the Notice of Violation/Order of Abatement was the primary course of action because the violations committed by most of the companies were considered to be high priority violations under EPA's guidance, thus meriting the highest level of enforcement. According to the official, the issuance of these notices emphasized to the companies the importance of bringing their operations into compliance. A reason for not fining most companies is that in years past, agency staff felt that one of their primary roles was to educate companies about their

responsibilities under RCRA. Education was deemed to be a more important consideration than collecting a fine on a company that may not have been aware of the regulations.

While EPA has stated that high priority violators should be penalized, companies considered to be high priority violators have often not been penalized. According to a U.S. General Accounting Office report (GAO/RCED-88-140), EPA headquarters has recognized that it has a problem with some of its definitions for violators and has tried to address this in their most recent enforcement response policy.

Although EPA's guidance allows the flexibility needed for case-by-case decisions on violations and penalties, it has not, in our view, presented a well-defined hierarchical system of enforcement action along with tight definitions of violations and violators and clear-cut penalties to match. New Hampshire has set forth a sensible hierarchy of enforcement actions, but given the vague nature of EPA's criteria for categorizing and fining violators, appears to have had some difficulty in deciding when and how much to fine violators. While WMD and the Department of Justice may have done the best job possible with the existing criteria, we believe that liberal use of the Notice of Violation/Order of Abatement (only a small percentage of which resulted in fines) diminished the importance of that action and its effectiveness as an enforcement tool.

We also noted that for some of the cases we reviewed, it was difficult to determine the nature of historical events or the status of ongoing actions leading to penalty decisions. EPA guidance states that "in order to support the penalty proposed in the complaint, compliance/enforcement personnel must include in the case file an explanation of how the proposed penalty amount was calculated. The case file must also include a justification of any adjustments made after issuance of the complaint." Despite this guidance, we did not always find a clear basis for the decisions reached by the Attorney General, WMD and the violator. It was, therefore, sometimes difficult to conclude whether a penalty or no penalty decision was proper.

RECOMMENDATIONS

- In order to match the highest priority enforcement actions with the most serious violations, WMD should consider reserving its use of the Notice of Violation/Order of Abatement for the most serious violations. This recommendation is in line with EPA's desire to separate out the highest priority violators for priority enforcement action.

- WMD should consider the imposition of mandatory fines when a Notice of Violation/Order of Abatement is issued to a high priority violator. Enforcement might be strengthened by the companies' knowledge that violations serious enough to merit such an action will result in a fine.

- WMD should consider publishing the range of possible fines per violation for the most common types of violations. This would let companies know what types of violations will result in fines and what such violations will likely cost them. By making the process more well-defined, company negotiations could also be easier for WMD and the Attorney General.

- The Attorney General should move RCRA penalty cases along more expeditiously with the goal of maintaining consistent progress towards the disposition of each case.

- For files with ongoing penalty cases, WMD should consider developing a brief summary sheet with a chronology of events, so that attorneys, inspectors, or reviewers new to a case can quickly review its history. For cases in which a penalty will be assessed, the file should clearly document when a violation occurred, what was done to follow through on enforcement, what the basis for the penalty was, and what the final disposition was.

WASTE REDUCTION

One of the stated objectives of RCRA is to minimize hazardous waste generation. New Hampshire's efforts in this regard are in the early stages, as DES has concentrated on other priorities considered to be more pressing. While EPA has some ongoing initiatives to reduce waste in the states, New Hampshire has received thus far only part of a small grant along with other New England states. New Hampshire and its localities have held about fifty household hazardous waste collection days since 1985 in various locations throughout the state.

THE NEED FOR WASTE REDUCTION

Estimates of the amount of hazardous waste generated in the United States each year reach into the hundreds of billions of tons. For decades, this waste has been disposed of in ways which jeopardize human health and the environment; landfills, surface impoundments and underground injection have been the predominant disposal methods for these materials.

However, increasing knowledge of waste hazards and the rising cost of conventional disposal have led both the private and public sectors to explore means of reducing or even eliminating the volume of hazardous waste in the early stages of the manufacturing process. In addition, provisions of the 1984 RCRA amendments prohibit the land disposal of untreated hazardous waste and require establishment of standards for treatment. The standards must specify a level or method of treatment which reduces the toxicity or mobility of the hazardous constituents. EPA is examining the best demonstrated available technologies that meet this requirement. EPA is also researching approaches for reducing the volume of hazardous waste requiring treatment or disposal. These approaches, as listed in EPA's publication, Solving the Hazardous Waste Problem: EPA's RCRA Program, follow.

APPROACHES TO WASTE REDUCTION

-- Source separation (or segregation) keeps hazardous waste from contaminating nonhazardous waste through management practices that prevent the wastes from coming into contact. This is the cheapest and easiest method of reducing the volume of hazardous waste to be disposed of, and is widely used by industry. In addition to reducing disposal costs, source separation reduces handling and transportation costs.

-- Recycling (also referred to as recovery and reuse) is also widely used by industry. Recycling is the process of removing a substance from a waste and returning it to productive use. Generators commonly recycle solvents, acids, and metals.

-- Substitution of raw materials may offer the greatest opportunity for waste reduction. By replacing a raw material that generates a large amount of hazardous waste with one that generates little or no hazardous waste, manufacturers can substantially reduce the waste volume.

-- Manufacturing process changes consist of either eliminating a process that produces a hazardous waste or altering the process so that it no longer produces the waste.

-- Substitution of products also may eliminate use of a hazardous material. For example, by substituting concrete posts for creosote-preserved wood posts in construction operations, builders can remove any possibility that the hazardous creosote will leach from the posts and contaminate underlying ground water or surrounding soil.

All those who play a role in hazardous waste generation and management, in government as well as industry, face significant limits to fully implementing waste reduction and treatment methods. Perceived financial disincentives, the lack of technical assistance, and organizational resistance to change all impede the movement of the regulated community toward long term waste reduction goals.

The limits, however, should not be overstated, as there are considerable long term economic and technical incentives for reduction as well. Both the private and public sectors have already committed substantial resources in order to meet the costly requirements of the federal and state regulatory process; it costs industry and all levels of government tens of billions of dollars each year to manage toxic waste. Also, most industries already engage in some form of waste reduction, such as solvent distillation, small scale chemical treatment and substitution.

Thus, a major incentive for industry to change from pollution control to pollution reduction or elimination comes from tightened regulations which have escalated the costs of treatment, transportation and disposal of hazardous waste. Here, the potential for savings is high, as manufacturers improve the efficiency of production processes in order to lower the costs of production and regulatory compliance.

New Hampshire, like most other states, has tried to act on the recognition of the growing need to reduce and prevent industrial pollution. However, DES has not elected to treat waste reduction as a high priority, which accounts for the absence of any formalized program. Other New England states, such as Massachusetts, Connecticut and Vermont, have created a separate agency, division or program whose purpose is to educate and advise industry on waste minimization. In

New Hampshire, RCRA inspectors and administrative staff have the responsibility of conducting seminars, preparing fact sheets, and responding to industry questions, while fulfilling their primary objective of enforcing environmental laws.

WMD officials say that as a state enforcement agency working to bring companies into compliance, the agency tries to avoid the confusion of appearing also as a partner to industry. Inspectors admit, however, that RCRA and non-notifier inspections provide one of the few opportunities to advise companies on methods of waste reduction, recycling and substitution.

WASTE MANAGEMENT DIVISION EFFORTS

In an effort to develop its information outreach capability, DES recently published its first issue of Environmental News, a newsletter assembled and produced by department officials and their public information officer. The newsletter, to be published quarterly, includes bureau information, upcoming events, and articles covering all areas of environmental control. The publication is being sent to legislators, business associations, environmental groups, local health officers, selectmen and town managers in the state.

No employee of WMD has ever been solely responsible for directing a program of hazardous waste reduction. However, WMD has recently hired an additional staff member to assist in the preparation of its Capacity Assurance Plan. According to WMD, once the department submits the plan in October, the new employee will shift about 75% of his work to the subject of waste reduction, which will include targeting certain industries, using standard industrial codes and manifest data, for outreach. He will conduct generator mailings, seminars, site visits and workshops.

As an EPA-authorized agency, WMD uses EPA's program guidance. In the area of waste reduction, however, New Hampshire has received little direction, and federal grants have been difficult to obtain. The eligibility criteria for grants in waste reduction seem to diminish the competitive standing of smaller states such as New Hampshire in the application process. For example, the $300,000 waste reduction grants go only to programs that integrate many areas of environmental control and multimedia transfers (air, water, soil etc.) and that tend to include as many states, towns and localities as possible. A recent EPA guidance document concerning the grants shows that EPA favors state proposals that offer the greatest potential for documentation and measurable results, provide for development beyond initial federal funding (to include state funding) and best match the capabilities and experience of the state.

WMD's resources are devoted almost entirely to meeting existing compliance and enforcement responsibilities. The state has little practical experience and capability in non-enforcement areas such as waste reduction and prevention.

EPA ASSISTANCE

The Environmental Protection Agency, through its Pollution Prevention Office, has addressed waste reduction in the states primarily through three separate but related grant programs. The first grant program in fiscal year 1988 was designed to help states plan and implement training and technical aspects of their RCRA programs. The RCRA Integrated Training and Technical Assistance grant provided $3 million to states that EPA judgmentally selected from a large field of applicants.

EPA required the following three components of state programs: 1. a long term plan for training and technical assistance; 2. actual training and technical assistance to state regulators in accordance with that plan; and 3. a pilot project in waste minimization for regulated industry. New Hampshire applied for but failed to receive an award under this initiative.

The second similar grant program, known as Source Reduction and Recycling Cooperative Agreements, provided $3.9 million in funds for states to begin or expand waste reduction technical assistance programs to focus on the transfer of pollution across all environmental media (air, land, surface and ground water, etc). The multimedia approach to waste reduction and recycling seeks to draw on and coordinate the expertise of a wider range of state environmental offices.

An agency official who has worked closely on previous grants says that New Hampshire initially joined other northern New England states to apply for a source reduction cooperative grant, but, after Massachusetts withdrew from the plan, submitted a new proposal through the region's New England Waste Management Officials Association, which did receive an award of $300,000. With the grant, these regional officials intend to develop a clearinghouse of technical and regulatory information for use throughout the New England states. Fourteen states, including Massachusetts, New York and New Jersey also received funds through this program in March of this year.

The latest round of grants intended for the fall of 1989 expands the range of state-wide multi-media programs to bring about "significant reductions in the generation of pollution." The emphasis of this program, worth an additional $3.0 million, concentrates more explicitly on pollution prevention rather than solely on traditional "end of the pipe" regulations and minimization. The program includes technical

assistance, training and audits, and the development of a waste reduction information management system called the Pollution Prevention Clearinghouse. The program will have a national strategy to promote an "ethic of pollution prevention." EPA officials from the Pollution Prevention Office intend for the state programs to be institutionalized and long term.

HOUSEHOLD HAZARDOUS WASTE

One area of reduction which has received wider attention in the last ten years is household hazardous waste. In 1985, the state began a pilot program for household hazardous material collection. Since then almost fifty household collection days have been conducted throughout the state; the division plans at least six more through the summer. Over 1300 fifty-five gallon drums of waste plus 350 lab-packs of various sizes have been collected since 1986 through this program.

New Hampshire's Hazardous Waste Rules, section He-P 1905.12, authorize WMD to provide funds for household hazardous waste collection days with money from the Hazardous Waste Cleanup Fund. This section also spells out the contractual requirements of applicants for funds which include a guarantee of matching funds from the requesting party, along with assurance that the applicant "shall conduct appropriate and sufficient public educational activities regarding household hazardous waste...."

Over the last three years, the state has allocated matching funds of over $200,000 for household hazardous waste collection days. In calendar year 1988, the state served 139 communities with collection days.

Compared with the volume of toxic waste generated by industrial technologies, wastes collected from the home seem insignificant. However, in light of the large number of consumer products containing hazardous ingredients, the amounts present a threat to human health and the environment if not properly discarded.

According to a WMD official, EPA studies have examined the volume and toxicity of household waste streams. In one study of wastewater going to two residential sewage treatment plants, analysis showed that the source of over 50% of the toxic phenols found were from residential waste products. Chemicals such as naphthalene, tetra-chloroethylene, benzene and toluene find their way in and out of households regularly in products such as drain and oven cleaners, furniture and metal polish, pesticides, pool chemicals, antifreeze, wood strippers and paint thinner.

WASTE REDUCTION (Continued)

In an effort to measure the success of the collection days, WMD requires sponsoring groups to use a survey to collect relevant information from participants in order to measure the degree of resident participation in various towns. The latest survey asks for such information as: the number of households represented by each participant, the miles driven to the site, and the means of disposing of the waste had no program been available. Participants surveyed on one hazardous waste collection day in the towns of Wilton, Nashua, Concord, Stratford and the Lakes Region overwhelmingly favored continued collection days on at least a semi-annual basis. Almost half of the participants had responded to an earlier collection day.

In addition to supporting household hazardous waste collection days, the division continues to produce, collect and distribute literature, fact sheets, journals and educational guides concerning substitute products, procedures and methods, and to answer the questions of interested citizens. Speaking engagements and discussion groups provide WMD with another means of informing the public about hazardous materials in the home. Since 1987, WMD has participated in fifteen of these conferences with organizations such as local schools, colleges, environmental groups, planning boards and businesses.

OBSERVATIONS - WASTE REDUCTION

- New Hampshire, like most other states, has tried to act on the recognition of the growing need to reduce industrial pollution; however, DES has not elected to treat waste reduction as a high priority, which accounts for the absence of any formalized program. Also, EPA appears to be slow in disseminating minimization information to the states and seems to be selective about which states it will grant funds to for this purpose. In the near term, New Hampshire businesses are unlikely to be able to count on either the state or federal government for much help in this area.

- WMD has no system to track the success of waste minimization and has failed to clearly define waste reduction goals and objectives for New Hampshire. As a result, the state is limited in the advice it can provide to industry in this area, and is unable to develop on its own, a solid, comprehensive body of information, training materials and outreach programs to assist the regulated community.

- WMD's inspection staff spends most of its time on compliance and enforcement matters. The division has taken steps to inform industry about regulations, waste reduction and technical assistance whenever possible. However, the seminars, conferences, fact sheets and telephone consultation provided by WMD still do not satisfy the growing needs of generators for technical and regulatory information on hazardous waste management.

WASTE REDUCTION (Continued)

- Small generators of hazardous waste sometimes find it more expensive to remove their quantities of waste than large generators, as the cost of removing half a drum of waste can equal that of a full drum, according to WMD staff.

RECOMMENDATIONS

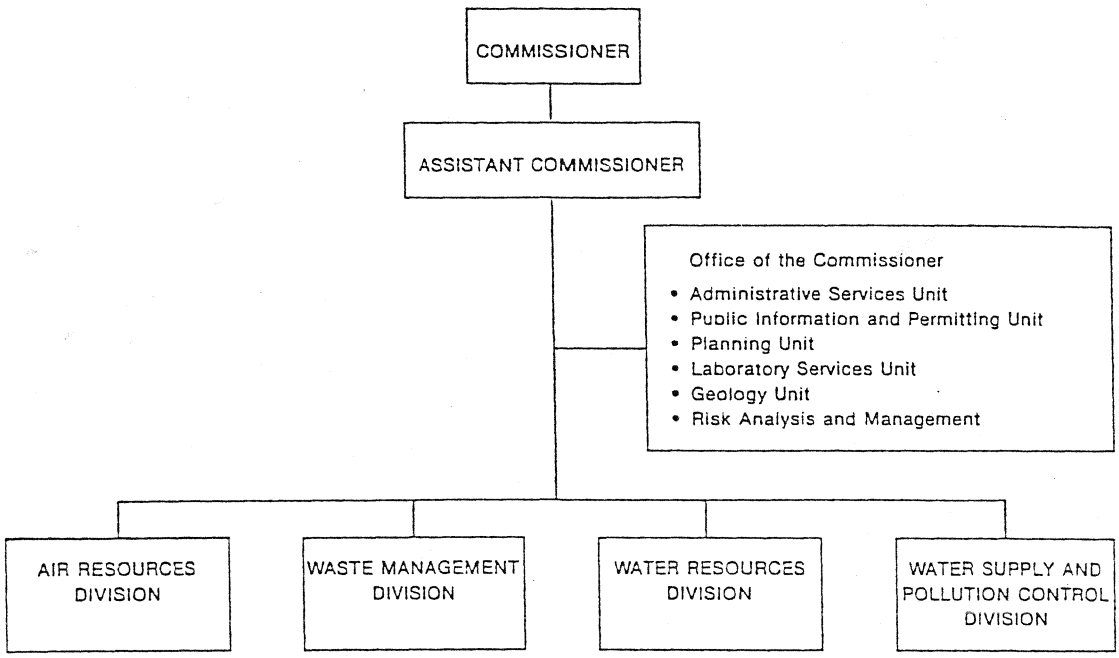
- DES should clearly define its goals and objectives related to waste minimization and should compile and analyze data on waste recycling and reduction over time so that progress on this goal can be tracked and analyzed.

- The Waste Management Division should expand, to the greatest possible extent, its effort to access, organize and communicate regulatory and technical information to the regulated community in an effort to disseminate information related to waste minimization.

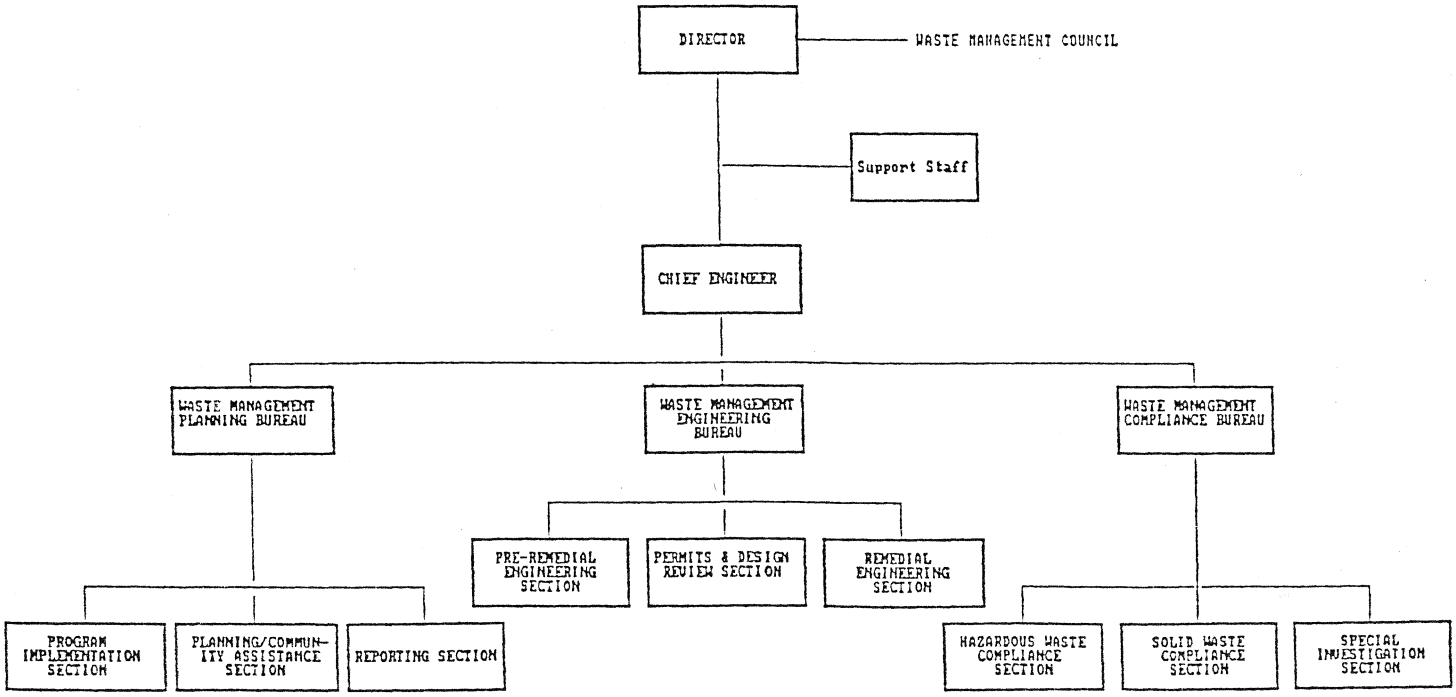
- WMD should expand the mailing list for its newsletter, Environmental News, to include registered generators, as a means of reaching the regulated community with relevant information.

- The Waste Management Division should consider changing state rules to allow 100 to 1000 kg./mo. generators to accumulate wastes for 180 days, as federal regulations allow, rather than 90 days. This could reduce expenses for generators while not significantly increasing risks.

STATE OF NEW HAMPSHIRE
DEPARTMENT OF ENVIRONMENTAL SERVICES
[603-271-3503]



WASTE MANAGEMENT DIVISION



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APPENDIX B

LIST OF REGULATED HAZARDOUS WASTES

This appendix includes all wastes considered hazardous by New Hampshire as of June 30, 1989. The appendix contains four lists of wastes, the primary source for which is the Federal Register.

