Chapter 6
State Activities in Waste Reduction

Contents

Tables

Boxes

Chapter 6

State Activities in Waste Reduction

INTRODUCTION

State governments have taken the initial steps in establishing programs related to waste reduction. The first program was formed in 1981 in New York; programs in North Carolina and Minnesota followed in 1983 and 1984. With few exceptions, the prime rationale for the existing programs and those being planned is to help ameliorate the contentious local issue of siting new hazardous waste facilities.[1]

In preparing this report, OTA studied existing State waste reduction activities. Environmental programs have most often been designed at and mandated from the Federal level; but in the case of waste reduction, States have assumed a leadership role. Healthy, effective, and growing State-level efforts in the absence of a Federal program would suggest that Federal action is not critical to the advancement of waste reduction. Instead, OTA found a patchwork of programs that are often more concerned with waste management than with waste reduction and that indicate a need for parallel Federal leadership.

promoters of the concept pollution *prevention pays* point to the State 1ead, which grew from interest at the local level, as indicative of a groundswell of public support for waste reduction. But many questions must be asked. How widespread are these programs across the Nation? What are individual programs actually trying to accomplish? How effective are they in promoting waste reduction initiatives in local industry? To what extent are their efforts concentrated instead on waste management?

This chapter begins with a discussion of the extent of State-levelI efforts and presents two minimum criteria for defining State waste reduction programs, Next, the chapter analyzes the direction, content, and focus of existing State efforts and the effectiveness of these efforts in increasing the implementation of waste reduction in industry. The chapter concludes with an analysis of changes needed at the State level and in the State/Federal relationship to improve the chances of adding pollution prevention as a complement to the traditional pollution control approach to environmental protection.

This chapter *does not* attempt to analyze the level of success each individual State program has achieved in carrying out *the State mission for which it was created,* since often that mission is broader than the encouragement of waste reduction. Thus, a finding about waste reduction may have no bearing on the viability of a program from the State perspective.

The existing State programs have been designed and are being run by people who are very committed to their programs. They tend to be extremely knowledgeable about the State's industry and its hazardous waste problems. Given political realities, the programs have started out small with the goal of gaining a permanent presence in the State's environmental protection structure. As first generation programs, they tend to be inventive and they often focus on new approaches to environmental protection. At the same time a cautiousness exists about alienating those who see waste reduction as a threat or as competition for State resources and attention.

Collectively, these programs are not promoting waste reduction in any major way. They are too few in number, do not focus on waste reduction, and concentrate on small business. While the number of State programs appears to be growing, individual budgets are not growing, and the future of these programs as a substantial force for waste reduction nationwide is in doubt. This does not mean, however, that

[1] At the State level, the siting issue appears to provide the major impetus for waste reduction, just as waste management costs provide incentive in the private sector.

existing State programs should be discounted when designing and adopting Federal policies; current and future State programs could become the vehicles for implementation of Federal policies.

EXISTING PROGRAMS AND PLANNING EFFORTS

OTA found a growing number of variously constituted programs underway at the State level that promote waste reduction with differing degrees of effort. States other than New York, Minnesota, and North Carolina are becoming active; still others are engaged in planning. Local governments are also becoming involved (see box 6-A).

Difficulties in surveying these efforts arise from the fact that there are no existing, agreed upon definitions that answer the basic questions: *What is waste reduction? What constitutes a State waste reduction program?* OTA chose initially to leave program definitions up to individual States, simply asking States in its survey conducted in January 1986, if they had a waste reduction program. Of the 51 replies received, 12 were affirmative, Ten States that answered in the negative indicated that they were planning programs. Twenty-nine States responded that they did not have a program and were not designing one. Table 6-1 contains a modified version of OTA'S State survey [2,3]

Because there are no operating State programs based solely on reducing waste at the source of generation, a basic definition made up of two criteria was then used by OTA as a starting point for analysis of State *waste reduction* programs. One criterion was the existence of an organizational focal point for waste

[2]In December 1985, OTA prepared a survey to gather information for this report and document activity at the State level. All 50 States and the District of Columbia were sent a 10-page questionnaire with 35 questions. OTA was aware that the term *waste reduction* has many definitions and, therefore, asked each State to provide its own definition and to respond to the questionnaire within that context. Eventually, responses were obtained from the entire survey group. It became obvious when the answers were tabulated that some of the questions were ambiguous and produced unclear responses. 'These problem questions plus others which proved irrelevant have been eliminated from the results in the modified version as shown in table 6-1. Whenever possible, responses have been clarified by telephone.

[3]The table shows that States with names that start with the letters N through Z have a lower probability of having a waste reduction program than those at the upper end of the alphabet.

Box 6-A.—Local Governments and Waste Reduction

Some local (city and county) governments and groups across the country are actively pursuing ways to promote waste reduction efforts in local industries. The existence of local-level activity should be kept in mind as Federal policies are considered and adopted. It was not possible for OTA to include a thorough review of waste reduction at the local level in this report; two examples are highlighted below.

In California's Santa Cruz County, a local ordinance (No. *3725)* was passed in 1986 that can require facilities that handle or store hazardous materials to submit a Hazardous Materials Management Plan as part of a permitting procedure. In the plan the facility must document the use of best available control technologies or waste reduction in the handling of hazardous materials. Fees are charged such facilities based on the amounts of hazardous materials handled and stored onsite.

Under pressure from its citizens, the city council of Saco, Maine, passed an ordinance in 1986 requiring a local firm to finance an independent review of waste reduction and treatment options for dealing with wastewater contaminated with heavy metals. When the review is completed, the council will decide whether to impose waste reduction measures as a condition for a local permit to discharge the wastewater into surface waters. (This citizen project is described in "A Community-Based Source Reduction Campaign To Protect the Saco River," by the Maine Peoples AIliance and the National Campaign Against Toxic Hazards.)

For the most part, local governments use their authority over land use to become involved in environmental issues such as waste reduction. For details, see Susan Sherry, et al., Golden Empire Health Planning Center, High *Tech and Toxics: A Guide for Local Communities* (Washington DC: Conference on Alternative State and Local Policies, *1985).*

Table 6-1 .— Results of **OTA State Survey**

	States																								
	AL	AK	AZ	AR	CA	CO	CT	DE	DC	FL	GA	HI	ID	IL	IN	1A	KS	KY	.A	ME	MD	MA	MI	MN	MS	M O
Does State have program?	N	N	n	N	Y	n	Y	n	n	N	n	N	N	y	N	N	Y[a]	n	n	N	n	Y	Y	Y	N	y[b]
If yes when established?	—			—	84	—	85	–						84			81				–	85	85	84	—	
Why establls;ed~	—							—		—		–								—	–					
Land disposal shortfall														x										x		
Treatment shortfall																						x		x		
PuDIIc support for progrdnl							x															x		X		
Lack of Insurance for WM																										
Escalating WM costs					x		x																	h		
To Improve WM					x		x										x					,x	X	X		
keed to mlnlmlze HW sites					x																	x	X			
13LRA 1984 Amendments							x							x								x				
Other comment$																										
If no program why not?																										--
Ldc F of funds	x	x				x						x	x		x	x				x				A		
Need for facliitles more urgent													x		x	x										
Waste qeneratlon not pr,orlty Item				x				x	x						x											
Waste reduction not prlorlfy Issue										x																
RCRA req program takes resources																										
other comments	:)												c													
Is there alannlng effr,rt r State?	Y	b,	n	N	Y	n	Y	n	n	Y	n	N	N	y	N	N	N	v	n	N	n	Y	V	V	N	n
Is p~oqranl plannlng focused on RCRA hazardous 'waste; ıR ı or mulhmedla pollutants (f+ J?	R						R	–		r	-			m			—	m				1,1	R			
has Slate ronsldered facilitating or requlrlnq WR plans by Industryv	NR	–	n		Y	—	N	n	n	Y	n	N	N	n	Y	N	N	n	y	N		Y	N	N	N	-
Does State have a techmcai assistance program ıTAP 17	N	—	n		Y	–	Y	n	n	P	y	fi	N	y	N	N	N	n	n	N		P	P	Y	h	
Does State TAP provide onsl[e assistance?	-		–		'{	-	N	—			Y			\									—	Y		
Has State held or olannln~ tl~ hold waste reductlo~ conferences?	Y	Y	n	N	v		Y	n	n	v	n	N	N	y	N	N	Y	y	y	N		V	N	'	N	
Has Stale developed Information material on waste reduction for Its mdustry~	Y	N	n	N	Y		Y	n	n	P	n	N	h	y	N	N	Y	v	[L	N		v	P	V	N	—
Does Sfate Impose taxes and ~ or fees on chemical production or wastes?	Y	N	n	Y	Y	nr	Y	y	n	Y	n	N	Y	y	Y	Y	Y	y	y	Y	nr	Y	P		N	y
Are economic mcentlves used n your State [hat could oromote wasfe reduction?	NR	NR	n		Y		Y		n	Y	n	NR	N	y	Y	N	N	n	)	NR		P	P	Y	V	n

