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An Analysis of the Possible Utilization of Local Government to Aid Small Quantity Generators of Hazardous Waste Comply with Federal and State Regulation

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AN ANALYSIS OF THE POSSIBLE UTILIZATION
OF LOCAL GOVERNMENT TO AID SMALL QUANTITY GENERATORS
OF HAZARDOUS WASTE COMPLY WITH
FEDERAL AND STATE REGULATION

A Masters Project Presented

by

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Submitted to the Graduate School of the
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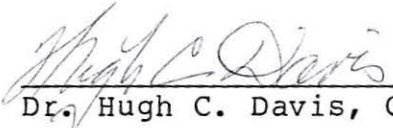
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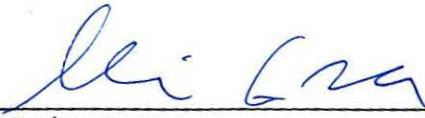
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EXECUTIVE SUMMARY

The main goal of this study was to analyze the possible use of local government to aid Small Quantity Generators (SQGs) of hazardous waste comply with federal and state regulations. A survey was formulated and administered to determine if state regulatory agencies in the Northeast Region believed local governments did or could aid them in this matter. The results of the survey revealed seven of the twelve states utilizing local government to assist in SQG compliance. Only one state rated the use of local government as effective while five states rated their use as somewhat effective. Although these state regulatory agencies have had limited success in the utilization, other sources suggest local government can be utilized to aid SQGs if appropriate resources and programs are available.

Another goal of the study was to analyze the needs and problems of SQGs, as well as the problems state regulatory agencies faced in bringing SQGs into compliance. A review of literature showed many barriers to compliance for both SQGs and regulatory agencies. SQGs often find state regulatory agencies to be unable to help them in a effective manner. State regulatory agencies find SQGs reluctant to discuss hazardous waste management practices and often find SQGs believe they won't be found.

An objective of the study was to determine the types of programs to best aid SQGs. State regulatory agencies must

utilize programs whose components include personal, sensitive communication and expertise in appropriate hazardous waste management. These programs must be administered at a local level where SQGs can find solutions to waste management issues without fear of fines and economic hardship.

Recommendations were formulated for types of programs that would be helpful to SQGs. These recommendations focused on programs to meet the needs and problems of SQGs to aid them with compliance, rather than on enforcement of regulations. Cooperative Extension Service, local government, Chambers of Commerce and trade associations are recommended as organizations who could be enlisted by state government to provide successful programs to meet the goals of state and federal hazardous waste regulations.

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C H A P T E R I

INTRODUCTION

The goal of this study is to determine if local government initiatives can be constructive in aiding businesses and other establishments generating small quantities of hazardous waste, termed small quantity generators (SQG's) comply with the 1984 amendments to the federal Resource Conservation and Recovery Act.¹ The study has been sponsored by the Massachusetts Cooperative Extension Service, Community Resource Development, and focuses on the twelve northeastern states, defined by the United States Department of Agriculture, Cooperative Extension Service as the Northeastern Region. (This region includes Maine, Vermont, New Hampshire, Massachusetts, Connecticut, Rhode Island, New York, New Jersey, Pennsylvania, Delaware, Maryland, and West Virginia.) In order to lend perspective to the particular problems of small quantity generators, it is important to begin with an overview of the hazardous waste issue in the United States.

1. Resource Conservation and Recovery Act (RCRA). Originally passed 1976; amended 1980; amended 1984. See page 13 for the goals and history of this legislation.

OVERVIEW

The history of the United States is filled with examples of the nation reacting to social problems, grasping for solutions that are rarely simple or immediate, and working through political, economic, social and technological barriers to establish workable solutions. The discovery of and response to the mismanagement of hazardous waste is yet another episode in this history, and the methods and programs to solve the problem are still being developed. Unfortunately, before viable solutions are found, continued damage to both the environment and public health will occur.²

Times Beach, the Valley of the Drums, and Love Canal are signals of the severe environmental degradation caused by hazardous waste disposal practices of the past. In spite of these, and many other examples of environmental poisoning, and the severe medical problems of people exposed to hazardous waste, there have been many attempts to avoid and to undermine the management of hazardous waste materials.

Although there have been setbacks in the establishment of hazardous waste management practices, the public has let it be known to policy makers and government officials that hazardous waste management should be a priority matter. In

2. Samuel S. Epstein, Lester O. Brown, and Carl Pope, Hazardous Waste in America (San Francisco: Sierra Club Books, 1982), p. 26.

November 1984, amendments were enacted to strengthen the Resource Conservation and Recovery Act (RCRA), the federal law protecting human health and the environment from improper waste management practices. The programs and policies needed to implement this legislation have been left to state governments to determine.³

DEFINITION OF HAZARDOUS WASTE

RCRA defines a hazardous waste as a solid waste that may cause or significantly contribute to serious illness or death, or that poses a substantial threat to human health or the environment when improperly managed.⁴ The Environmental Protection Agency (EPA) has compiled a list of hazardous wastes, in four categories of characteristics. These categories are:

1. Ignitability, identifies wastes that pose a fire hazard during routine management;
2. Corrosivity, identifies wastes requiring special containers because of their ability to corrode standard materials, or requiring segregation from other wastes because of their ability to dissolve toxic contaminants;

3. Environmental Protection Agency, The New RCRA Requirements, (Washington, D.C.: Environmental Protection Agency, [1985]), pamphlet.

4. Environmental Protection Agency, Everybody's Problem: Hazardous Waste, (Washington D.C.: Environmental Protection Agency, Office of Water & Waste Management, [1980]), p. 12.

3. Reactivity (or explosiveness), identifies wastes that, during routine management, tend to react spontaneously. This category includes wastes that react vigorously with air or water, wastes unstable to shock or heat, and wastes generating toxic gases; and,

4. Toxicity identifies wastes which may release toxicants in sufficient quantities to pose a substantial hazard to human health or the environment.⁵

Virtually every process for producing socially useful products also produces materials not generally regarded, especially to the producer, as useful. Most wastes, thought to be relatively harmless, will eventually break down and become part of the ecological process. In the past, wastes harmful to human health and the environment have been left to the processes of nature as well, where they have contaminated soil, leached into ground water supplies, and caused, in some cases, irreparable damage.⁶

Hazardous wastes can be: by-products of the production process, spent raw materials, or manufactured products. The EPA estimates 80 billion pounds of hazardous waste material are generated annually--about 350 pounds of hazardous waste for every inhabitant of the United States.⁷ Table 1-1,

5. Ibid., pp. 12-13.

6. In 1980 the EPA stated in Everybody's Problem: Hazardous Waste, that 90 percent of all hazardous waste in the United States was disposed of by environmentally unsound methods.

7. Epstein, Brown, and Pope, Hazardous Waste in America, p.7.

p. 6., lists the products we use and the potentially hazardous waste they generate.

The rate of production of hazardous waste has increased dramatically in recent years. With each technological advancement more hazardous wastes have been created. Mining operations, synthetic fabrics and dyes, metallurgy, photography, advanced medical machinery and medications, and petroleum products are examples of technological advancements we all benefit from as a society, yet all these create hazardous waste.⁸

8. All of these technological advancements produce hazardous waste, however, the chemicals and allied products industry generates sixty percent of all industrial hazardous waste. Source: Booz, Allen and Hamilton, Hazardous Waste Generation and Commercial Hazardous Waste Management Capacity (Unpublished report to the EPA, {1980}).

TABLE 1-1:

Common Products and the Potentially
Hazardous Waste Generated

PRODUCT	WASTE GENERATED
Plastics	Organic chlorine compounds.
Pesticides	Organic chlorine compounds, organic phosphate compounds.
Medicines	Organic solvents and residues, heavy metals (i.e. mercury and zinc.)
Paints	Heavy metals, pigments, solvents, organic residues.
Oil, gasoline, and other petroleum products	Oil, phenols and other organic compounds, heavy metals, ammonia salts, caustics.
Metals	Heavy metals, fluorides cyanides, acid and alkaline cleaners, solvents, pigments abrasives, plating salts, oils, phenols.
Leather	Heavy metals, organic solvents.
Textiles	Heavy metals, dyes, organic chlorine compounds, solvents.

Source: Environmental Protection Agency, Everybody's Problem: Hazardous Waste (Washington D.C.: Environmental Protection Agency), p. 13.

GENERATORS OF HAZARDOUS WASTE

It is important to recognize that hazardous waste is generated not only by big industries, but also by commercial firms, small businesses and individual consumers. Large quantity generators were certainly the most obvious offenders in the past, but it is also necessary to control hazardous waste from small quantity generators.⁹ The hazardous waste we collect in our homes, such as paints, solvents, cleansers, pesticides, etc, also create management issues and possible contamination of the environment.

Large Quantity Generators

The EPA has defined a large generator of hazardous waste as any operation producing over 1,000 kilograms (2,200 pounds) a month of any hazardous substance, or over 100 kilograms of residue or contaminated soil, water or other debris resulting from the clean-up of a spill into or on any

9. The Government Refuse Collection and Disposal Association, in a 1984 report to the EPA, titled "The Role of Local Government in Hazardous Waste Management", states: "...exempted generators are probably the single largest source of the hazardous waste component of sanitary landfills.". This is further substantiated by the Association of State and Territorial Solid Waste Management Officials' 1983 unpublished report "State Small Quantity Hazardous Waste Generator Survey", Vol. 1, completed for EPA, which states: "One such problem concerns the potential threat to the environment and human health that now exists because a generator who produces up to one ton per month of hazardous waste is allowed to dispose of this waste in a solid waste sanitary landfill."

land or water.¹⁰ Large quantity generators, such as chemical and petroleum companies, have been responsible for the major environmental catastrophes of the past. These companies were the first to be regulated by the EPA through RCRA, and now many of these companies effectively manage their hazardous waste.¹¹

Certain regions of the country have high concentrations of industries that produce hazardous wastes. According to a 1979 EPA study, about 60 percent of this country's hazardous waste is generated in 10 states. These states are: New Jersey, Illinois, Ohio, California, Pennsylvania, Texas, New York, Michigan, Tennessee, and Indiana. The 12 northeastern states produced (as of 1979), between 22.7 and 31.7 percent of the nations hazardous waste.¹²

Many regional differences exist in the types of hazardous waste produced. New Jersey probably has the largest volume

10. Association of State and Territorial Solid Waste Management Officials, "State Small Quantity Hazardous Waste Generator Survey," Volume II, report to the Environmental Protection Agency, September, 1983. p. A-1. (Typewritten.)

11. Nearly 15,000 currently regulated generators produce an estimated 250 million metric tons of hazardous waste a year. The EPA Office of Public Affairs estimates that 40 percent of large quantity generators now handle their hazardous waste in compliance with the 1976 RCRA regulations. (Telephone interview with Robin Woods, EPA Office of Public Affairs, 2 July 1985.)

12. Environmental Protection Agency, "Draft Environmental Impact Statement," Washington, D.C., 1979. (Typewritten.)

of dangerous chemical waste. Wastes problems resulting from oil production and refining are particularly acute in Texas, California, and New Jersey. Problems from uranium mill tailings are largely confined to the West--Colorado, Utah and New Mexico.¹³

Currently the EPA estimates there are 15,000 regulated large quantity generators producing an estimated 250 million metric tons of hazardous waste annually.¹⁴ The RCRA legislation of 1979 required all hazardous waste generated by these sources be regulated through a "cradle-to-grave" control system to track all significant quantities of hazardous waste from generation to final disposal.¹⁵ This regulation has begun the process of making our environment safer, but there are many more sources of hazardous waste generation as well as countless sanitary landfills and forgotten dumps to potentially create severe problems for human health and the environment.

Small Quantity Generators (SQGs)

13. Samuel S. Epstein, Lester O. Brown, and Carl Pope, Hazardous Waste in America, p.11.

14. Environmental Protection Agency, Environmental News, (Washington, D.C.: Environmental Protection Agency, March 12, 1985), p.1.

15. Environmental Protection Agency, The Resource Conservation and Recovery Act, What it is; How it Works, (Washington D.C.: Environmental Protection Agency, April, 1984), p. 2.

Until August 1985, anyone who accumulated less than 1000 kilograms of hazardous waste a month faced no federal regulations for disposal.¹⁶ Consequently, small quantities of hazardous waste are more likely to be pollution problems than large quantities because they were less likely to be managed.¹⁷ Proper management of hazardous waste has been difficult for many small firms who were not familiar with hazardous waste disposal requirements or found sound hazardous waste management techniques prohibitively expensive.¹⁸ The common practice of dumping waste unto the earth, or into the local landfill has sufficed as the easiest solution to disposal of small quantities of hazardous waste.

Even with the advent of the "scientific" or "secure" landfill, the health of future generations is still jeopard-

16. This does not include acutely hazardous waste such as radioactive materials. The limit for unrestricted disposal of acutely hazardous waste is 1 kilogram, or 2.2 pounds.

Association of State and Territorial Solid Waste Management Officials, State Small Quantity Hazardous Waste Generator Study, (Unpublished study for the EPA, September, 1983) p. 5.

17. Association of State and Territorial Solid Waste Management Officials, "State Small Quantity Hazardous Waste Generator Survey", Vol. 1., p. 33.

18. Waste Systems Institute of Michigan, Inc., Investigations and Recommendations for a Management System for Small Quantities of Hazardous Waste from Michigan Business and Industry, (prepared for the Michigan Department of Natural Resources, [1984]), p. 1.

dized. Peter Montague, in Beyond Dumping; New Strategies for Controlling Toxic Contamination, compares EPA's 1982 statements on "secure" landfills with the second law of thermodynamics. EPA stated its latest regulations would "adequately protect human health and the environment...basically forever."¹⁹ Montague points to the second law of thermodynamics, one of the most fundamental laws of the universe: that disorder in a system and its surroundings always increases. Many engineers believe the longest a "secure" landfill will maintain its integrity (i.e., won't leak) is ten to forty years.²⁰

In November 1984 amendments to the RCRA were passed effecting SQGs. As of August 1985 generators of more than 100 kilograms of hazardous waste a month are also be expected to follow "cradle-to-grave" requirements, and have their waste transported to appropriate disposal sites. The exact management guidelines for SQGs must be announced by EPA by March 1986. Most states however, have already established guidelines expected to be at least as stringent as those developed by EPA.