Hazardous waste No.	Chemical abstracts No.	Substance
P023	107-20-0	Acetaldehyde, chloro-
P002	591-08-2	Acetamide, N-(aminothioxomethyl)-
P057	640-19-7	Acetamide, 2-fluoro-
P058	62-74-8	Acetic acid, fluoro-, sodium salt
P002	591-08-2	1-Acetyl-2-thiourea
P003	107-02-8	Acrolein
P070	116-06-3	Aldicarb
P004	309-00-2	Aldrin
P005	107-18-6	Allyl alcohol
P006	20859-73-8	Aluminum phosphide (R,T)
P007	2763-96-4	5-(Aminomethyl)-3-isoxazolol
P008	504-24-5	4-Aminopyridine
P009	131-74-8	Ammonium picrate (R)
P119	7803-55-6	Ammonium vanadate
P099	506-61-6	Argentate(1-), bis(cyano-C)-, potassium
P010	7778-39-4	Arsenic acid H_3AsO_4
P012	1327-53-3	Arsenic oxide As_2O_3
P011	1303-28-2	Arsenic oxide As_2O_5
P011	1303-28-2	Arsenic pentoxide
P012	1327-53-3	Arsenic trioxide
P038	692-42-2	Arsine, diethyl-
P036	696-28-6	Arsonous dichloride, phenyl-
P054	151-56-4	Aziridine
P067	75-55-8	Aziridine, 2-methyl-
P013	542-62-1	Barium cyanide
P024	106-47-8	Benzenamine, 4-chloro-
P077	100-01-6	Benzenamine, 4-nitro-
P028	100-44-7	Benzene, (chloromethyl)-
P042	51-43-4	1,2-Benzenediol, 4-[1-hydroxy-2-(methylamino)ethyl]-, (R)-
P046	122-09-8	Benzeneethanamine, alpha,alpha-dimethyl-
P014	108-98-5	Benzenethiol
P001	[1] 81-81-2	2H-1-Benzopyran-2-one, 4-hydroxy-3-(3-oxo-1-phenylbutyl)-, & salts, when present at concentrations greater than 0.3%
P028	100-44-7	Benzyl chloride
P015	7440-41-7	Beryllium
P017	598-31-2	Bromoacetone
P018	357-57-3	Brucine
P045	39196-18-4	2-Butanone, 3,3-dimethyl-1-(methylthio)-, O-[methylamino)carbonyl] oxime
P021	592-01-8	Calcium cyanide
P021	592-01-8	Calcium cyanide $Ca(CN)_2$
P022	75-15-0	Carbon disulfide
P095	75-44-5	Carbonic dichloride
P023	107-20-0	Chloroacetaldehyde
P024	106-47-8	p-Chloroaniline
P026	5344-82-1	1-(o-Chlorophenyl)thiourea
P027	542-76-7	3-Chloropropionitrile
P029	544-92-3	Copper cyanide
P029	544-92-3	Copper cyanide Cu(CN)
P030	.....	Cyanides (soluble cyanide salts), not otherwise specified
P031	460-19-5	Cyanogen
P033	506-77-4	Cyanogen chloride
P033	506-77-4	Cyanogen chloride (CN)Cl
P034	131-89-5	2-Cyclohexyl-4,6-dinitrophenol
P016	542-88-1	Dichloromethyl ether
P036	696-28-6	Dichlorophenylarsine
P037	60-57-1	Dieldrin
P038	692-42-2	Diethylarsine
P041	311-45-5	Diethyl-p-nitrophenyl phosphate
P040	297-97-2	O,O-Diethyl O-pyrazinyl phosphorothioate
P043	55-91-4	Diisopropylfluorophosphate (DFP)
P004	309-00-2	1,4,5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a,-hexahydro-, (1alpha,4alpha,4abeta,5alpha,8alpha,8abeta)-
P060	465-73-6	1,4,5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a-hexahydro-, (1alpha,4alpha,4abeta,5beta,8beta,8abeta)-
P037	60-57-1	2,7:3,6-Dimethanonaphth[2,3-b]oxirene, 3,4,5,6,9,9-hexachloro-1a,2,2a,3,6,6a,7,7a-octahydro-, (1aalpha,2beta,2aalpha,3beta,6beta,6aalpha,7beta,7aalpha)-
P051	[1] 72-20-8	2,7:3,6-Dimethanonaphth [2,3-b]oxirene, 3,4,5,6,9,9-hexachloro-1a,2,2a,3,6,6a,7,7a-octahydro-, (1aalpha,2beta,2abeta,3alpha,6alpha,6abeta,7beta,7aalpha)-, & metabolites
P044	60-51-5	Dimethoate
P046	122-09-8	alpha,alpha-Dimethylphenethylamine
P047	[1] 534-52-1	4,6-Dinitro-o-cresol, & salts
P048	51-28-5	2,4-Dinitrophenol
P020	88-85-7	Dinoseb
P085	152-16-9	Diphosphoramide, octamethyl-
P111	107-49-3	Diphosphoric acid, tetraethyl ester
P039	298-04-4	Disulfoton
P049	541-53-7	Dithiobiuret
P050	115-29-7	Endosulfan
P088	145-73-3	Endothall
P051	72-20-8	Endrin
P051	72-20-8	Endrin, & metabolites
P042	51-43-4	Epinephrine
P031	460-19-5	Ethanedinitrile
P066	16752-77-5	Ethanimidothioic acid, N-[[(methylamino)carbonyl]oxy]-, methyl ester
P101	107-12-0	Ethyl cyanide
P054	151-56-4	Ethyleneimine
P097	52-85-7	Famphur
P056	7782-41-4	Fluorine
P057	640-19-7	Fluoroacetamide
P058	62-74-8	Fluoroacetic acid, sodium salt
P065	628-86-4	Fulminic acid, mercury(2+) salt (R,T)
P059	76-44-8	Heptachlor
P062	757-58-4	Hexaethyl tetraphosphate
P116	79-19-6	Hydrazinecarbothioamide
P068	60-34-4	Hydrazine, methyl-
P063	74-90-8	Hydrocyanic acid
P063	74-90-8	Hydrogen cyanide
P096	7803-51-2	Hydrogen phosphide
P060	465-73-6	Isodrin
P007	2763-96-4	3(2H)-Isoxazolone, 5-(aminomethyl)-
P092	62-38-4	Mercury, (acetato-O)phenyl-
P065	628-86-4	Mercury fulminate (R,T)
P082	62-75-9	Methanamine, N-methyl-N-nitroso-
P064	624-83-9	Methane, isocyanato-
P016	542-88-1	Methane, oxybis[chloro-
P112	509-14-8	Methane, tetranitro- (R)
P118	75-70-7	Methanethiol, trichloro-
P050	115-29-7	6,9-Methano-2,4,3-benzodioxathiepin, 6,7,8,9,10,10-hexachloro-1,5,5a,6,9,9a-hexahydro-, 3-oxide
P059	76-44-8	4,7-Methano-1H-indene, 1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-
P066	16752-77-5	Methomyl
P068	60-34-4	Methyl hydrazine
P064	624-83-9	Methyl isocyanate
P069	75-86-5	2-Methyllactonitrile
P071	298-00-0	Methyl parathion
P072	86-88-4	alpha-Naphthylthiourea
P073	13463-39-3	Nickel carbonyl
P073	13463-39-3	Nickel carbonyl $Ni(CO)_4$, (T-4)-
P074	557-19-7	Nickel cyanide
P074	557-19-7	Nickel cynaide $Ni(CN)_2$
P075	[1] 54-11-5	Nicotine, & salts
P076	10102-43-9	Nitric oxide
P077	100-01-6	p-Nitroaniline
P078	10102-44-0	Nitrogen dioxide
P076	10102-43-9	Nitrogen oxide NO
P078	10102-44-0	Nitrogen oxide NO_2
P081	55-63-0	Nitroglycerine (R)
P082	62-75-9	N-Nitrosodimethylamine
P084	4549-40-0	N-Nitrosomethylvinylamine
P085	152-16-9	Octamethylpyrophosphoramide
P087	20816-12-0	Osmium oxide OsO_4, (T-4)-
P087	20816-12-0	Osmium tetroxide
P088	145-73-3	7-Oxabicyclo[2.2.1]heptane-2,3-dicarboxylic acid
P089	56-38-2	Parathion
P034	131-89-5	Phenol, 2-cyclohexyl-4,6-dinitro-
P048	51-28-5	Phenol, 2,4-dinitro-
P047	[1] 534-52-1	Phenol, 2-methyl-4,6-dinitro-, & salts
P020	88-85-7	Phenol, 2-(1-methylpropyl)-4,6-dinitro-
P009	131-74-8	Phenol, 2,4,6-trinitro-, ammonium salt (R)
P092	62-38-4	Phenylmercury acetate
P093	103-85-5	Phenylthiourea
P094	298-02-2	Phorate
P095	75-44-5	Phosgene
P096	7803-51-2	Phosphine
P041	311-45-5	Phosphoric acid, diethyl 4-nitrophenyl ester

Hazardous waste No.	Chemical abstracts No.	Substance
P039	298-04-4	Phosphorodithioic acid, O,O-diethyl S-[2-(ethylthio)ethyl] ester
P094	298-02-2	Phosphorodithioic acid, O,O-diethyl S-[(ethylthio)methyl] ester
P044	60-51-5	Phosphorodithioic acid, O,O-dimethyl S-[2-(methylamino)-2-oxoethyl] ester
P043	55-91-4	Phosphorofluoridic acid, bis(1-methylethyl) ester
P089	56-38-2	Phosphorothioic acid, O,O-diethyl O-(4-nitrophenyl) ester
P040	297-97-2	Phosphorothioic acid, O,O-diethyl O-pyrazinyl ester
P097	52-85-7	Phosphorothioic acid, O-[4-[(dimethylamino)sulfonyl]phenyl] O,O-dimethyl ester
P071	298-00-0	Phosphorothioic acid, O,O,-dimethyl O-(4-nitrophenyl) ester
P110	78-00-2	Plumbane, tetraethyl-
P098	151-50-8	Potassium cyanide
P098	151-50-8	Potassium cyanide K(CN)
P099	506-61-6	Potassium silver cyanide
P070	116-06-3	Propanal, 2-methyl-2-(methylthio)-, O-[(methylamino)carbonyl]oxime
P101	107-12-0	Propanenitrile
P027	542-76-7	Propanenitrile, 3-chloro-
P069	75-86-5	Propanenitrile, 2-hydroxy-2-methyl-
P081	55-63-0	1,2,3-Propanetriol, trinitrate (R)
P017	598-31-2	2-Propanone, 1-bromo-
P102	107-19-7	Propargyl alcohol
P003	107-02-8	2-Propenal
P005	107-18-6	2-Propen-1-ol
P067	75-55-8	1,2-Propylenimine
P102	107-19-7	2-Propyn-1-ol
P008	504-24-5	4-Pyridinamine
P075	[1] 54-11-5	Pyridine, 3-(1-methyl-2-pyrrolidinyl)-, (S)-, & salts
P114	12039-52-0	Selenious acid, dithallium(1+) salt
P103	630-10-4	Selenourea
P104	506-64-9	Silver cyanide
P104	506-64-9	Silver cyanide Ag(CN)
P105	26628-22-8	Sodium azide
P106	143-33-9	Sodium cyanide
P106	143-33-9	Sodium cyanide Na(CN)
P107	1314-96-1	Strontium sulfide
P107	1314-96-1	Strontium sulfide SrS
P108	[1] 57-24-9	Strychnidin-10-one, & salts
P018	357-57-3	Strychnidin-10-one, 2,3-dimethoxy-
P108	[1] 57-24-9	Strychnine, & salts
P115	7446-18-6	Sulfuric acid, dithallium(1+) salt
P109	3689-24-5	Tetraethyldithiopyrophosphate
P110	78-00-2	Tetraethyl lead
P111	107-49-3	Tetraethyl pyrophosphate
P112	509-14-8	Tetranitromethane (R)
P062	757-58-4	Tetraphosphoric acid, hexaethyl ester
P113	1314-32-5	Thallic oxide
P113	1314-32-5	Thallium oxide Tl_2O_3
P114	12039-52-0	Thallium(I) selenite
P115	7446-18-6	Thallium(I) sulfate
P109	3689-24-5	Thiodiphosphoric acid, tetraethyl ester
P045	39196-18-4	Thiofanox
P049	541-53-7	Thioimidodicarbonic diamide [(H$_2$N)C(S)]$_2$NH
P014	108-98-5	Thiophenol
P116	79-19-6	Thiosemicarbazide
P026	5344-82-1	Thiourea, (2-chlorophenyl)-
P072	86-88-4	Thiourea, 1-naphthalenyl-
P093	103-85-5	Thiourea, phenyl-
P123	8001-35-2	Toxaphene
P118	75-70-7	Trichloromethanethiol
P119	7803-55-6	Vanadic acid, ammonium salt
P120	1314-62-1	Vanadium oxide V_2O_5
P120	1314-62-1	Vanadium pentoxide
P084	4549-40-0	Vinylamine, N-methyl-N-nitroso-
P001	[1] 81-81-2	Warfarin, & salts, when present at concentrations greater than 0.3%
P121	557-21-1	Zinc cyanide
P121	557-21-1	Zinc cyanide Zn(CN)$_2$
P122	1314-84-7	Zinc phosphide Zn_3P_2, when present at concentrations greater than 10% (R,T)

[1] CAS Number given for parent compound only.

3. In 40 CFR 261.33, the table in paragraph (f) is revised to read as follows:

Hazardous waste No.	Chemical abstracts No.	Substance
U001	75-07-0	Acetaldehyde (I)
U034	75-87-6	Acetaldehyde, trichloro-
U187	62-44-2	Acetamide, N-(4-ethoxyphenyl)-
U005	53-96-3	Acetamide, N-9H-fluoren-2-yl-
U240	[1] 94-75-7	Acetic acid, (2,4-dichlorophenoxy)-, salts & esters
U112	141-78-6	Acetic acid ethyl ester (I)
U144	301-04-2	Acetic acid, lead(2+) salt
U214	563-68-8	Acetic acid, thallium(1+) salt
see F027	93-76-5	Acetic acid, (2,4,5-trichlorophenoxy)-
U002	67-64-1	Acetone (I)
U003	75-05-8	Acetonitrile (I,T)
U004	98-86-2	Acetophenone
U005	53-96-3	2-Acetylaminofluorene
U006	75-36-5	Acetyl chloride (C,R,T)
U007	79-06-1	Acrylamide
U008	79-10-7	Acrylic acid (I)
U009	107-13-1	Acrylonitrile
U011	61-82-5	Amitrole
U012	62-53-3	Aniline (I,T)
U136	75-60-5	Arsinic acid, dimethyl-
U014	492-80-8	Auramine
U015	115-02-6	Azaserine
U010	50-07-7	Azirino[2',3':3,4]pyrrolo[1,2-a]indole-4,7-dione, 6-amino-8-[[(aminocarbonyl)oxy]methyl]-1,1a,2,8,8a,8b-hexahydro-8a-methoxy-5-methyl-, [1aS-(1aalpha, 8beta,8aalpha,8balpha)]-
U157	56-49-5	Benz[j]aceanthrylene, 1,2-dihydro-3-methyl-
U016	225-51-4	Benz[c]acridine
U017	98-87-3	Benzal chloride
U192	23950-58-5	Benzamide, 3,5-dichloro-N-(1,1-dimethyl-2-propynyl)-
U018	56-55-3	Benz[a]anthracene
U094	57-97-6	Benz[a]anthracene, 7,12-dimethyl-
U012	62-53-3	Benzenamine (I,T)
U014	492-80-8	Benzenamine, 4,4'-carbonimidoylbis[N,N-dimethyl-
U049	3165-93-3	Benzenamine, 4-chloro-2-methyl-, hydrochloride
U093	60-11-7	Benzenamine, N,N-dimethyl-4-(phenylazo)-
U328	95-53-4	Benzenamine, 2-methyl-
U353	106-49-0	Benzenamine, 4-methyl-
U158	101-14-4	Benzenamine, 4,4'-methylenebis[2-chloro-
U222	636-21-5	Benzenamine, 2-methyl-, hydrochloride
U181	99-55-8	Benzenamine, 2-methyl-5-nitro-
U019	71-43-2	Benzene (I,T)
U038	510-15-6	Benzeneacetic acid, 4-chloro-alpha-(4-chlorophenyl)-alpha-hydroxy-, ethyl ester
U030	101-55-3	Benzene, 1-bromo-4-phenoxy-
U035	305-03-3	Benzenebutanoic acid, 4-[bis(2-chloroethyl)amino]-
U037	108-90-7	Benzene, chloro-
U221	25376-45-8	Benzenediamine, ar-methyl-
U028	117-81-7	1,2-Benzenedicarboxylic acid, bis(2-ethylhexyl) ester
U069	84-74-2	1,2-Benzenedicarboxylic acid, dibutyl ester
U088	84-66-2	1,2-Benzenedicarboxylic acid, diethyl ester
U102	131-11-3	1,2-Benzenedicarboxylic acid, dimethyl ester
U107	117-84-0	1,2-Benzenedicarboxylic acid, dioctyl ester
U070	95-50-1	Benzene, 1,2-dichloro-
U071	541-73-1	Benzene, 1,3-dichloro-
U072	106-46-7	Benzene, 1,4-dichloro-
U060	72-54-8	Benzene, 1,1'-(2,2-dichloroethylidene)bis[4-chloro-
U017	98-87-3	Benzene, (dichloromethyl)-
U223	26471-62-5	Benzene, 1,3-diisocyanatomethyl- (R,T)
U239	1330-20-7	Benzene, dimethyl- (I,T)
U201	108-46-3	1,3-Benzenediol
U127	118-74-1	Benzene, hexachloro-
U056	110-82-7	Benzene, hexahydro- (I)
U220	108-88-3	Benzene, methyl-
U105	121-14-2	Benzene, 1-methyl-2,4-dinitro-
U106	606-20-2	Benzene, 2-methyl-1,3-dinitro-
U055	98-82-8	Benzene, (1-methylethyl)- (I)
U169	98-95-3	Benzene, nitro-
U183	608-93-5	Benzene, pentachloro-
U185	82-68-8	Benzene, pentachloronitro-
U020	98-09-9	Benzenesulfonic acid chloride (C,R)
U020	98-09-9	Benzenesulfonyl chloride (C,R)
U207	95-94-3	Benzene, 1,2,4,5-tetrachloro-
U061	50-29-3	Benzene, 1,1'-(2,2,2-trichloroethylidene)bis[4-chloro-
U247	72-43-5	Benzene, 1,1'-(2,2,2-trichloroethylidene)bis[4-methoxy-
U023	98-07-7	Benzene, (trichloromethyl)-
U234	99-35-4	Benzene, 1,3,5-trinitro-

Hazardous waste No.	Chemical abstracts No.	Substance
U021	92-87-5	Benzidine
U202	[1] 81-07-2	1,2-Benzisothiazol-3(2H)-one, 1,1-dioxide, & salts
U203	94-59-7	1,3-Benzodioxole, 5-(2-propenyl)-
U141	120-58-1	1,3-Benzodioxole, 5-(1-propenyl)-
U090	94-58-6	1,3-Benzodioxole, 5-propyl-
U064	189-55-9	Benzo[rst]pentaphene
U248	[1] 81-81-2	2H-1-Benzopyran-2-one, 4-hydroxy-3-(3-oxo-1-phenylbutyl)-, & salts, when present at concentrations of 0.3% or less
U022	50-32-8	Benzo[a]pyrene
U197	106-51-4	p-Benzoquinone
U023	98-07-7	Benzotrichloride (C,R,T)
U085	1464-53-5	2,2'-Bioxirane
U021	92-87-5	[1,1'-Biphenyl]-4,4'-diamine
U073	91-94-1	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dichloro-
U091	119-90-4	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dimethoxy-
U095	119-93-7	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dimethyl-
U225	75-25-2	Bromoform
U030	101-55-3	4-Bromophenyl phenyl ether
U128	87-68-3	1,3-Butadiene, 1,1,2,3,4,4-hexachloro-
U172	924-16-3	1-Butanamine, N-butyl-N-nitroso-
U031	71-36-3	1-Butanol (I)
U159	78-93-3	2-Butanone (I,T)
U160	1338-23-4	2-Butanone, peroxide (R,T)
U053	4170-30-3	2-Butenal
U074	764-41-0	2-Butene, 1,4-dichloro- (I,T)
U143	303-34-4	2-Butenoic acid, 2-methyl-, 7-[[2,3-dihydroxy-2-(1-methoxyethyl)-3-methyl-1-oxobutoxy]methyl]-2,3,5,7a-tetrahydro-1H-pyrrolizin-1-yl ester, [1S-[1alpha(Z),7(2S*,3R*),7aalpha]]-
U031	71-36-3	n-Butyl alcohol (I)
U136	75-60-5	Cacodylic acid
U032	13765-19-0	Calcium chromate
U238	51-79-6	Carbamic acid, ethyl ester
U178	615-53-2	Carbamic acid, methylnitroso-, ethyl ester
U097	79-44-7	Carbamic chloride, dimethyl-
U114	[1] 111-54-6	Carbamodithioic acid, 1,2-ethanediylbis-, salts & esters
U062	2303-16-4	Carbamothioic acid, bis(1-methylethyl)-, S-(2,3-dichloro-2-propenyl) ester
U215	6533-73-9	Carbonic acid, dithallium(1+) salt
U033	353-50-4	Carbonic difluoride
U156	79-22-1	Carbonochloridic acid, methyl ester (I,T)
U033	353-50-4	Carbon oxyfluoride (R,T)
U211	56-23-5	Carbon tetrachloride
U034	75-87-6	Chloral
U035	305-03-3	Chlorambucil
U036	57-74-9	Chlordane, alpha & gamma isomers
U026	494-03-1	Chlornaphazin
U037	108-90-7	Chlorobenzene
U038	510-15-6	Chlorobenzilate
U039	59-50-7	p-Chloro-m-cresol
U042	110-75-8	2-Chloroethyl vinyl ether
U044	67-66-3	Chloroform
U046	107-30-2	Chloromethyl methyl ether
U047	91-58-7	beta-Chloronaphthalene
U048	95-57-8	o-Chlorophenol
U049	3165-93-3	4-Chloro-o-toluidine, hydrochloride
U032	13765-19-0	Chromic acid H_2CrO_4, calcium salt
U050	218-01-9	Chrysene
U051		Creosote
U052	1319-77-3	Cresol (Cresylic acid)
U053	4170-30-3	Crotonaldehyde
U055	98-82-8	Cumene (I)
U246	506-68-3	Cyanogen bromide (CN)Br
U197	106-51-4	2,5-Cyclohexadiene-1,4-dione
U056	110-82-7	Cyclohexane (I)
U129	58-89-9	Cyclohexane, 1,2,3,4,5,6-hexachloro-, (1alpha,2alpha,3beta,4alpha,5alpha,6beta)-
U057	108-94-1	Cyclohexanone (I)
U130	77-47-4	1,3-Cyclopentadiene, 1,2,3,4,5,5-hexachloro-
U058	50-18-0	Cyclophosphamide
U240	[1] 94-75-7	2,4-D, salts & esters
U059	20830-81-3	Daunomycin
U060	72-54-8	DDD
U061	50-29-3	DDT
U062	2303-16-4	Diallate
U063	53-70-3	Dibenz[a,h]anthracene
U064	189-55-9	Dibenzo[a,i]pyrene
U066	96-12-8	1,2-Dibromo-3-chloropropane
U069	84-74-2	Dibutyl phthalate
U070	95-50-1	o-Dichlorobenzene
U071	541-73-1	m-Dichlorobenzene
U072	106-46-7	p-Dichlorobenzene
U073	91-94-1	3,3'-Dichlorobenzidine
U074	764-41-0	1,4-Dichloro-2-butene (I,T)
U075	75-71-8	Dichlorodifluoromethane
U078	75-35-4	1,1-Dichloroethylene
U079	156-60-5	1,2-Dichloroethylene
U025	111-44-4	Dichloroethyl ether
U027	108-60-1	Dichloroisopropyl ether
U024	111-91-1	Dichloromethoxy ethane
U081	120-83-2	2,4-Dichlorophenol
U082	87-65-0	2,6-Dichlorophenol
U084	542-75-6	1,3-Dichloropropene
U085	1464-53-5	1,2:3,4-Diepoxybutane (I,T)
U108	123-91-1	1,4-Diethyleneoxide
U028	117-81-7	Diethylhexyl phthalate
U086	1615-80-1	N,N'-Diethylhydrazine
U087	3288-58-2	O,O-Diethyl S-methyl dithiophosphate
U088	84-66-2	Diethyl phthalate
U089	56-53-1	Diethylstilbesterol
U090	94-58-6	Dihydrosafrole
U091	119-90-4	3,3'-Dimethoxybenzidine
U092	124-40-3	Dimethylamine (I)
U093	60-11-7	p-Dimethylaminoazobenzene
U094	57-97-6	7,12-Dimethylbenz[a]anthracene
U095	119-93-7	3,3'-Dimethylbenzidine
U096	80-15-9	alpha,alpha-Dimethylbenzylhydroperoxide (R)
U097	79-44-7	Dimethylcarbamoyl chloride
U098	57-14-7	1,1-Dimethylhydrazine
U099	540-73-8	1,2-Dimethylhydrazine
U101	105-67-9	2,4-Dimethylphenol
U102	131-11-3	Dimethyl phthalate
U103	77-78-1	Dimethyl sulfate
U105	121-14-2	2,4-Dinitrotoluene
U106	606-20-2	2,6-Dinitrotoluene
U107	117-84-0	Di-n-octyl phthalate
U108	123-91-1	1,4-Dioxane
U109	122-66-7	1,2-Diphenylhydrazine
U110	142-84-7	Dipropylamine (I)
U111	621-64-7	Di-n-propylnitrosamine
U041	106-89-8	Epichlorohydrin
U001	75-07-0	Ethanal (I)
U174	55-18-5	Ethanamine, N-ethyl-N-nitroso-
U155	91-80-5	1,2-Ethanediamine, N,N-dimethyl-N'-2-pyridinyl-N'-(2-thienylmethyl)-
U067	106-93-4	Ethane, 1,2-dibromo-
U076	75-34-3	Ethane, 1,1-dichloro-
U077	107-06-2	Ethane, 1,2-dichloro-
U131	67-72-1	Ethane, hexachloro-
U024	111-91-1	Ethane, 1,1'-[methylenebis(oxy)]bis[2-chloro-
U117	60-29-7	Ethane, 1,1'-oxybis-(I)
U025	111-44-4	Ethane, 1,1'-oxybis[2-chloro-
U184	76-01-7	Ethane, pentachloro-
U208	630-20-6	Ethane, 1,1,1,2-tetrachloro-
U209	79-34-5	Ethane, 1,1,2,2-tetrachloro-
U218	62-55-5	Ethanethioamide
U226	71-55-6	Ethane, 1,1,1-trichloro-
U227	79-00-5	Ethane, 1,1,2-trichloro-
U359	110-80-5	Ethanol, 2-ethoxy-
U173	1116-54-7	Ethanol, 2,2'-(nitrosoimino)bis-
U004	98-86-2	Ethanone, 1-phenyl-
U043	75-01-4	Ethene, chloro-
U042	110-75-8	Ethene, (2-chloroethoxy)-
U078	75-35-4	Ethene, 1,1-dichloro-
U079	156-60-5	Ethene, 1,2-dichloro-, (E)-
U210	127-18-4	Ethene, tetrachloro-
U228	79-01-6	Ethene, trichloro-
U112	141-78-6	Ethyl acetate (I)
U113	140-88-5	Ethyl acrylate (I)
U238	51-79-6	Ethyl carbamate (urethane)
U117	60-29-7	Ethyl ether (I)
U114	[1] 111-54-6	Ethylenebisdithiocarbamic acid, salts & esters
U067	106-93-4	Ethylene dibromide
U077	107-06-2	Ethylene dichloride
U359	110-80-5	Ethylene glycol monoethyl ether
U115	75-21-8	Ethylene oxide (I,T)