Table 6-1 .—Results of OTA State Survey-Continued

	States																										
	MT	NE	NV	NH	NJ	NM	NY	NC	ND	OH	OK	OR	PA	RI	SC	SD	TN	TX	UT	VT	VA	WA	WV	WI	WY
Does State have program?	Y	[e] n	N	n	N	N	Y	Y	N	N	N	n	N	n	N	n	N	N	N	N	n	N	n	y	N
If yes, when established?	82	–	–	–	–	–	81	83			–		–		–	–	–					–	–	84	–
Why established		–			–				–	–				–					–	–	–	–			–
Land disposal shortfall							X																	X	
Treatment shortfall																									
Public support for program	X						X	X					P				P							X	
Lack of Insurance for WM																									
Escalating WMgmt costs	X						X						P											X	
To Improve WM							X	X					P				P							X	
Need to minlmlze HW sites							X																	X	
RCRA 1984 Amendments																	P								
Other comments								t																	
If no program, why not?							.	–																	
Lack of funds		X		X		X			X		X	X	X		X	X	X		XX	X					X
Need for facilities more urgent			X		X						X				X										X
Waste generation not prlorlty Item									X			X				X	X			X					X
Waste reduction not pnorlty Issue		X																							
RCRA reg program takes resources													X												
Other comments				f		~						h		I						k				I	
Is there plannlng effort m State?	N	n	Y	n		Y	N	Y	Y	N	N	N	n	Y	n	Y	n		Y	Y	N	N	n	Y	n	P	N
I~program/plannlng focused on RCRA hazardous wastes (R) or multimedia pollutants (M)?	R	–	R	–	R	–	M	M					R	–	NR	–	R	NR	–	–	–	M	–	R	–
Has State considered fa~lltatlng or requmng WR plans by Industry?	N	–	–	–	NR	N	N	Y	N	Y		N	n	N	–		N	–	N	N	NR	N	–	N	–	Y	N
Does State have a techn!cal assistance program (TAP)?	N	–	N	–		P	N	Y	Y	N	Y	N	n	P	–	N	–	Y	N	N	N	n	Y	--	Y	N
Does State TAP prowde onslte assistance?						P	–	Y	Y	–	Y	–	–	N	–	–	–	Y	–	–	–	–	N	–	Y	–
Has State held or plannlng to hold waste reduction conferences?	Y	–	N	–		Y	N	Y	Y	N	Y	N	n	Y	–	N	–		Y	N	N	N	n	N	–	Y	N
Has State developed Informahon material on waste reduction for Its Industry?	N	–	N	–		Y	N	N	Y	N	N	N	n	N	–	N	–		Y	Y	N	N	n	N	–	N	N
Does State Impose taxes and/or fees on chemical production or wastes?	Y	n	N	y		Y	N	Y_	Y	N	Y	P	y		N	y	Y	n		Y	Y	N	Y	n	Y	y	Y	N
Are economic Incentwes used [n your State that could promote waste reductlon~	NR	n	NR	n		NR	–	Y	Y	NR	Y	NR	y	P	n	NR	n		N	NR	NR	NR	n	P	n	Y	–

KEY: QNR = questionnaire not returned
NR = no reponse to question
N = no
y – yes
P = pending or planning
– not applicable
NOTE: Use of lower case letters Indicates that OTA obtained Informallon by telephone
[a] Only waste exchange
[b] N, statutory authority WR not identified as issue
[c] No HW program in State
[d] No atfenllon given WR
[e] nformal WR assistance with regulatory permitting process
[f] WR already occurring due to high transportation costs
[g] Not Included in EPA work grant
[h] N, political pressure for WR
[I] WR not needed
[j] No authority to require
[k] Would have If EPA funds available
[l] Industry argues WR not necessary awaiting Federal guidance and leadership

reduction activity in the State government. The other was a current offering of some waste reduction services to industries in the State. These criteria eliminated those States that have only a legislated or executive policy statement on waste management practices, those in which efforts are directed at studying possible types of services to offer, and those in which service is limited to, for instance, a waste exchange or a Governor's award, Using these criteria, OTA found that there were waste reduction programs in 10 States: California, Connecticut, Georgia, Illinois, Minnesota, North Carolina, New York, Pennsylvania, Tennessee, and Wisconsin. As table *6-2* shows, each has a different mix of components, level of budget, and extent of concentration on waste reduction.

State planning efforts (see table 6-3) indicate that the number of programs may increase. In fact, some States such as Massachusetts may satisfy the above criteria by the time this report is in print. These planning efforts, however, are at different stages and there is no uniformity from one State to another about what constitutes a planning effort. Some programs have been officially initiated (i.e., have a legislative or executive mandate to operate) but are still planning their structure and implementation. Some planning efforts are aimed at developing the consensus necessary to obtain the le~islativc or executive mandate to operate. Some programs already underway are still planning how best to broaden their activities. When and if all the planning efforts now underway culminate in waste reduction programs, about a third of the States will be promoting waste reduction to some extent.

The lack of a standard definition for the term waste reduction is another source of difficulty in surveying State efforts. One of the major findings of this report is that the definition of waste reduction guides and focuses the activities of any program; the inclusion of waste management in a definition tends to shift efforts away from waste reduction. OTA found that State definitions often include offsite recycling and waste treatment. As an example of the variety that exists, table 6-4 gives the 13 definitions reported on OTA'S State survey.

With few exceptions, all of the State programs can be considered waste minimization programs; their primary concern is to encourage any activities that may reduce the use of land disposal facilities.[4] They do not focus on reducing the generation of waste at the source.

[4]Throughout this report, waste minimization is considered to include activities that reduce the amount and/or toxicity of wastes either before *or after* they are generated. This is consistent with EPA's working definition of the term as used prior to the release of its report to Congress.

SOME GENERALIZATIONS ABOUT STATE PROGRAMS

Despite a lack of consistency and their potential for change, it is possible to make some generalizations about State programs:[5]

- they are new;
- the force driving their initiation and sustaining their momentum is public distrust of land disposal for hazardous wastes;
- good waste management practices are stressed rather than waste reduction, and
- siting new waste management facilities is a major goal;
- RCRA hazardous wastes are the target pollutants;
- their target industries are small and medium-sized businesses, along with small quantity hazardous waste generators;
- budgets are relatively small;
- a nonregulatory framework is preferred;
- technical assistance is the predominant program component; and
- little systematic information or data collection is underway to assess program effectiveness,

[5]While collective analysis of the 10 waste reduction programs identified by OTA serves as the primary basis for the discussion in this section, experiences in States with planning efforts have also been taken into account.

Table 6-2.—State Waste Reduction (WR) Programs

Program name and/or coordinating body	Program components	Annual budget[a]	WR as percent of activities	Activities which include waste reduction
California:				
Alternative Technology & Policy Development Section (Department of Health Serwces)	Waste Reduction Unit	$1.5 mllllon	<25	Funded studies of 1) economic Incentives for WR, 2) waste audit of 5 CA industries, 3) strategies for solvent use reduction.
	Grants program			Funded at $1 million/year; first matching grants awarded July 1986,
	Technical assistance			No onsite consultations offered, Assists in regulatory compliance.
Connecticut:				
Office of Small Business Services (Department of Economic Development)	Technical assistance	**$50!000**	***< 1 0***	Advice on RCRA hazardous waste to SQGS; chief initial role to acquaint firms with new regulations. Fiscal 1987 budget cut to **$40,000.**
	Loans		unknown	Low Interest loans available to small and large firms for WR and waste management projects,
Georgia:				
Hazardous Waste On-Site Consultation Program (Georgia Tech Research Institute)	Technical assistance	**$220!ooo**[b]	**10-15**	As part of RCRA compliance assistance to SQGS, some WR advice offered. EPA source of *900/0* **of past funding; State to supply all funds for fiscal 1987 at** $250,000.
Illinois:				
Hazardous Waste Research & Information Center	Research	$1.3 million	**10**	WR will be part of hazardous waste basic/applied research and information transfer services,
Illinois TAP	Technical assistance			WR is part of waste management assistance to small/medium sized firms.
Minnesota:				
Minnesota Waste Management Board	MnTAP	$180,000	25	Technical assistance. telephone and onsite; seminars and outreach. Summer engineering intern program.
	Research grants	$ **55,000**	***5 0***	Funded industry RCRA hazardous waste projects in 1985; program under review in 1986. Received $100,000 EPA grant for 1987.
	Governor's Award			Annual award since 1985
New *York:*				
Industrial Materials Recycling Act Program (New York State Environmental Facilities Agency)	Technical assistance	**$494,000**	<25	Sol Id/hazardous WR and management advice; primarily telephone, some onslte visits. Operates waste exchange Information service.
	Industrial Financing Program		***0***	Revenue bonds of $131 million since 1976 for pollutlon control projects by Industry; Proposed revolving loan fund would Include WR.