Household Hazardous Waste

19. Bruce Piasecki, ed., Beyond Dumping (Westport: Quorum Books, 1984), p. 5.

20. Bruce Piasecki, ed., Beyond Dumping; New Strategies for Controlling Toxic Contamination, pp. 4-5.

Household hazardous waste includes those products, such as old paint and solvent cans, tossed into the trash, as well as chemicals such as pesticides, many septic tank cleaners, and solvents poured down the drain. Besides the problems caused by hazardous materials cause in landfills, those poured into drains can destroy bacteria needed to break down waste, causing the malfunction of septic systems and the discharge of untreated waste water. This may result in the contamination of surface and groundwater.²¹

Household hazardous waste programs have generally approached the problem by asking for a change in the behavior of consumers rather than a change in products or existing disposal systems. Most programs (developed by state environmental officials) have focused on providing temporary facilities for collecting unwanted toxic home products and education of consumers on appropriate choice and disposal of products.²² Hopefully, as consumers become educated about the magnitude of the problem of managing hazardous waste, they will take more action to be sure the materials going

21. Massachusetts Department of Environmental Quality Engineering, Division of Water Supply, Groundwater Quality and Protection: A Guide for Local Officials, (Boston, MA: DEQE, 1983).

22. Rachel Laderman, "Rural Issues in Planning for Household Hazardous Wastes" (Independent study in Planning Theory for Dr. John R. Mullin, December, 1984), pp. 5-7.

down the drain and into the local landfill will not destroy the health and environment of the future.

THE RESOURCE CONSERVATION AND RECOVERY ACT

While household hazardous waste programs focus on educating the consumer, the Resource Conservation and Recovery Act (RCRA) allocated funding for the EPA to develop programs to provide federal research and development in the solid waste field, and financial and technical assistance to state waste management agencies. RCRA also requires EPA to develop regulatory controls for hazardous wastes. The two goals of the RCRA legislation are:

1. To protect human health and the environment; and,
2. To reduce waste and conserve energy and natural resources.²³

History of RCRA

RCRA was originally passed by Congress in 1976, and was scheduled for congressional review in 1979. At that time, the EPA had yet to issue regulations to carry out the act. Initially, the House and Senate planned a simple extension of the law to give the EPA more time to determine regulations, but a major lobbying effort from industry, countered by a lobbying effort from environmentalists,

23. Environmental Protection Agency, The Resource Conservation and Recovery Act, What it is; How it Works, p. 1.

produced a year long battle until a revised version of the bill was passed.

The 1980 version of the bill did remove the EPA's regulation of a number of waste streams such as coal mine wastes and drilling-rig muds, however, utility wastes, cement wastes, and ore-mining wastes were left in the act. More important, RCRA was strengthened in several ways. The most significant of these changes was in the Imminent Hazard section which changed the phrase "is presenting an imminent and substantial endangerment" to "may present an imminent and substantial endangerment", thus permitting the EPA and the Department of Justice to act before the hazard actually occurred.

Penalties were also significantly increased, including serious penalties for cases where individuals recklessly and knowingly endangered the public health, even where no damage actually resulted. This gave the EPA and Department of Justice a critical new tool against illegal dumpers. Other enforcement provisions were also strengthened--violation of permits, for example, became a felony.²⁴

Funding for environmental clean-up also produced a major battle in both the House and the Senate that was finally resolved in a lame duck session of the Senate. On November

24. Samuel S. Epstein, et. al. Hazardous Waste in America, p. 199.

24, 1980, Congress passed "superfund" legislation calling for 85 percent industry funding, with \$1.6 billion in the fund, liability for dumpers and no coverage of oil spills. One of Jimmy Carter's last acts as President was to sign PL96-510, the "superfund" legislation. In the spring of 1983, under the direction of William Ruckelhaus, the EPA finally developed the regulatory mechanisms to enforce RCRA.

EPA's Role

The EPA's major role in its effort to enforce RCRA has been to establish guidelines for states to develop waste management plans, to design criteria for classifying land disposal facilities in terms of environmental soundness, and to publish a national inventory of unacceptable disposal facilities. The EPA's first phase of regulations established various requirements for three categories of hazardous waste handlers: generators, transporters and owners or operators of treatment, storage, and disposal facilities. At this time, EPA published regulation which defined hazardous waste, and established record keeping and reporting requirements for owners and operators. In November 1980, these RCRA regulations went into effect.

Next, technical standards were set, in January 1981, for design and safe operation of the various types of treatment, storage and disposal facilities. EPA also published

technical standards for incinerators, treatment, and storage facilities, financial responsibility and liability insurance requirements for all facilities, as well as technical standards for both new and existing land disposal facilities.²⁵

State Role

The EPA has encouraged states to develop and assume control of hazardous waste programs. State programs must meet two stages of federal requirements. The first is interim authorization under which states can operate their own programs for two years while upgrading their programs; the second is full authorization. To qualify for interim authorization the state program must comply with federal requirements.

To qualify for full or final authorization, state programs must be equivalent to, or more stringent than federal programs, and the state must show it has the resources to administer and enforce the program. The states have responded strongly to federal encouragement under RCRA, and most states have EPA approved, or partially approved, solid waste management plans.²⁶

25. Environmental Protection Agency, The Resource Conservation and Recovery Act, What it is; How it Works, p. 4.

26. Ibid., pp. 3-4.

EPA/State Programs

The EPA and the states have begun issuing permits for hazardous waste treatment, storage, and disposal facilities. Issuing permits is essential to making the regulatory program work, since it is through the permitting process that EPA or a state actually applies the technical standards to facilities. In reviewing a permit application the waste handling process is evaluated, taking into consideration site-specific factors as well as the nature of the wastes being handled.

RCRA's success in improving hazardous waste management practices depends heavily on the cooperative efforts of waste generating industries. Until the passage of the RCRA amendments in November of 1984, EPA and state programs have focused on large quantity generators of hazardous waste. These programs have begun to manage hazardous waste in this country, but the amended RCRA requirements are expected to increase the number of federally regulated generators from about 15,000 to 150,000.²⁷

RCRA Amendments

Beginning in August of 1985, programs have been expanded to include small quantity generators. The EPA estimates the new RCRA will increase the number of federally regulated

27. Environmental Protection Agency, Highlights of the Hazardous and Solid Waste Amendments of 1984, (Washington, D.C.: The Environmental Protection Agency, April 1985) pamphlet.

generators from about 15,000 to well over 100,000 firms. An EPA survey released in March 1985 suggested that more than half of these small quantity generators fall into the categories of vehicle maintenance, manufacturing and finishing of metals, printing, photography and laundries and dry cleaners. Other industrial categories with a substantial number of SQGs are wood preserving, analytical and clinical laboratories, construction and pesticide applicators.²⁸

Starting August 5, 1985, SQGs who ship their hazardous waste off their premises must obtain and fill out parts of a Uniform Hazardous Waste Manifest. (The legal limit for storage of hazardous waste on a premises is 100 kilograms per month.) This form is currently required of all regulated hazardous waste generators when shipping hazardous waste. The manifest provides a way to track a shipment of hazardous waste from its origin to its final disposal.

In March 31, 1986, the EPA issued final regulations to protect human health and protect the environment from small quantities of hazardous waste. These new regulations require hazardous waste from generators of more than 100 kilograms per month be treated, stored, or disposed of at an

28. Environmental Protection Agency, Small Quantity Hazardous Waste Generators, (Washington, D.C.: EPA) pamphlet. March 1985.

approved hazardous waste facility. All hazardous waste must be accompanied by a manifest with the proper information.

The amended RCRA also calls for the regulation of leaking underground storage tanks, a proven source of groundwater contamination, as well as a phase out of land disposal for hazardous waste. The EPA has also been given authority to develop new criteria for facilities receiving nonhazardous waste.²⁹ Table 1-2, page 20, lists the law's significant provisions.

In order to regulate such a large number of companies, the EPA is conducting an education/assistance program. This program is aimed at alerting SQGs of their responsibilities under federal law. EPA's first task is to identify SQGs and provide them with information through EPA regional offices, states and trade associations, to help SQGs determine if they are affected by the new regulations. The program provides SQGs with the information necessary to fill out the manifest, and informs them of the EPA's requirements.³⁰

The new RCRA requirements are designed to significantly reduce the amount of hazardous waste disposed in landfills

29. Ibid.

30. Environmental Protection Agency, Hazardous Waste Requirements For Small Quantity Generators of 100 to 1000 kg/mo, (Washington, D.C.: The Environmental Protection Agency, March 1986) pamphlet.

TABLE 1-2:
Significant Amended RCRA Provisions

*Immediate prohibition against certain land disposal practices, such as the placement of liquids in landfills, salt bed formations, or mines, and use of hazardous waste as a dust suppressant.

*Minimum technology requirements for hazardous waste landfills, surface impoundments, and incinerators.

*Requirements for retrofitting certain existing surface impoundments with liners.

*Expanded requirements for monitoring and cleanup of groundwater at facilities holding permits under RCRA.

*Authority to clean up past releases of hazardous wastes at RCRA-permitted facilities.

*Authority to expedite permits for new and innovative treatment technologies to foster research and development.

*Authority to impose permit conditions beyond the scope of the existing RCRA regulations to protect human health and the environment.

*Requirements to identify additional hazardous wastes.

*Enhanced federal enforcement authorities.

*Requirements for thorough inspections of federal and state hazardous waste facilities.

*Requirements for the regulation of used oil.

*New citizen rights under RCRA including participation in the permitting process, legal settlements and involvement in legal actions where past and present hazardous waste management pose an "imminent and substantial hazard."

Source: Environmental Protection Agency. Highlights of the Hazardous and Solid Waste Amendments of 1984, (Washington, D.C.: Environmental Protection Agency, pamphlet.)

and to reduce risks to human health and the environment. Actually bringing SQGs into compliance involves a process including education as well as regulation. Before educating SQGs, the EPA and the states face the task of identifying these generators and determining their waste management needs.³¹

ISSUES FOR PLANNERS AND LOCAL GOVERNMENT

The burden of the EPA's lack of enforcement policy sooner or later, will come to rest on local communities. If even the best landfills can be guaranteed for 10 to 40 years, planners and local governments must consider crisis planning to deal with possible contaminated water supplies, and other environmental degradation. Although EPA estimates that SQGs produce less than one-half of one percent of all hazardous waste generated in this country annually, this is still nearly 800,000 metric tons of hazardous waste that has gone into our nations local landfills for years.³² Continuing to ignore the disposal of hazardous waste into local landfills, will only increase the potential problems.

31. Chris Hill, "Compliance Assistance Activities for Small Quantity Generators of Hazardous Waste," (prepared for the Environmental Protection Agency, Washington D.C., October 1984), p.1.

32. Environmental Protection Agency, Environmental News, (Washington D.C.: EPA), p. 1.

With the amended RCRA requirements effecting many local businesses, local government planners may be able to offer some assistance, in the form of educational material about hazardous waste, or in linking with other communities for transportation of hazardous waste. Certainly the problems of managing hazardous waste could be shared by local government and local businesses creating the waste.

GOALS AND REPORT FORMAT

Goals

The primary goal of this study is to determine what local government can do to constructively aid SQGs of hazardous wastes. Local governments primary involvement in hazardous waste issues to date has been inclusion in the siting process for hazardous waste facilities. Since no one wants a hazardous waste disposal facility in their backyard, this has not been a useful device in solving the issue of appropriate hazardous waste facilities.³³

In order to determine what local government can do to help small quantity generators, it is first essential to review regulation/enforcement policies to determine the components of an ideal policy model for regulation of small

33. For a complete assessment of this situation see: Michalann Harthill, ed., Hazardous Waste Management; In Whose Backyard?, (Boulder, CO: Westview Press, Inc., 1984), p. 3.

quantity generators. These components would bring small quantity generators into compliance without causing them, or the public, economic hardship, while ensuring the proper disposal of their hazardous waste. The most appropriate ways local government can be utilized will then be determined.

Format

This chapter is designed to provide an overview of the hazardous waste situation in this country. The necessity of appropriate hazardous waste management cannot be overstated. Chapter II provides a detailed description of small quantity generators. The problems they and regulatory agencies face with the new RCRA requirements is also given, as well as a review of federal, and state programs aimed at SQGs.

Chapter III will describe the research methods used for this report. This includes a survey, designed to determine the specifics of the enforcement policy of the states chosen for the study, and the various ways local government could aid state efforts in small quantity hazardous waste management. The administration of the survey is also discussed.

Chapter IV includes the tabulated results of the survey. Comparisons of various state detailed answers are also analyzed. Chapter V presents an assessment of the data, and

presents conclusions of the study, as well as recommendations to state and local government for the utilization of local government in hazardous waste management.

Limitations of the Study

The study focuses on the Northeastern States, as defined by the Cooperative Extension Service. These states provide a relatively cohesive region, and a comparatively significant sample size to survey the states' small quantity hazardous waste management policies and programs.

Several of the states in this region have exceeded the 1979 RCRA guidelines in their definition of SQGs of hazardous waste. It is possible, therefore, that these states have little or no issue with the amended RCRA requirements. The effectiveness of enforcement policy in these states will still be assessed.

One major difference among the states considered in this study is the form of local government. The New England states have strong town governments, performing the tasks involved in local services. Most Middle Atlantic states have stronger township and county governments. In evaluating the results of the survey it will be important to adjust for this regional difference.

C H A P T E R I I

SMALL QUANTITY GENERATORS (SQGs)

INTRODUCTION

One of the biggest environmental problems we will face in the United States for the remainder of this century is the successful regulation of hazardous waste.¹ Safe practices for packaging, manifesting, transporting and disposing already have been specified by the EPA for a broad range of hazardous waste.² Efforts are now being pursued to effectively regulate and manage the hazardous waste generated by SQGs.