Hazardous waste No.	Chemical abstracts No.	Substance
U116	96-45-7	Ethylenethiourea
U076	75-34-3	Ethylidene dichloride
U118	97-63-2	Ethyl methacrylate
U119	62-50-0	Ethyl methanesulfonate
U120	206-44-0	Fluoranthene
U122	50-00-0	Formaldehyde
U123	64-18-6	Formic acid (C,T)
U124	110-00-9	Furan (I)
U125	98-01-1	2-Furancarboxaldehyde (I)
U147	108-31-6	2,5-Furandione
U213	109-99-9	Furan, tetrahydro-(I)
U125	98-01-1	Furfural (I)
U124	110-00-9	Furfuran (I)
U206	18883-66-4	Glucopyranose, 2-deoxy-2-(3-methyl-3-nitrosoureido)-, D-
U206	18883-66-4	D-Glucose, 2-deoxy-2-[[(methylnitrosoamino)-carbonyl]amino]-
U126	765-34-4	Glycidylaldehyde
U163	70-25-7	Guanidine, N-methyl-N'-nitro-N-nitroso-
U127	118-74-1	Hexachlorobenzene
U128	87-68-3	Hexachlorobutadiene
U130	77-47-4	Hexachlorocyclopentadiene
U131	67-72-1	Hexachloroethane
U132	70-30-4	Hexachlorophene
U243	1888-71-7	Hexachloropropene
U133	302-01-2	Hydrazine (R,T)
U086	1615-80-1	Hydrazine, 1,2-diethyl-
U098	57-14-7	Hydrazine, 1,1-dimethyl-
U099	540-73-8	Hydrazine, 1,2-dimethyl-
U109	122-66-7	Hydrazine, 1,2-diphenyl-
U134	7664-39-3	Hydrofluoric acid (C,T)
U134	7664-39-3	Hydrogen fluoride (C,T)
U135	7783-06-4	Hydrogen sulfide
U135	7783-06-4	Hydrogen sulfide H_2S
U096	80-15-9	Hydroperoxide, 1-methyl-1-phenylethyl- (R)
U116	96-45-7	2-Imidazolidinethione
U137	193-39-5	Indeno[1,2,3-cd]pyrene
U139	9004-66-4	Iron dextran
U190	85-44-9	1,3-Isobenzofurandione
U140	78-83-1	Isobutyl alcohol (I,T)
U141	120-58-1	Isosafrole
U142	143-50-0	Kepone
U143	303-34-4	Lasiocarpine
U144	301-04-2	Lead acetate
U146	1335-32-6	Lead, bis(acetato-O)tetrahydroxytri-
U145	7446-27-7	Lead phosphate
U146	1335-32-6	Lead subacetate
U129	58-89-9	Lindane
U163	70-25-7	MNNG
U147	108-31-6	Maleic anhydride
U148	123-33-1	Maleic hydrazide
U149	109-77-3	Malononitrile
U150	148-82-3	Melphalan
U151	7439-97-6	Mercury
U152	126-98-7	Methacrylonitrile (I, T)
U092	124-40-3	Methanamine, N-methyl- (I)
U029	74-83-9	Methane, bromo-
U045	74-87-3	Methane, chloro- (I, T)
U046	107-30-2	Methane, chloromethoxy-
U068	74-95-3	Methane, dibromo-
U080	75-09-2	Methane, dichloro-
U075	75-71-8	Methane, dichlorodifluoro-
U138	74-88-4	Methane, iodo-
U119	62-50-0	Methanesulfonic acid, ethyl ester
U211	56-23-5	Methane, tetrachloro-
U153	74-93-1	Methanethiol (I, T)
U225	75-25-2	Methane, tribromo-
U044	67-66-3	Methane, trichloro-
U121	75-69-4	Methane, trichlorofluoro-
U036	57-74-9	4,7-Methano-1H-indene, 1,2,4,5,6,7,8,8-octachloro-2,3,3a,4,7,7a-hexahydro-
U154	67-56-1	Methanol (I)
U155	91-80-5	Methapyrilene
U142	143-50-0	1,3,4-Metheno-2H-cyclobuta[cd]pentalen-2-one, 1,1a,3,3a,4,5,5,5a,5b,6-decachlorooctahydro-
U247	72-43-5	Methoxychlor
U154	67-56-1	Methyl alcohol (I)
U029	74-83-9	Methyl bromide
U186	504-60-9	1-Methylbutadiene (I)
U045	74-87-3	Methyl chloride (I,T)
U156	79-22-1	Methyl chlorocarbonate (I,T)
U226	71-55-6	Methyl chloroform
U157	56-49-5	3-Methylcholanthrene
U158	101-14-4	4,4'-Methylenebis(2-chloroaniline)
U068	74-95-3	Methylene bromide
U080	75-09-2	Methylene chloride
U159	78-93-3	Methyl ethyl ketone (MEK) (I,T)
U160	1338-23-4	Methyl ethyl ketone peroxide (R,T)
U138	74-88-4	Methyl iodide
U161	108-10-1	Methyl isobutyl ketone (I)
U162	80-62-6	Methyl methacrylate (I,T)
U161	108-10-1	4-Methyl-2-pentanone (I)
U164	56-04-2	Methylthiouracil
U010	50-07-7	Mitomycin C
U059	20830-81-3	5,12-Naphthacenedione, 8-acetyl-10-[(3-amino-2,3,6-trideoxy)-alpha-L-lyxo-hexopyranosyl)oxy]-7,8,9,10-tetrahydro-6,8,11-trihydroxy-1-methoxy-, (8S-cis)-
U167	134-32-7	1-Naphthalenamine
U168	91-59-8	2-Naphthalenamine
U026	494-03-1	Naphthalenamine, N,N'-bis(2-chloroethyl)-
U165	91-20-3	Naphthalene
U047	91-58-7	Naphthalene, 2-chloro-
U166	130-15-4	1,4-Naphthalenedione
U236	72-57-1	2,7-Naphthalenedisulfonic acid, 3,3'-[(3,3'-dimethyl[1,1'-biphenyl]-4,4'-diyl)bis(azo)bis(5-amino-4-hydroxy)]-, tetrasodium salt
U166	130-15-4	1,4-Naphthoquinone
U167	134-32-7	alpha-Naphthylamine
U168	91-59-8	beta-Naphthylamine
U217	10102-45-1	Nitric acid, thallium(1+) salt
U169	98-95-3	Nitrobenzene (I,T)
U170	100-02-7	p-Nitrophenol
U171	79-46-9	2-Nitropropane (I,T)
U172	924-16-3	N-Nitrosodi-n-butylamine
U173	1116-54-7	N-Nitrosodiethanolamine
U174	55-18-5	N-Nitrosodiethylamine
U176	759-73-9	N-Nitroso-N-ethylurea
U177	684-93-5	N-Nitroso-N-methylurea
U178	615-53-2	N-Nitroso-N-methylurethane
U179	100-75-4	N-Nitrosopiperidine
U180	930-55-2	N-Nitrosopyrrolidine
U181	99-55-8	5-Nitro-o-toluidine
U193	1120-71-4	1,2-Oxathiolane, 2,2-dioxide
U058	50-18-0	2H-1,3,2-Oxazaphosphorin-2-amine, N,N-bis(2-chloroethyl)tetrahydro-, 2-oxide
U115	75-21-8	Oxirane (I,T)
U126	765-34-4	Oxiranecarboxyaldehyde
U041	106-89-8	Oxirane, (chloromethyl)-
U182	123-63-7	Paraldehyde
U183	608-93-5	Pentachlorobenzene
U184	76-01-7	Pentachloroethane
U185	82-68-8	Pentachloronitrobenzene (PCNB)
See F027	87-86-5	Pentachlorophenol
U161	108-10-1	Pentanol, 4-methyl-
U186	504-60-9	1,3-Pentadiene (I)
U187	62-44-2	Phenacetin
U188	108-95-2	Phenol
U048	95-57-8	Phenol, 2-chloro-
U039	59-50-7	Phenol, 4-chloro-3-methyl-
U081	120-83-2	Phenol, 2,4-dichloro-
U082	87-65-0	Phenol, 2,6-dichloro-
U089	56-53-1	Phenol, 4,4'-(1,2-diethyl-1,2-ethenediyl)bis-, (E)-
U101	105-67-9	Phenol, 2,4-dimethyl-
U052	1319-77-3	Phenol, methyl-
U132	70-30-4	Phenol, 2,2'-methylenebis[3,4,6-trichloro-
U170	100-02-7	Phenol, 4-nitro-
See F027	87-86-5	Phenol, pentachloro-
See F027	58-90-2	Phenol, 2,3,4,6-tetrachloro-
See F027	95-95-4	Phenol, 2,4,5-trichloro-
See F027	88-06-2	Phenol, 2,4,6-trichloro-
U150	148-82-3	L-Phenylalanine, 4-[bis(2-chloroethyl)amino]-
U145	7446-27-7	Phosphoric acid, lead(2+) salt (2:3)
U087	3288-58-2	Phosphorodithioic acid, O,O-diethyl S-methyl ester

Hazardous waste No.	Chemical abstracts No.	Substance
U189	1314-80-3	Phosphorus sulfide (R)
U190	85-44-9	Phthalic anhydride
U191	109-06-8	2-Picoline
U179	100-75-4	Piperidine, 1-nitroso-
U192	23950-58-5	Pronamide
U194	107-10-8	1-Propanamine (I,T)
U111	621-64-7	1-Propanamine, N-nitroso-N-propyl-
U110	142-84-7	1-Propanamine, N-propyl- (I)
U066	96-12-8	Propane, 1,2-dibromo-3-chloro-
U083	78-87-5	Propane, 1,2-dichloro-
U149	109-77-3	Propanedinitrile
U171	79-46-9	Propane, 2-nitro- (I,T)
U027	108-60-1	Propane, 2,2'-oxybis[2-chloro-
U193	1120-71-4	1,3-Propane sultone
See F027	93-72-1	Propanoic acid, 2-(2,4,5-trichlorophenoxy)-
U235	126-72-7	1-Propanol, 2,3-dibromo-, phosphate (3:1)
U140	78-83-1	1-Propanol, 2-methyl- (I,T)
U002	67-64-1	2-Propanone (I)
U007	79-06-1	2-Propenamide
U084	542-75-6	1-Propene, 1,3-dichloro-
U243	1888-71-7	1-Propene, 1,1,2,3,3,3-hexachloro-
U009	107-13-1	2-Propenenitrile
U152	126-98-7	2-Propenenitrile, 2-methyl- (I,T)
U008	79-10-7	2-Propenoic acid (I)
U113	140-88-5	2-Propenoic acid, ethyl ester (I)
U118	97-63-2	2-Propenoic acid, 2-methyl-, ethyl ester
U162	80-62-6	2-Propenoic acid, 2-methyl-, methyl ester (I,T)
U194	107-10-8	n-Propylamine (I,T)
U083	78-87-5	Propylene dichloride
U148	123-33-1	3,6-Pyridazinedione, 1,2-dihydro-
U196	110-86-1	Pyridine
U191	109-06-8	Pyridine, 2-methyl-
U237	66-75-1	2,4-(1H,3H)-Pyrimidinedione, 5-[bis(2-chloroethyl)amino]-
U164	56-04-2	4(1H)-Pyrimidinone, 2,3-dihydro-6-methyl-2-thioxo-
U180	930-55-2	Pyrrolidine, 1-nitroso-
U200	50-55-5	Reserpine
U201	108-46-3	Resorcinol
U202	[1] 81-07-2	Saccharin, & salts
U203	94-59-7	Safrole
U204	7783-00-8	Selenious acid
U204	7783-00-8	Selenium dioxide
U205	7488-56-4	Selenium sulfide
U205	7488-56-4	Selenium sulfide SeS_2 (R,T)
U015	115-02-6	L-Serine, diazoacetate (ester)
See F027	93-72-1	Silvex (2,4,5-TP)
U206	18883-66-4	Streptozotocin
U103	77-78-1	Sulfuric acid, dimethyl ester
U189	1314-80-3	Sulfur phosphide (R)
See F027	93-76-5	2,4,5-T
U207	95-94-3	1,2,4,5-Tetrachlorobenzene
U208	630-20-6	1,1,1,2-Tetrachloroethane
U209	79-34-5	1,1,2,2-Tetrachloroethane
U210	127-18-4	Tetrachloroethylene
See F027	58-90-2	2,3,4,6-Tetrachlorophenol
U213	109-99-9	Tetrahydrofuran (I)
U214	563-68-8	Thallium(I) acetate
U215	6533-73-9	Thallium(I) carbonate
U216	7791-12-0	Thallium(I) chloride
U216	7791-12-0	Thallium chloride Tlcl
U217	10102-45-1	Thallium(I) nitrate
U218	62-55-5	Thioacetamide
U153	74-93-1	Thiomethanol (I,T)
U244	137-26-8	Thioperoxydicarbonic diamide $[(H_2N)C(S)]_2S_2$, tetramethyl-
U219	62-56-6	Thiourea
U244	137-26-8	Thiram
U220	108-88-3	Toluene
U221	25376-45-8	Toluenediamine
U223	26471-62-5	Toluene diisocyanate (R,T)
U328	95-53-4	o-Toluidine
U353	106-49-0	p-Toluidine
U222	636-21-5	o-Toluidine hydrochloride
U011	61-82-5	1H-1,2,4-Triazol-3-amine
U227	79-00-5	1,1,2-Trichloroethane
U228	79-01-6	Trichloroethylene
U121	75-69-4	Trichloromonofluoromethane
See F027	95-95-4	2,4,5-Trichlorophenol
See F027	88-06-2	2,4,6-Trichlorophenol
U234	99-35-4	1,3,5-Trinitrobenzene (R,T)
U182	123-63-7	1,3,5-Trioxane, 2,4,6-trimethyl-
U235	126-72-7	Tris(2,3-dibromopropyl) phosphate
U236	72-57-1	Trypan blue
U237	66-75-1	Uracil mustard
U176	759-73-9	Urea, N-ethyl-N-nitroso-
U177	684-93-5	Urea, N-methyl-N-nitroso-
U043	75-01-4	Vinyl chloride
U248	[1] 81-81-2	Warfarin, & salts, when present at concentrations of 0.3% or less
U239	1330-20-7	Xylene (I)
U200	50-55-5	Yohimban-16-carboxylic acid, 11,17-dimethoxy-18-[(3,4,5-trimethoxybenzoyl)oxy]-, methyl ester, (3beta,16beta,17alpha,18beta,20alpha)-
U249	1314-84-7	Zinc phosphide Zn_3P_2, when present at concentrations of 10% or less

[1] CAS Number given for parent compound only

APPENDIX III

HAZARDOUS GENERIC INDUSTRIAL PROCESS WASTES

Source: Federal Register, "Rules and Regulations." Volume 46 No. 11, Friday, January 16, 1981, p. 4617-19, and Vol. 49, No. 29, Friday, February 10, 1984, p. 5312.

Industry and EPA Hazardous Waste No.	Hazardous Waste	Hazard Code
Generic:		
F001.....	The following spent halogenated solvents used in degreasing: Tetrachloroethylene, trichloroethylene, methylene chloride, 1,1,1-trichloroethane, carbon tetrachloride, and chlorinated fluorocarbons; and still bottoms from the recovery of these spent spent solvents and spent solvent mixtures not in 40 CFR.	(T)
F002.....	The following spent halogenated solvents: Tetrachloroethylene, methylene chloride, trichloroethylene, 1,1,1-trichloroethane, chlorobenzene, 1,1,2-trichloro-, 1,2,2-trifluoroethane, orthodichlorobenzene, trichlorofluoromethane, and 1,1,2-trichloroethane; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.	(T)
F003.....	The following spent non-halogenated solvents: Xylene, acetone, ethyl acetate, ethyl benzene, ethyl ether, methyl isobutyl ketone, n-butyl alcohol, cyclohexanone, and methanol; and still bottoms from the recovery of these spent solvents, and spent solvent mixtures.	(I)
F004.....	The following spent non-halogenated solvents: Cresols and cresylic acid, and nitrobenzene; and still bottoms from the recovery of these spent solvents, and spent solvent mixtures.	(T)
F005.....	The following spent non-halogenated solvents: Toluene, methyl ethyl ketone, carbon disulfide, isobutanol, pyridine benzene, 2-ethoxyethanol, and 2-nitropropane; and still bottoms from the recovery of these spent solvents 2 and spent solvent mixtures.	(I,T)

Industry and EPA Hazardous Waste No.	Hazardous Waste	Hazard Code
F006.....	Wastewater treatment sludges from eletroplating operations except from the following processes: (1) Sulfuric acid anodizing of aluminum; (2) tin plating on carbon steel; (3) zinc plating (segregated basis) on carbon steel; (4) aluminum or zinc - aluminum plating on carbon steel; (5) cleaning/stripping associated with tin, zinc and aluminum plating on carbon steel; and (6) chemical etching and milling of aluminum.	(T)
F007.....	Spent cyanide plating bath solutions from electroplating operations.	(R,T)
F008.....	Plating bath residues from the bottom of plating baths from electroplating operations where cyanides are used in the process.	(R,T)
F009.....	Spent stripping and cleaning bath solutions from electroplating operations where cyanides are used in the process.	(R,T)
F010.....	Quenching bath residues from oil baths from metal heat treating operations where cyanides are used in the process.	(R,T)
F011.....	Spent cyanide solutions from salt bath pot cleaning from metal heat treating operations.	(R,T)
F012.....	Quenching waste water treatment sludges from metal heat treating operations where cyanides are used in the process.	(T)
F014.....	Cyanidation wastewater treatment tailing pond sediment from mineral metals recovery operations.	(T)

Industry and EPA Hazardous Waste No.	Hazardous Waste	Hazard Code
F015.....	Spent cyanide bath solutions from mineral metals recovery operations.	(R,T)
F017.....	Paint residues or sludges from industrial painting in the mechanical and electrical products industry.	(T)
F018.....	Wastewater treatment sludge from industrial painting in the mechanical and electrical products industry.	(T)
F019.....	Wastewater treatment sludges from the chemical conversion coating of aluminum.	(T)
F020.....	Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production or manufacturing use) as a reactant, chemical intermediate, or component in a formulating process) of tri- or tetrachlorophenol, or of intermediates used to produce their pesticide derivatives. (This listing does not include wastes from the production of Hexachlorophene from highly purified 2,4,5-trichlorophenol.)	(H)
F021.....	Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production or manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of pentachlorophenol, or of intermediates used to produce its derivatives.	(H)
F022.....	Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production or manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) or tetra-, penta-, or hexachlorobenzenes under alkaline conditions.	(H)

Industry and EPA Hazardous Waste No.	Hazardous Waste	Hazard Code
F023.....	Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production of materials on equipment previously used for the production or manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tri- and tetrachlorophenols. (This listing does not include wastes from equipment used only for the production or use of Hexachlorophene from highly purified 2,4,5-trichlorophenol.)	(H)
F024.....	Wastes, including but not limited to, distillation residues, heavy ends, tars, and reactor clean-out washes from the production of chlorinated aliphatic hydrocarbons, having carbon content from one to five, utilizing free radical catalyzed processes. (This listing does not include light ends, spent filters and filter aids, spent dessicants, wastewater, wastewater treatment sludges, spent catalysts, and wastes listed in § 261.32).	(T)
F026.....	Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production of materials on equipment previously used for the manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tetra-, penta-, or hexachlorobenzene under alkaline conditions.	(H)

Industry and EPA Hazardous Waste No.	Hazardous Waste	Hazard Code
F027.....	Discarded unused formulations containing tri-, tetra-, or pentachlorophenol or discarded unused formulations containing compounds derived from these chlorophenols. (This listing does not include formulations containing Hexachlorophene synthesized from prepurified 2,4,5-trichlorophenol as the sole component.)	(H)
F028.....	Residues resulting from the incineration or thermal treatment of soil contaminated with EPA Hazardous Waste Numbers F020, F021, F022, F023, F026, and F027.	(T)

Appendix IV

HAZARDOUS SPECIFIC INDUSTRIAL PROCESS WASTES

Source: Federal Register, "Rules and Regulations,: Volume 46, No. 11, Friday, January 16, 1981, p. 4618-19.
40 CFR Part 161.32, p. 408-410, Revised as of July 1, 1988

Industry and EPA Hazardous Waste No.	Hazardous Waste	Hazard Code
Wood Preservation:		
K001	Bottom sediment sludge from the treatment of wastewaters from wood preserving processes that use creosote and/or pentachlorophenol.	(T)
Inorganic Pigments:		
K002	Wastewater treatment sludge from the production of chrome yellow and orange pigments.	(T)
K003	Wastewater treatment sludge from the production of molybdate orange pigments.	(T)
K004	Wastewater treatment sludge from the production of zinc yellow pigments.	(T)
K005	Wastewater treatment sludge from the production of chrome green pigments.	(T)
K006	Wastewater treatment sludge from the production of chrome oxide green pigments (anhydrous and hydrated).	(T)
K007	Wastewater treatment sludge from the production of iron blue pigments.	(T)
K008	Oven residue from the production of chrome oxide green pigments.	(T)

Industry and EPA Hazardous Waste No.	Hazardous Waste	Hazard Code
Organic Chemicals:		
K009	Distillation bottoms from the production of acetaldehyde from ethylene.	(T)
K010	Distillation side cuts from the production of acetaldehyde from ethylene.	(T)
K011	Bottom stream from the wastewater stripper in the production of acrylonitrile.	(R,T)
K013	Bottom stream from the acetonitrile column in the production of acrylonitrile.	(R,T)
K014	Bottoms from the acetonitrile purification column in the production of acrylonitrile.	(T)
K015	Still bottoms from the distillation of benzyl chloride.	(T)
K016	Heavy ends or distillation residues from the production of carbon tetrachloride.	(T)
K017	Heavy ends (still bottoms) from the purification column in the production of epichlorohydrin.	(T)
K018	Heavy ends from the fractionation column in ethyl chloride production.	(T)
K019	Heavy ends from the distillation of ethylene dichloride in ethylene dichloride production.	(T)

Industry and EPA Hazardous Waste No.	Hazardous Waste	Hazard Code
K020	Heavy ends from the distillation of vinyl chloride in vinyl chloride monomer production.	(T)
K021	Aqueous spent antimony catalyst waste from fluoromethanes production.	(T)
K022	Distillation bottom tars from the production of phenol/acetone from cumene.	(T)
K023	Distillation light ends from the production of phthalic anhydride from napthalene.	(T)
K024	Distillation bottoms from the production of phthalic anhydride from naphthalene.	(T)
K093	Distillation light ends from the production of phthalic anhydride from ortho-xylene.	(T)
K094	Distillation bottoms from the production of phthalic anhydride from ortho-xylene.	(T)
K025	Distillation bottoms from the production of nitrobenzene by the nitration of benzene.	(T)
K026	Stripping still tails from the production of methyl ethyl pyridines.	(T)
K027	Centrifuge and distillation residues from toluene diisocyanate production.	(R,T)
K028	Spent catalyst from the hydrochlorinator reactor in the production of 1,1,1-trichloroethane.	(T)