Table 6.2.—State Waste Reduction (WR) Programs—Continued

Program name and/or coordinating body	Program components	Annual budget[a]	WR as Dercent of actlvlt(es	Actlvltles which Include waste reduction
North Carolina:				
Pollution Prevention Pays		**$190,000**	**>50**	
	Technical assistance			Multimedia WR and recycllng advice by telephone and ons!te visits, conduct seminars and outreach.
	Challenge grants			Matching grants (29 since 1985 with $5,000 maximum) for WR and recycllng projects
North Carolina Board of Science and Technology	Research & education grants	***$ 4 0 0 , 0 0 0 b***	**>50**	Grants up to $30,000 each for WR and recycllng projects, funds include $100,000 from EPA.
Governor's Waste Management Board	Governor's Award			Annual award since 1983
North Carol~na Technical Development Authority	Financial assistance		unknown	Provides funds for new/improved products/services; tax credit also available for sol id/hazardous WR projects
Pennsylvania:				
PennTAP (operated by Penn State University with funds from State's Department of Commerce)	Technical assistance	$150,000'	<50	General techn!cal assistance to small business In State; two staff members handle environmental problems
Department of Environmental Resources	Demonstration grants	**$139!ooo**[b] (1 986-87)	unknown	WR and waste management pro]ects eligtble
Tennessee:				
Department of Economic and Community Development	Technology assessment	**$loo,ooob**	**>50**	Pilot program In 1986: EPA dented request for contlnuatton of funding for 1987
University of Tennessee Hazardous Waste Extension Service	Technical assistance	***$ 2 0 0 , 0 0 0*** (1986-87)	unknown	Technical assistance with onsite waste audits; Information clearinghouse and workshops planned
Waste Management Research and Educat!on Institute	Research	**$1,7 million**	**<25**	Policy research and engineering R&D Two contract projects !n 1986 include WR State funding of $700,000/year approved for 1985-90
Safe Growth Cabinet Council	Governor's Award	-.		First presented in 1986
Wisconsin:				
Bureau of Solld Waste (Department of Natural Resources)	Information outreach	**$175,000b**	**<25**	WR Included as part of assistance to RCRA generators, prtmarily small businesses
	P!annlng grants	**$500,000**	**<25**	WR and recycling grants totallng $242,000 given to local communities In 1986 from Wisconsin Fund. Fund cut from future State budgets
	WR and recycllng demonstration grants	**$350,000**	***0***	Industry project proposals totallng $1 miilion received; no WR projects Included Program will have only $150,000 to grant In 1987.
	Tax exemptions		unknown	Sales tax exemption available on purchase of WR and recycling equipment.

aBased on State's 985-88 fiscal year, unless otherwise noted
bIncludes funds from the U S Environmental protection Agency
c Estl mate based on staff!ng level fOr enVi rOn mental as?.l?.tance

SOURCE Off Ice of Technology Assessment, 1986

Table 6-3.—State Planning: Potential Waste Reduction Programs

State	Status/stage of development
Alabama	Legislation pending
California[a]	New activities proposed to supplement existing program
Connecticut[a]	Preparing recommendations for program expansion for submission to legislature in 1987
Florida	Planning as result of mandate to reduce land disposal of solid wastes
Massachusetts	Developing multimedia program within established regulatory agency; legislation pending
Michigan	Decisions pending on proposals by hazardous waste board and Governor
Nevada	Comprehensive hazardous waste management planning underway
New Jersey	Studies underway to define State hazardous waste facility needs
Pennsylvania[a]	More comprehensive program designed; awaiting funding source
Texas	Recent legislation created interagency coordinating council to plan needs
Washington	Study mandated by legislation underway

[a]Also listed as existing programs in table 6-2

SOURCE Off Ice of Technology Assessment 1986

Program Support

State and local governments have been under increasing pressure from citizens, the environmental community, regulators, and industry regarding the siting of new hazardous waste facilities. **Most current State waste reduction programs have evolved from studies initiated to investigate the needs for new hazardous waste management facilities.**

For instance, public pressure halting a siting process in the mid-1970s, prompted an investigation by the Joint Study Commission of Minnesota's legislature. The commission concluded that a land disposal facility was needed in the State but recommended that an independent board be created to avoid conflicts of interest. Accordingly, the Minnesota Waste Management Board was established in 1980 to develop a State plan for hazardous waste management and to site disposal and treatment facilities. Embodied in the policy statement of the legislation that created the board was the concept of waste reduction and proper waste management. Minnesota's present program is the result of recommendations made by the board in 1984.

As offshoots from the siting issue, State programs tend to have a broad but limited and hesitant political base of support. As discussed in chapter 1, a certain tension exists among proponents of waste reduction, those attempting to site new hazardous waste facilities, industry, traditional pollution control regulators, and environmentalists. The State programs, poised among the concerns of these groups, tend to exist at a metastable position. Environmentalists, for instance, may wish to have the programs strengthened by imposing some level of regulations, Industry, fearful of further regulatory burdens, strives to maintain the status quo with a focus on those aspects of waste minimization that do not penetrate into the specifics of their operations. Many people—including supporters—view the possible outcomes of waste reduction with high uncertainty. Some are seriously concerned that a potential dilution of pollution control efforts could come about with a shift to waste reduction. State waste reduction programs are, as a consequence, viewed as a small part of overall solutions to environmental problems. This balancing act and level of anxiety constricts State programs to a small niche within the existing environmental bureaucracy and limits their political and financial support.

Waste Minimization

Most States have given waste reduction the top position in their stated policies regarding hazardous waste. Despite these declared intentions, most State programs stress good waste management practices rather than waste reduction. This emphasis may be a consequence of the fact that these programs grew out of hazardous waste siting problems that were created because of poor waste management. Furthermore, waste management has been the traditional control technique approach for dealing with pollution problems. The focus of the Resource Conservation and Recovery Act (RCRA), the basis for most State waste reduction programs, is waste management—not prevention. In addition, firms tend to be open about their waste treatment facilities and techniques, whereas waste reduction deals directly with

Table 6-4.—Definitions of Waste Reduction Provided by States

California: We are using a broad definition of waste reduction which equates with reducing the amount of waste going to or requiring land disposal; this includes on and offsite treatment and recycling as well as source control.

Connecticut: Eliminating or reducing the quanitites of waste produced at the source through process changes. The benefits of waste reduction include reduced liability and elimination of waste needing storage, treatment, and disposal; reduced water use and air emissions; and increased worker safety.

Kansas: Implementation of any process changes or use of other technology which results in the reduction of hazardous waste requiring further treatment or disposal.

Massachusetts: Onsite practices which minimize or eliminate the risk posed by hazardous losses from product processes before they are generated; . . . we consider that the program may incorporate the potential to prohibit the use of specific hazardous inputs and perhaps the manufacture or use of hazardous products if deemed necessary under certain circumstances.

Minnesota: A decrease in the total quantity of hazardous waste generated by the generator through abatement, minimization, reuse, or recycling; or decreases in the quantity which could result in a decrease in risk to public health safety and the environment, even though the quantity [sic] is not decreased.

Montana: Waste reduction = any actions taken that avoid discarding a material. Discard = if it not used, reused, reclaimed, or recycled.

New Jersey: New Jersey's Hazardous Waste Facilities Siting Commission through its Source Reduction and Recycling Task Force consider source reduction, recycling, reuse, and recovery to be the elements of waste reduction. . . source reduction is any method or technique applied at the site of generation, the use of which reduces the volume of hazardous waste produced without increasing risk to the public or the environment. Examples include improved process/production control and maintenance, process modification, substitution, equipment changes.

New York: New York State has no "official" definition for waste reduction. The working definition for source reduction is anything which decreases the amount of waste destined for disposal. This definition includes recycling and reuse and is, therefore, not limited to process changes.

North Carolina: The PPP Program goal is to find and apply ways to reduce, recycle, and prevent wastes before they become pollutants. The reduction effort addresses water and air quality, toxic materials, and solid and hazardous wastes. Actions include volume and toxicity reduction, recycle/reuse, process modification, elimination through substitution and waste exchanges.

Pennsylvania: Source reduction—reducing the generation of waste at its source through process or raw material changes.

Texas: Waste reduction is the prevention of waste at its source either by redesigning products or by otherwise changing societal patterns of consumption or industrial patterns of waste generation.

Vermont: Production-based reduction in amount of waste generated.

Wisconsin: Waste reduction . . . to reduce the quantity or the weight of wastes generated. These methods may include, but are not limited to, consumer product redesign to **increase product longevity, repair or serviceability; changes in the manufacturing process to produce less manufactu r-ing waste; the utilization of less packaging** in consumer products; and the conscious effort to change consumer consumption habits which result i n the generation of less waste.

SOURCE Direct quotes from Office of Technology Assessment State Survey.

processes and operations that firms usually consider proprietary. Thus, it is easier and safer for State waste reduction programs to focus on traditional waste management.

OTA could not identify any operating State program that is based exclusively on waste reduction or that gives waste reduction overall primacy. Among States involved in planning, only Massachusetts is developing its program around waste reduction. The North Carolina program does consider waste reduction as a first option in its technical assistance efforts but also promotes recycling, both onsite and offsite. Waste treatment in North Carolina is left to both the regulatory programs and independent consultants who are in the business of selling equipment along with advice. B

Often a State's words and deeds seem to be at odds (see box 6-B). The 1985 annual report for Minnesota's technical assistance program (MnTAP) begins with a statement that:

> . . . "pollution prevention" by reducing or eliminating the generation of waste is an important advancement over the concept of managing hazardous wastes aft er they are generated, through "pollution control. "[7]

[6]Roger Schecter, Director, Pollution Prevention Pays Program, North Carolina Department of Natural Resources and Community Development, personal communication, Apr. 29, 1986.

[7]Minnesota Waste Management Boa rd, *.4 Year of Service, Minnesota Technical Assistance Program, 1985 Annual Report*, January 1986.

Box 8-B.-Californla: Waste Reduction Lost Enroute From the Legislature

In moving from the statute to implementation in California, waste reduction took on a new meaning. This incident is similar to what has happened in other States where deeds do not match stated goals, at the Federal level in the implementation of the 1984 RCRA Amendments on waste minimization, and in industry where talk of waste reduction often results in waste management activities. It also shows how a definition can determine program focus.