Recent changes in Federal law, as well as some stringent State regulations, have made proper management of small quantities of hazardous waste a more pressing regulatory issue. This trend is a result of growing concern that unregulated handling and disposal of small amounts of hazardous waste can cause environmental, occupational and health problems in our communities.³ Many individuals, organizations, and businesses generating small quantities of hazardous waste are facing increased environmental

1. Marc D. Jones, Impact of Hazardous Waste Regulations on Small Business (Washington, D.C.: EPA, [1984]), p. 1.

2. Ibid.

3. Chris Hill, Marc D. Jones, and Edgar Berkey, Compliance Assistance Activities for Small Quantity Generators of Hazardous Waste (prepared for the EPA Office of Solid Waste and Emergency Response, Washington, D.C.: EPA, [1984]), p. 1.

regulation.

EPA has defined SQGs as any generator producing between 100 kg (one-half 55 gallon drum) and 1000 kg (five 55 gallon drums) per month of hazardous waste.⁴ A description of generators, the kinds of hazardous waste they produce, the constraints both generators and regulatory agencies face in realizing compliance with RCRA and the programs developed to reach RCRA goals form the focus of this chapter.

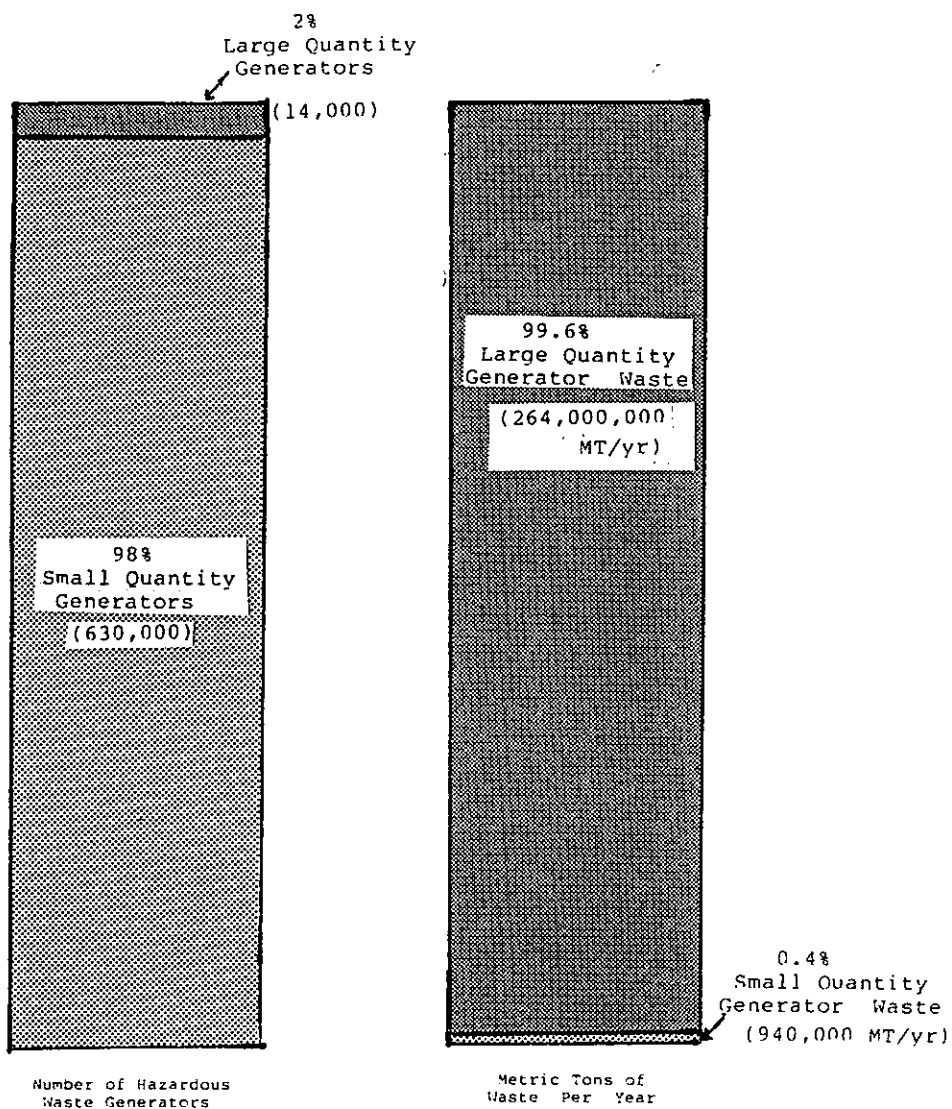
DESCRIPTION OF SQGs

Abt Associates, in the final report, of their 1985 National Small Quantity Hazardous Waste Generator Survey, state there are approximately 600 to 660 thousand small establishments generating between one and 1000 kilograms of hazardous waste per month. These generators account for 98 percent of all hazardous waste generators nationally. However, (See Figure 2-1, page 27) they account for a very

4. Environmental Protection Agency, Environmental News, 12 March 1985. p. 1.

Figure 2-1:

Breakdown of Hazardous Waste Generation
by Large and Small Quantity Generators



Source: Abt Associates, Inc. National Small Quantity Hazardous Waste Generator Survey, prepared for EPA, (Cambridge: Abt Associates, Inc., 1985.)

small fraction of hazardous waste generated.⁵ Abt estimates SQGs produce about 940 thousand metric tons of waste annually, only 0.4 percent of the total hazardous waste generated (See Figure 2-1, page 29.)⁶

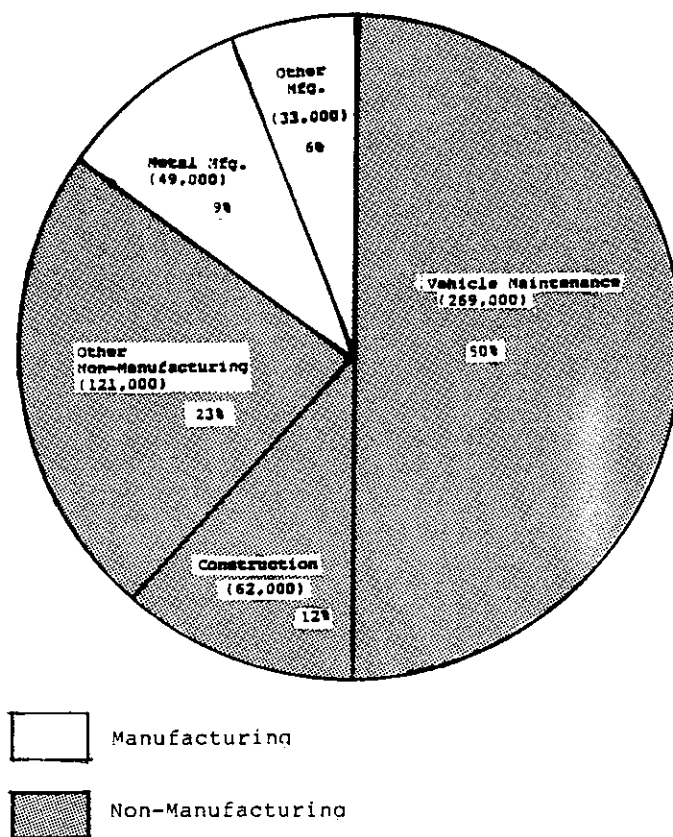
The Abt study found that nearly 85 percent of all SQGs are in non-manufacturing industries, (see Figure 2-2, page 30), and are closely associated with major population centers. Twelve percent of the total number of non-manufacturing SQGs are vehicle maintenance and construction establishments. These establishments comprise the largest categories of non-manufacturing SQGs with construction accounting for 12 percent and vehicle maintenance accounting for 50 percent of all SQGs.

Other non-manufacturing establishments, including laundries, photographic processors, equipment repair shops, laboratories and schools, account for nearly 25 percent of the total number of SQGs. The remaining 15 percent of the SQGs consist of manufacturing establishments, with two thirds of these in metal manufacturing and the

5. Abt Associates Inc., National Small Quantity Hazardous Waste Generator Survey, (Cambridge: Abt Associates, [1985]). This survey, completed for the EPA, provides the most complete research done on identifying small quantity generators to date.

6. Abt identified SQGs based on EPA's definition. The firm identified those firms producing less than 100 kilograms per month of hazardous waste as "very small quantity generators (VSQGs). This group accounts for three quarters of the generators, but only 20 percent of the waste." p.2.

Figure 2-2:
Distribution of Small Quantity Generators
by Industry Group



Source: Abt Associates, Inc., National Small Quantity Hazardous Waste Generator Survey, prepared for the EPA. (Cambridge: Abt Associates, Inc. 1985.)

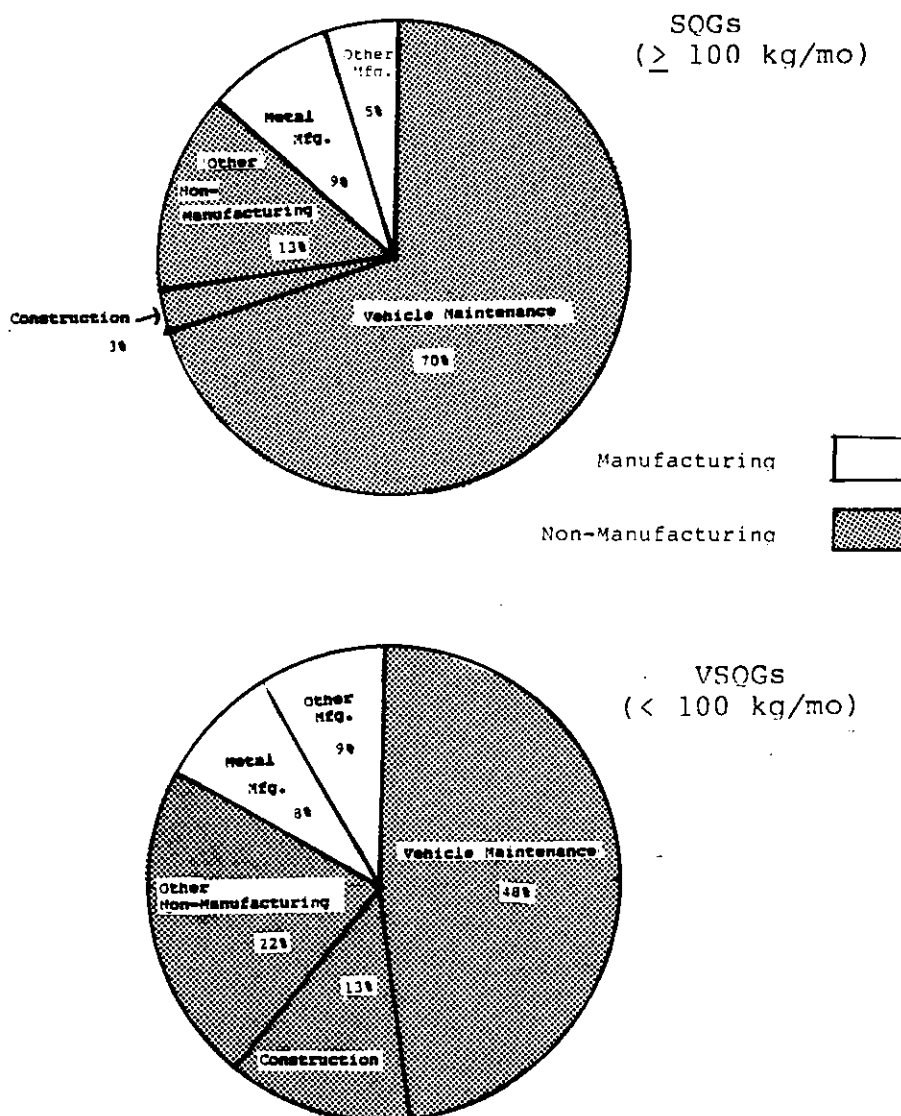
remaining third in other manufacturing and formulating, furniture manufacturing and textile manufacturing.

As shown in Figure 2-3, page 31, the distribution of SQGs, (those producing more than 100 kilograms per month), differs from VSQGs, (those producing less than 100 kilograms per month). With the exception of vehicle maintenance, which dominates SQGs, most of the generators in this category tend to be manufacturing establishments. Non-manufacturing establishments are more heavily concentrated among VSQGs.

Service related industry groups such as pesticide application services, laundries, equipment repair shops, construction, furniture, printing, educational establishments and wholesale and retail establishments are concentrated in the VSQG category. In contrast, a relatively large number of establishments engaged in chemical manufacturing, wood preserving, textile manufacturing, cleaning agent manufacturing and paper products manufacturing are found in the SQG category.⁷ This breakdown of SQGs and VSQG indicates the need for stringent hazardous waste management and disposal regulations exceeding the current EPA cutoff of 100 kilograms or more per month.

7. Ibid., pp. 2-35.

Figure 2-3:
Distribution of Small Quantity Generators
by Industry Group:
SQGs and VSQGs



Source: Abt Associates, Inc., National Small Quantity Hazardous Waste Generator Survey, prepared for the EPA. (Cambridge: Abt Associates, Inc., 1985).

Waste Produced

The Abt study found 60 percent of SQG waste is from lead-acid batteries, primarily from vehicle maintenance.⁹ An additional 18 percent of the SQG and VSQG waste consists of solvents from metal manufacturing, vehicle maintenance, equipment repair, printing and construction, while six percent is made up of strongly acidic or alkaline wastes. The remaining 15 percent of the waste is filtration residues, ignitable wastes and spent plating wastes.¹⁰ Table 2-1, page 33, lists major industrial categories EPA has found producing small quantities of hazardous waste.

REGULATION OF SQGs

Federal Regulations

As of August 5, 1985, federal regulations under the amended RCRA guidelines require generators producing over 100 kilograms of hazardous waste per month to restrict on-site storage to less than 180 days without a permit, utilize only permitted facilities for off site disposal, and keep and maintain records for certain periods of time. They

9. The most common hazardous waste produced is lead-acid batteries; 90 percent are recycled or reclaimed. Environmental News, 12 March, 1985.