Industry and EPA Hazardous Waste No.	Hazardous Waste	Hazard Code
K029	Waste from the product steam stripper in the production of 1,1,1-trichloroethane.	(T)
K095	Distillation bottoms from the production of 1,1,1-trichloroethane.	(T)
K096	Heavy ends from the heavy ends column from the production of 1,1,1-trichloroethane.	(T)
K030	Column bottoms or heavy ends from the combined production of trichloroethylene and perchloroethylene.	(T)
K083	Distillation bottoms from aniline production.	(T)
K103	Process residues from aniline extraction from the production of aniline.	(T)
K104	Combined wastewater streams generated from nitrobenzene/aniline production.	(T)
K085	Distillation or fractionation column bottoms from the production of chlorobenzenes.	(T)
K105	Separated aqueous stream from the reactor product washing step in the production of chlorobenzenes.	(T)
K111	Product washwaters from the production of dinitrotoluene via nitration of toluene.	(C,T)

Industry and EPA Hazardous Waste No.	Hazardous Waste	Hazard Code
K112	Reaction by-product water from the drying column in the production of toluenediamine via hydrogenation of dinitrotoluene.	(T)
K113	Condensed liquid light ends from the purification of toluenediamine in the production of toluenediamine via hydrogenation of dinitrotoluene.	(T)
K114	Vicinals from the purification of toluenediamine in the production of toluenediamine via hydrogenation of dinitrotoluene.	(T)
K115	Heavy ends from the purification of toluenediamine in the production of toluenediamine via hydrogenation of dinitrotoluene.	(T)
K116	Organic condensate from the solvent recovery column in the production of toluene diisocyanate via phosgenation of toluenediamine.	(T)
K117	Wastewater from the reactor vent gas scrubber in the production of ethylene dibromide via bromination of ethene.	(T)
K118	Spent adsorbent solids from purification of ethylene dibromide in the production of ethylene dibromide via bromination of ethene.	(T)
K136	Still bottoms from the purification of ethylene dibromide in the production of ethylene dibromide via bromination of ethene.	(T)

Industry and EPA Hazardous Waste No.	Hazardous Waste	Hazard Code
Inorganic Chemicals:		
K071	Brine purification muds from the mercury cell process in chlorine production, where separately prepurified brine is not used.	(T)
K073	Chlorinated hydrocarbon waste from the purification step of the diaphragm cell process using graphite anodes in chlorine production.	(T)
K106	Wastewater treatment sludge from the mercury cell process in chlorine production.	(T)
Pesticides:		
K031	By-products salts generated in the production of MSMA and cacodylic acid.	(T)
K032	Wastewater treatment sludge from the production of chlordane.	(T)
K033	Wastewater and scrub water from the chlorination of cyclopentadiene in the production of chlordane.	(T)
K034	Filter solids from the filtration of hexachlorocyclopentadiene in the production of chlordane.	(T)
K035	Wastewater treatment sludges generated in the production of creosote.	(T)
K036	Still bottoms from toluene reclamation distillation in the production of disulfoton.	(T)

Industry and EPA Hazardous Waste No.	Hazardous Waste	Hazard Code
K037	Wastewater treatment sludges from the production of disulfoton.	(T)
K038	Wastewater from the washing and stripping of phorate production.	(T)
K039	Filter cake from the filtration of diethylphosphorodithioic acid in the production of phorate.	(T)
K040	Wastewater treatment sludge from the production of phorate.	(T)
K041	Wastewater treatment sludge from the production of toxaphene.	(T)
K042	Heavy ends or distillation residues from the distillation of tetrachlororobenzene in the production of 2,4,5-T.	(T)
K043	2,6-Dichlorophenol waste from the production of 2,4-D	(T)
K097	Vacuum stripper discharge from the chlordane chlorinator in the production of chlordane.	(T)
K098	Untreated process wastewater from the production of toxaphene.	(T)
K099	Untreated wastewater from the production of 2,4-D.	(T)

Industry and EPA Hazardous Waste No.	Hazardous Waste	Hazard Code
K123.	.Process wastewater (including supernates, filtrates, and washwaters) from the production of ethylene-bisdithiocarbamic acid and its salt.	(T)
K124.	.Reactor vent scrubber water from the production of ethylenebisdithiocarbamic acid and its salts.	(C,T)
K125.	.Filtration, evaporation, and centrifugation solids from the production of ethylenebisdithiocarbamic acid and its salts.	(T)
K126.	.Baghouse dust and floor sweepings in milling and packaging operations from the production or formulation of ethylenebisdithiocarbamic acid and its salts.	(T)
Explosives:		
K044.	.Wastewater treatment sludges from the manufacturing processing of explosives.	(R)
K045.	.Spent carbon from the treatment of wastewater containing explosives.	(R)
K046.	.Wastewater treatment sludges from the manufacturing, formulation and loading of lead-based initiating compounds.	(T)
K047.	.Pink/red water from TNT operations.	(R)

Industry and EPA Hazardous Waste No.	Hazardous Waste	Hazard Code
Petroleum Refining:		
K048.	.Dissolved air floation (DAF) float from the petroleum refining industry.	(T)
K049.	.Slop oil emulsion solids from the petroleum refining industry.	(T)
K050.	.Heat exchanger bundle cleaning sludge from the petroleum refining industry.	(T)
K051.	.API separator sludge from the petroleum refining industry.	(T)
K052.	.Tank bottoms (leaded) from the petroleum refining industry.	(T)
Iron and Steel:		
K061.	.Emission control dust/sludge from the primary production of steel in electric furnaces.	(T)
K062.	.Spent pickle liquor generated by steel finishing operations of facilities within the iron and steel industry (SIC codes 331 and 332).	(C,T)
Secondary Lead:		
K069.	.Emission control dust/sludge from secondary lead smelting.	(T)
K100.	.Waste leaching solution from acid leaching of emission control dust/sludge from secondary lead smelting.	(T)

Industry and EPA Hazardous Waste No.	Hazardous Waste	Hazard Code
Veterinary Pharmaceuticals:		
K084.	.Wastewater treatment sludges generated during the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds.	(T)
K101.	.Distillation tar residues from the distillation of aniline-based compounds in the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds.	(T)
K102.	.Residue from the use of activated carbon for decolorization in the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds.	(T)
Ink Formulation:		
K086.	.Solvent washes and sludges, caustic washes and sludges, or water washes and sludges from cleaning tubs and equipment used in the formulation of ink from pigments, driers, soaps, and stablizers containing chromium and lead.	(T)
Coking:		
K060.	.Ammonia still lime sludge from coking operations.	(T)
K087.	.Decanter tank tar sludge from coking operations.	(T)

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APPENDIX C

NPL SITES

SITE DESCRIPTIONS AND SITE HISTORY

Source: Information provided by Department of Environmental Services, Waste Management Division

Somersworth Municipal Landfill, Somersworth, New Hampshire

Site Description

This site is located on Blackwater Road about 2500 feet west of its junction with Route 9 in Somersworth, New Hampshire. Draining the entire site is the Peters Marsh Brook and its unnamed tributary, which rises at Willand Pond, flows north along the landfill's western edge, and discharges into Tates Brook; Tates Brook empties into the Salmon Falls River.

The Somersworth site is a partially active twenty-five acre municipal landfill, begun in the early 1950s as a burning dump, until burning caused smoldering underground fires. As a result, in 1957, the city converted the dump into a landfill.

With the passage of the Hazardous Waste Management Act in 1979, disposal of industrial wastes on-site ceased and the state required the city to prepare a site closure plan based on state-approved guidelines. But in 1981, Somersworth requested permission to continue to dump materials unfit for the city's incinerator, such as tree stumps, white goods (e.g. major household appliances), old furniture, leaves and brush, in the northeast corner of the landfill.

History

1977

Field investigations by the New Hampshire Bureau of Solid Waste Management reveals inadequacies in operations and maintenance at the landfill. State officials cite incomplete berm construction around the landfill and improper disposal practices.

1978

The city covers and seeds the existing landfill and expands operations to the site's west side. The city eventually reclaims the closed portion as park land.

1979

The city prepares a site closure plan based on state-approved guidelines.

July 1982

Field investigations done for EPA by Ecology and Environment, Inc. confirm the presence of volatile organic compounds in monitoring wells. Leachate samples taken at the northern edge of the landfill at Peters Marsh Brook reveal significant quantities of organic chemicals.

December 1982

EPA places the site on the National Priorities List, making it eligible for funds under Superfund legislation.

Somersworth Municipal Landfill (Continued)

February 1983

EPA consultant Camp, Dresser & McKee, Inc. submits a plan recommending a Remedial Investigation to determine the extent of contamination, to define the contaminant sources and paths of migration from the site, and to formulate appropriate remedial steps.

May 1984

New Hampshire's Water Supply and Pollution Control Commission and EPA enter a Cooperative Agreement to proceed with a Remedial Investigation/Feasibility Study.

October 1984

The state contracts with Wehran Engineering Corporation to conduct the Remedial Investigation/Feasibility Study.

May 1988

The state receives Wehran's Remedial Investigation Draft Report; the Public Health Risk Assessment follows.

December 1988

The state evaluates the responses to government review comments of the draft Remedial Investigation report, and sends review comments on the Risk Assessment to Wehran for their response.

Status

As of January 1989, negotiations with potentially responsible parties continue over the Feasibility Study that will evaluate remedial alternatives. Also under review are consultant responses to Remedial Investigation report comments.

The dump portion of the site still operates, while the state monitors surface and groundwater quality. Discussions continue in an effort to establish appropriate future actions.

Dover Municipal Landfill, Dover, New Hampshire

Site Description

The Dover Municipal Landfill, located in the southwest corner of Dover near the intersecting town lines of Dover, Barrington and Madbury, is approximately 2100 feet south of the Dover production well in an area called "The Hoppers", about 600 feet west of the Cocheco River, and approximately 2000 feet northeast of the Bellamy (Portsmouth) Reservoir. The site occupies about 55 acres of land 4 miles northwest of the Dover City Hall at the junction of Glen Hill Road and Tolend Road.

Dover Municipal Landfill (Continued)

Prior to closure, the landfill accepted solid, liquid and sludge wastes and incinerated much of it, but refused to accept sealed drums in its last five years of operation.

History

1961 to 1962
Landfilling begins on the site's eastern portion.

Late 1960s
Landfill operations expand into the site's northwestern and southwestern portions.

1977
New Hampshire's Water Supply and Pollution Control Commission begins a statewide study of landfill-related water quality problems. Water samples taken from monitoring wells installed by the city surrounding the site indicate concentrations of inorganics as well as several volatile organic compounds.

August 1978
Dover discontinues use of the Tolend Road Landfill.

June 1981
The city contracts with consultant Camp, Dresser and McKee to study leachate contamination of a nearby groundwater supply and the Bellamy Reservoir.

July 1982
Camp, Dresser and McKee submits its study which concludes that leachate contamination is migrating.

December 1982
EPA places the site on its Interim List of top priority disposal sites making the site eligible for funds under Superfund.

September 1983
EPA's consultant submits a Remedial Action Master Plan recommending a Remedial Investigation/Feasibility Study.

May 1984
The Water Supply and Pollution Control Commission and EPA enter a Cooperative Agreement to proceed with a Remedial Investigation/ Feasibility Study.

October 1984
The state contracts Wehran Engineering to conduct the Remedial Investigation/Feasibility Study.

Dover Municipal Landfill (Continued)

November 1984 to November 1987

The state, Wehran Corp and Cambride Analytical Associates conduct extensive geophysical and hydrogeological investigations.

Status

As of January 1, 1989, the potentially responsible parties for the ground and surface water contamination at this site have signed an administrative order negotiated by EPA and the state to conduct a Feasibility Study. A Remedial Investigation assessing the extent and character of the contamination was completed in March 1989. The findings of the investigation and plans for future remedial action were presented at a subsequent public hearing.

Tinkham Garage Site, Londonderry, New Hampshire

Site Description

Beginning in the 1970s, this site, located off Ross Road in Londonderry on the downgradient behind Tinkham Garage, was a repository for liquid hazardous waste, organic solvents and waste oil. Concentrations of contaminants were sufficient to close several private wells in the area, including the well supplying the Woodland Village condominiums in early 1983.

History

April 1978

The Londonderry Health Department receives complaints of a strong odor and "excessive foam" in a brook near Ross Road which Londonderry officials determine is tank truck sludge and bulk liquids.

May 1978

The Water Supply and Pollution Control Commission issues an order requiring action to prevent further pollution to surface and groundwater.

1981

EPA contracts Ecology and Environment, Inc. to conduct a preliminary inspection of the Tinkham property, which reveals groundwater contamination in the site's southwestern portion, especially the principal water source, Londonderry Green Supply Well.

Tinkham Garage Site (Continued)

November 1982

EPA contracts NUS Corporation's Field Investigation Team to conduct hydrogeologic tests and other remedial activities to determine the extent of contamination.

December 1982 to January 1983

EPA's Oil and Hazardous Materials Section collects and analyzes samples from residential wells in neighborhoods around the site, and due to contamination, discontinues water supplies to several areas.

March 1983

EPA's Environmental Response Team begins groundwater monitoring, sampling and testing.

November 1983

A water line from the town of Derry to the affected areas becomes operational after months of coordinating emergency water supplies.

March 1984 to October 1985

EPA and contractors carry out an extensive Remedial Investigation, endangerment assessments, and other field studies.

Status

In 1986, EPA decided on a remedial action which was finalized in 1989. Remedial action is currently underway by the potentially responsible parties, while EPA provides oversight.

Auburn Road Landfill, Londonderry, New Hampshire

Site Description

The Auburn Road Landfill, a 200 acre parcel of land located 3.2 miles northwest of Exit 5 on Interstate 93, at the intersection of Auburn Road and Old Derry Road in Londonderry, is bordered on the south and west by residential property. North of the site is the Whispering Pines Trailer Park comprised of over 200 residences. Four main source areas comprise the site: a) Town Dump, b) Tire Dump, c) Septage Lagoon, and d) Solid Waste Landfill. The Town Dump was the first of the four known source areas to begin landfilling. The Tire Dump was the next source area to become operational.

Auburn Road Landfill (Continued)

History

1950

Small scale dumping begins on the site as early as 1950, although most of the land is used for sand and gravel excavation. [Starting in 1955, towns had to get state approval for dumping: Londonderry first sought approval in 1964.]

1964

The Londonderry Board of Selectmen requests approval by the Division of Public Health for a half acre open-face-wall disposal site.

1968

With the first site nearing capacity, Londonderry selectmen seek approval for a second site on the property. The alternative site, would be open to the public, and used as an area-type sanitary landfill with burning prohibited.

March 1970

The Division of Public Health investigates the improper private use of the public site and finds evidence of out-of-state industrial waste. In a letter to the division, town selectmen state that the site was not being used as a public dump, but a landfill for industrial waste.

April 1970

The division threatens legal action against Londonderry unless town officials direct the dump owner to stop illegal industrial waste disposal.

August 1970

The Londonderry Zoning Board of Adjustment grants Landfill Disposal, Inc., owned by George Thomopoulus, a variance for a sanitary landfill off Auburn Road.

April 1973

Londonderry requests permission to operate a new sanitary landfill at the Auburn Road site, but the Division of Public Health denies permission, citing the area's abundant surface water and a high water table which make it unsuitable for refuse and hazardous waste disposal. Next, Landfill Disposal, Inc. requests the division's approval for another sanitary landfill.

October 1973

The Division of Public Health tells Landfill Disposal, Inc. in a letter to prepare an operational plan to show the site is suitable for disposal. A month later, the company contracts George Benjamin Engineers, Inc. to prepare the plan.

Auburn Road Landfill (Continued)

January 1974

Londonderry requests a permit for a sanitary landfill on the same site, which it receives in March.

October 1974

The Division of Public Health approves a five-acre site, adjacent to the site approved in March, with the following conditions:

1) a high base elevation
2) surface water monitoring wells at the perimeter
3) surface water testing twice yearly
4) strictly sanitary landfill
5) no unauthorized burning
6) controlled site access
7) full-time attendant

1977

The Water Supply and Pollution Control Commission samples and analyzes the well of Whispering Pines Mobile Home Park.

September 1979

In a letter to Londonderry Selectmen, the division confirms that a state investigation identified hazardous waste at the existing five-acre landfill. The letter added the following conditions to the Board's 1974 letter of approval:

1) change all site locks and keys; town to control all keys
2) prohibit all out-of-state waste; a full-time entrance guard to keep a log of trucks and contents.
3) receive no drums or small containers
4) control all means of access to the site.

October 1979

The division orders Truk-Away Service to cease and desist illegal dumping at the landfill.

November 1979

The state samples and analyzes on-site monitoring wells and surface water, along with private wells around the site.

January 1980

New dump owner, Peter Johnson, ends landfilling activities, and the Water Supply Pollution Control Commission continues to sample landfill monitoring wells and area drinking wells.

February 1980

The division orders Londonderry Selectmen to close the dump due to the town's failure to control dumping. Soon after, the town seeks permission to construct a lined sanitary landfill on the site, but the state orders an area-wide hydrogeologic investigation before allowing construction.

Auburn Road Landfill (Continued)

September 1980

The Water Supply and Pollution Control Commission conducts emergency sampling and a reconnaissance survey of the site in response to a medical emergency involving children suspected of having been exposed to hazardous waste. Soon after, Johnson hires two engineering firms to conduct a preliminary hydrogeologic investigation.

January 1981

Goldberg-Ziono and Associates, (site engineers), report that volatile and halogenated organics contaminate the site's surface and groundwater.

March 1981

EPA Region I and Water Pollution Control Commission sample and analyze several drinking water wells.

April 1981

The division directs Johnson and Londonderry to submit a plan to eliminate all sources of contamination.

June 1981

The state responds to public complaints of health problems by sampling the air around the site.

1986

EPA removes approximately 1,300 buried and exposed 55-gallon steel drums from the Town Dump.

Status

Studies throughout the 1980s uncovered considerable hazardous waste at the Auburn Road Site. When the Tire Dump area reached refuse capacity in the middle 1970s, landfilling operations shifted to the Septage Lagoon area. A waste mound (Solid Waste Landfill) adjacent to the Septage Lagoon served as a stop-gap landfill area for a short period of time. EPA removed approximately 270 buried and exposed drums from the Tire Dump.

The most recent landfilling activities occurred in an area south of the Septage Lagoon, referred to as the Solid Waste Landfill. The Solid Waste Landfill appears to be the largest on-site landfilling area. It was active until the site was closed in 1980. This area is composed primarily of trash and tires; however, 55-gallon drums have also been noted protruding from the landfill. Because of their proximity, the Septage Lagoon and waste mound are now considered a single source area.

EPA consultant, Roy F. Weston, Inc. recently completed the Feasibility Study which examines alternative remedial actions. The Record of Decision is expected in 1989.

Keefe Environmental Services Site, Epping, New Hampshire

Site Description

The Keefe Environmental Services Site is located on about seven acres of land, approximately two miles southeast of Epping's municipal center off Exeter Road and north of the Piscassic River. A dozen homes lie along Exeter Road near the site. A chicken farm is west of the site, and to the east is a dragway.

Two surface streams originate adjacent to the site. Surface water accumulating in a wetland area at the northeast corner of the site drains northwesterly toward the Piscassic River through a brook which flows beneath a gravel pit access road. Surface water from all other sections of the site flows southward toward a wetland area south of the site.

As originally conceived, the site consisted of a 700,000 gallon capacity, synthetically lined waste lagoon, drum storage areas, large storage tanks, equipment shelters and a bulking area. The remains of the lagoon are located in the northeast quadrant of the site. In early 1984, the Water Supply and Pollution Control Commission contracted with a company to empty the lagoon.

The state and federal governments made periodic inspections and recommendations to improve site operations; however, none of these prevented contamination. However, field investigations did identify four zones of potential soil contamination. Soil gas samples detected with field monitoring equipment and taken from the zones contained high organic vapor concentrations. The engineers located three potentially contaminated zones in low lying areas which receive surface runoff from the site. The fourth zone, situated on a flat graded area, contained discolored soil and vegetative stress.

Analytical data also indicated volatile organic compounds present in both shallow bedrock and aquifers. The distribution of contaminants at the site suggested the existence of two possible contamination sources: one in the vicinity of the chemical bulking and storage area, and a second in wetlands at the southwest corner of the site.

History

March 1978

Paul Keefe proposes a chemical waste storage facility in Epping, New Hampshire. Under his plan, AMEX, Inc. will own the site, while Keefe Environmental Services, Inc. will own and operate the facility and equipment. Keefe will control both corporations.

May 1978

Following Planning Board approval of his plan, Keefe begins construction.

Keefe Environmental Services Site (Continued)

April 1979

The New Hampshire Bureau of Solid Waste Management and the Division of Public Health Services orders Keefe to clean up leaking storage tanks, ruptured drums, and contaminated soil. Local residents make a series of complaints about the strong odors coming from the site.

May 1979

As a result of the complaints, town officials begin legal action against the company in the Rockingham County Superior Court.

December 1979

In response to state orders, Keefe files a motion for a rehearing, denying that treatment facility conditions constitute an immediate threat to public health and the environment.

April 1980

A court order specifies the basis by which Keefe may continue to operate safely while abating existing site problems.

January 1981

Due to financial constraints, Keefe files for reorganization in federal bankruptcy court. A court investigation shows that a reorganization plan cannot be formulated to successfully operate the facility; Keefe files for voluntary bankruptcy and abandons the site.

February 1981

EPA declares an emergency when it finds the lagoon is close to overflowing. EPA's Field Investigation Team begins site investigations, including emergency lagoon berm stabilization work under the Clean Water Act.

March 1981

EPA's Emergency Response Team uses a mobile carbon filter unit to draw the lagoon down 3 1/2 feet. The team eventually draws down the lagoon four more times.

Spring 1981

Rising temperatures cause expansion of the contents of several drums, resulting in ground leaks.

June-November 1981

The state and several generators engage in a joint, cooperative cleanup effort and remove the following materials: 2029 fifty-five gallon drums, 84 thirty gallon drums, 37 cauldrons and trays, 51 carboys, 1630 five gallon pails, 124 empty drums, 10 fiber and 155 miscellaneous containers.

Keefe Environmental Services Site (Continued)

July 1982

EPA contracts to remove imminent health hazards, such as explosives, water reactives, toxic gases and spontaneous combustibles from on-site warehouses, and also to remove storage tank contents and dumpsters.

Fall 1982

EPA's contractor prepares and submits a Remedial Action Master Plan outlining possible future long term remedial actions.

March 1983

Through a Cooperative Agreement with the EPA, the state removes approximately 4,100 55-gallon drums, four 5,000-gallon drums and four 10,000-gallon above ground tanks and seven dumpsters from the site.

July 1983

The Water Supply and Pollution Control Commission contracts Tighe and Bond Consulting Engineers to conduct a Remedial Investigation.

November 1983

The state contracts to drain the 700,000 gallon lagoon and dispose of the liner.

October 1984

The Water Supply and Pollution Control Commission accepts Tighe and Bond's Remedial Investigation.

August 1985

The Water Supply and Pollution Control Commission contracts Camp, Dresser & McKee, Inc. to conduct a Supplemental Remedial Investigation and Feasibility Study. [Camp, Dresser & McKee, Inc. completes the Feasibility Study in 1987].

Status

During initial cleanup activities, crews removed leaking storage tanks, ground bulking vats and drums, the alleged origins of site contamination. Ground water, surface water, and soil are still contaminated, however.