In 1985 the Hazardous Waste Reduction, Recycling, and Treatment Research and Demonstration Act was passed by the California Legislature. The first legislative finding under the act is a restatement of the two-tiered national policy statement of the 1984 RCRA Amendments that calls for waste reduction and proper waste management. California sharpened the language, however, by explicitly identifying recycling, as well as treatment, as components of proper management. In addition, a distinction is maintained throughout the act by referring to "hazardous waste *reduction, recycling,* and *treatment*" **as** three separate activities.

The major portion of the act deals with funding and establishing a **$1** million annual grant program in the State to promote the research, development, and demonstration of "hazardous waste reduction, recycling, and treatment technologies." These technologies are further and distinctively defined as "technologies and techniques which have, as their primary purpose, the reduced generation of hazardous waste, the recycling of hazardous waste, or the conversion of hazardous waste into a less hazardous form."

Several portions of the act apply only to waste reduction. The act requires all generators of hazardous waste to submit a biennial report on "the changes in volume and toxicity of waste achieved through waste reduction." (The Federal waste minimization reporting requirement applies to a subset of generators: only those who ship wastes offsite.) The legislature also required the Department of Health Services, which implements RCRA in the State, to report back by June 1,1986, on the "establishment of a comprehensive program for achieving reductions in hazardous waste generation." The study was to address various program elements "as they relate to hazardous waste reduction. "

The report to the legislature, *Reduction of Hazardous Waste in California,* does not retain the statute's reduction, recycling, and treatment concept, Instead, the Department of Health Services has converted *waste reduction* into an umbrella term encompassing "strategies . . . to reduce the volume of hazardous waste going to land disposal." The components of waste reduction are identified as: recycling (both onsite and offsite), treatment, and source reduction. Source reduction is given the legislature's definition of waste reduction: the "elimination or reduction of generation of hazardous wastes." Doubt is cast on its feasibility by the claim that "its implementation beyond a certain point requires major technological changes and can become costIy. " Having waved aside the reduction of the generation of hazardous wastes, the report proceeds to discuss primarily waste management in the balance of its 14 pages.

The Waste Reduction Unit of the Department of Health Services does not give any primacy to waste reduction as defined by California's legislature.

The next paragraph introduces the report which, it says,

> ... documents the hazardous waste reduction, improvecl hazardous waste management and increased regulatory compliance achieved by Minnesota hazardous waste generators with the assistance of MnTAP.

MnTAP makes most of its contacts with hazardous waste generators over the telephone. In the annual report, seven "primary types of [telephone consultation] assistance" are listed. None pertain to hazardous waste reduction, *as defi~~~ above by Minnesota.* The first type is "advice on ways to dispose of hazardous waste that

has been generated, " three deal with other aspects of hazardous waste management, two with referrals to other State agencies, and one with needs for general information on State pro-,grams,[8] In MnTAP's student intern program, waste reduction *does* have primacy, Participating companies are chosen only on the basis of waste reduction projects. [9]

The Fourth Annual Report of New York's Industrial Materials Recycling Program provides another example. The introduction to the report cites the law that mandates the program to "help industry *reduce*, reuse, recycle and exchange industrial materials. "Io But waste reduction rarely appears in the balance of the report that describes the program's activities. For i nstance, the section on technical information and assistance services ranks waste reduction options first on a list of recommended projects.[11] It then highlights six waste management projects. Appendix D in the report has a detailed list of hundreds of technical information and assistance services offered in 1985. Waste management predominates: there are only two explicit mentions of waste reduction. Two more entries might be either waste management or waste reduction.

RCRA v. Multimedia

For the most part State programs concentrate on RCRA hazardous wastes and give little if any attention to the opportunities for reduction of air and water pollution. Because they emphasize land disposal abatement, few State programs have been designed from a multimedia perspective, However some, due to later influences or the views of people involved in the programs, develop a multimedia approach. The initial basis for the North Carolina program was the State's Waste Management Act which established legislative policy guidelines to encourage and promote " . . . the prevention, recycling, detoxification and reduction of hazardous wastes. "[12] Administratively, it developed into a multimedia program. The planning effort in Massachusetts is built around a multimedia concept, The New Jersey Hazardous Waste Facilities Siting Commission is coordinating that State's program planning efforts, and although there is currently a RCRA focus, there is sentiment for broadening to a multimedia focus.[13] Because Illinois' technical assistance program operates under the Hazardous Waste Research and Information Center, it focuses on RCRA hazardous waste but does not hate a legislative or executive mandate to do so, The staff responds to other media problems when they arise, [14]

Target Firms

Rather than target firms based on the hazardous waste streams they generate and potential problems they create, State program people deal almost exclusively with small and medium-sized businesses. The often stated rationale for having set this priority is that large firms have the resources to pursue waste rduction and effective management practices and do not need help. The inappropriateness of using limited State resources to assist big business is also often cited.

Another reason for targeting small business can be that industry generally views waste reduction as a threat if it is carried to the regulatory stage. By concentrating on small business entities, State programs do not stimulate the concerns of large firms, which may have the pOlitical muscle to influence Govenors' and State legislators' attitudes about waste reduction programs. The ability of industrj to exert influence, however, can be dependent on the prevailing winds in State government. For instance, the staff members in California is waste reduction program share the convientional wis-

[8]Ibid.

[9]Cindy McComas, Director, MnTAP, State of Minnesota, personal communication, May 28, 1986.

[10]New York State Environmental Facilities Corp., *Fourth Annual Report, Industrial Materials Recycling Program 1985*, p. 1. Italics for emphasis.

[11]Ibid., p. 8. The term used in the report is source reduction.

[12]North Carolina General Statute 143B, 1981.

[13]Susan B. Boyle, Assistant Director, New Jersey Hazardous Waste Facilities Siting Commission, personal communication, May 1, 1986.

[14]Frederick L. Doll, Industrial Assistance Coordinator, Hazardous Waste Research and Information Center, State of Illinois, personal communication, May 9, 1986.

dom that small business has the greater need for its services, but program efforts are not yet concentrated in that direction.[15] Legislators in that State know—due to the heightened awareness in California regarding toxics—that most of their hazardous waste generators are not small business firms, and they want appropriate action from the program in dealing with the problem.

Small v. Large

The size of a firm—in terms of annual sales or number of employees—is not necessarily indicative of the amount and/or toxicity of wastes being produced. Targeting solely by firm size may not be the valid way to try to cope with a State's hazardous waste problems or an efficient use of a small budget. In certain States small firms may be more prone than large ones to poor waste management practices, i.e, they may create problems out of proportion to their hazardous waste generation rates.

Another factor that must be considered is that since the goal of most State programs is to educate industry as to the benefits of waste reduction, large firms may have as great a need for State services as small and medium-sized firms, It maybe true that large firms have greater access to financial resources and technical expertise to pursue waste reduction than do small firms, but these assets may not be used for waste reduction for a variety of reasons, One State—Massachusetts—has recognized the need for top-down support for waste reduction and has plans to offer seminars for corporate CEOS,

Small Quantity Generators

In some cases, small quantity generators (SQGS),[16] are the target industries of State programs, either exclusively or in combination with small business. While the services of the Minnesota technical assistance program are advertised as being" . . . FREE to any Minnesota business," the objectives of the program are "to reduce hazardous waste generation and identify alternatives to land disposal by providing small quantity generators with technical assistance."[17]

SQGs are not necessarily small business firms; on a plant basis a large firm can qualify as an SQG. The appropriateness of using limited resources on SQGs can vary State-by-State. In some States, they may generate a substantial percentage of RCRA hazardous wastes or types of those wastes. Focusing on SQGS may be a consequence of a program's focus on RCRA hazardous wastes. SQGs have only recently been subject to regulations under RCRA, and there has been a concentrated effort by EPA to inform such RCRA hazardous waste generators of their new responsibilities. Part of that effort has included making funds available to States for SQG projects (see below).

There is uncertainty about the amount of RCRA hazardous wastes being generated by SQGs. In 1982 OTA estimated that SQGs represented "from less than 1 percent to over 10 percent" of States' RCRA hazardous waste generators and the figures for most States were at the low end of the range.[1a] According to an EPA study, however, SQGs produce less than 0.5 percent of the hazardous wastes annually, although they represent 98 percent of the Nation's total number of generators.[19] Statistics produced at the regional or State level can also vary. In a 1986 report covering New England, eight RCRA waste streams were compared. Depending on the waste streams, small generators produced between less than 1 percent and a high of 8 percent of the wastes.[20] On the other

[15] Kim Wilhelm, Waste Reduction Unit, California State Department of Health Services, personal communication, Apr. 30, 1986.

[16] Small quantity generators are defined by RCRA regulations as those which produce (or accumulate) between 100 and 1,000 kilograms per month of hazardous wastes. Since March 1986, they have been regulated under Subtitle C of RCRA. Generators which produce less than 100 kilograms per month are called "very small quantity generators" and are not covered by regulations.

17 Minnesota Technical Assistance Program, promotional flyer.

[18] U.S. Congress, Office of Technology Assessment, "The RCRA Exemption for Small Volume Hazardous Waste Generators," staff memorandum, July 1982, p. 20.

[19] U.S. Environmental Protection Agency, *National small Quantity Hazardous Waste Generator Survey* (Washington, DC: Office of Solid Waste, February 1985), p. 2.