10. Abt Associates, Inc. National Small Quantity Hazardous Waste Generator Survey, p. 36.

TABLE 2-1:
Industrial Groups Comprising Over 60% of All
Small Quantity Generators

Industry Category	# SOGs		Total
	100-1000 kg/mth	Most Common Waste Streams	Quantity (tons/yr)
Vehicle Maintenance	82,530	Used Lead Acid Batteries Spent Solvents Strong Acids or Alkalies	351,500
Metal Manufacturing	11,080	Spent Solvents Strong Acids or Alkalies Spent Plating Wastes	58,160
Printing	3,450	Photographic Wastes Spent Solvents Waste Ink	13,200
Photography	2,820	Photographic Wastes Solutions or Sludges Containing Silver	16,200
Laundries & Drycleaning	2,520	Dry Cleaning Filtration Residues	8,270
Other Services	2,400	Wastes Containing Formaldehyde Ignitable Wastes	6,900
Pesticide Applicators	1,660	Pesticide Solutions Empty Pesticide Containers	6,450
Analytical & Clinical Labs	1,300	Spent Solvents Ignitable Wastes	5,900
Construction	1,120	Ignitable Paint Wastes Spent Solvents	3,000

Source: Environmental Protection Agency, Environmental News, 12 March, 1985.

must also complete parts of the Uniform Hazardous Waste Manifest to accompany waste shipped off their premises.¹¹ The following information must be completed on the Manifest:

*Name, address and signature of the generator;

*Department of Transportation (DOT) shipping name, hazard class and waste identification number;

*Number and type of containers;

*Quantity of hazardous waste being transported; and,

*Name and address of facility designated to receive the hazardous waste.¹²

The new requirement for SQGs to complete parts of the Uniform Hazardous Waste Manifest still allows them to send wastes to either an authorized hazardous waste facility or to a facility approved by the state to manage non-hazardous waste, such as a sanitary landfill.¹³ In reality, however, SQG's may find only hazardous waste transporters and hazardous waste facilities willing to accept waste accompanied by a manifest.¹⁴ In states whose regulations are more stringent than EPA's, generators are currently facing this

11. Chris Hill, Marc D. Jones, and Edgar Berkey, Compliance Assistance Activities for Small Quantity Generators of Hazardous Waste, p. 2.

12. Environmental Protection Agency, Requirements for Small Quantity Generators; Questions and Answers, (Washington, D.C.: Environmental Protection Agency, [March 1985]), pamphlet.

13. Environmental Protection Agency, Environmental News, p. 2.

14. Environmental Protection Agency, Requirements for Small Quantity Generators; Questions and Answers.

situation. As of September 22, 1986, all SQGs are required to treat, store or dispose of their hazardous waste at an authorized facility.¹⁵

Northeastern States Regulations

Seven of the 12 states in the New England and Mid-Atlantic states have already enacted more stringent regulations for SQGs than those previously enforced by EPA. Four of these states have regulations equal to the new generator limit of more than 100 kilograms per month. These states are Maryland, New Hampshire, New Jersey and Vermont. Maine's regulations, before August 5, 1985, regulated generators above 200 kilograms. Massachusetts regulates SQGs producing 20 kilograms or more per month; Rhode Island has no exemption level for hazardous waste generators.¹⁶

IMPLICATIONS OF REGULATIONS

The amended regulations formed by RCRA and the states are aimed at appropriate management of the hazardous waste generated by establishments such as vehicle maintenance, dry cleaners, laboratories and schools. States following EPA's criterion of regulating only those generators producing more

15. Ibid.

16. Association of State and Territorial Solid Waste Management Officials, State Small Quantity Hazardous Waste Generator Survey, (prepared for the Environmental Protection Agency, Washington, D.C.: EPA, [1983]).

than 100 kilograms of hazardous waste per month, may be allowing, by default, a substantial portion of their hazardous waste generators (under 100 kilograms), to dispose of their waste indiscriminately.¹⁷ Continued uncontrolled dumping of hazardous waste or toxic materials can result in contaminated groundwater supplies, and other environmental problems which threaten public health.¹⁸

Many barriers stand between the development of regulations and actual compliance. Both regulatory agencies and SQGs have problems, concerns and perceptions hindering compliance. Responsibility for the existing problems should be shared by both government and the small business community.¹⁹ The following section describes the barriers to compliance faced by regulatory officials and generators. A comprehensive list of these barriers is provided on page 37, Table 2-2.

17. VSQGs represent three quarters of the generators. Abt Associates, National Small Quantity Hazardous Waste Generator Survey, p.2.

18. Marc D. Jones, Impact of Hazardous Waste Regulations on Small Business, p. 1.

19. EPA Small Business Task Force, EPA Small Business Initiatives--Strategy for Improved Regulation and Compliance, (recommendations prepared for the Environmental Protection Agency, Washington, D.C.: EPA, [1984]), p. 3.

TABLE 2-2:
Barriers to Compliance with the 1984
Amended RCRA Requirements

=====

Barriers for EPA and State Regulatory Agencies

- *Lack of manpower and funding to effectively identify, educate and regulate SQGs.
- *Perceptions held by SQGs about regulatory agencies as being bureaucratic, inflexible, insensitive communicators and disinterested in SQGs' needs and problems.
- *Lack of understanding and concern about small business problems among regulatory officials.
- *Reluctance on the part of SQGs to discuss their waste management practices with regulatory officials.
- *Belief of SQGs that they won't be found.

Barriers for Small Quantity Generators

- *Lack of awareness and understanding of regulatory details and compliance requirements.
- *Lack of financial and technical resources to appropriately manage hazardous waste.
- *Generators who comply may be at a competitive disadvantage with other small businesses as a result of hazardous waste management costs.
- *Transport and disposal costs are prohibitive for many SQGs who are often small, marginally successful businesses.
- *Transporters and disposal facilities are sometimes reluctant to handle small quantities of hazardous waste.

Sources: Marc D. Jones, Impact of Hazardous Waste Regulations on Small Business, p. 1; Waste Systems Institute of Michigan, Inc., Investigations and Recommendations for a Management System for Small Quantities of Hazardous Waste from Michigan Based Business, p. 9; EPA Small Business Task Group, EPA Small Business Initiatives--Strategy for Improved Regulation and Compliance, p. 3.

Barriers for EPA and State Regulatory Agencies

The EPA and state regulatory agencies have many problems to overcome before they can effectively enforce RCRA and state regulations for SQGs. These include limitations, such as manpower and funding within their agencies, as well as barriers created by SQG perceptions about regulation and regulatory agencies. These situations must be addressed in order to develop successful enforcement programs.

The greatest limitation for agencies is a lack of funding and manpower to effectively identify, educate and regulate SQGs.²⁰ Other agency barriers to effective regulation result from the existence of overly complex government regulations and policies developed without adequate consideration of small business constraints.²¹ This is compounded by a lack of understanding and concern about small business problems among regulatory officials.²²

Perceptions SQGs have about regulatory agencies are based on the problem areas listed above. SQGs perceive regulatory agencies as being bureaucratic, inflexible, insensitive

20. Waste Systems Institute of Michigan, Inc., Investigations and Recommendations for a Management System for Small Quantities of Hazardous Waste from Michigan Business and Industry, (prepared for the Michigan Department of Natural Resources, Grand Rapids: Waste Systems Institute of Michigan, Inc., [1984]), p. 9.

21. EPA Small Business Task Group, EPA Small Business Initiatives--Strategy for Improved Regulation and Compliance, p. 3.

22. Ibid.

communicators and disinterested in SQGs' needs and problems.²³ Many SQGs believe regulatory agencies do not have the ability to detect them²⁴ and regulatory agencies find a reluctance on the part of SQGs to discuss their waste management practices.²⁵

Barriers for SQGs

The issues SQGs have with coming into compliance fall into three interrelated categories. One set of problems results from lack of knowledge about hazardous waste and regulations. A second set of problems centers around management and economic issues. The third set of issues includes transporters and disposal facilities operators, who sometimes do not welcome small quantities of hazardous waste because they find it unprofitable.

Many SQGs do not realize they are producers of hazardous waste for a variety of reasons. For example, although guidelines exist for determining if a waste is hazardous, those guidelines may not have been made easily accessible to

23. Ibid.

24. Marc D. Jones, Regulatory Education Program for Small Quantity Hazardous Waste Generators in the United States, (presented at the HAZWASTE FORUM, Washington, D.C.:EPA, [1984]) p. 9.

25. Ibid., p. 8.

SQGs.²⁶ Many trade associations have published material describing types and management guidelines for waste produced by their trades, but many SQGs are not affiliated with any such organization.²⁷

Even if SQGs are informed about hazardous waste and regulation, they often have difficulty understanding and/or responding to regulations.²⁸ Few SQGs are equipped to deal with hazardous waste management issues. Most businesses producing hazardous waste do not have the expertise, capital or staff to effectively manage the liability, technical and procedural components of compliance.²⁹

The cost of hazardous waste management can severely cut into the profit of small businesses who are often only marginally successful.³⁰ SQGs find the cost of having a small quantity of waste transported more expensive than the

26. Waste Systems Institute of Michigan, Inc. Investigations and Recommendations for a Management System for Small Quantities of Hazardous Waste from Michigan Business and Industry, p. 9.

27. Marc D. Jones, Regulatory Education Program for Small Quantity Hazardous Waste Generators in the United States, p. 9.

28. EPA Small Business Task Group, EPA Small Business Initiatives--Strategy for Improved Regulation and Compliance, p. 3.

29. Marc D. Jones, Regulatory Education Program for Small Quantity Hazardous Waste Generators in the United States, p. 8.

30. Marc D. Jones and Edgar Berkey, Communicating with Small Business, (prepared for RCRA Communications Task Force, Washington, D.C.: Environmental Protection Agency, [1985]), p.5.

transport of large quantities of waste because SQGs cannot take advantage of economies of scale.³¹ Often small generators also face the management issue of not being able to obtain timely pick-up service from transporters.³²

Transporters and disposal facilities often find the costs of servicing SQGs prohibitive. Transporters must either pay full price for the disposal of a unfilled drum, or they must travel long distances to a variety of generators to collect a full barrel. Disposal facilities must complete the same amount of paper-work to accompany small quantities of waste as for large quantities. This makes handling costs disproportionately large for small quantities of hazardous waste.³³

31. Boston Coalition for Safe Hazardous Waste Disposal by Small Quantity Generators, A Report: A Milk-Run Program for Small Quantity Generators of Hazardous Wastes, (Boston: Massachusetts Department of Environmental Management) p. 13.

32. Ibid.

33. Waste Systems Institute of Michigan, Inc., Investigations and Recommendations for a Management System for Small Quantities of Hazardous Waste from Michigan Business and Industry, p. 9.

PROGRAMS

The major barrier between regulatory agencies and SQG compliance is lack of communication.³⁴ EPA and state agencies have recognized this as a major obstacle and have begun developing and instituting programs to improve communication with SQGs. The cornerstone to solving the compliance problem is believed to be effective comprehensive educational programs aimed specifically at small generators.³⁵

EPA Programs

"Hotline" Program

In 1982, EPA created the Small Business Ombudsman's office. This office is charged with providing easier access to the agency and increasing EPA responsiveness and sensitivity to SQGs. The office's charge also includes investigating and resolving SQG disputes with EPA and helping SQGs comply with regulations.³⁶

34. Marc D. Jones, Impact of Hazardous Waste Regulations on Small Business Regulations on Small Business, p. 8; EPA Small Business Task Group, EPA Small Business Initiatives--Strategy for Improved Regulation and Compliance, p. 2.

35. Marc D. Jones, Regulatory Education Program for Small Quantity Hazardous Waste Generators in the United States, p. 2.

36. Environmental Protection Agency, Small Business Assistance at EPA, (Washington, D.C.: EPA, [1982]); Marc D. Jones, Regulation Education Program for Small Quantity Hazardous Waste Generators in the United States, p. 2.

The Ombudsman operates an easily accessible toll-free telephone number. The "Hotline" offers a means for small generators to request advice and consultation on hazardous waste issues. It also provides SQGs with an opportunity to obtain information inexpensively and confidentially.³⁷

EPA also offers another "Hotline" through the Office of Solid Waste and Emergency Response. This is known as the RCRA/Superfund Hotline, and its function is to answer callers' questions on the requirements and program activities of RCRA and the Superfund.³⁸ All calls are handled on an anonymous basis and the staff provides technical information, furnishes referrals and takes orders for available publications. The nature of the questions and concerns is documented by EPA and compiled to provide a way of continually upgrading EPA's assistance service.³⁹

37. Chris Hill, Marc D. Jones and Edgar Berkey, Compliance Assistance Activities for Small Quantity Generators of Hazardous Waste, p. 3.

38. Environmental Protection Agency, Small Business Assistance at EPA, pamphlet.

39. Chris Hill, Marc D. Jones and Edgar Berkey, Compliance Assistance Activities for Small Quantity Generators of Hazardous Waste, p. 4.

SQG Education Program

The amended RCRA provisions require EPA to "Undertake a program to inform and educate small quantity hazardous waste generators of their new responsibilities."⁴⁰ A program has been developed and includes two phases. The first phase of the program has been completed through the Abt study quoted earlier in this chapter. The next step, currently being conducted, is to provide generators with information through EPA regional offices, states and trade associations. This information will identify wastes through product trade names, chemical and slang names or general descriptions, and will correlate the waste with the appropriate Department of Transportation (DOT) identification number where possible.⁴¹ Generators will also be informed of the need to prepare a Uniform Hazardous Waste Manifest to accompany waste. They will also be provided with instructions for completing the manifest.

The EPA has evaluated its position with SQGs and their compliance with RCRA. From this evaluation EPA has created programs to make the agency more accessible to small generators by offering information through its "Hotlines".

40. Resource Conservation and Recovery Act, cited by Chris Hill, Marc D. Jones and Edgar Berkey, Compliance Assistance Activities for Small Quantity Generators of Hazardous Waste, p. 5.