The state issued the Record of Decision in March 1988, identifying the selected remedial action for the site. Camp, Dresser & McKee, Inc. has finished the additional field studies and has begun the remedial design. Remedial action should begin in the summer of 1989.

Ottati & Goss/Great Lakes Container Corporation Site, Kingston, New Hampshire

Site Description

The Ottati & Goss/Great Lakes Container Corporation site, consisting of approximately 35 acres, is located immediately west of Route 125 in Kingston, New Hampshire. The site is bounded on its easterly side by Route 125 and is traversed by an Exeter-Hampton Electric Company power line easement.

Two brooks traverse the site to the north and south. North Brook flows eastward near the northerly boundary of the site through a culvert beneath Route 125 and into the marsh adjacent to Country Pond. South Brook flows eastward near the southerly edge of the site, through a culvert beneath Route 125 into a marsh. Both brooks drain several marshy areas of seasonally ponded surface water on-site.

The Senter Transportation Co. owns about 28 acres of the site with the remaining 5.8-acre portion currently owned by Great Lakes Container Corporation. In 1978, Senter Transportation leased an acre parcel in the southwestern portion of the site to Ottati & Goss, Inc. Portions of the site have been used for drum reconditioning operations and hazardous waste disposal since at least the late 1950's.

Studies have identified groundwater, surface water and soil contamination both on and off site. The major classes of compounds detected include volatile organic compounds, acid and base/neutral extractable organic compounds, polychlorinated biphenyl and metals.

History

Late 1950

Conway Barrel and Drum Company begins a drum reconditioning operation, which lasts until 1967. [Water Supply and Pollution Control Commission files indicate the operation involved the use and disposal of caustic rinse water in a dry well in the vicinity of South Brook].

1960s

Area residents begin to complain about runoff and seepage from leaching pits draining into South Brook and eventually into Country Pond. Complaints include reports of fish kills in Country Pond, dying vegetation along South Brook, and skin irritation of swimmers in Country Pond.

1967

New site owner, Kingston Steel Drum Company, continues site reconditioning operations until 1973.

Ottati & Goss/Great Lakes Container Corporation Site (Continued)

May 1973

International Mineral and Chemical Corporation purchases Kingston Steel Drum Company and continues drum reconditioning, with some modifications, on a larger scale until 1976.

1978

Heavy sludges from wash tanks, drum drainings and residues from incinerator burning begin to arrive at site for "processing".

July 1979

The New Hampshire Bureau of Solid Waste Management orders the owners and operators of the site to remove drums from both sites.

December 1980

EPA begins to process and remove approximately 4000 drums from the site.

July 1984

International Mineral and Chemical Corp. begins to excavate and remove drums from the Great Lakes Container Corporation site.

June 1985

Removal of all stockpiled contaminated soils finishes. The total volume of contaminated soils, drums, and metal debris removed is around 12,800 tons.

August 1986

Goldberg-Zoino & Associates, under contract with the New Hampshire Water Supply and Pollution Control Commission, completes a Remedial Investigation/Feasibility Study of the site. Their report describes the nature and extent of contamination. It also identifies contamination sources, contaminant transport, and suspected health and environmental risks.

January 1987

EPA issues its Record of Decision.

July 1988

The court issues orders which include the schedule for site remediation. The Ottati & Goss Site potentially responsible parties contract with Canonie Environmental to perform soil remediation.

October 1988

Canonie sets up a Low Temperature Thermal Aeration facility. International Mineral and Chemical Corporation and the Great Lakes Container Corporation install a chain link fence around the site, which they complete in December of that year.

Ottati & Goss/Great Lakes Container Corporation Site (Continued)

December 1988

Soil remediation activities begin for "Proof of Process." Equipment and cold weather cause the facility to shut down until Spring 1989.

Status

Negotiations continue on the settlement for soil and groundwater remediation at the Great Lakes Container Corporation. After submitting a court-ordered draft work plan, the company appealed the court order in state Supreme Court. The state also filed an appeal in the U.S. District Court on April 6, 1988, to clarify and amend the state court's earlier finding of facts and conclusions. The division now samples and tests residential wells in the area for volatile organic compounds on an annual basis.

Mottolo Pig Farm Site, Raymond, New Hampshire

Site Description

The Mottolo Pig Farm Site is located approximately three miles south of the center of Raymond, New Hampshire on Blueberry Hill Road, in a rural area characterized by undeveloped wooded land and single family residences.

At the time of its discovery, the site consisted of three former piggery buildings, a pile of manure and a drum disposal area, located in about two acres of open land in the southwest portion of a fifty acre parcel. A leachate seep emanated from the toe of the disposal area and flowed northeasterly towards an unnamed brook; surface water was in contact with the toe of that area.

History

1974 -1975

Dumping begins at the site and continues until 1979. More than 1,600 drums and pails are dumped just north of the main piggery building.

April 1979

The state discovers the site after receiving a complaint from a local official. Initial site reconnaissance reveals a small open face dump, approximately one quarter of an acre in area, used to dispose drums and pails of hazardous waste. Officials find layers of drums and pails covered with soil at the open face of the dump. The wells of several single family homes located on Blueberry Hill Road to the north and northwest of the site concern the state and town, as well as the potential contamination of the Exeter River, the town's major source of drinking water.

Mottolo Pig Farm Site (Continued)

September 1980

EPA begins site activity by diverting surface water away from the toe of the dump, by clearing and grading an area north of the excavated materials in the disposal area, and by constructing a temporary access road.

December 1980

EPA completes the excavation of drums from the disposal area.

December 1981 - January 1982

EPA removes the drummed wastes, and 160 cubic yards of contaminated soil, then fills the area with graded and seeded soil.

April 1985

The Water Supply and Pollution Control Commission updates its hydrogeological investigation to assess contaminant migration from the site, and ends its fieldwork in November 1985.

Status

Existing site conditions have changed only slightly since completion of the drum removal process. One wooden building located just west of the piggery building was razed and only its concrete floor pad remains.

Sampling results indicate that groundwater and surface water at the site show contamination; however, nearby private wells and the Exeter River appear unaffected at this time. Preliminary results obtained from a hydrogeological investigation, conducted concurrently with EPA, show several orange-brown stained leachate seeps adjacent to a small unnamed tributary of the Exeter River into which surface water and groundwater flow.

The Mottolo Pig Farm Site is currently undergoing a Superfund Remedial Investigation/Feasibility Study. One potentially responsible party is now working under an April 1980 Administrative Order of Consent, negotiated by EPA and the state.

The Waste Management Division provides technical oversight during the Remedial Investigation, supplies staff and sampling analysis for residential wells near the site, and attends monthly progress meetings with company consultants, legal counsel, and EPA. The division will also assist EPA in choosing among alternative steps for final cleanup and site closure.

Gilson Road, Nashua, New Hampshire

Site Description

This site is a twenty acre plot, adjacent to Gilson Road, Nashua. It was originally a sand and gravel pit containing refuse and demolition material. Since remedial work began on the site, a slurry cutoff wall constructed from the ground surface to bedrock and a security fence surrounding the area have been installed. The site also houses a treatment facility comprised of recovery wells, pressure filters, high temperature air strippers, vapor incinerators, sludge processors and discharge trenches.

History

January - October 1979

More than 900,000 gallons (1,300 55-gallon drums) of hazardous waste discharge into a leach field. The waste seeps into surrounding soils, contaminating over 100 million gallons of groundwater.

May 1980

State and local officials take steps to protect public health and the environment from imminent threats of contaminants, including the construction of a $20,000 security fence around the site. Officials send 1,314 drums to an approved hazardous waste facility for analysis, treatment and disposal at a cost of $130,000 to the state and $20,000 to the city of Nashua. A $900,000 EPA emergency groundwater interception and recirculating system, designed by Goldberg-Zoino & Associates, is installed to prevent the most heavily contaminated portion of the plume from entering the Lyle Reed Brook and the Nashua River.

August 1981

EPA and the Water Supply and Pollution Control Commission enter into the first cooperative agreement funded under Superfund legislation in the nation. The agreement finances the construction of an on-site containment facility.

June 1982

The state and EPA approve the remedial action plan completed by Roy F. Weston Consulting Engineers, which calls for hydrogeologic isolation, groundwater interception and contaminant plume treatment.

November 1982

A slurry wall and membrane cap are constructed at the site for $2.4 million (90% EPA, 10% state cost sharing) to further contain hazardous materials on-site.

Gilson Road (Continued)

Status

The City has extended municipal drinking water supplies on Route 111, Countryside Drive and Gilson Road. EPA, the state and the city of Nashua shared the $140,000 cost of this water line extension. They also built a $5.4 million groundwater treatment facility to remove hazardous contaminants. The facility treats almost half a million gallons of groundwater per day.

The facility has been in operation since 1986. Officials expect it to continue operating until at least 1995, at an estimated cost of $2 million per year. EPA and the state have negotiated a settlement for past and future costs with the potentially responsible parties.

Kearsarge Metallurgical Corporation Site, Conway, New Hampshire

Site Description

The Kearsarge Metallurgical Corporation site is located on the banks of Pequawket Pond in Conway, New Hampshire. The company disposed waste materials it generated in its casting process on-site, including spent ceramics, caustic soda, hydrofluoric acid and flammable liquids. A 5,600-cubic-yard solid waste pile currently exists on the site, which reportedly contains at least some of the above waste, as well as scrap metal and electrical parts.

History

1964

Kearsarge begins using the western portion of this site for a castings foundry, and continues until 1982.

1982

The Waste Management Division begins site investigations and test-pitting to determine the extent of waste materials disposed of on-site.

June 1982

Private parties remove approximately 54,000 pounds of caustic solids, 17,800 gallons of acids and 660 gallons of flammable liquids and industrial solvents.

December 1983

EPA adds the Kearsarge site to the National Priorities List, making it eligible for funds under Superfund.

Kearsarge Metallurgical Corporation Site (Continued)

July 1985
The state enters into a consent decree with private parties to conduct the Remedial Investigation.

August 1985
Geotechnical Engineers, Inc. begins the Remedial Investigation.

December 1986
Geotechnical Engineers, Inc. submits its Remedial Investigation draft report.

March 1987
Geotechnical Engineers, Inc. submits a draft Endangerment Assessment.

May 1987
Geotechnical Engineers, Inc. submits a draft Remedial Technologies Screening.

August 1988
The Waste Management Division circulates requests for proposals on the Remedial Investigation/Feasibility Study for completion under guidelines established by the Superfund Amendments and Reauthorization Act of 1986.

November 1988
The state selects Camp, Dresser & McKee, Inc. to conduct the Remedial Investigation.

December 1988
The state completes contract negotiations and submits the contract to Governor and Executive Council for action on January 16, 1989.

Status

A completed Remedial Investigation is expected by the end of 1989. The state will contract with an engineering consultant to conduct the site Feasibility Study.

The Department of Public Health, Environmental Health Risk Assessment Unit has reviewed the public health risks of the site and has determined that the site does not pose an imminent health threat. However, the Assessment Unit believes the potential for long term health risk still exists. The Unit believes the draft Endangerment Assessment must be reevaluated in light of current EPA Superfund guidance.

Tibbetts Road Site, Barrington, New Hampshire

Site Description

This site, in the town of Barrington is located about eight miles west of Dover and fifteen miles northwest of Portsmouth on Tibbetts Road, on a dead-end dirt road, about two miles northeast of the Route 4 and Hall Road junction. The site sits in a rural area and is moderately developed with single-family homes. Swain's Lake is also the location of a sizable number of seasonal homes with its southeast shore only 1200 feet north of the site. The lake is the headwaters of the Bellamy River which feeds a reservoir supplying water to Portsmouth. Because no public water supplies exist in the site area, residents rely almost exclusively on ground water as a source of drinking water.

The roughly two-acre site is located on a topographic high and is situated along the divide between the Bellamy and Oyster Rivers drainage areas. The Oyster River serves as a water supply for the town of Durham, which is about six miles southeast of the site.

The Tibbetts Road Site began as a storage area for hazardous waste drums and a metal salvage operation. Chemicals, including waste solvents, oil, and gasoline, were found at the site. State testing of nearby residential water wells detected significant levels of contamination.

History

May 1982

The Division of Public Health discovers approximately 336 55-gallon drums containing volatile organic liquids stored on a two acre lot on site.

June 1982

The Water Supply and Pollution Control Commission begins sampling residential wells for volatile organic compounds and detects them in one well south of the site.

August 1982

The Division of Public Health orders the site's owner, Alexander Johnson, to remove all hazardous wastes from the property. Due to financial constraints, Johnson fails to comply.

March 1984

The state conducts a site inspection which reveals overturned and deteriorating drums. State environmental officials request emergency action by EPA.

April 1984

EPA signs a $250,000 Action Memorandum to avert the fire hazard posed by the drums. EPA, with the state, conducts an emergency response action to remove over 300 drums of toxic wastes, and finishes in May 1984.

Tibbetts Road Site (Continued)

June 1984

The Water Supply and Pollution Control Commission begins a hydrogeological study of the area to determine the extent of groundwater contamination. The commission finds several plumes of contamination emanating from the site.

May 1985

The state requests EPA assistance to solve the area's groundwater and soil problems. Later in the month, the state attends a public hearing at which residents demand safe drinking water for the Tibbets Road area.

June 1985

EPA and the state conduct inspections and determine that the site presents an immediate risk to public health and the environment. The state and EPA officials hold discussions with selectmen and residents.

July 1985

EPA directs site activities to establish a grid system for soil sampling, and to prepare a site survey map. The state and EPA begin a full scale hydrogeological investigation.

October 1985

The state and EPA hold various hearings and public forums about the site. The Centers for Disease Control evaluation of soil samples reveals the presence of dioxins. A 24-hour security guard is hired for the site.

December 1985

The state receives the hydrogeological investigation summary from EPA's Emergency Response Team.

January 1986

The state holds a meeting to develop and finalize plans for soil removal and water distribution.

February 1986

A complete EPA draft report of the hydrogeologic investigation is submitted delineating areas at risk from the site.

March 1986

EPA and the state enter a joint agreement to remove contaminated soil. They replace dioxin-contaminated soil with clean soil, an impermeable liner, loam, and seed. Shirco Infrared Systems thermally treats all soil in its mobile incinerator, before shipment to an authorized facility.

Tibbetts Road Site (Continued)

October 1987

Installation of an alternative water supply, using Swain's Lake, begins. It will provide a long-term safe and reliable source of water to the area's residents.

Status

EPA is in the process of negotiating with the potentially responsible parties to begin a Remedial Investigation/Feasibility Study. The state is providing technical support.

Peterborough South Municipal Well Site, Peterborough, New Hampshire

Site Description

The Peterborough South Municipal Well site is located about two miles south of Peterborough, New Hampshire off Sharon Road, approximately 350 feet east of the Contoocook River. Land use in the vicinity of the South Well, particularly east of the river, is rural and undeveloped. Several commercial establishments are nearly 1,000 feet north of the site and west of the river. New Hampshire Ball Bearings, Inc. is located some 1,200 feet west of the well.

The South Municipal Well was installed in 1952, and provided quality potable water to Peterborough for nearly thirty years. The well is 70.5 feet deep, gravel packed, and has a reported safe yield of 0.4 million gallons per day . The South Well was one of two wells in use by the town of Peterborough prior to shutdown in 1982. The second well, the North Well, located west of Route 202 in the northern section of Peterborough, 3.5 miles north of the South Well, was installed in 1964, and has a reported safe yield of 0.86 mgd.

History

October 1982

The Water Supply and Pollution Control Commission samples and tests water from South Well for contamination. Samples indicate the presence of over 100 parts per billion of total volatile organic compounds.

December 1982

Additional sampling confirms the initial results; total volatile organic compound concentrations are above 100 parts per billion. Due to the potential risks of consuming low levels of organic chemicals, the Water Supply and Pollution Control Commission recommends closing the South Well. Soon after, the town of Peterborough discontinues use of the South Well while it equips and connects the Summer Street Well, about 2.5 miles north of the South Well.

Peterborough South Municipal Well Site (Continued)

April 1983

The Water Supply and Pollution Control Commission tests more water samples from the South Well which indicate no volatile organic compounds present. However, the commission leaves the well inoperative, concerned that contamination may occur later.

May 1983

The Water Supply and Pollution Control Commission inspects the South Well. EPA places the site on the National Priorities List, making it eligible for funds under Superfund legislation.

July 1986

The state negotiates a work plan and signs a consent order for remediation of the site.

August 1986

Field investigations for the Remedial Investigation/Feasibility Study begin. EPA also begins monthly meetings to track the progress of the investigation.

Status

The Draft Remedial Investigation report was submitted in January 1989 for review. The Feasibility Study is scheduled for release in July 1989.

Coakley Landfill, North Hampton, New Hampshire

Site Description

The Coakley Landfill Inc., located on a 92-acre parcel within the towns of Greenland and North Hampton, is situated about 600 feet west of Lafayette Road (US Route 1), directly south of Breakfast Hill Road, and 2.5 miles northeast of the center of North Hampton. The northern portion of the site lies in Greenland and, to the east, abuts Rye, New Hampshire. The 27-acre landfill is in the southernmost portion of the site, almost completely within North Hampton, west of the junction of the North Hampton, Rye, and Greenland town boundaries.

Land use to the east and south of the site is both residential and commercial, while relatively large tracts of undeveloped woodlands and wetlands lie to the west and north of the site. The landfill accepted municipal and industrial wastes from the Portsmouth area between early 1972 and July 1982. The site accepted incinerator residue from the Pease Air Force Base incineration recovery plant between July 1982 and July 1985.

Coakley Landfill (Continued)

History

February 1983

The Water Supply and Pollution Control Commission receives a complaint from a resident near the Coakley Landfill, concerning drinking water quality. The commission detects volatile organic compounds in that residential well. Further investigations document contamination in other residential wells, in groundwater monitoring wells installed in on-site bedrock, and at surface water sampling stations.

1983

EPA adds the site to its National Priorities List.

1985 - 1987

Coakley Landfill is scheduled for a Remedial Investigation/ Feasibility Study, but completion of the study is delayed well beyond the initial scheduled date.

November 1988

The Remedial Investigation report is released and a public meeting held to discuss the results.

Status

The Feasibility Study is in its final stages of EPA and state review. The study will be released in the near future and the Record of Decision will follow. The state will assist in choosing one or more of the alternatives identified in the study for final cleanup and site closure and will provide technical and managerial oversight during the remedial action and post closure activities. The Waste Management Division will also continue its well sampling of homes and businesses around the site.

Savage Municipal Well Site, Milford, New Hampshire

Site Description

The Savage Municipal Water Supply Well, located in southwestern New Hampshire in the town of Milford, is off Elm Street about two miles west of Milford. The site is a gravel packed well with a sustained yield of approximately 500 gallons per minute. Milford used the well for drinking water from 1960 until 1983.

Savage Municipal Well Site (Continued)

History

February 1983

The New Hampshire Water Supply and Pollution Control Commission, in a routine water quality inspection, detects several volatile organic chemicals in water drawn from the well and used by the Milford Mobile Home Trailer Park, west of the Savage Well. The state orders Milford to discontinue use of the well.

March 1983

EPA, by request of the state, conducts an emergency removal action under Superfund to supply uncontaminated water to residents of the Milford Mobil Home Trailer Park. EPA actions include supplying bottled water to the residents and connecting the trailer park to the existing municipal water main.

October 1984

EPA places the site on its National Priorities List.

1984

The Water Supply and Pollution Control Commission Hydrogeological Investigation Unit conducts an investigation of the site.

June 1985

The Hydrogeological Unit releases the results of its investigation.

August 1987

EPA and potentially responsible parties sign a Consent Order, and EPA budgets funds for EPA and state personnel and contractors to oversee the Remedial Investigation/Feasibility Study.

Status

Under a cooperative agreement with the EPA, the state will oversee field activities conducted by the consultants of potentially responsible parties. Fieldwork begun in August 1988 includes an air quality investigation, a geophysical investigation and a groundwater monitoring well installation. The Department of Environmental Services laboratory will analyze samples taken from groundwater, surface waters and soil in January 1989.

Holton Circle, Londonderry, New Hampshire

Holton Circle is a relatively new residential development located off Pillsbury Road in Londonderry, N.H. The oldest houses are approximately ten years old, and homes are currently being built on the last remaining lots. Holton Circle is situated on a small round hill and is surrounded on the north, east, and west side by wetlands. The site is wooded right up to the edge of the swamp. An unnamed brook flows south from the eastern section of the marsh (relative to the site) to a small pond and then on to Beaver Brook. The land surrounding the site is primarily residential and is interspersed with woodlands and farms, including many apple orchards.

The Londonderry Town Garage is located to the west of Holton Circle on High Range Road. For six to nine months following the closure of the Auburn Road Landfill in 1978, the Town Garage property was used as a transfer station for local residents' household waste. The property was staffed during open hours and locked at other times. All waste was stored in containers while on Town Garage property. The Town Garage property was previously owned by the military for purposes that are at this time unknown. A natural gas pipeline is located approximately 1,000 feet to the east of Holton Circle and trends north/south.

In the Spring of 1984 the NHDES received complaints from residents near the site concerning a rapid degradation of the quality of their drinking water. Random water sampling revealed elevated chloride concentrations in the drinking water. Contamination of volatile organic compounds was also identified in water samples from wells in areas near Holton Circle. At the request of the Town of Londonderry, consultants performed a brief investigation of the Town Garage wells in which contaminants were identified.

A perimeter survey conducted by contractors as part of the preliminary assessment requested by EPA identified two potential sources of volatile organic contamination: the Town Garage located off High Range Road within 1,000 feet west of Holton Circle and Paul Hicks Auto Repair, located on Pillsbury Road approximately 1,500 feet southwest from the area of the observed contamination. On September 30, 1985 the preliminary assessment was completed. The site investigation was completed in August of 1986 and concluded that there was no obvious source for the contamination. A Hazard Ranking Package submitted in November of 1987 gave the site a rating of 31.94, qualifying the site for the NPL. In 1988, municipal water was extended to the area by a developer in order to get approval to develop residential lots in the vicinity of Holton Circle. Some of the residents in the vicinity have chosen to pay to hook up to this water line. Holton Circle was added to the NPL in the spring of 1989. The Remedial Investigation/ Feasibility Study is expected to be led by EPA with state oversight and completed in 1991. The Record of Decision is expected to be completed in 1992.

Fletcher's Paint Works, Milford, New Hampshire

Fletcher's Paint Works is located at 21 Elm Street in Milford, N.H. The surrounding area is primarily residential/commercial. The company manufactures and sells paints and stains for residential use. Approximately 700 feet to the south is a warehouse referred to as the Fletcher's Paint Storage Facility owned by Fletcher's Paint Works and used for storing bulk paint pigments. Contaminants attributable to the storage facility have been detected in a drainage ditch on the adjoining Hampshire Paper Co. facility. Because of this, the boundaries of the Fletcher's Site have been extended to include the portion of the ditch on Hampshire property.

While conducting an investigation into sources of contamination of a nearby public water supply well in 1984, the NHDES identified the Fletcher's Paint Works as a potential contributor. In an inspection in July 1985, EPA detected volatile organic compounds, heavy metals, and polychlorinated biphenyls (PCBs) in ambient air, soil, surface water, and sediment at the site. Two underground tanks that were found were not lined or monitored for leakage. Drums, some uncovered, were stored on the ground.

The site is adjacent to the Souhegan River, which is used for recreational activities. Contaminants attributable to the facility have been detected in river sediments. The manufacturing facility is easily accessible and is adjacent to a road leading to a popular recreation area. The primary public health and environmental concerns found to date are the migration potential of contaminants to groundwater due to the highly permeable nature of the shallow sand and gravel aquifer that supplies drinking water, and public exposure to contamination soils. The facility and neighboring property are supplied with municipal water.

In May of 1988 EPA authorized approximately $1 million in emergency funds to remove and dispose of the drums at the site and to cap the soil areas contaminated with PCBs. At this time, the drums have been stabilized at the site and EPA is waiting for sampling results. Following results of the sampling, EPA will determine which drums need to be treated and discarded. Air samples taken both off and on the site have revealed no air contamination. This site was added to the NPL on March 31, 1989, and completion of the Remedial Investigation/ Feasibility Study is anticipated in 1991. The Record of Decision is expected to be completed in 1992.