[20] New England Congressional Institute, *Hazardous Waste Generation and Management in New England* (Washington, DC: February 1986), table 11-4. In this study a small generator is defined as one producing 5,000 or less kilograms of waste per year.

hand, according to statistics from Massachusetts, SQGS produce 25 percent of the State's RCRA hazardous wastes.

Funds for Small Business and SQGs

Targeting of small business and SQGs by State programs has been supported by EPA. For example, Georgia's Hazardous Waste On-Site Consultation Program received $50,000 (66 percent of its budget) in 1984 to 1985 from EPA's Small Business Ombudsman Office and $200,000 (90 percent) in 1985 to 1986 from EPA's Office of Solid Waste. Georgia's program, as a consequence of this funding and perceived State needs, concentrates its efforts on bringing SQGs into voluntary RCRA compliance; and waste reduction is a relatively minor component. [21] The State has assumed full funding of the program for fiscal year 1987, and the program may eventually broaden its target population. [22]

Funds have also been made available from EPA's Office of Research and Development in Cincinnati. The Hazardous Waste Engineering Research Laboratory has funded two Small Business Initiative projects in fiscal year 1986 through State waste reduction programs (North Carolina and Minnesota). Minnesota's MnTAP will administer $100,000 in grants on applied research projects to assist small business in complying with regulatory problems. The grants will apply primarily to RCRA hazardous waste and will not be restricted to waste minimization, [23]

Section 8001 of RCRA allows for funding of special hazardous waste projects. [24] In fiscal years *1985* and 1986, $4.5 million has been dispersed via EPA's Regional offices to States, local governments, and other nonprofit entities. The largest group of projects receiving funding were those designated for SQG education and assistance projects, The State of Tennessee, however, used its fiscal year 1985 grant to fund a pilot technical assistance waste reduction program. Funds requested in 1986 to continue the project for another year were denied by EPA's Region 4. This Tennessee effort is one of only a few Section 8001 projects dealing specifically with waste reduction,

Budget Size

Funding for the 10 State waste reduction programs identified by OTA totaled about $7 million in fiscal year 1986, but less than 50 percent of that money is for waste reduction.

Individual State waste reduction programs tend to have small budgets because they are new and experimental and must compete with pollution control programs for funding. Budgets for *all* activities range from $40,000 to almost $2 million, when research funds are included. Waste reduction expenditures are estimated at less than 10 to over 50 percent of program budgets. Budgets are especially small in comparison with the total amounts spent by States' environmental control programs. In its fiscal year 1986, California budgeted $114.5 million of its own resources for its air, water, and solid waste programs. Another $50 million was spent at the local level in California for air quality programs, [25] Minnesota, with a $235,000 waste reduction program, budgeted $6.6 million in State funds for its water quality, air, and RCRA programs for fiscal year 1986. In addition, these latter programs received $5.1 million from the Federal Government. [26]

Programs aimed at stimulating rather than regulating waste reduction do not and will not require budgets comparable to those needed by

[21] It is modeled after the Occupational Safety and Health Administration's "Section 7(c)1" consultation program which began in 1975. Under this program employers can ask for an OSHA paid (consultant to offer advice about how to meet regulations. The consultants are not inspectors, and there is no threat of citation or penalty. [U.S. Congress, Office of Technology Assessment, *Preventing Illness and Injury in the Workplace*, OTA-H-256 (Washington, DC: U.S. Government Printing Office, April 1985], p. 235.]

[22] John C, Nemeth, Chief, Environ mental Health and Safety Division, Georgia Tech Research Institute, personal corn munication, Apr. 28, 1986.

[23] Jim Bridges, Project Officer, Hazardous Waste Engineering Research Laboratory], U.S. Environmental Protection Agency, personal communication, May 8, 1986.

[24] This source of funds is explored more fully in the RC RA section in ch.5 of this report.

[25] Charles Shulock, Environmental Affairs Agency, State of California, May 14, 1986,

[26] John Clus, Director, Administration Services Sect 1011, Pollut ion Control Agency, State of Minnesota, personal communicant ion, May 1, 1986.

regulatory pollution control programs. But, to balance the pollution control culture which has evolved over the last 15 years, more than the current 1 percent or less of environmental budgets will be required. No Federal funds were budgeted for waste reduction in fiscal year 1986, while EPA's budget for its pollution control air, water, and RCRA programs totaled $732 million.

Small budgets for waste reduction do not just reflect the fact that awareness of the issue of waste reduction is recent. The level of funding for waste reduction also indicates that it has little status as a solution to environmental problems. State studies conducted to determine RCRA facilities' needs have tended to show that waste reduction methods would have a relatively modest effect on the generation of statewide RCRA hazardous waste streams (see ch. 3). In addition, strong competition is offered by traditional State environmental regulatory programs that are immersed in the pollution control culture. Such programs receive explicitly designated funding through the Federal RCRA, air, and water programs, while waste reduction does not. As the availability of Federal funds decreases, the States must increase their share of program costs; and the traditional regulatory programs are given priority.

The most common reason cited as an explanation of why States do not have waste reduction programs is lack of funds. Many State officials interested in waste reduction claim they are barely able to keep the currently mandated RCRA and Superfund programs going, much less add a new program. State officials have suggested that if the Federal Government would delegate funds for waste reduction they would then institute such a program. This feeling that the States are being overwhelmed by current Federal regulatory programs was echoed by participants at an OTA meeting with State waste reduction program officials .27 28

[27]The OTA meeting (Apr. 22, 1986) was held in conjunction with the Third Workshop for State Waste Reduction Programs in Washington, DC.

[28]See also testimony of the Association of State and Territorial Solid Waste Management officials before the Subcommittee on HUD-Independent Agencies of the U. S. House of Representatives, May 8, 1986.

Small budgets can actually be a benefit to State programs in their initial stages because they require relatively little justification for continuation. Designing and maintaining small programs prevents an increase in tension among waste reduction advocates and local industry, existing regulatory programs, and siting proponents.

New, relatively small budget programs, however, often are targets during budget-cutting periods, The Wisconsin Fund has been granting funds to local communities in that State for solid waste planning since 1978. In 1984, legislation was passed to allow the fund to cover and to give priority to local waste reduction and recycling planning efforts. The first waste reduction and recycling grants–a total of $242,000" —were funded in January 1986, In February 1986 the legislature withdrew all of the remaining money in the fund because of general budgetary constraints in the State.

State people point out that small budgets and their corresponding small programs are not necessarily indicative of the support and resources given waste reduction at the State level. State governments are complex; they contain a multitude of administrative and legislative offices as well as advisory committees and boards. Environmental boards composed of State officials serve as internal coordinating bodies; those made up of private citizens serve in oversight roles and provide external support and an influx of ideas. (See ch, 2 for a discussion of waste reduction boards.) Any of these State entities can provide elements of support and can also present obstacles to State waste reduction programs. Most programs cite the environmental regulatory program offices as their major source of information and data, and in some cases regulatory program staff refer firms to waste reduction programs. State business support agencies are also useful. Minnesota's program, for instance, works through the established network of eight Small Business Development Centers across the State to enhance its outreach efforts.

Nonregulatory Framework

Most programs operating now provide voluntary services to industry and are strictly nonregulatory. Some have considered or are considering the use of regulations in the future. California describes its program as one combining voluntary and regulatory aspects. Massachusetts, where a waste reduction program was just getting underway as this report was being written, is the only State that has decided to work through its regulatory system to promote waste reduction.

The State programs' nonregulatory approach may be essential for developing a consensus for waste reduction. It allows promoters to sell the industrial community the concept that avoiding the generation of pollutants is in their economic interest while defusing concern over government interference in internal operations. Many see their ability to work cooperatively with industry impaired if they operate from a regulatory mode because the existing regulatory/industr} atmosphere is adversarial. The major goal of most State programs as they are now set up is not to regulate but to increase industry's awareness of the potential of pollution prevention. However, it is the cost of complying with existing regulations that often motivatcs industries toward considering waste reduction techniques and investigating waste reduction assistance offered by State programs.

The State of Massachusetts, after a number of years of studying the possibilities of promoting waste reduction through the imposition of netv economic incentives and disincentives, has decided instead to operate within the current regulatory structure and programs. Thus, the State's lead Source Reduction Program is located in its regulatory Department of Environmental Quality and Engineering but outside of the department's media programs (such as the Solid and Hazardous Waste, Air Quality, a n d Water Pol 1 u t i o n C o nt rol Divisions). 29 I t is studying ways to help the regulatory people use the flexibility of current statutes and regulations to apply waste reduction within a multimedia framework,

Whether a regulatory or nonregulatory approach at the State level will be more effective in promoting waste reduction to industry is debatable. It is too early to tell from State experiences: no programs have yet collected supporting data and the only two using regulator approaches are embryonic. Massachusetts is still planning how it will use the existing regulatory structure.[30]

The regulatory environment can limit capabilities. The California program is located within the State RCRA regulatory program office and operates under two regulations—land disposal restrictions and an expansion of the Federal waste minimization reporting requirements. The program also offers regulatory conlpliance assistance to RCRA generators. Its technical assistance effort does not offer onsite consultations because of a concern that its staff' would be obliged to report a n y none compliance with RCRA regulations that they might happen to witness. The North Carolina program, on the other hand, successfully operates out of a regulatory agency because its staff have no regulatory powers.