41. Environmental Protection Agency, Small Quantity Hazardous Waste Generators; The New RCRA Requirements, (Washington, D.C.: EPA), pamphlet.

Information for SQGs is also provided through regional offices, states and trade associations. This information is helpful, but it only aids those who are somewhat informed about the issue of hazardous waste, its generators, and related regulations.

State Programs

State programs to assist SQGs have many variations. Some states utilize technical assistance programs,⁴² waste exchanges,⁴³ amnesty days⁴⁴ and computerized hazardous waste management systems.⁴⁵ Many states have focused their program efforts on a variety of educational programs. These

42. Technical assistance programs, offering over-the-phone assistance, operate in many states, including Pennsylvania, Connecticut, North Carolina, New York, and Georgia. Chris Hill, Marc D. Jones and Edgar Berkey, Compliance Assistance Activities for Small Quantity Generators of Hazardous Waste.

43. Waste Exchanges are excellent systems for resource recovery. Although there are several private sector waste exchanges, such as one operating from Syracuse, NY, called the Northeast Waste Exchange, North Carolina has developed a waste exchange operating at the state level. Waste exchanges provide exchange referrals and furnish educational and research services to assist industries develop safe and economical waste management strategies. Ibid.

44. Florida, for instance, has developed an "Amnesty Days" program creating a one-time activity in each region of the state allowing generators to dispose of hazardous waste without fear of fines. Ibid.

45. Hennepin County, Minnesota has developed a program to bring SQGs into compliance by using a computerized data base. The county uses the data base to monitor waste from each licensed generator, while generators use it to identify possible transporters or disposal sites and obtain waste exchange information. Ibid.

programs include workshops given throughout the state, information packets distributed through state agencies and trade associations and events focusing on hazardous waste management, such as hazardous waste collection days.⁴⁶

Technical assistance programs and waste exchange programs can be operated from a central location through the use of telephones and computers. Other programs, such as those creating information packets, can be developed at the state agency level. The administration of most programs, and the dissemination of information must be done at the local level if SQGs are to be reached.

Some states have encouraged local initiatives,⁴⁷ such as collection days, to supplement their state programs. Local programs and programs delivered in local areas can provide the stimulus needed to encourage business to question their waste, determine if it is hazardous and seek the information and assistance needed to come into compliance. Local programming can also educate the general public about

46. Cape Cod Planning and Economic Development Commission has developed a local hazardous waste collection program to not only collect waste, but also to disseminate information about hazardous waste management. A household hazardous waste collection day was held in 1984. A similar program for SQGs is expected by October 1986. Telephone interview with Greg Braham, August 9, 1985.

47. For example, New Mexico, Massachusetts, Washington, and Minnesota have encouraged the development of hazardous waste management programs at the local level. Chris Hill, Marc. D. Jones and Edgar Berkey, Compliance Assistance Activities for Small Quantity Generators of Hazardous Waste.

hazardous waste and appropriate disposal and management of these wastes.

SUMMARY

Businesses and other institutions generating small quantities of hazardous waste account for 98 percent of all generators of hazardous waste but only .4 percent of the hazardous waste generated. This waste, until recently, has usually been disposed of in landfills. Congress, through RCRA legislation, has mandated the regulation of small quantities of hazardous waste to protect the environment and public health.

The realization of RCRA legislation relies on the development of successful programs to educate and regulate SQGs. Successful program development hinges on the ability of regulatory agencies to work within the constraints of limited funding and bureaucratic efficiencies, while understanding the problems faced by SQGs. These problems include limited economic and managerial resources, as well as a lack of knowledge about hazardous waste. Programs developed at the federal level provide an excellent source of information for establishments who have some idea they produce hazardous waste, and have the inclination to change their disposal practices.

States have established programs similar to the federal programs, such as offering over-the-phone technical

assistance. States have also developed programs, or funded programs to be administered at the local level. These include educational workshops, one-to-one technical assistance, amnesty days and collection days. Programs administered at the local level serve to educate the small quantity generator and aid them in complying with regulations. These programs also educate the public and disseminate information about hazardous waste. Programing at the local level is certainly a necessary part of bringing about SQG compliance.

CHAPTER III

METHODS

INTRODUCTION

The focus of this chapter is on the methods used to obtain information for this study. First, information was gathered from current publications and EPA reports to describe the hazardous waste situation from a national perspective. Federal and state regulations¹ and documents written by the EPA, or for the EPA, were reviewed for an assessment of regulations regarding the problems faced in bringing about SQG compliance. This information is discussed in Chapters I and II and provides a background for the remainder of the study.

The goal of this study was to determine what local governments initiatives, if any, could be utilized to aid SQGs. A survey² was then developed and administered to state regulatory agencies charged with bringing SQGs into compliance. The purpose of the survey was to solicit ideas and information relating to SQGs to determine if these agencies utilized local governments, or could envision the use of local government in their enforcement programs. The formulation, administration and evaluation of the survey is

1. Association of State and Territorial Solid Waste Management Officials, State Small Quantity Hazardous Waste Generators Survey, vol. 1. Prepared under contract with the EPA, (Washington, D.C.: EPA).

2. See Appendix A, page 100, for a copy of the survey and the accompanying cover letter.

the crux of this chapter.

SURVEY FORMULATION

Sample Size

The study area included the 12 states identified as the Northeast Region by the United States Department of Agriculture, Cooperative Extension Service. These states include Maine, Vermont, New Hampshire, Massachusetts, Connecticut, Rhode Island, New York, New Jersey, Pennsylvania, Delaware, Maryland, and West Virginia. The Cooperative Extension Service has delineated the Northeast Region as those states listed above (as well as the District of Columbia) since the 1920s for the purpose of program and planning efforts.³

It was decided to poll those individuals in each of the states in the Northeast Region responsible for carrying out the regulations developed to bring SQGs into compliance. The individual respondents were selected by calling each state's State House and asking for the agency responsible for hazardous waste.

The next step was to call each agency to identify an individual who was familiar with the updated RCRA amendments

3. Telephone interview with Dr. Hollis Hall, USDA, Cooperative Extension Service, 6 August 1985; Alfred Charles True, A History of Agricultural Extension in the United States, 1785-1923 (Washington: United States Government Printing Office, 1928), p. 127.

and worked with enforcement policy involving SQGs. In every state there was at least one contact name given.

Development of the Survey Instrument

There is very sparse information available on state regulations pertaining to small quantity hazardous waste generators updated after the Survey of SQG, Vol 1., 1983, and no information at all is available on the role state regulatory agencies believe local governments can play in aiding SQGs. The survey was developed to supply this information. Issac and Michael state in Handbook in Research and Evaluation: "Surveys are the most widely used techniques in education and the behavioral sciences for the collection of data. They are a means of gathering information that describes the nature and extent of a specified set of data ranging from physical counts and frequencies to attitudes and opinions."⁴

Question Design

Survey questions were developed by using information from Issac and Michael, Dillman and the Statistical Consulting Service at the University of Massachusetts.⁵ These sources

4. Stephen Issac and William B. Michael, Handbook in Research and Evaluation for Education and the Behavior Sciences, 2nd ed. (San Diego: EdITS, 1981), p. 128.

5. Stephen Issac and William B. Michael, Handbook in Research and Evaluation for Education and the Behavior Sciences, pp. 127-130; Don A. Dillman, Mail and Telephone Surveys; The Total Design Method, (New York: John Wiley and Sons, 1978), pp. 79-118; Statistical Consulting Services, Graduate Research Tower, University of Massachusetts, Amherst.

offer guidelines to creating concise questions, geared to obtaining the information desired. Questions were designed to determine beliefs regulatory officials have regarding regulations, as well as their views about what could, could not, or does work in terms of involving local government in the SQG issue.

Partially close-ended questions with ordered answer choices were designed to provide some dimension to the answers provided.⁶ The choice of "other" was offered for most questions to enable those surveyed to include responses not listed. Given the small size of the surveyed group, and the many possible responses, it was reasonable to allow for a limited number of open-ended answers. This allowed for the stimulation of discussion with these officials and gave them the opportunity to discuss issues, programs, etc. either unique to the state, or of special interest to them regarding SQGs.

6.Dillman, p.89.

Design of the Survey

The survey, titled "Survey for the Northeast States to Evaluate Policy Regarding SQGs of Hazardous Waste", was designed using criteria suggested by Dillman,⁷ and the Statistical Consulting Service. The questions evolved from topic areas relating to current state regulations, the effectiveness of these regulations, methods utilized to enhance effective regulation, and problems found in enforcing SQG compliance.

Questions pertaining to the state's utilization of local government in this matter were then covered. These questions related to whether, and in what form local government is utilized and its effectiveness. A final question asked how local government is or how it might be utilized in programming efforts and how effective this utilization may be.

Survey Package

To insure response, the survey was designed to provide respondents with a choice of either completing the survey and returning it by mail, or answering the questions in a telephone survey. The survey package consisted of the survey and cover letter, as well as an envelope addressed for return correspondence. For a complete copy of the

7. Don A. Dillman, Mail and Telephone Surveys; The Total Design Method, pp. 119-228.

"package" see Appendix A, (page 102.) As suggested by Dillman,⁸ all material used in correspondence included the letterhead and address of the agency sponsoring the study, all correspondence was typed, and the date, business address, and personal greeting were used in each cover letter.

A single page cover letter⁹ was designed to introduce the respondents to the study. The cover letter explained the goal of the study, as well as Cooperative Extension Services' long range goal of providing information to aid in the appropriate management of small quantity generation of hazardous waste. The letter also explained the respondent's option of filling out the survey and returning it by mail, or waiting to answer the survey by telephone. Last, but not least, the letter thanked those individuals surveyed for their consideration, and offered them a copy of the completed study.

ADMINISTRATION OF THE SURVEY

All of the survey packages were mailed on July 3, 1985. Beginning on July 15, calls were made to the state agencies to arrange for convenient times to interview those individuals being surveyed. This proved to be an excellent step because it established a time which respondents could

8. Ibid.

9. See Appendix A.

set aside for the interview, without pressure or interruption, and it gave them an opportunity to review the survey before the actual interview call. Everyone contacted in the Northeast Region was interested in the study, and extended an invitation for calls back if there were any further questions.

Calls were made between July 15 and July 31. Two respondents returned their surveys before they were contacted, and three others mailed a completed survey as well as answering questions during a telephone interview. Five states sent additional information regarding their regulations and programs relating to hazardous and solid waste disposal.

Analysis

The response to the survey was 100 percent, however the relatively small size of the sample limits statistical analysis of the survey.¹⁰ Although the sample size was limited to the Northeast Region, the survey offers a great deal of information concerning state regulations as well as problems and successes in developing enforcement policy regarding SQGs. Most questions will be analyzed in a comparative format to see differences and similarities in

10. Dillman states: ...turning a close-ended question into one that is only partially closed may provide very useful information. Don Dillman, Mail and Telephone Surveys; The Total Design Method, p. 92.

how respondents answered questions. Because there seem to be many variations in the approaches state regulatory agencies have taken, each state's response will also be analyzed in a case study format.

Evaluation

The survey was a valuable tool for obtaining information on states' regulations for SQGs and the effectiveness of those regulations. The information expresses the view of individuals working through state agencies on issues of SQG compliance. These viewpoints are important, since they come from the source responsible for implementing regulations. There are however, many other professionals who have worked with these issues. The beliefs of these professionals were not included in this particular survey. Their views will be incorporated in the conclusions in Chapter V.

The survey developed for this study has several shortcomings which were remedied in the telephone interviews, with the exception of question number four. This question asks for an estimated percentage breakdown of businesses generating small quantities of hazardous waste within the state. Only two states had the informational sources to answer this question.

The wording of question seven was found to be inappropriate. The question states: "Do your state regulations bring SQGs into compliance?" The first respondent noted

that it is enforcement and not regulation that actually fosters compliance. This point was discussed in all other telephone interviews, and the question was re-phrased, "Do your state enforcement policies bring SQGs into compliance?"

SUMMARY

Developing a survey is an excellent tool to elicit information not available from other sources. Although there were some errors in the mailed survey, the use of telephone interviews allowed for corrections in questions and encouraged respondents to offer additional information. The individuals surveyed were very congenial and expressed interest in the results of the study. The information from the survey will be analyzed in Chapter IV.

C H A P T E R I V

SURVEY RESULTS

INTRODUCTION

This chapter focuses on the results of the survey conducted in July 1985. One official from the agency responsible for enforcing state and federal regulations regarding SQGs was surveyed from each of the Northeastern States. A list of the names, addresses and telephone numbers of these regulatory officials is given in Appendix B, (page 107).

The purpose of the survey was threefold: 1. to determine the specifics of each state's regulatory policy as it applies to SQGs; 2. to measure the effectiveness of the states policies in aiding SQGs; and, 3. to discover various ways municipal government could aid state efforts in small quantity hazardous waste management. This chapter provides a question by question analysis of the data derived from the survey. A summary of the findings and success of the survey is included in Chapter V.

SURVEY RESULTS

Question #1. Do the amended RCRA requirements effect SQGs of hazardous waste in your state?

yes_____

no_____

somewhat_____

Question #1 was asked to determine if the stringency of each states regulatory requirements was less strict, more strict, or as strict as the amended RCRA requirements. Of the 12 states surveyed, five (41.6 percent) answered "yes", while seven (58.3 percent) answered "no". None of the states answered with the response "somewhat." Table 4-1, shown below, lists the responses to question #1 by state.

TABLE 4-1:
Responses to Question #1

Yes, the amended RCRA requirements effect SQGs in this state.	No, the amended RCRA requirements do not effect SQGs in this state.
Connecticut New York Pennsylvania Delaware West Virginia	Maine Vermont New Hampshire Massachusetts Rhode Island New Jersey Maryland

Question #2. (If "yes" or "somewhat" to #1), Which of the following are reflected in the changes in enforcement policy for SQGs in your state:

The new identification of a SQG as one who generates
_____ more than 100 kg hazardous waste monthly.