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STATE OF NEW HAMPSHIRE

COMPREHENSIVE EMERGENCY RESPONSE, COMPENSATION AND LIABILITY INFORMATION SYSTEM (CERCLIS) - SITE/EVENT LISTING (excluding NPL sites)

SITE DISCOVERY	PRELIMINARY ASSESSMENT	SHORT SITE INVESTIGATION	LISTING SITE INVESTIGATION	NPL LISTING	REMEDIAL INVESTIGATION	FEASIBILITY STUDY	RECORD OF DECISION	REMEDIAL DESIGN	REMEDIAL ACTION	LONG TERM OPERATIONS & MAINTENANCE	NPL DELISTING

*relates to NPL site

*1980 2/81 ----------> HITCHNER MANUFACTURING CO. INC., MILFORD

1980 5/82 ----------due 12/89------> DUCHARME, LONDONDERRY

1981 12/85 ----------> PORTSMOUTH GAS WORKS, PORTSMOUTH

1981 2/83 ----------due 9/89--------> CLAROSTAT MANUFACTURING INC., DOVER

1984 12/85 ----------> CARDINAL LANDFILL, FARMINGTON

1984 3/86 3/89 ----------> NEW HAMPSHIRE PLATING CO., MERRIMACK

*1985 9/85 ----------> LONDONDERRY TOWN GARAGE, LONDONDERRY

*1985 9/85 ----------> NEW ENGLAND STEEL FABRICATORS, MILFORD

1985 6/87 ----------> BRUNO & STILLMAN, NEWINGTON

1986 3/87 ----------> ALLIED LEATHER CORPORATION, BOSCAWEN

1986 3/87 6/89 ---------- BEDFORD COMPUTER, GOFFSTOWN

STATE OF NEW HAMPSHIRE

COMPREHENSIVE EMERGENCY RESPONSE, COMPENSATION AND LIABILITY INFORMATION SYSTEM (CERCLIS) - SITE/EVENT LISTING (excluding NPL sites)

SITE DISCOVERY	PRELIMINARY ASSESSMENT	SHORT SITE INVESTIGATION	LISTING SITE INVESTIGATION	NPL LISTING	REMEDIAL INVESTIGATION	FEASIBILITY STUDY	RECORD OF DECISION	REMEDIAL DESIGN	REMEDIAL ACTION	LONG TERM OPERATIONS & MAINTENANCE	NPL DELISTING
			9/87								
1986	----------		---------->								
SALEM SEWAGE TREATMENT PLANT, SALEM											
			9/87								
1986	----------		---------->								
BURNS HILL ROAD, HUDSON											
			9/87								
1986	----------		----------expected FY 90/91								
HALL STREET AREA, BOW											
			3/87								
1986	----------		----------expected 8/89--->								
MERRIMACK VILLAGE WATER DISTRICT WELL #6, MERRIMACK											
			4/87								
	----------		---------->								
1986	ACME WELL #1, FRANKLIN										
			6/87								
*1987	----------		---------->								
LONDONDERRY CENTRAL FIRE DEPT., LONDONDERRY											
			8/87								
1987	----------		----------due 9/89--->								
MOHAWK TANNERY, NASHUA											
			1/88								
1987	----------		----------scheduled FY 91/92								
REGIS TANNERY, RAYMOND											
			2/88								
1987	----------		----------scheduled FY 91/92								
OAKLAND AVE. ASBESTOS, NASHUA											
			2/88								
1987	----------		----------due 12/89------>								
CASTLE COURT AREA, LONDONDERRY											
			11/79								
1979	----------		----------scheduled FY 91/92								
LONDONDERRY LANDFILL, LONDONDERRY											

STATE OF NEW HAMPSHIRE

COMPREHENSIVE EMERGENCY RESPONSE, COMPENSATION AND LIABILITY INFORMATION SYSTEM (CERCLIS) - SITE/EVENT LISTING (excluding NPL sites)

SITE DISCOVERY	PRELIMINARY ASSESSMENT	SHORT SITE INVESTIGATION	LISTING SITE INVESTIGATION	NPL LISTING	REMEDIAL INVESTIGATION	FEASIBILITY STUDY	RECORD OF DECISION	REMEDIAL DESIGN	REMEDIAL ACTION	LONG TERM OPERATIONS & MAINTENANCE	NPL DELISTING
1979			3/81 ----------scheduled FY 91/92								
	KOPPERS CO., INC, NASHUA										
1980			9/80 ---------->								
	CONCORD MANOR DUMP, CONCORD										
1980			5/82 ----------due 12/89--->								
	GARABEDIAN LANDFILL, PELHAM										
1980			7/80 ----------scheduled FY 90								
	QUINN KJ & CO., SEABROOK										
1981			9/86 ---------->								
	BERLIN MUNICIPAL LANDFILL, BERLIN										
1981			3/86 ---------->								
	COLEBROOK MUNICIPAL LANDFILL, COLEBROOK										
1981			3/86 ----------due 6/89--------->								
	DOVER GAS PLANT, DOVER										
1981			3/86 ---------->								
	EXETER GAS PLANT, EXETER										
1981			4/82 ---------->								
	EXETER SANITATION LANDFILL, EXETER										
1981			5/82 6/89 ---------->								
	TAPPAN, LACONIA										
1981			4/82 ---------->								
	LONGA DISPOSAL AREA, MERRIMACK										

STATE OF NEW HAMPSHIRE

COMPREHENSIVE EMERGENCY RESPONSE, COMPENSATION AND LIABILITY INFORMATION SYSTEM (CERCLIS) - SITE/EVENT LISTING (excluding NPL sites)

SITE DISCOVERY	PRELIMINARY ASSESSMENT	SHORT SITE INVESTIGATION	LISTING SITE INVESTIGATION	NPL LISTING	REMEDIAL INVESTIGATION	FEASIBILITY STUDY	RECORD OF DECISION	REMEDIAL DESIGN	REMEDIAL ACTION	LONG TERM OPERATIONS & MAINTENANCE	NPL DELISTING
1983	12/85 ----------due 6/89---------->										
DUSTON ROAD, SALEM											
1984	5/84 ---------->										
HUDSON MUNICIPAL LANDFILL, HUDSON											
1984	9/85 ---------->										
FRANKLIN RIVER ROAD LANDFILL, FRANKLIN											
1984	5/86 ----------scheduled FY 91/91										
INDUSTRIAL REPRODUCTION INC., NASHUA											
1984	3/87 ----------scheduled FY 91/92										
URETHANE MOLDED PROJECTS, ROCHESTER											
1984	4/86 ----------scheduled FY 91/92										
GROVETON PAPERS CO., STARK											
1985	3/87 ---------->										
ANDOVER LANDFILL, ANDOVER											
1985	5/85 ---------->										
INTERNATIONAL PACKING CO., BRISTOL											
1985	4/86 ---------->										
MARINER YACHT CO. INC, FARMINGTON											
1985	8/87 ----------scheduled FY 91/92										
FRENETTE DRIVE AREA 1, HUDSON											
1985	12/87 ----------scheduled FY 90										
OLD HUDSON LANDFILL, HUDSON											

STATE OF NEW HAMPSHIRE

COMPREHENSIVE EMERGENCY RESPONSE, COMPENSATION AND LIABILITY INFORMATION SYSTEM (CERCLIS) - SITE/EVENT LISTING (excluding NPL sites)

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9/85

1985 ------------------------>

PAUL HICKS AUTO REPAIR, LONDONDERRY

9/85

1985 ------------------------>

HENDRIX WIRE & CABLE, MILFORD

9/85

1985 ------------------------>

HITCHNER MANUFACTURING LANDFILL, MILFORD

9/85

1985 ------------------------>

MILFORD MOTORS, MILFORD

9/85

1985 ------------------------>

O.K. TOOL CO., MILFORD

12/87

1985 ------------------------>

NEWPORT LANDFILL, NEWPORT

5/85

1985 ------------------------>

PROCESS ENGINEERING, PLAISTOW

5/86

1985 --------------------due 8/89-------->

LL & S LANDFILL, SALEM

6/87

1985 --------------------scheduled FY 91/92

LOWELL ROAD ASBESTOS, HUDSON

9/87

1986 ------------------------>

RIVER ROAD AREA, BOW

12/87

1986 ------------------------>

EASTERN AIR DEVICES, DOVER

STATE OF NEW HAMPSHIRE

COMPREHENSIVE EMERGENCY RESPONSE, COMPENSATION AND LIABILITY INFORMATION SYSTEM (CERCLIS) - SITE/EVENT LISTING (excluding NPL sites)

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7/86

1986 ------------------------->

AMP. KEYBOARD TECHNOLOGY, INC., MILFORD

12/87

1986 ----------scheduled Fy 91/92

FIMBELL LANDFILL, NASHUA

7/87

1986 ------------------------->

TECO CORPORTATION, SANBORNTON

3/87

1986 ----------scheduled FY 91/92

WINCHESTER LANDFILL, WINCHESTER

12/87

1987 ------------------------->

PUBLIC SERVICE OF NH, BOW

8/87

1987 ----------scheduled FY 91/92

FRENETTE DRIVE AREA 2, HUDSON

6/87

1987 ----------scheduled FY 91/92

HUDSON ASBESTOS AREA 1, HUDSON

7/87

1987 ----------scheduled FY 91/92

HUDSON ASBESTOS AREA 2, HUDSON

6/87

1987 ----------scheduled FY 91/92

HUDSON ASBESTOS AREA 3, HUDSON

6/87

1987 ----------scheduled FY 91/92

HUDSON ASBESTOS AREA 4, HUDSON

6/87

1987 ----------scheduled FY 91/92

MUSQUASH RD. ASBESTOS AREA, HUDSON

STATE OF NEW HAMPSHIRE

COMPREHENSIVE EMERGENCY RESPONSE, COMPENSATION AND LIABILITY INFORMATION SYSTEM (CERCLIS) - SITE/EVENT LISTING (excluding NPL sites)

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12/87

1987 ------------------------->

NEW ENGLAND POLE AND WOOD TREAT., MERRIMACK

6/87

1987 ----------scheduled FY 91/92

INTERVALE STREET ASBESTOS DUMP, NASHUA

12/87

1987 ------------------------->

MCMENAMONS GARAGE, NORTHWOOD

12/87

1987 ----------scheduled FY 91/92

RIDGE AVE ASBESTOS, HUDSON

9/80

1979 ------------------------->

DERRY LANDFILL, DERRY

2/82

1980 ------------------------->

ASSOCIATED MINERALS, BOW

5/80

1980 ------------------------->

OLD RAILROAD BED, NASHUA

11/80

1980 ------------------------->

HARDING METALS INC., NORTHWOOD

5/80

1980 ------------------------->

GILSON ROAD TAR PIT, NASHUA

4/82

1980 ------------------------->

OLD ROCHESTER LANDFILL, ROCHESTER

5/82

1981 ------------------------->

CHARLESTOWN DUMP, CHARLESTOWN

STATE OF NEW HAMPSHIRE

COMPREHENSIVE EMERGENCY RESPONSE, COMPENSATION AND LIABILITY INFORMATION SYSTEM (CERCLIS) - SITE/EVENT LISTING (excluding NPL sites)

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3/81

1981 ---------->

SWANZEY SEPTAGE PITS, SWANZEY

1/83

1981 ---------->

KOLLMORGAN MULTIWIRE DIVISION, NASHUA

1987 ---------projected 1989

NAUGHTON LANDFILL, BRADFORD

1987 ---------->

GILFORD FIRE TRAINING, GILFORD

1989

1989 ---------->

TURCHIN JUNKYARD, TILTON

5/82

1979 ---------->

GRACE WR & CO., NASHUA

5/85

1981 ---------->

GROVETON PAPERS CO., GROVETON

1/83

1981 ---------->

NORTON CO., HILLSBORO

1/83

1981 ---------->

U.S. DEFENSE FUEL SUPPORT, NEWINGTON

4/86

1981 ---------->

YIELDHOUSE, NORTH CONWAY

3/86

1981 ---------->

SOMERSWORTH GAS PLANT, SOMERSWORTH

STATE OF NEW HAMPSHIRE

COMPREHENSIVE EMERGENCY RESPONSE, COMPENSATION AND LIABILITY INFORMATION SYSTEM (CERCLIS) - SITE/EVENT LISTING (excluding NPL sites)

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1981 — ABBOTT MACHINE CO. INC., WILTON
- PRELIMINARY ASSESSMENT: 1/83
- SHORT SITE INVESTIGATION: 8/86

1984 — USGSA PROPERTY, CONCORD
- SHORT SITE INVESTIGATION: 5/86

1984 — POLYTHANE CO. INC., GONIC
- SHORT SITE INVESTIGATION: 3/87

1984 — MEADOWS, HUDSON
- SHORT SITE INVESTIGATION: 3/86

1984 — QUALITY FOOTWEAR INC., ROCHESTER
- SHORT SITE INVESTIGATION: 6/87

1985 — AEGIS INC., MILFORD
- SHORT SITE INVESTIGATION: 9/85

1985 — TRANSFORMER DISPOSAL SITE, MILFORD
- SHORT SITE INVESTIGATION: 3/87

1985 — SHADY LANE ASBESTOS, NASHUA
- SHORT SITE INVESTIGATION: 6/87
- NPL LISTING: FY 91/92

1985 — SOUTH BANK ASBESTOS, NASHUA
- SHORT SITE INVESTIGATION: 2/88
- NPL LISTING: FY 91/92

1985 — WEST BANK ASBESTOS, NASHUA
- SHORT SITE INVESTIGATION: 2/88
- NPL LISTING: FY 91/92

1985 — HAMPSHIRE PAPER CO., MILFORD
- PRELIMINARY ASSESSMENT: 9/85
- SHORT SITE INVESTIGATION: 9/86

STATE OF NEW HAMPSHIRE

COMPREHENSIVE EMERGENCY RESPONSE, COMPENSATION AND LIABILITY INFORMATION SYSTEM (CERCLIS) - SITE/EVENT LISTING (excluding NPL sites)

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1986			9/87								
UNIVEX CORP., SALEM											
1987			12/87								
OTIS ALLEN & SON COMPANY, PORTSMOUTH											
1987			2/88		FY 91/92						
NIQUETTE DR. ASBESTOS #1, NASHUA											
1987			2/88		FY 91/92						
NIQUETTE DR. ASBESTOS # 2, NASHUA											
1987			2/88		FY 91/92						
NOWELL DR. ASBESTOS, NASHUA											
1987			1/88		FY 91/92						
RUSSEL AVE. ASBESTOS, NASHUA											
1987			12/87								
LAKE SUNAPEE, SUNAPEE											
1988			4/88								
WESTERN UNION TELEGRAPH CO., NASHUA											
GRUGNALE WASTE DISPOSAL SITE, MILFORD			10/88		9/88						
1979			10/80		7/88						
TRANSFORMER SERVICE INC., CONCORD											
1981			5/80		9/88						
MILFORD MUNICIPAL LF											

STATE OF NEW HAMPSHIRE

COMPREHENSIVE EMERGENCY RESPONSE, COMPENSATION AND LIABILITY INFORMATION SYSTEM (CERCLIS) - SITE/EVENT LISTING (excluding NPL sites)

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1980		5/82	12/84								
BROWNS SEPTAGE, PETERBOROUGH											
1980		6/82	9/85								
CONCORD LANDFILL, CONCORD											
1980		9/85	9/85								
SENTER TRANSPORTATION CO., KINGSTON											
1980		7/80	8/87								
MSAF (PEASE), PORTSMOUTH											
1981		4/82	9/84								
BRANDY BROW AREA OF PLAISTOW, PLAISTOW											
1981		2/83	4/84								
CALCUTT LAND, DOVER											
1981		1/83	8/84								
GENERAL ELECTRIC CO., SOMERSWORTH											
1981		2/81	5/82								
HOOKSETT TOWN LANDFILL, HOOKSETT											
1981		5/82	3/87								
RIVERSIDE ST. LANDFILL, NASHUA											
1981		10/81	7/85								
TROY MILLS LANDFILL, TROY											
1981		4/82	5/88								
BLUELINE EXPRESS, NASHUA											

STATE OF NEW HAMPSHIRE

COMPREHENSIVE EMERGENCY RESPONSE, COMPENSATION AND LIABILITY INFORMATION SYSTEM (CERCLIS) - SITE/EVENT LISTING (excluding NPL sites)

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1984		5/84	7/85								
CLAREMONT LANDFILL, CLAREMONT											
1984		11/85	7/88								
INDUSTRIAL DRIVE PROPERTY, MANCHESTER											
1984		9/85	3/87								
RAYMOND LANDFILL, RAYMOND											
1984		8/85	9/87								
ROGERS MOBILE HOME PARK, HOLLIS											
1984		5/84	7/85								
BARNEY BASS JUNKYARD, CLAREMONT											
1985		10/86	9/86								
PERMATTACH DIAMOND TOOL CO., MILFORD											
1985		9/87	9/88								
KEYES WELL, MILFORD											
1985		9/85	9/86								
FLETCHER PAINT STORAGE, MILFORD											
1986		5/87	9/87								
WILLEY HILL ROAD GRAVEL PIT, LONDONDERRY											
1987		6/87	9/88								
GRACE PROPERTIES ASSOCIATES, NASHUA											

DEADLINES IN THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986
TITLE III
RESPONSIBILITIES OF STATE AND LOCAL GOVERNMENT AND PRIVATELY OWNED BUSINESSES

* as of March 1989

SARA DEADLINE	RESPONSIBLE ENTITY	REQUIRED ACTION	SARA SECTION	ACTUAL OR ESTIMATED COMPLETION	COMMENTS ON PROGRESS MADE TO DATE, AND DIFFICULTIES ENCOUNTERED IN ACHIEVING COMPLIANCE WITH SARA
				*STATUS PROVIDED BY N.H. OFFICE OF EMERGENCY MANAGEMENT	
4/17/87	GOVERNOR	Appoint a State Emergency Response Commission (SERC) that, to the extent practicable, includes persons who have technical expertise in the emergency response field.	301(a)	(A) 1/26/87	Meets approximately every six weeks.
5/17/87	PRIVATE INDUSTRY	Notify the SERC that the facility is subject to the requirements of Title III emergency planning and notification requirements if the business facility has on hand any of the extremely hazardous substances listed by EPA under section 302(a)(2) exceeding the threshold levels set by EPA for regulation.	302(c)	(A) 5/17/87	Approximately 800 facilities notified the SERC that they may be subject to Title III requirements.
	SERC	Designate emergency planning districts within the state in order to facilitate preparation and implementation of local emergency plans.	301(b)	(A) 6/17/87	SERC designated each municipality as a planning district.
8/17/87	SERC	Appoint members of a Local Emergency Planning Committee (LEPC) for each emergency planning district within the state, including representatives of elected state and local officials; law enforcement, civil defense, firefighting, first aid, health, local environmental, hospital, and transportation personnel, media, community groups; and owners and operators of regulated businesses.	301(c)	(A) 7/17/87	SERC requested each community to designate a local official to coordinate planning activities and provided guidance for committee composition.
9/17/87	PRIVATE INDUSTRY	Appoint a representative who will participate in the emergency planning process as a facility emergency coordinator, if the business facility was subject to the section 302(c) notification requirement, and notify the LEPC of the appointment.	303(d)(1)	(A) 8/17/87	Facilities subject to Sec 302(c) appointed reps. to local planning committees and informed SERC of their reps.
10/17/87	PRIVATE INDUSTRY	Submit a material safety data sheet (MSDS) for each such chemical, or list of such chemicals, to the LEPC, SERC, and local fire department. Required for each business facility that is required to prepare an MSDS for a hazardous chemical under the Occupational Safety and Health Act of 1970.	311(d)(1)(A)	(A) 10/17/87	Approximately 900 facilities submitted MSDS for each chemical, subject to Title III requirements to SERC and LEPCs.

DEADLINES IN THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986
TITLE III
RESPONSIBILITIES OF STATE AND LOCAL GOVERNMENT AND PRIVATELY OWNED BUSINESSES

* as of March 1989

SARA DEADLINE	RESPONSIBLE ENTITY	REQUIRED ACTION	SARA SECTION	ACTUAL OR ESTIMATED COMPLETION	COMMENTS ON PROGRESS MADE TO DATE, AND DIFFICULTIES ENCOUNTERED IN ACHIEVING COMPLIANCE WITH SARA
				*STATUS PROVIDED BY N.H. OFFICE OF EMERGENCY MANAGEMENT	
3/1/88	PRIVATE INDUSTRY	Prepare and submit a first annual emergency and hazardous chemical inventory form for the previous calendar year to the LEPC, SERC, and local fire department from each facility required to have an MSDS for a hazardous chemical under the Occupational Safety and Health Act of 1970.	312(a)(2)	(A) 3/1/88	Approximately 300 facilities submitted annual inventories on the first round.
7/1/88	PRIVATE INDUSTRY	Submit the first annual toxic chemical release form to EPA and the state designee, reporting any of a specific list of chemicals manufactured, processed, or used in quantities exceeding the threshold level set in the law during the preceding calendar year, including among other things, the quantity of each that was released into the environment.	313(a)	(A) 7/1/88	Approximately 90 facilities filed (313) information on the first submission.
10/17/88	LEPC	Complete preparation of emergency plan, with specific, detailed provisions for identifying and handling emergencies within the emergency planning district.	303(a)	(A) 10/17/88	Only 12 communities have submitted completed haz-mat contingency plans. Approximately 40 are near completion. The remaining 113 are in various stages of development.
12/31/88	LEPC	Publish the first annual notice in local newspapers that the emergency response plan, MSDS, and inventory forms have been submitted as required and state the location where the public can review such plans, sheets and follow-up notices.	324(b)	(A) 12/31/88	
3/1/89	PRIVATE INDUSTRY	Prepare and submit a second annual emergency and hazardous chemical inventory form for the previous calendar year to the LEPC, SERC, and local fire department from each facility required to have an MSDS for a hazardous chemical under the Occupational Safety and Health Act of 1970.	312(a)(2)	(E) 3/1/89	Approximately 450 facilities have filed annual inventories.
7/1/89	PRIVATE INDUSTRY	Submit the second annual toxic chemical release form to EPA and the state designee, reporting any of a specific list of chemicals manufactured, processed, or used in quantities exceeding the threshold level set in the law during the preceding calendar year, including, among other things, the quantity of each that was released into the environment.	313(a)	(E) 7/1/89	No comment at this time.

DEADLINES IN THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986
TITLE III
RESPONSIBILITIES OF STATE AND LOCAL GOVERNMENT AND PRIVATELY OWNED BUSINESSES

* as of March 1989

SARA DEADLINE	RESPONSIBLE ENTITY	REQUIRED ACTION	SARA SECTION	ACTUAL OR ESTIMATED COMPLETION	COMMENTS ON PROGRESS MADE TO DATE, AND DIFFICULTIES ENCOUNTERED IN ACHIEVING COMPLIANCE WITH SARA
				*STATUS PROVIDED BY N.H. OFFICE OF EMERGENCY MANAGEMENT	
10/17/89	LEPC	Complete first annual review and revision, if needed, of the emergency plan with specific, detailed provisions for identifying and handling emergencies within the emergency planning district.	303(a)	(E) 10/17/89	No comment at this time.
12/31/89	LEPC	Publish the second annual notice in local newspapers that the emergency response plan, MSDS, and inventory forms have been submitted as required and state the location where the public can review such plans, sheets, forms, and follow-up notices.	324(b)	(E) 12/31/89	No comment at this time.
3/1/90	PRIVATE INDUSTRY	Prepare and submit a third annual emergency and hazardous chemical inventory form for the previous calendar year to the LEPC, SERC, and local fire department from each facility required to have an MSDS for hazardous chemicals under the Occupational Safety and Health Act of 1970.	312(a)(2)	(E) 3/1/90	No comment at this time.
7/1/90	PRIVATE INDUSTRY	Submit the third toxic chemical release form to EPA and the state designee, reporting any of a specific list of chemicals manufactured, processed or used in quantities exceeding the threshold level set in the law during the preceding calendar year, including among other things, the quantity of each that was released into the environment.	313(a)	(E) 7/1/90	No comment at this time.
10/17/90	LEPC	Submit the second annual review and revision if needed of the emergency plan with specific, detailed provisions for identifying and handling emergencies within the emergency planning district.	303(a)	(E) 10/17/90	No comment at this time.
12/31/90	LEPC	Publish the third annual notice in local newspapers that the emergency response plan, MSDS, and inventory forms have been submitted as required and state the location where the public can review such plans, sheets, forms, and follow-up notices.	324(b)	(E) 12/31/90	No comment at this time.