The extent of the adversarial relationship between industry and government regulators varies across the Nation, In general, it appears to be more onerous between industry and the Federal Environmental Protection Agency than between industry and some State rcgulatory bodies. Whether waste reduction technical assistanc e staff (with or without regu1atory powers) are invited into a plant site for consultation is determined by this relationship, the operating procedures of f'irms, the personality j of plant managers or contact personnel, and firms' ability to the trust government regulators,[31]

[29]Another source reduction project exists within the State's Department of Environmental Management which deals with land management issues. This group is still focusing on ways to educate industry about the benefits of adopting waste reduction practices through the use of seminars, workshops, and technical assistance brochures.

[30]The Source Reduction Program issued a draft report on "Promoting Source Reduction--Existing Regulatory Opportunities, Issues for Discussion" in May 1986. The intent of the report is to stimulate discussion of the possible components of the regulatory approach within the department.

[31]Other important factors are the need for services and the confidence of plant people in the expertise of the State technical assistance staff.

California and Massachusetts are considering other regulatory components for their programs. A California bill would create a voluntary registration process for independent environmental auditors. This bill, before the California Legislature in 1986, would create Environmental Quality Assessors (modeled after certified public accountants), This approach could increase the adoption of waste reduction techniques if the assessors were required to provide such assistance as part of their registration requirements. Supporters feel that this program could assist small and medium-sized businesses in gaining access to chemical management experts, thereby helping them "to achieve and maintain compliance with toxics laws and regulations and reduce long term liability. [32] The bill requires a minimal examination of applicants and those who pass will be placed on a referral list. While some individual firms in California have opposed the bill, several major industry groups such as the Chamber of Commerce and the California Manufacturers' Association are supporting it. Those opposed view the bill as a precursor to mandated environmental auditing,[33]

Massachusetts may require industrial firms to draw up annual waste reduction plans to be certified by State-approved engineers. The waste reduction plans would specify the steps taken to accomplish waste reduction at each point of release of each regulated substance in a plant. The theory behind such actions is that forced planning will point out material losses and increase awareness among firms of the potential of waste reduction. Legislation that includes such planning requirements has been introduced in Massachusetts and is being considered in 1986, [34]

[32] State of California, Commission for Economic Development, "Proposed Legislation, *Environment] Quality Assessment,* Senator Craven. " Attachment to letter to Joel Hirschhorn, OTA, from Peter Diebler, Special Consultant to the Commission for Economic Development, Mar. 10, 1986.

[33] Peter Diebler, consultant to the Lt. Governor, State of California, personal communication, May 1, **1986.**

[34] The Massachusetts Toxic Use Reduction bill, Section 8, Toxics Use Reduction Plans,

Program Activities

A State can, theoretically, educate its industry about waste reduction by offering information and technology transfer services. It can encourage the adoption of waste reduction practices by removing disincentives (increasing the cost of waste management by adding waste end taxes, for example) or by instituting incentives (such as loan and grant offerings or feedstock taxes), It can support R&D to improve the technical opportunities for waste reduction. It can mandate that industry adopt waste reduction practices. Actual program component choices will be based on each State's perceived needs and available resources and the political feasibility of initiation and implemention.

Information and Technical Assistance

By and large States have adopted an education role, and the cornerstone of most existing State waste reduction programs is a technical assistance component, Nine States (California, Connecticut, Illinois, Georgia, Minnesota, North Carolina, New York, Pennsylvania, and Tennessee) have technical assistance programs (TAPs) which, in varying degrees, offer waste reduction advice to State industry. Some TAPs (such as those in Minnesota and Illinois) have been set up specifically for the purpose of offering a range of waste minimization assistance; some offer a broader range of technical advice to State businesses. An example is Pennsylvania's TAP which now includes waste reduction but has been offering technical assistance to State business (modeled after the agricultural extension service) for 21 years, New York's TAP covers solid, as well as hazardous, waste problems and offers waste minimization advice that includes a waste-information exchange service.

Minnesota's TAP is widely regarded as a model assistance program, It began operations in December 1984 and offers a call-in service and onsite consultations. A unique feature of the Minnesota TAP is its summer engineering intern program which expands its onsite consultation capability to long-term projects while training future engineers to be aware of a mul-

titude of hazardous waste problems and solutions.

The TAPs so far appear to be largely reactive; initial contacts are responses to telephone and written inquiries. This method is an efficient use of small budgets and is in keeping with the voluntary nature of the programs. Its effectiveness in reaching a high percentage of State hazardous waste producers may depend on the strength of a complementary outreach effort.

TAP advice ranges from help with regulatory compliance problems to waste management and waste reduction, Appropriate technical information is supplied or other sources of information offered. For information outside the scope of the TAP, callers are referred to other State agencies (for assistance with loans or tax credits, for example) or to private firms offering needed services,

Onsite consultations result from requests by firms. Except for the program in Georgia (see above], the existing TAPs are limited to a small number of onsite consultations per year because of staffing levels. Depending on travel distances, an onsite consultation takes 1 or 2 days. A followup written report with suggested actions can take up to a month to prepare.

State programs also educate and expand the effectiveness of their TAP through outreach. Outreach is variously defined but generally includes promotional activities, such as speaking before trade associations and civic organizations. Seminars are conducted for specific industrial groups (e. g., electroplates, dry cleaners) or may focus on specific waste streams (e.g., solvents, waste oils), Such activities can help State programs enlarge their constituency,

Governor's awards are used as an outreach device aimed at raising public awareness, They have been presented in North Carolina, Minnesota, and Tennessee and will be awarded for the first time in Kentucky in September 1986, The awards are generally given annually to firms that conduct laudable waste reduction or waste management projects, States appear to have difficulty in obtaining candidates after the first couple of years. If a State does not include a public relations effort to bring public attention to the awards, the cost to industry (especially to smaller firms) of entering may not seem to be worth the effort. When Tennessee first used the technique in 1986, the winners were mentioned in the local newspaper, but only on page six of the business section. Had any of those firms been suspected of creating a hazardous waste problem, they would have received front page attention,

Financial Assistance

Next to technical assistance, the second most prevalent program component at the State level is direct financial assistance to help override some of the costs of waste reduction or improve the technical opportunities for such projects, Financial assistance is offered in the form of loans or competitive research grants, some of which are on a matching basis. None of this assistance is offered exclusively for waste reduction projects; much covers RCRA hazardous wastes only.

Grants in North Carolina, Minnesota, and California in 1986 totaled approximately $1.5 million to industry (primarily small business) and academia for a wide range of projects. Only a portion of this sum—at the most 50 percent—will be used specifically for waste reduction, California's research, development, and demonstration grants, for instance, were established under the State's Hazardous Waste Reduction, Recycling, and Treatment Research and Demonstration Act of 1985. The act excludes from consideration only those treatment activities "occurring directly in, or on, the land, such as techniques using evaporation, surface impoundments, or land farming, "[35] Minnesota's Hazardous Waste Reduction Grants are advertised as" . , , available to help investigate new waste reduction techniques—or the applicability of known techniques—to reduce waste generation. [36] Although this language appears to favor waste reduction at the source of generation, an analysis of the four awards in 1985

[35] Assembly Bill No. 685, approved September 1985.

[36] Minnesota Waste Management Board, "Hazardous Waste Reduction Grants" brochure and application form, undated.

shows that two were waste reduction projects and two were volume reduction projects. The waste reduction projects investigated the feasibility of changing circuit board etchants to reduce the generation of wastes and reusing acid solutions. North Carolina's grants (which are reviewed below) are available for waste reduction and recycling projects.

California's first research, development, and demonstration grants were awarded in June 1986. Applicability for the grants is divided into two groups: the private sector and public agencies and universities. The private sector received 24 grants totaling over $800,000; the latter group's grants totaled $75,000. No breakdown of grants in terms of the ratio of waste reduction to recycling and treatment projects is available. One of the four categories of private sector grants (feasibility studies) is more likely to include waste reduction projects, according to program staff .37 Just over half of the grants in 1986 are for feasibility studies.

The future of Minnesota's research grants program was in doubt in mid-1986 due to a combination of overall budget cuts in the State and a low rate of response to the program's second year offering .38 Although 90 requests for applications were sent out, only two proposals were submitted. Depending on the worthiness of these proposals, the Waste Management Board may decide to fund them at a maximum of $30,000 each. The rest of the remaining grant budget (which originally totaled $150,000 for 1986-87) may be shifted to its MnTAP. The board is conducting an overall review of the grants programs, If a decision is made to continue the program, some changes probably will be made in the application procedure and in the program itself. For instance, the proposal process is apparently complicated and applicants feel they are not given enough time to complete it. The staff also feels that the cost of applying may be excessive in terms of the possible outcome, given the size of the grants (the maximum is $30,000).[39] The grants are restricted to generators of RCRA hazardous waste and capital equipment purchases are not allowed.

While the funds for Wisconsin's grant program to local communities were eliminated in 1986 (see above), the State has a smaller Waste Reduction and Recycling Demonstration Grant program, which began in 1986. Applications have been received totaling $1 million for the use of $350,000 that is available this year. In subsequent years, the program will have only $150,000 to disperse. None of the applications this year include proposals for waste reduction projects.