The "cradle to grave" control system which tracks all
_____ significant quantities of hazardous waste from generat-
_____ ion to disposal.

The new manifest, which after August 5, 1985, must ac-
_____ company shipments of hazardous waste.

_____ Other _____

This question was designed to discover the reasons why SQSs would be effected by the amended RCRA requirements in the states answering "yes" to question #1. The three responses provided in the survey were formulated with information from studies from the state of Michigan and the EPA.¹ The response of "other" was also listed to encourage different responses.

Only Delaware listed the new identification of SQGs as generators of more than 100 kg hazardous waste monthly as a change in enforcement policy regarding SQGs. Both Connecticut and Delaware believed the "cradle to grave" control system used to track all significant quantities of hazardous waste from generation to disposal would effect enforcement policy in these states. Connecticut's current system will be altered by the new RCRA requirements. The other states already track all hazardous waste disposed through licensed transporters.

All five states answering question one with "yes" believed the federal manifest required to accompany shipments of hazardous waste would effect enforcement policy for

1. Waste Systems Institute of Michigan, Inc., Investigations and Recommendations for a Management System for Small Quantities of Hazardous Waste From Michigan Business and Industry, (prepared for the Michigan Department of Natural Resources, Grand Rapids: Waste Systems Institute of Michigan, Inc., {1984}), pp. 7-9. and Chris Hill, Marc D. Jones, and Edgar Berkey, Compliance Assistance Activities for Small Quantity Generators of Hazardous Waste, (prepared for the EPA Office of Solid Waste and Emergency Response, Washington, D.C.: EPA, {1984}), p. 1.

SQGs. Several states found the federal manifest to be more complicated than necessary for monitoring small quantities of hazardous waste. One state believed the federal manifest may cause confusion for SQGs because the state monitoring program was different and more stringent than EPA's monitoring system.

Question #3. (If "no" to #1), Are your state requirements more stringent than the amended RCRA requirements? Please specify.

This question was designed with the assumption that the states whose SQGs weren't effected by the amended RCRA requirements would have more stringent requirements. Although the question was designed for the seven states who answered "no, the amended RCRA requirements would not effect SQGs in their states," all twelve states responded to this question either in returned surveys or during the course of the telephone interview. Table 4-2, p. 62, shows a compilation of the responses to question #3.

Seven states surveyed believed their state requirements were more stringent than the amended RCRA requirements. Delaware, New Jersey and Maine stated their regulations were equal to federal regulations. (Maine and New Jersey have had their regulatory policies in effect for some time.) West Virginia and Pennsylvania stated their definitions of SQGs were not as stringent as the new federal definition,

but other regulations pertaining to landfills and dumping practices have encouraged SQGs to dispose their waste through licensed facilities.

TABLE 4-2:
Responses to Question #3

Yes, state requirements are more stringent than the amended RCRA requirements.	State requirements are either as stringent as the amended RCRA requirements, or other regulations force SQGs to comply.
Vermont New Hampshire Massachusetts *Connecticut Rhode Island *New York Maryland	Maine *Pennsylvania New Jersey *Delaware *West Virginia

* States whose SQGs are effected by the amended RCRA requirements. (from Question #1.)

Question #4. What (estimated) percent of the following small businesses account for small generation of hazardous waste in your state?

_____ Vehicle Maintenance	_____ Metal Manufacturing
_____ Printing	_____ Photography
_____ Laundries & Drycleaning	_____ Pesticide Applicators
_____ Analytical & Clinical Labs	_____ Pesticide Applicators
_____ Other _____	

Question #4 was designed using information from a survey conducted for the EPA². The purpose of the question was to compare state percentages in each category. Unfortunately, only two states, Vermont and New Hampshire, were able to answer the question within the given format. The results from these two states' estimates and EPA's estimates are compared in Table 4-3, p. 64.

Three other states offered some ranking of SQGs without any percentage estimation. Pennsylvania stated vehicle maintenance caused the most generation of hazardous waste (mostly from lead batteries) in that state. Maryland also listed vehicle maintenance to be the largest contributor of waste in the state, followed by laundries and dry-cleaning, printing and metal manufacturing.

Connecticut included information from a study done for the state by Abt Associates (see Appendix C, page 110). This study found about 60 percent of the SQG waste generated in this state consists of lead acid batteries. Solvents, the next largest category, account for about 20 percent of the waste generated in Connecticut, and an additional five percent of the waste is made up of highly acidic or alkaline

2. Abt Associates Inc., National Small Quantity Hazardous Waste Generator Survey, (Cambridge: Abt Associates, {1985}). pp. 2-35.

TABLE 4-3:
 Responses to Question #4;
 The Estimated Percent of Small Business Accounting for Small
 Quantity Generation of Hazardous Waste in Vermont and
 New Hampshire.

Vehicle Maintenance			Metal Manufacturing		
VT	NH	EPA	VT	NH	EPA
<u>40%</u>	<u>10%</u>	<u>50%</u>	<u>01%</u>	<u>25%</u>	<u>10%</u>
Printing			Photography		
VT	NH	EPA	VT	NH	EPA
<u>40%</u>	<u>15%</u>	<u>*</u>	<u>01%</u>	<u>0</u>	<u>*</u>
Laundries & Drycleaning			Pesticide Applicators		
VT	NH	EPA	VT	NH	EPA
<u>05%</u>	<u>05%</u>	<u>*</u>	<u>01%</u>	<u>0</u>	<u>*</u>
Analytical & Clinical Labs			Construction		
VT	NH	EPA	VT	NH	EPA
<u>01%</u>	<u>15%</u>	<u>*</u>	<u>01%</u>	<u>05%</u>	<u>*</u>
Other:					
VT					
<u>10%</u> Furniture strippers, Body shops, Salvage Yards, Lumber Yards.					
NH					
<u>25%</u> Measuring Analytical Controlling Instruments					
EPA					
* The EPA survey does not give percentage breakdowns for these categories.					

75 percent; Vermont and Pennsylvania listed compliance at 75 to 100 percent.

TABLE 4-4:
Response to Questions #5;
Estimated Number of SQGs in Compliance
with the Amended RCRA Requirements.

<25%	25-50%
Connecticut Rhode Island Maryland	Maine New Hampshire New York
50-75%	75-100%
Massachusetts New Jersey	Vermont Pennsylvania

Response to Question #6;
Estimated Number of SQGs in Compliance
with the Amended RCRA Requirements
by March 1986.

<25%	25-50%
Connecticut Rhode Island	Maine New Hampshire New York
50-75%	75-100%
Massachusetts New Jersey	Vermont Pennsylvania Maryland

Of the ten states who answered questions #5 and #6, nine (90 percent) listed the same compliance percentages for #6 as they had for #5. Only Maryland believed the percent of SQGs in compliance would change by March 1986. The change

from less than 25 percent to between 75 and 100 percent was attributed to state requirements also coming into effect in fall 1985.

Question #7. Do your state regulations bring SQGs into compliance?

yes_____

no_____

somewhat_____

As stated in Chapter III, there was some confusion on the wording of this question since it is the enforcement of regulations that brings SQGs into compliance. This issue was discussed with those surveyed and the question was re-worded, "Does your enforcement policy for state regulations bring SQGs into compliance?" After further analysis it became apparent that this question was still ambiguous because the responses were too general. Therefore, the data found from this question will not be discussed.

Question #8. (If yes or Somewhat to #7), Which of the following have aided your state in making your regulations effective?

_____ SQGs have been educated to know their legal responsibility for proper disposal.

_____ SQGs understand the liabilities for improper dumping.

_____ SQGs have been educated about ways to manage hazardous waste.

A statewide approach has been taken so no SQG is at a competitive disadvantage for complying with regulations.

Other _____

This question focused on the mechanisms used by state governments to make their regulations effective. Of the nine states who answered this question six states (66.6 percent) believed education of SQGs to know their legal responsibilities, as well as the liabilities for improper dumping and proper management practices have aided in making their regulations effective. Three states have taken a state wide approach so no SQG is at a competitive disadvantage for complying with regulations. (See Table 4-5, p. 69.)

Seven states had other sources besides those listed aiding them in making their regulations effective. Rhode Island and Connecticut cited on-site inspections as an aid in making regulations effective. Public news releases, fact sheets, mass mailings to suspected SQGs, programs through trade associations and workshops were listed by the states as assisting in making regulations for SQGs effective.

TABLE 4-5:
Mechanisms Employed to Assist States in
SQG Compliance

	Education about legal responsibility.	Education about possible liabilities.	Education on proper management of waste.	Statewide approach has been taken.	Other.
New Hampshire	X	X	X	X	
Massachusetts	X	X	X		X
Rhode Island					X
Connecticut	X		X		X
New York					X
New Jersey	X	X	X	X	X
Pennsylvania		X			X
Maryland	X	X	X	X	X
West Virginia	X	X	X		

Question #9. Which of the following are barriers to the enforcement of regulations for SQGs?

_____ SQGs don't report their waste because of fear of fines.

_____ SQGs don't report their waste because of fear of economic hardship due to added expense for compliance.

_____ The cost of disposal put SQGs at a competitive disadvantage with similar companies who do not comply.

_____ The cost for a transporter to make pick-ups for SQGs is prohibitive.

Many hazardous waste disposal facilities don't
_____ welcome SQG's waste.

The state regulatory agency does not have the
_____ financial resources necessary to effectively
regulate SQG's.

Question #9 was designed to determine the barriers to the enforcement of regulations for SQGs. This question was also formulated using information from the state of Michigan and the EPA.³ Eleven states responded to this question; Rhode Island did not.

Five states (45.4 percent) believed a barrier to the enforcement of regulations included the SQG's fear of fines if they report their waste. Seven states listed SQG's fear of economic hardship due to added expense for compliance as a barrier to enforcing regulations. The cost of disposal putting complying SQGs at a competitive disadvantage with non-complying businesses was seen as an enforcement barrier by six (54.5 percent) of the responding states.

Six states (54.5 Percent) also believed the cost for transporters to make pick-ups for SQGs to be prohibitive for both generators and transporters. Five states (45.4 percent) have found a barrier to enforcement of regulations

3. Waste Systems Institute of Michigan, Inc., Investigations and Recommendations for a Management System for Small Quantities of Hazardous Waste From Michigan Business and Industry, p.9. and, Chris Hill, Marc D. Jones, and Edgar Berkey, Compliance Assistance Activities for Small Quantity Generators of Hazardous Waste, pp. 1-2.

because hazardous waste facilities haven't welcomed small quantities of hazardous waste. Another barrier, found by seven states (63.6 percent), is the lack of financial resources needed by state regulatory agencies to effectively regulate SQGs. Table 4-6, p. 72 gives a compilation of the responses.

Five states also listed other barriers to the enforcement of regulations. One state listed the limited availability of transporters and facilities specializing in servicing SQGs as a barrier. All five states who listed other barriers believed SQGs often lacked awareness of their waste's possible danger, the regulations and the knowledge to properly manage hazardous waste. They believed lack of knowledge to be a significant barrier to the enforcement of regulations for SQGs.

TABLE 4-6:
Barriers to Enforcement of Regulations
for SQGs.

	Fear of fines.	Fear of economic hardship.	Competitive disadvantage.	Costs for transporter is prohibitive.	Disposal facilities don't welcome SQG's waste.	State regulatory agencies lack financial resources.	Other.
Maine	X	X	X	X	X	X	X
Vermont		X	X	X		X	
New Hampshire				X		X	
Massachusetts							X
Connecticut	X	X	X	X	X	X	X
New York		X	X	X	X		X
Pennsylvania						X	
New Jersey	X	X	X	X	X		
Delaware	X	X			X		X
Maryland		X	X			X	
West Virginia	X					X	

Question #10. Does your state utilize local government to aid in bringing SQGs into compliance?

yes_____

no_____

somewhat_____

Question #11. (If yes or somewhat to #10), Which form of local government do you utilize?

_____ County

_____ Township

_____ Municipal

_____ Other

Question #10 was designed to determine if states involved any form of local government to assist in bringing SQGs into compliance. Question #11 was asked to discover the level of local government most used in aiding with the regulation of SQGs. The information from these two questions is given in Table 4-7, p.75.

The two states who answered "yes" to question #10 utilized municipal government to assist bringing SQGs into compliance, as did four of the states who answered "somewhat." Vermont used county, township and municipal government; New York and New Jersey used both county and municipal government. Vermont also included zoning laws which may be used to bring facilities into compliance.

TABLE 4-7:
The Extent and Type of Local Government
Assisting in SQG Compliance

State	Is Local Govt. Utilized?			Type of Local Govt. Utilized
	Yes	Some- what	No	
Maine		X		Municipal
Vermont		X		County, Township Municipal, Other
New Hampshire		X		Township
Massachusetts	X			Municipal
Connecticut		X		Municipal
Rhode Island			X	
New York		X		County, Municipal
Pennsylvania			X	
New Jersey	X			County, Municipal
Delaware			X	
Maryland			X	
West Virginia			X	

Question #12. How effective is your state's utilization of local government in bringing SQGs into compliance?

_____very effective _____effective
 _____somewhat effective _____not effective

This question was designed to provide a measure of the effectiveness of using local government in bringing SQGs into compliance. Only New Jersey reported local governments' assistance to be very effective. New Jersey reported its local health departments have become the state's eyes and ears for hazardous waste regulation.

None of the seven states listed the use of local government to be effective, however, five states listed local governments' performance as somewhat effective. Vermont scored local government as not effective, but also stated, "a lot depends on the town and what the situation is."

Question #13. Which of the following ways does or could your state use to utilize local government in bringing SQGs into compliance?

Does Could
 _____ Offering educational materials to all known SQGs
 _____ in the local area.

(If you checked "Does", how effective is this strategy?)

_____very effective _____effective
 _____somewhat effective _____not effective

Does Could

_____ Organizing workshops to familiarize SQGs with safe
_____ management practices.

(If you checked "Does", how effective is this
strategy?)

_____ very effective _____ effective

_____ somewhat effective _____ not effective

Maintaining a list of the SQGs, the waste produced
and help to coordinate transport schemes with _____
_____ nearby areas.