DEADLINES IN THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986
TITLE III
RESPONSIBILITIES OF STATE AND LOCAL GOVERNMENT AND PRIVATELY OWNED BUSINESSES

* as of March 1989

SARA DEADLINE	RESPONSIBLE ENTITY	REQUIRED ACTION	SARA SECTION	ACTUAL OR ESTIMATED COMPLETION	COMMENTS ON PROGRESS MADE TO DATE, AND DIFFICULTIES ENCOUNTERED IN ACHIEVING COMPLIANCE WITH SARA
				*STATUS PROVIDED BY N.H. OFFICE OF EMERGENCY MANAGEMENT	
3/1/91	PRIVATE INDUSTRY	Prepare and submit the fourth annual emergency and hazardous chemical inventory form for the previous calendar year to the LEPC, SERC, and local fire department by each facility required to have an MSDS for a hazardous chemical under the Occupational Safety and Health Act of 1970.	312(b)(2)	(E) 3/1/91	No comment at this time.
7/1/91	PRIVATE INDUSTRY	Submit the fourth annual toxic chemical release form to EPA and the state designee, reporting any of a specific list of chemicals manufactured, processed, or used in quantities exceeding the threshold level set in the law during the preceding calendar year, including, among other things, the quantity of each that was released into the environment.	313(a)	(E) 7/1/91	No comment at this time.
10/17/91	LEPC	Complete third annual review and revision, if needed, of emergency plan with specific, detailed provisions for identifying and handling emergencies within the emergency planning district.	303(a)	(E) 10/17/91	No comment at this time.

The Environmental Protection Agency recognizes that generators of small quantities of hazardous waste, many of which are small businesses, may not be familiar with the manner in which hazardous waste materials are identified. This Appendix has been assembled to aid 100-1000 kg/mo small quantity generators in determining the EPA Hazardous Waste Numbers for their wastes. These numbers are needed to complete the "Notification of Hazardous Waste Activity," Form 8700-12.

This Appendix contains lists of EPA Hazardous Waste Numbers for each waste stream shown in the table on page 3 of this appendix. Note that acutely hazardous wastes are identified with an asterisk (*).

To Use This Appendix

1. Locate your business type in the table on page 3. This will help you to identify the waste streams common to your activities.
2. Find each of the waste streams that you identified on page 3 in the more detailed descriptions in this Appendix. Review the more detailed descriptions of typical wastes to determine which waste streams actually result from your activities.
3. If you determine that you actually do generate a particular waste stream, report the four-digit EPA Hazardous Waste Number in Item X of Form 8700-12, "Notification of Hazardous Waste Activity."

The specific instructions for completing Item X (Description of Hazardous Wastes) of the notification form are included in the notification package. You should note, however, that specific EPA Hazardous Waste Numbers beginning with:

- "F" should be entered in Item X, Section A.
- "K" should be entered in Item X, Section B.
- "P" or "U" should be entered in Item X, Section C.
- "D" should be entered in Item X, Section E.

The industries and waste streams described here do not provide a comprehensive list, but rather serve as a guide to potential small quantity generators in determining which of their wastes, if any, are hazardous. Except for the pesticide and wood preserving categories, this Appendix does not include EPA Hazardous Waste Numbers for commercial chemical products that are hazardous when discarded unused. These chemicals and their EPA Hazardous Waste Numbers are listed in Title 40 of the Code of Federal Regulations (40 CFR) in Section 261.33.

If the specific EPA Hazardous Waste Number that should be applied to your waste stream is unclear, please refer to 40 CFR Part 261, reprinted in the Notification Form 8700-12 package. In those cases where more than one EPA Hazardous Waste Number is applicable, all should be used. If you have any questions, or if you are unable to determine the proper EPA Hazardous Waste Numbers for your wastes, contact your state hazardous waste management agency, or the RCRA/Superfund Hotline.

Solvents:

Solvents, spent solvents, solvent mixtures, or solvent still bottoms are often hazardous. This includes solvents used in degreasing (identified as F001) and paint brush cleaning and distillation residues from reclamation. The following are some commonly used hazardous solvents (also see ignitable wastes for other hazardous solvents, and 40 CFR 261.31 for most listed hazardous waste solvents):

Benzene	F005
Carbon Disulfide	F005
Carbon Tetrachloride	F001
Chlorobenzene	F002
Cresols	F004
Cresylic Acid	F004
O-Dichlorobenzene	F002
Ethanol	D001
2-Ethoxyethanol	F005
Ethylene Dichloride	D001
Isobutanol	F005
Isopropanol	D001
Kerosene	D001
Methyl Ethyl Ketone	F005
Methylene Chloride	F001 F002
Naphtha	D001
Nitrobenzene	F004
2-Nitropropane	F005
Petroleum Solvents (Flashpoint less than 140°F)	D001
Pyridine	F005
1,1,1-Trichloroethane	F001 F002
1,1,2-Trichloroethane	F002
Tetrachloroethylene (Perchloroethylene)	F001 F002
Toluene	F005
Trichloroethylene	F001 F002
Trichlorofluoromethane	F002
Trichlorotrifluoroethane (Valclene)	F002
White Spirits	D001

Acids/Bases:

Acids, bases, or mixtures having a pH less than or equal to 2 or greater than or equal to 12.5, are considered corrosive (for a complete description of corrosive wastes, see 40 CFR 261.22, Characteristic of corrosivity). All corrosive materials and solutions have the EPA Hazardous Waste Number D002. The following are some of the more commonly used corrosives:

Acetic Acid	Nitric Acid
Ammonium Hydroxide	Oleum
Chromic Acid	Perchloric Acid
Hydrobromic Acid	Phosphoric Acid
Hydrochloric Acid	Potassium Hydroxide
Hydrofluoric Acid	Sodium Hydroxide
	Sulfuric Acid

Dry Cleaning Filtration Residues:

Cooked powder residue (perchloroethylene plants only), still residues, and spent cartridge filters containing perchloroethylene or valclene are hazardous and have the EPA Hazardous Waste Number F002.

Still residues containing petroleum solvents with a flashpoint less than 140°F are considered hazardous and have the EPA Hazardous Waste Number D001.

Heavy Metals/Inorganics:

Heavy metals and other inorganic waste materials exhibit the characteristic of EP Toxicity and are considered hazardous if the extract from a representative sample of the waste has any of the specific constituent concentrations as shown in 40 CFR 261.24, Table 1. This may include dusts, solutions, wastewater treatment sludges, paint wastes, waste inks, and other such materials which contain heavy metals/inorganics (note that wastewater treatment sludges from electroplating operations are identified as F006). The following are EP Toxic:

Arsenic	D004
Barium	D005
Cadmium	D006
Chromium	D007
Lead	D008
Mercury	D009
Selenium	D010
Silver	D011

Ignitable Wastes:

Ignitable wastes include any liquids that have a flashpoint less than 140°F, any non-liquids that are capable of causing a fire through friction, absorption of moisture, or spontaneous chemical change, or any ignitable compressed gas as described in 49 CFR 173.300 (for a complete

Source: Adapted from pages 29-32 and pages 4-5 of Understanding the Small Quantity Generator Hazardous Waste Rules: A Handbook for Small Business, EPA, 1986.

description of ignitable wastes, see 40 CFR 261.21, Characteristic of ignitability). Examples are spent solvents (see also solvents), solvent still bottoms, ignitable paint wastes (paint removers, brush cleaners and stripping agents), epoxy resins and adhesives (epoxies, rubber cements and marine glues), and waste inks containing flammable solvents. Unless otherwise specified, all ignitable wastes have the EPA Hazardous Waste Number of **D001**.

Some commonly used ignitable compounds are:

Acetone	F003
Benzene	F005
n-Butyl Alcohol	F003
Chlorobenzene	F002[1]
Cyclohexanone	F003
Ethyl Acetate	F003
Ethylbenzene	F003
Ethyl Ether	F003
Ethylene Dichloride	D001
Methanol	F003
Methyl Isobutyl Ketone	F003
Petroleum Distillates	D001
Xylene	F003

Ink Sludges Containing Chromium and Lead:

This includes solvent washes and sludges, caustic washes and sludges, or water washes and sludges from cleaning tubs and equipment used in the formulation of ink from pigments, driers, soaps, and stabilizers containing chromium and lead. All ink sludges have the EPA Hazardous Waste Number K086.

[1] Chlorobenzene is listed by EPA as a hazardous waste due to its toxicity and has been assigned EPA Hazardous Waste Number F002. It has a flashpoint, however, of less than 140°F and is therefore included here as an ignitable waste.

Lead-Acid Batteries:

Used lead-acid batteries should be reported on the notification form *only* if they are not recycled. Used lead-acid batteries that *are* recycled do not need to be counted in determining the quantity of waste that you generate per month, nor do they require a hazardous waste manifest when shipped off your premises. (Note: Special requirements do apply if you recycle your batteries on your own premises—see 40 CFR Part 266.)

Lead Dross	D008
Spent Acids	D002
Lead-Acid Batteries	D008

Pesticides:

The pesticides listed below are hazardous. Wastes marked with an asterisk (*) have been designated acutely hazardous. For a more complete listing, see 40 CFR 261.32 and 261.33 for specific listed pesticides, and other wastes, wastewaters, sludges, and by-products from pesticide formulators. (Note that while many of these pesticides are no longer in common use, they are included here for those cases where they may be found in storage.)

*Aldicarb	P070
*Aldrin	P004
Amitrole	U011
*Arsenic Pentoxide	P011
*Arsenic Trioxide	P012
Cacodylic Acid	U136
Carbamic Acid, Methylnitroso-, Ethyl Ester	U178
Chlordane	U036
*Copper Cyanides	P029
1,2-Dibromo-3-chloropropane	U066
1,2-Dichloropropane	U083
1,3-Dichloropropene	U084
2,4-Dichlorophenoxy Acetic Acid	U240
DDT	U061
*Dieldrin	P037
Dimethylcarbamoyl Chloride	U097

Pesticides *(Continued)*:

*Dinitrocresol	P047
*Dinoseb	P020
Disodium Monomethanearsenate	D004
*Disulfoton	P039
*Endosulfan	P050
*Endrin	P051
Ethylmercuric Chloride	D009
*Famphur	P097
*Heptachlor	P059
Hexachlorobenzene	U127
Kepone	U142
Lindane	U129
2-Methoxy Mercuric Chloride	D009
Methoxychlor	D014
*Methyl Parathion	P071
Monosodium Methanearsenate	D004
*Nicotine	P075
*Parathion	P089
Pentachloronitrobenzene	U185
Pentachlorophenol	U242
Phenylmercuric Acetate	D009
*Phorate	P094
*Strychnine	P108
2,4,5-Trichlorophenoxy Acetic Acid	U232
2-(2,4,5-Trichlorophenoxy)-Propionic Acid	U233
*Thallium Sulfate	P115
Thiram	U244
*Toxaphene	P123
Warfarin	U248

Reactives:

Reactive wastes include reactive materials or mixtures which are unstable, react violently with or form explosive mixtures with water, generate toxic gases or vapors when mixed with water (or when exposed to pH conditions between 2 and 12.5 in the case of cyanide or sulfide bearing wastes), or are capable of detonation or explosive reaction when heated or subjected to shock (for a complete description of reactive wastes, see 40 CFR 261.23, Characteristic of reactivity). Unless otherwise specified, all reactive wastes have the EPA Hazardous Waste Number D003. The following materials are commonly considered to be reactive:

Acetyl Chloride	Organic Peroxides
Chromic Acid	Perchlorates
Cyanides	Permanganates
Hypochlorites	Sulfides

Spent Plating and Cyanide Wastes:

Spent plating wastes contain cleaning solutions and plating solutions with caustics, solvents, heavy metals, and cyanides. Cyanide wastes may also be generated from heat treatment operations, pigment production, and manufacturing of anti-caking agents. Plating wastes are generally Hazardous Waste Numbers **F006-F009**, with **F007-F009** containing cyanide. Cyanide heat treating wastes are generally Hazardous Waste Numbers F010-F012. See 40 CFR 261.32 for a more complete description of plating wastes.

Wood Preserving Agents:

The wastewater treatment sludges from wastewater treatment operations are considered hazardous (EPA Hazardous Waste Number **K001**—bottom sediment sludges from the treatment of wastewater processes that use creosote and pentachlorophenol). In addition, unless otherwise indicated, specific wood preserving compounds are:

Chromated Copper Arsenate	D004
Creosote	U051
Pentachlorophenol	F027

TYPICAL WASTE STREAMS GENERATED BY SMALL QUANTITY GENERATORS

Type of Business	Types of Hazardous Wastes Generated
Building Cleaning and Maintenance	Acids/Bases Solvents
Chemical Manufacturers	Acids/Bases Cyanide Wastes Heavy Metals/Inorganics Ignitable Wastes Reactives Solvents
Cleaning Agents and Cosmetics	Acids/Bases Heavy Metals/Inorganics Ignitable Wastes Pesticides Solvents
Construction	Acids/Bases Ignitable Wastes Solvents
Educational and Vocational Shops	Acids/Bases Ignitable Wastes Pesticides Reactives Solvents
Equipment Repair	Acids/Bases Ignitable Wastes Solvents
Formulators	Acids/Bases Cyanide Wastes Heavy Metals/Inorganics Ignitable Wastes Pesticides Reactives Solvents
Funeral Services	Solvents Formaldehyde
Furniture/Wood Manufacturing and Refinishing	Ignitable Wastes Solvents

TYPICAL WASTE STREAMS GENERATED BY SMALL QUANTITY GENERATORS

(continued)

Type of Business	Types of Hazardous Wastes Generated
Laboratories	Acids/Bases Heavy Metals/Inorganics Ignitable Wastes Reactives Solvents
Laundries and Dry Cleaners	Dry Cleaning Filtration Residues Solvents
Metal Manufacturing	Acids/Bases Cyanide Wastes Heavy Metals/Inorganics Ignitable Wastes Reactives Solvents Spent Plating Wastes
Motor Freight Terminals and Railroad Transportation	Acids/Bases Heavy Metals/Inorganics Ignitable Wastes Lead-Acid Batteries Solvents
Other Manufacturing: 1) Textiles 2) Plastics 3) Leather	Heavy Metals/Inorganics Solvents
Pesticide End Users and Application Services	Heavy Metals/Inorganics Pesticides Solvents
Printing and Allied Industries	Acids/Bases Heavy Metals/Inorganics Ink Sludges Spent Plating Wastes Solvents
Vehicle Maintenance	Acids/Bases Heavy Metals/Inorganics Ignitable Wastes Lead-Acid Batteries Solvents
Wood Preserving	Preserving Agents

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Why the concern?

Many of the common products we use daily in our kitchen, bath, yard, garage, and basement pose a hazard if handled and/or disposed of improperly. Household toxics can harm you and your family.

According to the Consumer Product Safety Commission, in 1985 more than 135,000 people in the United States required emergency room treatment for injuries resulting from the misuse of household products. Many chemical spills or explosions have been the result of hazardous materials being thrown into the trash or poured down the drain.

It is estimated that the average American household has three to 10 gallons of unwanted hazardous chemicals in the garage, basement, shed, and kitchen. Household toxics can cause respiratory problems, burns, poisoning, nausea, headaches, and dizziness. They can be harmful if swallowed, absorbed through the skin, or by the inhalation of vapors.

Where do they go?

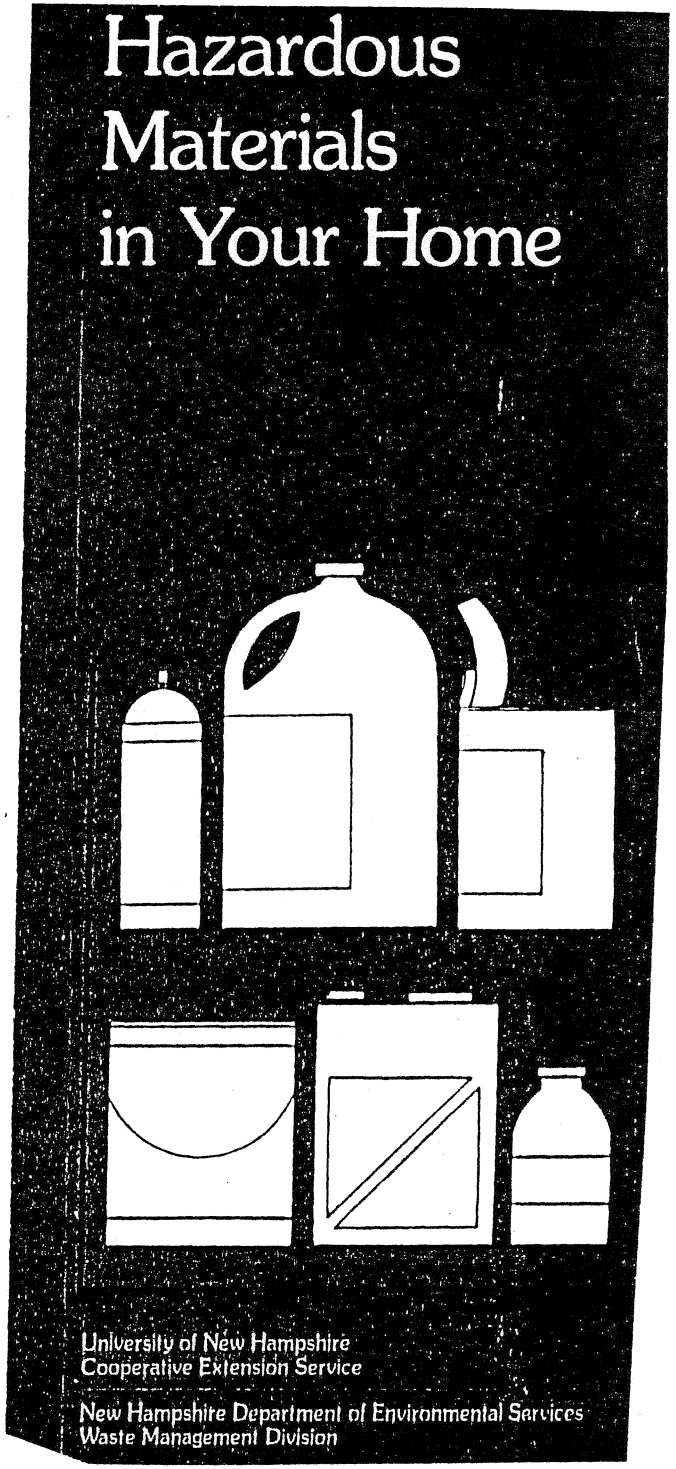
Contamination of our water and natural resources is a very real threat from the improper disposal of household hazardous wastes. Toxics that are rinsed down the drain enter into municipal treatment plants or leach fields which are incapable of handling these products. The result is the eventual contamination of our water supplies with disastrous consequences.

You Can Help!

This brochure was compiled by Nancy Adams, Judy Bush, Carol Corso, Barbara Hunter, and Faye Plowman of the UNH Cooperative Extension Service; and by Donna Reardon of the New Hampshire Department of Environmental Services.

Illustrations courtesy of Peter Brackenbury and the University of Vermont Extension Service.

Hazardous Materials in Your Home



University of New Hampshire
Cooperative Extension Service

New Hampshire Department of Environmental Services
Waste Management Division

What are hazardous household materials?

The United States Environmental Protection Agency (EPA) considers a substance to be hazardous if it is flammable, reactive or explosive when mixed with other substances, or if it is corrosive or toxic. In addition, EPA has designated 400 specific substances (such as battery acid) to be hazardous.

This definition includes many things you probably are storing right now in your garage, basement, bathroom, or kitchen.

Solvents

Kerosene
Charcoal Lighter
Turpentines
Nail Polish Remover
Thinners
Spot Remover
Degreasers

Household Products

Lamp Oil
Furniture Polish
Oven Cleaners
Waxes and Cleaners
Out-dated Medicines
Window Cleaner
Drain Cleaner

Automotive

Batteries
Anti-freeze
Brake Fluid
Waste Oil
Grease

Art and Hobby Supplies

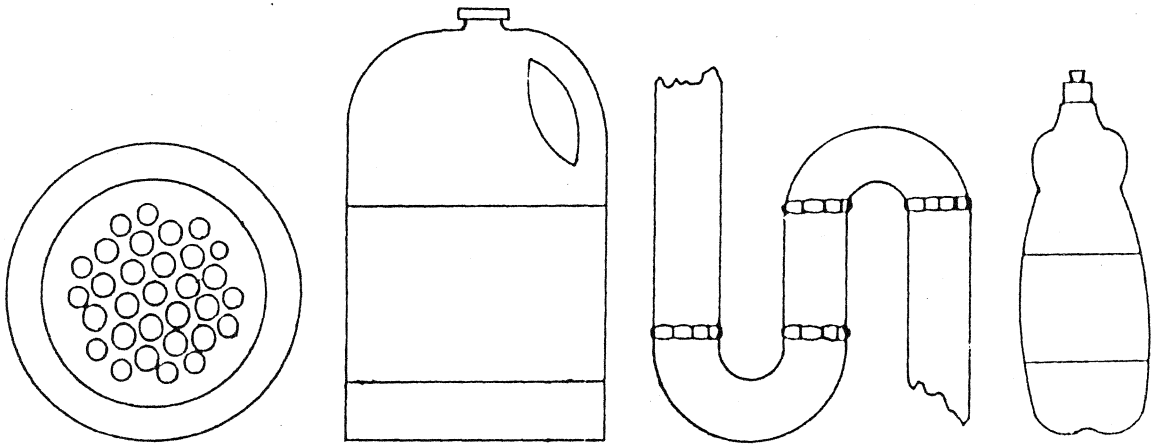
Old Chemistry Sets
Photographic Chemicals

Home Maintenance

Oil-based Paints
Pool Chemicals
Varnishes
Furniture Refinishers

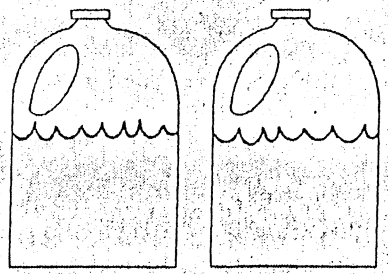
Pesticides

Mothballs and Flakes
Insecticides
Fungicides
Herbicides
Rodenticides (mouse baits)



Tips on Toxics

- Read product labels before purchasing them and select non-toxic alternatives if available.
- Buy child-proof packaging, or store them safely in locked cabinets.
- Avoid aerosol products.
- Buy only the quantity needed to limit disposal of unused portions.
- Read labels carefully before use and *follow directions.*
- Use only the recommended amount.
- *Never* mix different products.
- Use products in well ventilated rooms and avoid breathing fumes.
- Wear protective clothing and wash (rinse) well after product use.
- Pass on unused portion of products—such as paint, anti-freeze, cleaners, etc.—to someone who can use them.



Alternative Household Products

The following list offers some suggestions which are made up of easily obtainable substances. One caution—although these compounds may be kinder to the environment that some over-the-counter preparations, they may still contain highly toxic ingredients. Keep out of the reach of children. Also, some products such as chlorine bleach and ammonia, can react with each other to cause deadly fumes. Do not mix substances unless you are absolutely sure they are safe together.