Tax credits for waste reduction are not widely available, and when they are, cover only RCRA hazardous wastes, North Carolina has a tax credit program that was originally established for recycling and resource recovery in the 1970s. The statute was recently extended to include "the costs of facilities or equipment to be used to reduce the volume of hazardous wastes generated. "40 Minnesota did offer a tax credit for pollution control and waste reduction equipment "used primarily to reduce the generation of hazardous waste . . . [41] The credit only lasted 1 year due to an overhaul of the State's tax structure in 1985. No firm applied for the credit when it was available in Minnesota, and few have applied in North Carolina.A~ Purchases of waste reduction and

[17] Jim Potter, Waste Reduction Unit, California Department of Health Services, personal communication, June 16, 1986.

[18] Wayne Sames, Manager, Planning and Technical Assistance, Minnesota Waste Management Board, personal communication, May 1 and June 11, 1986.

[19] It should be noted that North Carolina has had 111'(!(; successful rounds of awarding matching grants to industry since 1984. Its maximum grant has been $5,000 and that program's staff feels that $10,000 would be more appropriate. [Roger Schecter, Director, Pollution Prevention Pays Program, North Carolina Department of Natural Resources and Community Development, May 5, 1986.] California can award research grants with a $25,000 to $100,000 maximum, [Jim Potter, Waste Reduction Unit, California Department of Health Services, personal communication, June 16, 1986.]

[40] Roger Schecter, Director, North Carolina Pollution Prevention Pays Program, speech before the 1985 Triangle Conference on Environmental Technology, Raleigh, NC. Italics for emphasis.

[41] 1984 Minnesota Laws Chapter 644, Section 290.06. As cited in ICF Consulting Associates, Inc., *Economic Incentives for the Reduction of Hazardous Wastes*, prepared for the State of California, Alternate Technology and Policy Section, Department of Health Services, Dec. 18, 1985, p. 23.

[42] ICF Consulting Associates, op. cit., app. A, p. 24. It reported that since 1975 10 firms have been certified by the North Carolina Department of Hurn; in Resources for recycling, recovering (recycling hazardous wastes and that the materiality of these fa-

(continued on next page)

recycling equipment are exempt from Wisconsin's 5 percent sales tax. Businesses in Wisconsin are now exempt from property taxes amounting to the worth of waste treatment equipment, and the State program is trying to extend this exemption to waste reduction and recycling equipment.[43]

Loan programs are available in a number of States. Among these are general loan programs that can be used for pollution control and, sometimes, waste reduction projects, Others have been specifically established to cover pollution control or, less often, waste reduction projects. Connecticut, because of a statute that established an assistance and advice program for small businesses on "the reduction, recycling or processing of hazardous wastes . . , ," can make use of existing general State loan programs." New York, through its Industrial Financing Program, has had the authority since *1978* to provide loans to industry for multimedia pollution control projects, such as sewage treatment works, resource recovery facilities, and industrial hazardous waste facilities. The Environmental Facilities Corp., which administers the loan program, has proposed to the State legislature that a revolving loan fund be established by the State to "debt finance hazardous waste, solid waste, industrial waste reduction, recycling, treatment, and disposal projects at smaller companies. "[45]

Information Collection for Program Effectiveness

There is no systematic information or data collection process underway in any State except Pennsylvania that assesses program effectiveness, and in no State is waste reduction being assessed. State programs explain this lack by saying that they are too new and too experimental to be able to ascertain at this stage what information is even appropriate. A key determinant of effectiveness is the amount of waste reduced over time. Some States have struggled with, but none have solved, the question of how to measure waste reduction on a statewide basis. This type of analysis is complicated by the number of factors (e. g., general economic conditions, State programs, existing regulatory programs, liabilities, and waste taxes) that may influence industry to reduce hazardous waste.[46]

State programs hesitate to require information—even when free services are offered—that would record progress, possibly because of their reluctance to intrude on the business community. For instance, in Minnesota's summer engineering intern program, six students each spent 4 months in 1985 working within a firm to develop a plan for a specific waste reduction project. North Carolina's program provides onsite technical assistance helping firms with waste audits or assessing the potential for a waste reduction project, Neither State program requires the benefactors of these services to supply specific followup data after implementation of the advice on projects' success or lack of success. Instead, they place the burden and cost of collecting such information on themselves. Because of limited program resources, the result is that they are simply unable to collect and assess appropriate information and data.

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cilities recycled hazardous wastes. The ICF report recommended (on p. R-5) that California not adopt the use of tax credits because they "do not address any specific barriers; unless allowable tax credits are high (e.g., greater than 50 percent), the amount of waste reduction directly attributable to the credit is likely to be low; and the costs of tax credits are difficult to control. "

[43]John Reindel, Recycling Coordinator, Bureau of Solid Waste. Wisconsin Department of Natural Resources, personal communication, July 25, 1986.

[44]State of Connecticut, Public Act No. 85-542, enacted July 1, 1985. The Connecticut Development Authority also offers long-term industrial revenue bond financing for a variety of projects which include the purchase and installation of *pollution abatement equipment,* This bond program—unlike the former-is not restricted to RCRA hazardous wastes.

[45]Marian J. Mudar, Analyst, Industrial Waste Program, New York State Environmental Facilities Corp., personal communication, June 19, 1986.

[46]See ch. 4 for a discussion of appropriate measures for waste reduction.

NORTH CAROLINA, AN EXAMPLE PROGRAM

Since it is not possible for this report to present a thorough review of all eight State programs, OTA has chosen to present North Carolina's Pollution Prevention Pays Program (NC3PP) as an example. Although it conforms to many of the generalizations expressed above, it is unique in that it is a multimedia *program* which "addresses toxic materials, water and air quality, and solid and hazardous wastes. "[47] It *focuses largely, but not exclusively, on waste reduction*.

The goal of the program is to "find ways to reduce, recycle and prevent wastes before they become pollutants"[48] (i.e., are disposed in some medium). To meet that goal, the program offers advice, provides information, and awards grants to firms, universities, and communities for waste reduction and for onsite and offsite recycling research, education, and demonstration projects. Waste treatment options are excluded from these activities because treatment tends to shift hazardous substances among media and because of possible overlaps with the activities of regulatory programs and the services of private consultants,

The NC3PP evolved over approximately 3 years out of a sequence of official State actions:

- 1981:
  - —North Carolina Waste Management Act was passed by State legislature; established policy guidelines and the Governor's Waste Management Board.
- 1982:
  - —State funded a 3P symposium,
  - –first Governor's Award was presented.
- 1983:
  - —State funded pollution prevention Research and Education Grants through its Science and Technology Board,
  - —NC3PP position was created within the Department of Natural Resources and Community Development.
- **1984:**
  - —Legislature Research Study recommended establishment of NC3PP and defined its basic structure,
  - —authorizing bill established NC3PP and funded three full-time positions.

The original idea for the program came, however, from local environmentalists who were disappointed about the lack of success of both the fight against hazardous waste land disposal facilities and the campaign for good hazardous waste management practices. They proposed an alternative: if the concept *pollution prevention pays* could be institutionalized and waste streams reduced in the State, then many of the land disposal problems might be solved. They found listeners among State officials, including those within the North Carolina Department of Natural Resources and Community Development (DNRCD).[49]

While the idea for the program and sequence of State actions which created it are similar to other State experiences, the people who became involved in North Carolina did not view the environment from a media-specific perspective. The presence of such people at the early stages of development of the program shifted the focus away from an exclusive RCRA hazardous waste position to a multimedia approach. This perspective also helped to keep the program's operations focused specifically on waste reduction and recycling.

NC3PP components today include technical assistance, research and education, and financial assistance. The program received its first year's direct funding from the legislature in the summer of 1984[50] and filled its allotted three staff positions by January 1985. Most of 1985 was spent getting the program into full operation, especially its technical assistance component. The bulk of the program's conceptualization and planning had occurred previously

47 North Carolina Pollution Prevention Pays Program, "1985 Program Summary and Status, " January 1986.
48 Ibid.
49 This agency includes the regulator} ' programs for air and water; the RCRA program is located in the Human Resources Department,
50 North Crolina operates u rider a July-to-June fiscal year.

within DNRCD and during the Legislative Research Study, and the first Research and Education Grants were awarded in 1983. In addition, the Governor's Waste Management Board has been presenting annual Governor's Awards for Excellence in Waste Management since 1982. These awards deal with RCRA hazardous and low-level radioactive wastes only.

So far, NC3PP has used both State and Federal Governments as sources of funding. The current annual budget totals $590,000 (see table 6-5). The State funds NC3PP through DNRCD and the Research and Education Grants through the Science and Technology Board in the Department of Administration. NC3PP provides the staff to administer and manage the board's grant program.

Technical Assistance

In its first year of operation in 1985, the North Carolina Program's technical assistance was conducted primarily by dealing with incoming telephone calls and written requests for information. While only 5 onsite visits were managed in the last half of 1985, the program hopes to conduct 15 or more in 1986. Waste reduction is the first option considered by staff when offering technical assistance.

Unlike generic hazardous waste problems, specific or unique problems can require individual research on the part of staff and may result in onsite consultations. Most firms prefer onsite visits by the staff, and the staff considers this to be the most valuable way of offering assistance to firms. However, such visits require substantially more time than telephone consultations. The program would like to have two persons instead of one assigned to technical assistance to have at least one person full-time for onsite consultation. However, present and foreseeable funding levels prevent this expansion of their service.