(If you checked "Does", how effective is this
strategy?)

_____ very effective _____ effective

_____ somewhat effective _____ not effective

_____ Other. _____

_____ very effective _____ effective

_____ somewhat effective _____ not effective

Question #13 was designed to discover the types of assistance local government can offer to bring SQGs into compliance, as well as the effectiveness of local government in this role. It was also designed to stimulate thought in state regulatory officials on ways local government might be used. All twelve states responded to some aspect of this question.

Currently only two states (16.6%), New York and Maryland, use local government to distribute educational materials to SQGs. Seven states (58.3%) believed local government could

be used to aid SQGs and state government by offering educational materials to SQGs.

Three states (25%), New Hampshire, New York and Maryland utilize local government in organizing workshops for SQGs on management of hazardous waste. All three states listed this use of local government to be somewhat effective. Two states (16.7%), Maine and Vermont, listed that local government could help in bringing SQGs into compliance by organizing relevant workshops.

Vermont, New York and New Jersey (25%) use their local governments to maintain a listing of SQGs and the waste produced. Local government is also used to help with coordination of transport for small quantities of hazardous waste with nearby areas. Vermont and New Jersey rated this use of local government to be effective, while New York and rated this use as somewhat effective. Connecticut and West Virginia listed this as assistance local government might offer.

Under the "other" option, Maine listed the possible use of local boards of health as being a possible use of local government. New Jersey currently utilizes its local boards of health to help enforce hazardous waste regulations. The boards of health in New Jersey have the power to fine violators and cases are tried in local courts.

Massachusetts has one citizen in each town who has the volunteer position of "hazardous waste coordinator". Many

of the coordinators are not active and this program was rated as somewhat effective. Massachusetts also has hazardous waste coalitions throughout the state consisting of state officials, planning professionals and others concerned with the regulation of hazardous waste. This program was not rated.

Three states suggested the use of Chamber's of Commerce and trade associations as local units to aid SQGs with educational materials and pertinent workshops. The SQG's fear of fines for not being in compliance may be dispelled if the operator could seek information through non-governmental associations. Trade associations may also be very helpful to members with the same kinds of waste, both in supplying management information and in organizing pick-ups for the waste.

SUMMARY

This chapter has analyzed the information provided from the survey conducted in July 1985. It found state governments' estimated compliance levels relatively unaffected by the new federal requirements. The estimated compliance rates were fairly evenly distributed in the categories between less than 25 percent and 75 to 100 percent. There is no obvious reason for the breakdown of this distribution.

Local government has not yet proven to be a strong asset in assisting the states bring SQGs into compliance, with the exception of New Jersey who rated the use of local government to be very effective. There are many ways local governments could help SQGs comply as listed in the discussion of question #13. Chapter V includes an analysis of the survey results and recommendations for effective steps state regulatory agencies and local government can take to aid SQGs.

CHAPTER V

RECOMMENDATIONS AND CONCLUSIONS

INTRODUCTION

The purpose of Chapter V is threefold. First, it provides a summary of the findings and success of the survey, in terms of the survey's objective. Second, a critique of the states' hazardous waste policies relating to SQGs is given with emphasis on the comparison of state policy and programs to the barriers for enforcement and compliance as outlined in Chapter II. Finally, recommendations to aid SQGs comply with regulations formulated from the survey analysis and other sources are offered for state regulatory agencies, local government and Cooperative Extension Service. A discussion of the importance of this topic to the planning profession is also included.

ANALYSIS OF THE SURVEY RESULTS

The first objective of the survey was to determine the specifics of each of the northeastern states regulatory policies in regards to SQGs. Questions #1, #2 and #3 were designed to provide a comparison between the RCRA amendments and state regulations. Although question one revealed five states to be effected by the new federal requirements, it became apparent in questions #2 and #3 that the majority of states had regulations at least as stringent as the federal requirements. These questions provided general information,

however further investigation would be necessary to yield more specific information about state regulatory policy.

Some states suggested the new federal requirements are not as stringent and conflict with effective state requirements. It is possible the new regulations may cause confusion for SQGs. One state suggested their compliance level may actually drop with the new federal requirement because of confusion on what regulations to follow.

Question #4 was intended to show the percentages of each type of SQGs in each state as well as provide data for comparison between states. The question did reveal that most of the states had not identified SQGs by industry. Only two states answered this question, however a study done for Connecticut provided information on the percentages of SQGs in that state.

Questions #5, #6 and #7 were intended to provide a measure of the effectiveness of state policy for SQGs, using the new federal requirements as the standard. These standards went into effect in August 1985, just after the survey was conducted and became law in March 1986. Question #6 revealed that most states assumed there would be little change in compliance levels by March 1986 when EPA announced its revised requirements for SQGs.

Five (41.7 percent) of the states surveyed believe over 50 percent of their SQGs are in compliance with the amended RCRA requirements. Only one state foresaw a change in

compliance from August 1985 to March 1986. At the time of the survey, most states appeared to be enforcing their own regulations and were waiting to see if the EPA would make any significant changes in regulations by March 1986. It is also possible the states found this too short a time span to expect any noticeable change.

Questions #8 and #9 provided comparisons between the states on mechanisms aiding SQGs to comply and the barriers to compliance. Table 4-5, page 70, and Table 4-6, page 73 show about half of the states have used the same mechanisms for assistance, and they share some of the same problems. Further study would be helpful to determine why some states do not face the same barriers to SQG compliance as recognized by other states.

Analysis of Questions #10 and #11 found seven states utilizing at least one form of local government to assist in SQG compliance. Question #12 found one state rated its use of local government to be very effective while five states rated the use of local government to be somewhat effective. Four of the states estimating compliance rates as either less than 25 percent or between 25 percent and 50 percent also rated the utilization of local government as somewhat effective.

The one state (Vermont) utilizing the most types of local government also rated their use as not effective. This state also estimated between 75 and 100 percent compliance.

Another state (New Jersey) rated its use of local government as very effective and estimated its compliance rate between 50 and 75 percent. Since New Jersey is likely to have more SQGs than many other states due to its population and economic base, further investigation into their use of local government may be helpful.

Question #13 provided information on the ways local government aids, or might aid, state government in bringing SQGs into compliance. It is apparent from the responses from this question that many states have utilized or could utilize local government to assist the state and SQGs. If the states were to examine the ways other states use local government they may find useful programs to borrow.

Perhaps the most important finding of the survey was not the answers to particular questions but the general emphasis of state regulatory policy and the creation and implementation of programs to obtain the goal of bringing SQGs into compliance. Many states have recognized the difficulties SQGs face and many state agencies have also faced frustration in finding successful programs to bring SQGs into compliance. The following section compares the barriers listed in Chapter II with the track-record of state regulatory agencies. For the convenience of the reader Table 2-2, (page 37,) is repeated here as Table 5-1.

TABLE 5-1:
Barriers to Compliance with the 1984
Amended RCRA Requirements

Barriers for EPA and State Regulatory Agencies

*Lack of manpower and funding to effectively identify, educate and regulate SQGs.

*Perceptions held by SQGs about regulatory agencies as being bureaucratic, inflexible, insensitive communicators and disinterested in SQG's needs and problems.

*Lack of understanding and concern about small business problems among regulatory officials.

*Reluctance on the part of SQGs to discuss their waste management practices with regulatory officials.

*Belief of SQGs that they won't be found.

Barriers for Small Quantity Generators

*Lack of awareness and understanding of regulatory details and compliance requirements.

*Lack of financial and technical resources to appropriately manage hazardous waste.

*Generators who comply may be at a competitive disadvantage with other small businesses as a result of hazardous waste management costs.

*Transport and disposal facilities are sometimes reluctant to handle small quantities of hazardous waste.

Sources: Marc D. Jones, Impact of Hazardous Waste Regulations on Small Business, p. 1.; Waste Systems Institute of Michigan, Inc., Investigations and Recommendations for a Management System for Small Quantities of Hazardous Waste from Michigan Based Business, p.9; EPA Small Business Task Group, EPA Small Business Initiatives--Strategy for Improved Regulation and Compliance, p.3.

POLICY AND PROGRAM; BREAKING DOWN OR MAINTAINING BARRIERS
TO SQG COMPLIANCE

The barriers faced by regulatory agencies are very significant hindrances to the enforcement of RCRA's regulations for SQGs. The EPA and many states have made numerous attempts to provide information and assistance to those small businesses generating hazardous waste. However, SQGS still perceive regulatory agencies as unable to understand their needs and problems. In spite of a variety of educational programs and enforcement techniques, five of the northeastern states believed the SQG compliance rate in their states to be below 50 percent, and two states were unable to give any estimate for SQG compliance.

The new RCRA requirements have been developed with the intent of generating the proper management of hazardous waste. These requirements neglect the needs and problems of those responsible for the initial management of small quantities of hazardous waste. The added burden and expense of meeting federal and state regulations may be incentive for many SQGs to ignore the important social and environmental consequences of improper disposal of hazardous waste.

The process of breaking down the barriers to SQG compliance requires state regulatory agencies to create innovative programs focusing on the issues facing SQGs. These programs must include flexibility, sensitive communicators, and administrators who thoroughly understand and are

interested in the needs and problems of SQGs. The following section provides recommendations to facilitate the development of effective programs to aid SQGs comply with hazardous waste regulations.

RECOMMENDATIONS TO AID SQG COMPLIANCE

These recommendations have been formulated through the analysis of the survey, discussions with individuals associated with trade and business associations and other publications.¹ The recommendations will be given in the order created by the survey analysis. This section will be followed by a breakdown of recommendations for specific agencies and local government.

Recommendation: Monitor Waste Disposal in Local Landfills

Questions #1, #2 and #3, provided a comparison between the northeastern states regulatory policies and RCRA requirements. This comparison revealed many states have more stringent policies in terms of the quantities of hazardous waste regulated than required by federal regulations. It is also important to note that several states believed many SQGs in their states were in compliance because of landfill regulations concerning dumping.

1. Suggestions for recommendations were offered by Mr. Monty Lovejoy of the Association of Independent Manufacturers, and individuals from the North East Fabricare Association in July and August of 1985.

Although these states do not utilize local government to assist in SQG compliance, their state agencies monitor waste disposal at a local level. Perhaps states whose local governments have limited power or financial resources should consider programs to monitor dumping in landfills. States whose local governments have substantial resources should encourage local programs to monitor waste disposal. It is certainly plausible for a certain amount of waste to be disguised for illegal dumping, but careful monitoring would help to eliminate the dumping of most hazardous waste in local landfills.

Recommendation: Compile a State-Wide Inventory of Businesses Known to Generate Hazardous Waste

Question #4 was intended to present the percentages of the predominant types of SQGs in each state, but only three of the twelve states were able to estimate SQGs by industry. Since certain businesses are known to produce hazardous waste, it would be useful for states to compile an inventory of SQGs by industry.

An inventory of those industries known to produce small quantities of hazardous waste would prove useful in several ways. For instance, this type of inventory would be ideal for developing programs and informing industries of specific workshops geared to their hazardous waste management needs. This inventory could also be used by state regulatory agencies to estimate quantities of hazardous waste produced by industry for comparison with estimates of actual com-

pliance. While rates of compliance could be more accurately measured, those SQGs who are not in compliance with state and EPA regulation could be more easily identified.

Another valuable use of such an inventory would be the increased ability of authorities to monitor the locations of possible emergency situations.² Identification of the location of sources and types of hazardous waste would aid fire fighters and other emergency units in the proper treatment of possible fires and leaks. If local emergency organizations are aware of possible hazards the extent of damages to health and the environment can be significantly reduced.

Recommendation: Create Locally Based Programs to Aid SQGs

Questions #5, and #6 revealed the majority of the states surveyed believed there would be no change in their compliance rates from July 1985 to March 1986. Although this may seem to be a relatively short period of time to make any significant changes in the waste disposal practices of SQGs, it also signifies another seven months of waste disposal practices possibly endangering the environment and the health of local residents. This inability of states to effectively change compliance rates reinforces SQGs perceptions of regulatory agencies as being bureaucratic and

2. The Government Refuse Collection and Disposal Association, The Role of Local Government in Hazardous Waste Management, (prepared for the Environmental Protection Agency, Silver Spring, MD: The Government Refuse Collection and Disposal Association, {1984}), pp. 10-12.

inflexible. The formation of locally based programs to increase compliance rates is essential.

Hazardous Waste Circuit Rider

One such program could be based on a model created in the state of Massachusetts, called the Circuit Rider program. This model was originally created by the Massachusetts Executive Office of Communities and Development to offer clusters of small towns with an administrator to aid them with town planning and management. The model was used again by the Massachusetts State Energy Office and Cooperative Extension Service to provide towns with a professional who could aid them in the process necessary to make municipal buildings energy efficient.

This model could be utilized by states to provide SQGs with an individual who would understand their needs and concerns, as well as effectively communicate the necessity and methods of appropriate management techniques for hazardous waste. The circuit rider may also be able to aid SQGs in the coordination of the pick-up and transport of waste. The funding and administration of such a program would have to be formulated based on the resources of each states resources. A program of this nature might also be administered through the states' Cooperative Extension Services.

Chamber of Commerce/Trade Associations

Other programs could be created through trade groups and local Chambers of Commerce. Although the ability to utilize organizations would vary widely from industry to industry and the size and commercial nature of towns, their use would be beneficial. Some trade associations, such as North East Fabricare, the dry cleaners association, have provided members with educational materials on the management of the industries hazardous waste as well as organizing hazardous waste pick-up and transport.

Chambers of Commerce could offer local businesses industry specific educational materials for safe waste management. They could also organize pick-up and transport schedules for local SQGs. Many towns may find they are too small to offer their SQGs any discount in pick-up and transport since the small quantities and diversity of waste would prove unprofitable for transporters to collect. These Chambers of Commerce should consider banning together where possible to make pick-up and transport costs more reasonable.