Household Hazard	Safer Substitute
Air Freshener	Set vinegar out in an open dish; light match or candle to dispel bathroom odors; use baking soda in refrigerator, in cat litter box, in diaper pail, on floral and herbal potpourri; and on rugs (vacuum afterward).
Ant Control	Mix two tablespoons of boric acid, two tablespoons of sugar, and one cup of water. Soak paper towels, place on dishes, and set out for ants. Keep dishes away from children.
Decorative Metal Cleaner	For brass, copper, or pewter—make a paste of salt, vinegar, and flour. Start with ¼ cup of salt and add enough vinegar to dissolve it. Then add enough flour to make a fairly dry paste.
Disinfectant	Wash area with soap and then wipe, using a solution of ¼ cup of chlorine bleach in one quart of water. Rinse well. Do not use on bare metal.
Drain Cleaner	Pour ½ cup of washing soda into drain, then add two cups of boiling water. To prevent clogging, flush drain weekly with boiling water.
Furniture Polish	Mix two teaspoons of lemon oil and one pint of mineral oil in a spray bottle. Spray, rub in, and wipe clean.
Houseplant Insecticide	Wash leaves with soapy water and rinse.
Low-Abrasion Scouring Powder	Use baking soda on everything except aluminum cooking utensils.
Mothproofing	Store clothes in cedar chest or closet, or in garment bag spread with cedar chips. Make sure your clothes are clean when putting them away; moths love dirty wool.
Multi-Purpose Cleaner	Mix ½ cup of ammonia and ⅓ cup of washing soda in a gallon of warm water. Use as needed and store in a large jug.
Painted Surface Cleaner	Mix one cup of ammonia, ½ cup of vinegar, and ¼ cup of baking soda in a gallon of warm water. Use as needed and store remainder in a large jug.
Silver Cleaner	Soak silver in one quart of warm water, containing one teaspoon of baking soda, one teaspoon of salt, and a piece of aluminum foil.
Stainless Steel Cleaner	Wash utensil or coffeepot in a solution of one quart of warm water and three taplespoons of baking soda. Rinse in hot water.
Stain Remover	Apply cold seltzer or club soda immediately.
Toilet Bowl Cleaner	Use ½ cup of chlorine bleach, swish with brush, and flush after five minutes.
Window and Mirror Cleaner	Fill eight-ounce cup or empty spray bottle with three tablespoons of ammonia, one tablespoon of vinegar, and cool water.
Upholstery and Carpet Shampoo	Add ¼ cup of liquid dishwashing detergent to one cup of warm water in a large bowl and beat to a dry, sudsy foam with a hand or electric beater. Use immediately.

Disposal Tips

Don't

- Don't pour them down the drain.
- Don't pour them on the ground or into a pond, river, or lake.
- Don't burn them.
- Don't bury them.
- Don't put them in the trash.

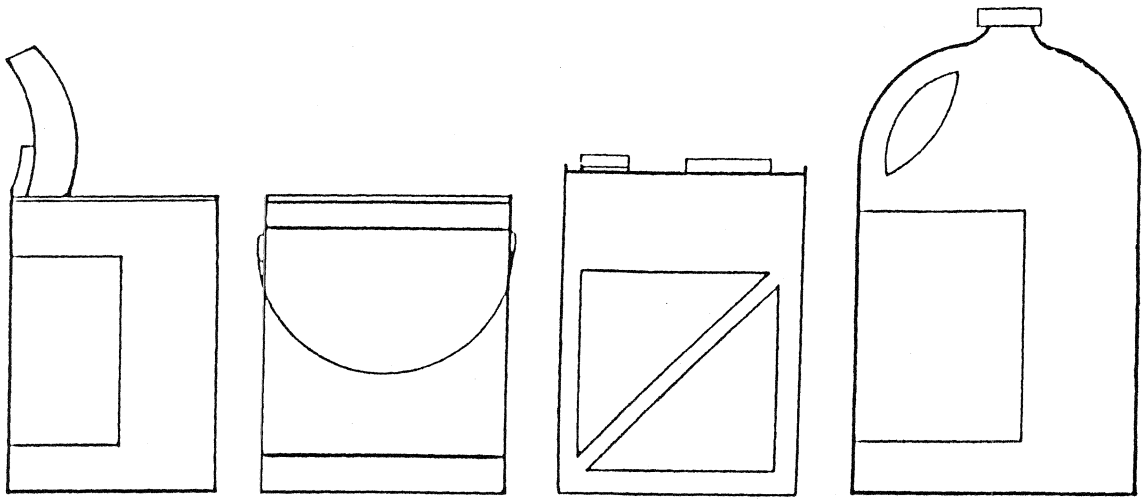
Do

- Safely bring them to a local home hazardous waste collection site. Call 271-2902 for the collection date and site nearest you.
- Recycle products such as used motor oil whenever possible. Many auto garages accept used motor oil.
- Save unused hazardous waste products. Store them in a safe, dry location away from children.

Cleaning up a spill

These directions are for pesticides, but are equally useful for oil-based paints, solvents, and other hazardous chemicals.

1. Try and contain the spill to a small area—don't let it flow.
2. Soak up the spill with cat litter, sawdust, wood ash, or soil.
3. Put the contaminated dirt or other absorbent material into a non-corroding container such as a plastic pail.
4. Wash the floor *after* you have absorbed the spill.
5. Never use household brooms or mops to clean the spill—they will be contaminated and must be discarded.
6. If the spill results in fewer than five pounds, or one or two gallons of contaminated dirt, put it into the trash.
7. If it is a large volume of waste, put it in a container, seal it, and label it with the product name and other pertinent information (quantity and mixture). Save for a collection day.



Call for further information

There are a number of agencies and organizations ready to assist you if any accident does occur or if you have a question. Here are some handy references:

- N.H. Poison Control Center
  Information if poisoning is suspected
  1-800-562-8236
- N.H. Department of Environmental Services
  Waste Management Division
  Household Hazardous Waste Program
  271-2902
- N.H. Department of Agriculture
  Pesticide Control Division
  Pesticide Law Enforcement 271-3550
- National Pesticide Telecommunications Network
  Pesticide Information 1-800-858-7378

UNH Cooperative Extension Service

Belknap County Office
Historic Belknap Mill
P.O. Box 368
Laconia, N.H. 03247
(603)524-1737

Carroll County Office
Main Street
P.O. Box 367
Conway, N.H. 03818
(603)447-5922

Cheshire County Office
800 Park Avenue
P.O. Box 798
Keene, N.H. 03431
(603)352-4550

Coos County Office
148 Main Street
Lancaster, N.H. 03584
(603)788-4961

Grafton County Office
County Court House
North Haverhill, N.H. 03774
Mailing Address:
P.O. Box 191
Woodsville, N.H. 03785
(603)787-6944

Hillsboro County Office
Chappell Professional Center
Route 13 South
Milford, N.H. 03055
(603)673-2510

Merrimack County Office
Extension Service Center
R.F.D. 14, Box 338, Suite 2
Boscawen, N.H. 03303
(603)225-5505
(from Concord area)
(603)796-2151

Rockingham County Office
Extension Service Center
North Road, Brentwood, N.H.
Mailing Address:
P.O. Box 200
Epping, N.H. 03042
(603)679-5616

Strafford County Office
County Admin. Bldg.
County Farm Road
Dover, N.H. 03820
(603)749-4445

Sullivan County Office
45 Crescent Street
Claremont, N.H. 03743
(603)543-3181

Pine Island 4-H Outdoor Education Center
2849 Brown Avenue
Manchester, N.H. 03103
(603)627-5637
(603) 627-5635

REGULATED INDUSTRY VIEWS

In order to gain the perspective of regulated companies on hazardous waste management in the state, we selected ten New Hampshire companies that generate hazardous waste and have been inspected by the Waste Management Division (WMD) within the last five years. We solicited their comments and criticism about the WMD program. In determining the survey sample, our goal was to represent various industries, geographic locations and company sizes. Our on-site interviews covered regulations, inspections, enforcement, reporting and waste reduction. This sample is small and the opinions in this section should not be construed to represent the views of all companies.

REGULATIONS

Almost all the companies we surveyed indicate that federal and state regulations are complex, far-reaching and voluminous, but several surveyed companies say that smaller companies have more difficulty interpreting and implementing them. They add that small companies do not have the specialized environmental and regulatory staffs of many large companies, and their access to helpful information and consultants is limited. But even the larger companies in our survey experience frustration with the amount of communication and regulatory guidance provided by the state. As a result, these companies rely on various sources of information, from trade publications and training seminars to past experience and word-of-mouth.

One company spokesman questions inconsistencies in the regulatory standards for hazardous materials and hazardous waste. If stored safely, even for more than 90 days, hazardous waste is no more harmful than hazardous materials which can be stored for years, thus making the strict observance of the 90 day storage rule unnecessary, according to this representative.

INSPECTIONS

Most of the companies surveyed have not disputed the state's definition of hazardous materials and waste in the last couple years. The process of delisting, or removing a substance considered toxic from the list contained in the state Hazardous Waste Rules, is too long and involved, and consequently provides little incentive for companies wanting to challenge the rule, according to many companies in our survey. One company questions the broad terms of New Hampshire's mixture rule, which states that if any listed hazardous waste in a mixture is subsequently mixed with a waste, the waste mixture is considered a hazardous waste. Another company which attempted to work through the delisting process gave up after over two years of effort.

No company in our survey believes facility inspections are inadequate or ineffective. A few think they are too thorough and rigid, while most are satisfied with their conduct and results. Overall, inspectors are cooperative, competent and reasonable, although these qualities vary by individual, say surveyed companies. Those who are critical of inspections say that WMD admits to few gray areas, or that it seems to have little regard for the logic of manufacturing. They suggest that inspectors can still protect public health and the environment by observing the spirit rather than the letter of the law. However, some agree that inspections are necessary, self-protective and valuable despite the inconvenience.

ENFORCEMENT

Most company representatives surveyed either consider WMD's enforcement of regulatory violations appropriate or claim to have never received any during their employment. Some, on the other hand, say the fines associated with violations are excessive. They also suggest that some industries believe they are discriminated against because their manufacturing process and materials produce more hazardous waste; this applies mainly to highly visible users of metals, chemicals and solvents. However, one company in our survey objects to inspectors treating companies generating less hazardous wastes the same as those generating more hazardous wastes with respect to violations.

REPORTING

Most companies in our survey are satisfied with the manifest tracking system. They agree that computerization in the last two years has greatly improved the system, and some say that manifests provide some security to both the state and industry in following the course of hazardous waste through and out of the state. Some would like a national uniform manifest but do not anticipate it in the near future. One, on the other hand, hopes it won't change again and likens further attempts to simplify the document with attempts to simplify federal tax forms, saying that the "simpler" the forms get, the harder they are to understand. Another company representative indicated that many company principals and managers hesitate to sign manifests because of their official, legal status; they fear the liability associated with a signature.

The surveyed companies also accept WMD's quarterly and annual reporting system. Although some say the system is still complicated and time-consuming, several agree that it is useful and greatly improved since computers were introduced two years ago. Now companies simply verify

the information tracked and generated by WMD computers. Companies once had to produce this information on their own. None complain of significant or unreconcilable discrepancies in waste shipments through the quarterly and annual reporting system.

WASTE REDUCTION

All generators in our survey have made some effort to reduce hazardous waste in their manufacturing operations. As some pointed out, the government mandates that they certify their reduction efforts, without specifying the method or amount, on manifests. One company wonders whether governmental assistance, such as tax credits or technical help, should be available, since the state requires reduction.

All generators in our survey use some form of waste reduction, recovery or reclamation. Industrial operations often include solvents which can be reused in the manufacturing process. Some companies have reduced the amount and toxicity of their process solutions through substitution, distillation and neutralization. Others have eliminated processes altogether.

Three reasons appear to motivate the companies in our survey to reduce waste. First, with the cost of transporting and disposing hazardous waste rising rapidly, along with the high cost of materials, industry saves money by minimizing waste streams. Some companies find that business survival often depends on it. On the other hand, some company representatives complain that the bottom-line demands of competitiveness make them resistent to experimenting with alternative materials and processes; customers and government contractors want products made cheaply and consistently using established means.

These companies are also concerned about the welfare of their employees. Company personnel work closely with hazardous materials and wastes during manufacturing. Replacing or eliminating certain materials directly benefits those closest to the process. Waste reduction efforts usually include employee training in efficient operation, emergencies, spill control and first aid. Businesses also enjoy an economic benefit in limiting the number of employees in need of workmen's compensation.

Finally, some companies surveyed state their interest in protecting the environment. They say they know of the environmental risks involved with their business and take care to ensure the least amount of environmental harm.

In addition, some company representatives surveyed express concern over the point at which waste recycling and reclamation become hazardous waste treatment procedures. Except for some forms of recycling and on-site neutralization, the hazardous waste rules require a permit for treating industrial wastes. The cost of obtaining a permit is high, however, failure to do so is a serious violation, according to the rules. These are reasons, say some of those surveyed, that keep many companies from exploring and developing more effective methods of reducing waste. They question whether WMD would grant variances in treatment, storage and disposal permits.

GENERAL COMMENTS

Many of the companies believe WMD is responsive when answering specific industry questions but does not adequately support the ongoing need for technical, regulatory information. A few companies in our survey point to the reluctance of some companies to contact the state with problems, as they fear inspections and possible penalties. Others say that their interpretation of regulations often varies from the state's but that communication to correct the differences is minimal.

Most companies in our survey hope for a better balance between education and enforcement by WMD in the future. Although they are pleased with the seminars and conferences held by WMD, they tend to believe the burden of keeping up with changing regulations and technical information falls too heavily on business. They state a need for a more concerted, organized effort initiated by the state.

In conclusion, we believe that both state and business must find more opportunities for cooperation and discussion, because the transfer of information helps both sides of the regulatory process, as well as the general public.

State of New Hampshire
DEPARTMENT OF ENVIRONMENTAL SERVICES
OFFICE of the COMMISSIONER
6 Hazen Drive, P.O. Box 95, Concord, NH 03301
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ROBERT W. VARNEY
COMMISSIONER

GEORGE A. MOLLINEAUX, P.E.
ASSISTANT COMMISSIONER

September 20, 1989

The Honorable William F. Kidder, Chair
Legislative Fiscal Committee
State House
Concord, New Hampshire 03301

Dear Chairman Kidder:

The Department of Environmental Services, Waste Management Division appreciates the opportunity to review the Legislative Budget Assistant's report on our Hazardous Waste Management Program. Department personnel have been impressed by the Audit Division's efforts to present an accurate and thorough report, and we concur with many of the recommendations. The Department does have several comments on the report which are provided in this letter. These comments respond to specific recommendations and are referenced by subject and page.

HAZARDOUS WASTE CLEANUP FUND

The first observation dealing with the Fund questions the deposit of proceeds from Superfund settlement actions into the Fund (p. 9, 44). As stated in our initial response to this observation in May 1989, the Fund is being used as a holding account until the necessary legislation can be enacted to clarify this issue. The advantage of using the Fund is that the settlement funds can earn interest and, therefore, increase the funds available to cover future state cleanup costs, which is the purpose of the settlements.

The second observation regarding the Fund deals with income that was deposited in the Waste Management Engineering Bureau, account 010-044-5495 (pp. 9, 45). To the best of our knowledge, these funds were used for activities permitted under RSA 147-B. The balance in this account was included in our request to the State Treasurer for interest earnings for the Fund.

The third observation deals with interest earnings on the Fund (pp. 9, 45). A request to the State Treasurer for interest from 1981 to the present was made on June 29, 1989.

The report recommends that the Department of Environmental Services (DES) develop a comprehensive database of hazardous waste sites (pp. 9, 46). The Waste Management Division (WMD) agrees with this recommendation and, in fact, has developed a very detailed information file which will provide regulators, the public, and other interested persons with a readily available, objective history of the sites. The compilation of this information has been labor intensive, however, and only a small amount of the data has been entered. We are committed to the completion of data entry and maintenance of the database.

IDENTIFYING AND PERMITTING REGULATED BUSINESSES

The report discusses non-notifying generators and recommends that the WMD "make every effort to locate [them]." (pp. 13, 56). Let me assure you that the WMD considers non-notifying companies which generate regulated quantities of hazardous waste as high priority violators. The Waste Management Compliance Bureau investigates a number of suspected non-notifiers each year and has taken appropriate enforcement action against the violators through the Attorney General's Office. We are acutely aware that failing to notify the DES of hazardous waste activity is a clever way for companies to avoid regulatory control and the associated costs for managing hazardous waste properly.

However, reaching non-notifiers is a resource dependent function and locating greater numbers of non-notifiers is proportional to the number of staff assigned to the task. Inspectors who seek out non-notifying generators perform this function as an ancillary duty to other important tasks.

The WMD also participates in various association/group meetings to inform potentially regulated entities of their legal responsibilities under RSA 147. As staffing and time permit, periodic seminars are conducted for the regulated community to assist them in their compliance efforts.

TRACKING & REPORTING HAZARDOUS WASTE

The report notes that the manifest tracking system has not been successful at providing reliable information on the volume and type of waste generated and that the WMD should continue to upgrade the system (pp. 13, 65). We are pleased to inform you that the conversion to the new system has been completed and that it has made a substantial difference in our ability to access the information.

WASTE REDUCTION

The LBA recommends that the Waste Management Division consider changing state rules to allow small generators to store wastes up to 180 days (p. 17, 84). The Division strives to achieve a balance between protecting human health and the environment and placing an undue burden on the regulated community. This idea has been given serious consideration for the past year and will be proposed as a future rule change.

Thank you for the opportunity to respond to the report. We commend the Audit Division staff on their ability to be patient and courteous while conducting the audit. Please contact me or my staff if there are any questions regarding our program.

Very truly Yours,

Robert W. Varney

Robert W. Varney
Commissioner

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ATTORNEY GENERAL
JOHN P. ARNOLD

DEPUTY ATTORNEY GENERAL
JEFFREY R. HOWARD

THE STATE OF NEW HAMPSHIRE

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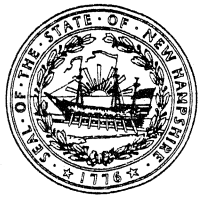

THE ATTORNEY GENERAL
STATE HOUSE ANNEX
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CONCORD, NEW HAMPSHIRE 03301-6397

September 20, 1989

Mr. Michael Buckley
Director of Audits
Office of Legislative Budget Assistant
State House, Room 102
Concord, New Hampshire 03301

Re: Hazardous Waste Management Program Audit

Dear Mr. Buckley:

This letter constitutes our reply to one observation and recommendation relating to the Attorney General's Office which is included in your audit report of New Hampshire's Hazardous Waste Management Program. Let me first reiterate my thanks to you and your staff for the courtesies you have extended to me throughout the audit process, and most particularly in discussing the final conclusions you have drawn with respect to our role in the hazardous waste management effort in the State. Also, I thank and commend you and your staff for an excellent effort in having undertaken a thorough and effective review of a highly complex program. To have covered comprehensively both the Superfund Program and the RCRA Program from a programmatic, enforcement, and accounting viewpoint was no easy task. To have completed that task and set forth cogent and important observations and recommendations is commendable.

In your report you properly identified the role of the Attorney General's Office in the Hazardous Waste Management Program. It is only briefly mentioned in the section on CERCLA, but, as you are aware, this office plays an important role in the enforcement phase of CERCLA cases, as well as a fundamental role in the ongoing administration of the CERCLA program. The description of our role on page 37 of the report identifies correctly this office's function with respect to CERCLA enforcement as including cost recovery responsibilities and the duty of counselling the Division with respect to remedial standards applied to site cleanups.

By definition, the RCRA cases -- those cases dealing directly with the management of hazardous waste in New Hampshire -- require a more pervasive enforcement effort by the State. As I have stated to you and your staff throughout this audit, I believe that New Hampshire has an excellent RCRA enforcement program in place. It epitomizes the strong and effective relationship between this office and the Department of Environmental Services in the enforcement process. Communications are regular and effective on enforcement matters relating to both the Department and this office, and cooperation exists across the board in all areas of administrative and judicial enforcement of the hazardous waste laws of the State.

Your audit focused specifically on the cases which were either open or completed during a particular time frame. You found that several of the 24 cases you looked at took up to three and, in one case, four years to complete. You identified on page 75 of your report four factors which contributed to case delays. Even in the most straightforward of RCRA cases, the time necessary for investigation and negotiation is significant. Moreover, several of the cases you looked at were such straightforward cases. Certain of the cases, as we have discussed, involved not only requests for RCRA penalties, but also site cleanups. Those cases, of course, take longer to resolve. Moreover, many of the companies involved in these cases either went into bankruptcy or were involved in corporate takeovers, which further complicated the enforcement effort. Also, as you pointed out, certain of the cases were assigned a low priority. In fact, the one case taking four years to complete was a minor case involving the disposal of some fifteen gallons of a pesticide at a municipal landfill. A decision was made early on not to file an action against either the town or the individual municipal employees. The case remained open for monitoring of any potential health problems from this disposal. The formal closure of the file is the only part of the case that was delayed for four years. Finally, a consistent factor in any delay in processing these cases is the availability of attorneys to handle the cases expeditiously. The Environmental Protection Bureau of this office has assigned as a priority the effective and expeditious handling of the RCRA cases, but there is not unlimited time available even for these cases within the full panoply of our responsibilities for all environmental enforcement matters in the State.

We concur in the recommendation that the RCRA cases be moved along expeditiously. Steps have been taken internally within this office to achieve the consistent progress toward completing the RCRA penalty cases that you identify in your recommendations. These internal management initiatives have, in the past couple of years, already led to a quicker turnaround on the RCRA penalty cases. Moreover, we are achieving increasingly greater penalty amounts in our RCRA cases. Although fiscal year 1990 is not included in your report, we have recently resolved several RCRA cases. One such case has resulted in the imposition of a $200,000 penalty. In recognizing the desirability of handling the RCRAA cases more expeditiously, we must also be cognizant of such successes and the overall effectiveness of New Hampshire's RCRA enforcement program.

Yours truly,

George Dana Bisbee
Associate Attorney General

GDB/sed

cc: Doug Haynes
Michelle Clauson
Robert Varney
Kenneth Marschner

STATE OF NEW HAMPSHIRE
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JUDD GREGG
Governor

GEORGE L. IVERSON
Director

August 4, 1989

Mr. Michael Buckley
Director of Audits
Office of Legislative Budget Assistant
State House
Room 102
Concord, New Hampshire 03301

Dear Mr. Buckley:

I have reviewed the draft material that you recently provided us with respect to Community Planning and "Right-To-Know Act" (Title III) and I find no disagreement of any consequence with your observations or recommendations as outlined therein.

Thank you very much for giving this office the opportunity to work with you and to highlight the difficulties that lie ahead in order for New Hampshire to comply with the provisions of Title III.

If we can be of assistance in any way with respect to this, please do not hesitate to contact this office.

Sincerely,

George L. Iverson

George L. Iverson
Director

GLI/sjc

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NEW HAMPSHIRE
FIRE STANDARDS & TRAINING COMMISSION
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Telephone: (603) 271-2661

September 19, 1989

Michael Buckley and
Michelle Clauson
Audit Section
Office of Legislative Budget Assistant
Concord Center, Room 429
10 Ferry Street
Concord, NH 03301

Dear Michael and Michelle:

We have reviewed the report as written and agree with the findings at the time the report was written.

Since the publishing of the report and the close of the legislative session, the Commission was allowed to hire one Instructor/Supervisor and one Secretary-Typist I to coordinate a Hazardous Materials Training Program. The funds appropriated by the Legislature were less than requested; however, we feel that with these additional funds we will be able to begin a comprehensive training program. Our new personnel were hired as of August 25, 1989 and have begun teaching and coordinating training programs to date.

We appreciate the opportunity to provide this additional information to the LBA. If there are further questions, please feel free to contact us.

Very truly yours,

Barry Bush, Chief
Fire Standards & Training

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