Cooperative Extension Service

Cooperative Extension Service (CES) could also play a vital role in providing SQGs with the expertise and services needed to aid SQG compliance. CES has access to researchers and experts at state universities who could develop industry

specific materials for SQGs about the nature of the hazardous wastes generated, their dangers and proper management. CES also has the advantage of being established as a service agency for answers to many types of questions. If appropriately staffed, CES could also develop educational programs and provide a full time extension agent who could aid local SQGs with management and compliance and act as a link between SQGs and state regulatory agencies.

Another possible program for CES is the expansion of the hazardous waste coordinator program developed by Gisela Walker and the Franklin County Extension Service. This program has trained individuals interested in educating local residents on hazardous waste and other environmental issues. The main objective of this group is to act as a catalyst for community problem-solving by coordinating with other town boards to work toward environmental protection. Hazardous waste issues vary from town to town, and a program to train individuals to specialize in issues particular to their local communities can be of great value.³

The greatest value of utilizing programs administered at the local level is the personal contact they can provide SQGs. State agencies are generally thought of as being very impersonal and difficult to communicate with. Programs such as these could provide SQGs with a source of comfortable

3. Richard M. Thompson, "16 Coordinators to Tackle Hazardous Waste Problems", Springfield Union, 2 July 1986.

communication while acting as a liaison for state government.

Recommendation: Organize a Conference for Regulatory Officials from the Northeastern States

Analysis of Questions #8 and #9 showed that some states do not face the same barriers to SQG compliance as recognized by other states. No specific question on the survey asked the regulatory officials if they communicated with officials from other states. However, in the context of the interviews with these states there appeared to be a general lack of communication between states concerning the development and success of their SQG hazardous waste management programs.

A conference of hazardous waste officials from the twelve northeastern states would be useful for comparison and assessment of policies and programs. This meeting could save states from the trials and financial costs of "re-inventing the wheel". Regulatory officials could also work together to create new programs to aid SQGs and transport systems from state to state.

Recommendation: Create Programs Utilizing Local Governments

Analysis of questions #10, #11 and #12 revealed seven states utilized local government to assist in SQG compliance, while only one state (New Jersey) rated the use of local government as effective. Question #13 provided information suggesting many states could utilize local government to assist the states and SQGs. There are many

advantages to the use of local government in assisting SQGs comply.

Local governments, due to their size, may appear to be less bureaucratic than state agencies and they may be more understanding of the difficult situation SQGs face with the management and possible economic hardship of hazardous waste management. Local governments are also responsible to their local constituents and the welfare of the community. Programs utilizing local governments must be carefully formulated to prepare local officials to be sensitive to the needs and problems of SQGs while helping to enforce state and federal hazardous waste regulations. These programs could be linked to Chambers of Commerce, trade associations and closely aligned to Boards of Health and other municipal organizations.

CONCLUSION

The extent to which local government can be utilized varies by states' constitutions and state and local resources. However, state agencies must find programs to break down the barriers that perceive them as being inflexible and unable to communicate and understand the predicament of SQGs. If these barriers cannot be broken then states must find other sources to communicate with SQGs and administer effective programs. Programs to aid SQGs with compliance must be administered at the local level where

SQGs can be given the specific education and assistance necessary to manage their hazardous waste.

Several options have been given for programs offering SQGs local contacts who could act as an arm of the state. These programs do not focus on enforcement or police powers, but rather on devising mechanisms to make it feasible for SQGs to comply with federal and state regulations. SQGs are not bandits or thieves; they are small businesses who form the backbone of local economies and provide communities with products and services few would want to be without. It is essential to regulate small quantities of hazardous waste, but not at the expense of jeopardizing small businesses. Programs must be developed for administration at the local level to aid SQGs comply with state and federal regulations.

ISSUES FOR PLANNERS

The crux of this study has not focused on the relevance of the management of hazardous waste to planners. Planners must, however, prepare themselves to understand the complex issues surrounding the management of the hazardous waste generated in their communities and regions. A great deal of planning includes the management of current issues in the process of shaping the future. Planners must take action to create and support programs such as recommended in this study to ensure the health and safety of local residents and the stability of the environment.

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APPENDIX A:
SURVEY AND COVER LETTER

July 3, 1985

Richard Baker
Environmental Service Specialist
Department of Environmental Protection
Bureau of Oil and Hazardous Materials Control
State House, Station 17
Augusta, ME 04333

Dear Mr. Baker:

As you well know, August 1985 will bring new compliance regulations for small quantity generators of hazardous waste in your state. We at the Cooperative Extension Service, at the University of Massachusetts are doing a study to determine: what state enforcement policies are in the Northeastern states; how effective these policies are; and, how local government could aid in programs aiding small quantity generators. Our long range goal is to provide information to local government, or small quantity generators that will aid the proper management of hazardous waste.

Enclosed you will find a survey designed to facilitate our study. If you have a few minutes, please fill it out and return it in the enclosed envelop, with the enclosed card. If you would prefer to wait and answer this in a telephone survey, my assistant, Barbara Demuth will call you between July 15-17.

There is much to be learned about appropriate policy to facilitate the appropriate management of hazardous waste generated in small quantities. If you have specific ideas that are not represented in this survey, please let us know.

Thank you for you consideration. If you would like a copy of this report, please indicate so on the survey. We expect to have copies available by the end of August.

Sincerely,

Rick Feldman
State Program Leader, CRD

RF/bd

SURVEY FOR THE NORTHEAST STATES
TO EVALUATE POLICY REGARDING SOG'S OF HAZARDOUS WASTE

State _____

Agency _____

Date _____

Contact _____

The following survey is designed to determine three things:

- 1.) The specifics of your state's enforcement policy as it applies to small quantity generators (SQG's) of hazardous waste (in compliance with the amended RCRA requirements);
- 2.) The effectiveness of that policy in aiding SQG's; and,
- 3.) The various ways municipal government could aid your state efforts in small quantity hazardous waste management.

This survey is being administered to all states in the Northeast region of the United States. If you have any additional comments or ideas, please include them on the back of the page. If you would like to receive a copy of the report please indicate by checking the box on the right. Thank you for your cooperation. _____

1. Do the amended RCRA requirements effect small quantity generators of hazardous waste in your state?

(Please go to question #2.) yes _____

(Please go to question #3.) no _____

(Please go to question #2.) somewhat _____

2. (If yes or somewhat to #1), Which of the following are reflected in the changes in enforcement policy for small quantity generators in your state:

_____ The new identification of a SQG as one who generates more than 100 kg hazardous waste monthly.

_____ The "cradle to grave" control system which tracks all significant quantities of hazardous waste from generation to disposal.

_____ The new manifest, which after August 5, 1985, must accompany shipments of hazardous waste.

_____ Other _____

3. (If no to #1), Are your state requirements more stringent than the amended RCRA requirements? Please specify.

4. What(estimated) percent of the following small businesses account for small generation of hazardous waste in your state?

_____ Vehicle Maintenance	_____ Metal Manufacturing
_____ Printing	_____ Photography
_____ Laundries & Drycleaning	_____ Pesticide Applicators
_____ Analytical & Clinical Labs	_____ Construction
_____ Other _____	

5. What percent of SQG's in your state, do you estimate as being in compliance with the amended RCRA requirements?

_____ <25%	_____ 25-50%
_____ 50-75%	_____ 75-100%

6. What percent of your SQG's will be in compliance with RCRA requirements by March 1986?

_____ <25%	_____ 25-50%
_____ 50-75%	_____ 75-100%

7. Do your state regulations bring SQG's into compliance?

yes _____
no _____
somewhat _____

8. (If yes or somewhat to #6), Which of the following have aided your state in making your regulations effective:

_____ Small Quantity Generators have been educated as to their legal responsibility for proper disposal.

_____ Small Quantity Generators understand the liabilities for improper dumping.

_____ Small Quantity Generators have been educated about ways to manage hazardous waste.

_____ A statewide approach has been taken so no small quantity generator is at a competitive disadvantage for complying with regulations.

_____ Other _____

9. Which of the following are barriers to the enforcement of regulations for small quantity generators?

_____ SQG's of hazardous waste don't report their waste because of fear of fines.

_____ SQG's of hazardous waste don't report their waste because of fear of economic hardship due to added expense for compliance.

_____ The cost of disposal put SQG's at a competitive disadvantage with similar companies who do not comply, due to the cost of hazardous waste management.

_____ The cost for a transporter to make pick-ups for SQG's is prohibitive.

_____ Many hazardous waste disposal facilities don't welcome SQG's hazardous waste.

_____ The state regulatory agency does not have the financial resources necessary to effectively regulate SQG's.

10. Does your state utilize local government to aid in bringing SQG's into compliance?

yes_____

no_____

somewhat_____

11. (If yes or somewhat), Which form of local government do you utilize?

_____ County

_____ Township

_____ Municipal

_____ Other

12. How effective is your state's utilization of local government in bringing SQG's into compliance?

_____ very effective

_____ effective

_____ somewhat effective

_____ not effective

13. Which of the following ways does or could your state use to utilize local government in bringing SQG's into compliance:

does could

____ Offering educational materials to all known SQG's
____ in the local area.

(If you checked "does", how effective is this strategy?

____very effective ____effective

____somewhat effective ____not effective

____ Organizing workshops to familiarize SQG's with
____ safe management practices.

(If you checked "does", how effective is this strategy?

____very effective ____effective

____somewhat effective ____not effective

____ Maintaining a list of the SQG's, the waste produced,
____ and help to coordinate transport schemes with other
nearby areas.

(If you checked "does", how effective is this strategy?

____very effective ____effective

____somewhat effective ____not effective

____ Other. _____

____very effective ____effective

____somewhat effective ____not effective

APPENDIX B:
THE RESPONDANTS TO THE SURVEY

NAMES, AGENCY, ADDRESS, & PHONE NUMBERS
OF THE RESPONDANTS TO
THE SURVEY TO EVALUATE POLICY REGARDING SQGS OF
HAZARDOUS WASTE

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APPENDIX C:

EXCERPT FROM THE REPORT TO THE TECHNICAL
CONNECTICUT HAZARDOUS WASTE MANAGEMENT
SERVICE

REPORT OF THE TECHNICAL ASSISTANCE TASK FORCE
TO THE
CONNECTICUT HAZAROUS WASTE MANAGEMENT SERVICE

February 7, 1985

RECEIVED
MAR 6 1985
HAZARDOUS MATERIALS
MANAGEMENT UNIT

Appendix II

Small Quantity Generators in Connecticut

1.0 Executive Summary

This report presents the results of a study of small quantity generators (SQGs) of hazardous wastes in Connecticut performed by Abt Associates Inc. under subcontract to ERM Northeast Inc. The study was conducted for the Connecticut Hazardous Waste Management Service (The Service) in July to December 1984 as part of an overall study performed by ERM.

For purposes of the study SQGs were defined as establishments generating less than 1000 kg per month of hazardous waste. Currently, these establishments are not covered by hazardous waste regulations but the 1984 amendments to the Resource Conservation and Recovery Act (RCRA) require regulation of establishments generating more than 100 kg per month. Thus, the state of Connecticut will be required to add establishments generating between 100 kg and 1000 kg per month, which are currently exempt from regulation, to its regulatory system.

To identify the nature and extent of the SQG problem in Connecticut Abt Associates conducted a two-part study. The first part of the study consisted of an extrapolation for Connecticut of the results of a national small quantity generator study done by Abt Associates for the United States Environmental Protection Agency. The second part of the study was designed to identify the extent to which the profile of SQGs in Connecticut differs from the profile of SQGs nationally and to provide additional data concerning Connecticut establishments. To accomplish this objective Abt Associates targeted two industry categories considered to be of particular interest by the Service (metal manufacturers and analytical laboratories). Connecticut establishments in these industries were surveyed and the results of these surveys were compared to the national results for these industry categories.

The following are the key findings of the study:

- Overall there are approximately 14,000 SQGs in Connecticut producing about 23,000 tons of hazardous waste per year. The number of small quantity generators in Connecticut compares, for example, to an estimated total of 14,000 large quantity generators in the nation. It is, however, considerably less than the 37,000 SQGs in New York State.

- Over two thirds of the SQGs in Connecticut are in non-manufacturing industries with nearly one half of the SQGs being vehicle maintenance establishments. The largest manufacturing industry category of SQGs is metal manufacturing which accounts for about 15 percent of the SQGs in Connecticut.
- About 4,000 establishments or 30 percent of the SQGs in Connecticut generate between 100 kg per month and 1000 kg per month. These establishments which must be regulated as hazardous waste generators under the 1984 Amendments to RCRA account for about 80 percent of the small quantity generator waste in Connecticut.
- About 60 percent of the SQG waste generated in Connecticut consists of lead acid batteries. Solvents, the next largest category, account for about 20 percent of the SQG waste generated in Connecticut, and an additional 5 percent of the waste is made up of highly acidic or alkaline substances. The remaining 15 percent of the waste is distributed over various types of wastes such as photographic wastes, dry cleaning filtration residues, ignitable wastes and spent plating wastes.
- The surveys conducted specifically of establishments in Connecticut indicated that the proportion of SQGs, the waste generation rates and the waste types generated by Connecticut establishments are very similar to those for establishments in the same industries in the nation as a whole.
- The Connecticut surveys indicated, however, that in the industry categories surveyed the waste management practices of establishments in Connecticut differed substantially from those of establishments elsewhere in the nation. In particular, Connecticut SQGs tend to rely more heavily on off-site disposal than SQGs in the remainder of the United States.
- SQGs will pose a significant regulatory problem for the state of Connecticut both because of their large number and because of their limited knowledge and resources. Unlike larger establishments SQGs do not have the staff resources to keep abreast of hazardous waste management techniques and requirements. Moreover, many of these requirements will prove more burdensome for SQGs than for larger establishments. Consequently, to address the SQG problem adequately the state will need to develop a program that provides SQG identification, education and enforcement.

These findings are presented in greater detail in the remainder of this report. Chapter 2 describes the profiles of SQGs in Connecticut based on the national profile of SQGs. Chapter 3 presents data developed specifically on the basis of Connecticut establishments.