An information clearinghouse maintained by the program includes a library of relevant literature and has the capability of conducting data searches through a variety of databanks. An in-house database is now being developed that will include literature, case studies, contacts, and Program publications." The library is available to the public and is a particular favorite of engineering consultants.

Outreach, another aspect of technical assistance, consists of presentations by the staff to trade associations, professional organizations, citizen groups, universities, and industrial workshops. The content and level of each presentation is tailored to the particular audience. A lo-minute slide/tape show giving an overview of the program is made available to groups. Workshops on specific industrial sectors or waste streams are organized and supported by funds from Research and Education Grants.

Research and Education

Using the Research and Education Grants awarded by the Science and Technology Board, the program promotes research projects and develops educational tools. Its objectives are to target North Carolina wastes and industries;

[51] The most comprehensive, up-to-date bibliography on *pollution prevention* is published by NC3PP. The January 1986 issue contains 90 pages of citations (over 800 individual citations] broken down into two genera], a miscellaneous, and 18 SIC category sections,

Table 6-5.—North Carolina Pollution Prevention Pays Program Funds

	1983-84	1984-85	1985-86	1986-87[a]
Program operation and challenge grants	—	$180,000	**$190,000**	**$190,000**
Research and education grants	$300,000	300,000	300,000	300,000
EPA Small Business Initiative	—	1 00)000	100,000	100,000
Total	$300,000	$580,000	$590,000	$590,000

[a] The State appropriates on a 2-year budget cycle, thus the 1986-87 funds were approved in the 1985 session of the legislature. The EPA 198687 funds, while part of a 3-year contract, are subject to review

SOURCE Office of Technology Assessment

document the economic and technical feasibility of waste reduction; reduce in volume the State's hazardous, toxic, water and air waste streams; and develop innovative approaches to environmental management.

Research grants (using 1983 funds) were awarded for 13 university projects in 1984. The second round of these grants (1984 funds) was awarded in 1985 for 11 projects, For the third round, 34 proposals were received in 1986; 15 projects were funded. The overall makeup of each set of awards has varied as the program develops a better understanding of the State's needs and the importance of research and education to the program. Of the 15 projects in the recent round, 11 deal with waste reduction issues.

Financial Assistance

The program provides financial assistance primarily from its Challenge Grants with total available funding of $50,000 from the State and $50,000 from the EPA grant. Additional assistance is provided by referring firms to other State agencies that administer industrial revenue bonds and loans; the North Carolina Technological Development Authority which provides funds for new or improved products, processes, or services; and the Department of Human Resources, which provides a certification allowing firms to take advantage of special tax treatment. The latter resource is available only for those who purchase and install hazardous waste equipment for waste reduction, resource recovery, or recycling. It is not known how useful these services have been to industry or in promoting waste reduction. [52]

The Challenge Grants are awarded each year for a maximum of $5,000 which must be matched by the awardee. They are given to small businesses and communities for the development and implementation of waste reduction and recycling projects. The money cannot be used for operating or capital costs or detailed engineering design, and the project content must be transferable to other firms or communities in North Carolina. Sixteen grants were awarded in 1985 and an initial 13 in 1986, Of the recent group, nine are for waste reduction projects.

The program has no problem in attracting interest in its grants; 21 proposals were submitted for the 1986 round. The results are publicly available as "Project Summaries" and are used by the program in its technical assistance efforts. The program plans to use these results to help document its program justification report for the next State budget cycle. The Project Summaries clearly indicate the outcomes of the projects, explain whether they were successful or not, and discuss their transferability,[53]

Conclusions and the Future

The Pollution Prevention Program began with the objective of applying waste reduction and recycling techniques to North Carolina industry and waste streams and it has been deemed successful at meeting that objective. It now has a secure place within the State's environmental institutions. However, it will not grow in size in the near future due to the State's overall budget concerns, Any budget increases that become available will go to the environmental regulatory programs.

In general, the program is supported by both the environmental and industrial communities in North Carolina. The chamber of commerce organization in the State—North Carolina Citizens for Business and Industry—was one of the original supporters of NC3PP, helped to institutionalize it, and still strongly supports its activities. [54] This business group feels that

[52] The tax certification can cause problems at the local level if it involves a hazardous waste management facility. Local communities believe that such firms should pay higher, rather than lower, taxes. [Bill Meyer, Chief, Solid and Hazardous Waste Management Branch, North Carolina Department of Human Resources, personal communication, May 8, 1986.]

[53] North Carolina has discovered that transferability of information *across industries* is limited by firms' tendency to view their own situation as unique, certainly unique to their trade, The Project Summaries encourage readership because they are brief, and because they are brief lack the specific detail that categorizes them as industry specific.

[54] Joe Haywood, Chair, Environmental Concerns Committee, North Carolina Citizens for Business and Industry, personal communication, May 9, 1986.

the program works because it is voluntary; that a mandatory approach would not be appropriate. The business group is now looking at the idea of adding a tax incentive in the State that will give some credit to firms that substantially reduce their wastes.

NC3PP does not make a conscious effort to target its activities toward small business concerns. There is no reason to target small quantity generators since they are part of the RCRA universe and NC3PP does not focus on RCRA hazardous wastes. An initial data collection effort identified (by number of facilities) the five major industrial categories of hazardous waste generators, air and water quality permitters, and industrial pretreatment programs. However, the Challenge Grants and use of the EPA funds are restricted to small business firms, and this group is the most likely to call for assistance. Large firms tend to be a valuable source of information to the program, but they are more open about sharing information on waste management, which tends to use generic technology, than on waste reduction, which can involve their own processes.

The program considers an expansion of its technical assistance to allow for more onsite visits to be its first priority, if additional funds become available. After 3 years of awarding research grants to State universities, the program staff sees a need to enlarge the pool of expertise. It maybe difficult, however, to obtain the authority to allow competitive bidding outside of the university system. The State universities have become accustomed to the annual $300,000 infusion of funds and will oppose any change. The Challenge Grants are considered by staff to be too small and need to be doubled to $10,000 to enable more detailed work to be accomplished. It has been found that the once-a-year cycle for grants is not always appropriate, and the program is now holding back about $30,000 of this money for use as worthy projects are identified through its technical assistance work,

THE EFFECTIVENESS OF STATE PROGRAMS

As yet, there is little information available on which to base any evaluation of the effectiveness of State programs in achieving their stated goals or in reducing the generation of hazardous waste. It is not possible to judge at this time whether the technical or financial assistance offered by State programs actually encourages waste reduction. The programs do not appear pressed for accountability and do not collect information in a systematic way. Few have even defined their future information needs. Thus, even in the near future, it will be difficult to make objective program evaluations.

The fact that some State programs have been through and have survived several annual budget processes is an indication of success. But, as mentioned before, this has not occurred as the result of an objective review. Since these are small budget programs, justification requirements are not rigorous. Renewals can be based on the ability of those concerned to argue program benefits effectively, often using anecdotal evidence. Programs can also gather the support of their constituents to help them through the budget process. In general, industry tends to be supportive of State programs as they are currently constituted. This is especially true of those firms that have taken advantage of the services offered. On the other hand, some industry people support these small, nonregulatory programs because they serve as a bulwark against the advent of waste reduction programs that could involve standard setting and regulations.

If there is currently a wait-and-see attitude among those who control State purse strings, then the programs may eventually have to provide an objective review of their activities and the results of these efforts. California's program staff, with one of the largest budgets among the current State programs, considers this a likelihood, They feel that for their third budget re-

quest they will have to be able to show that waste streams in California have decreased, and they intend to obtain such information from their grants and technical assistance projects. [55]

The Minnesota Waste Management Board completed a draft evaluation report in August 1986 of its hazardous waste programs,[58] To assess the effectiveness of its technical assistance program, the board reviewed the TAP's activity level and reported the results of a survey of users of the service, While the TAP appears to have a very good image, no evidence was presented that shows that waste reduction has occurred as a result of its assistance. In fact, the board noted that: "The majority of MnTAP's assistance went to help generators understand and comply with hazardous waste regulations as well as helping them improve their waste management methods. " As part of the evaluation of the board's research grant program, details of four 1985 projects were compiled. One of the two waste reduction projects funded—ADC Telecommunications—achieved a reduction of from 36 to 100 percent in wastes generated. At the maximum reduction rate, saved costs were estimated at $14,900 per year. The cost of the project, which involved changing a process etchant, was $15,300 of which the State contributed $11,300. The second waste reduction project was judged technically feasible but not economic on the small scale attempted.

The growing number of States that have established and planned programs over the last 2 years is one measure of success. It indicates success in selling the concept; it does not indicate a flurry of waste reduction activity. Considering the lack of attention given to collecting information, the growth in numbers of State programs cannot be taken as proof that even effective waste management is underway.

[55]Kim Wilhelm, Waste Reduction Unit, California State Department of Health Services, personal communication, Apr. 30, 1986.

[56]Minnesota Waste Management Board, "Hazardous Waste Programs Evaluation Report, " draft, August 1986. This is a discussion document, The board's final report and recommendations will be made to the State legislature in November 1986.

Three programs have conducted followup surveys to assess effectiveness, Pennsylvania's TAP conducts surveys on a continuing basis. Minnesota's TAP has surveyed its users twice; Georgia, once. None of these efforts tabulated or identified occurrences of waste reduction. The Minnesota program's first survey was in 1985. Fifty percent of the 150 firms to whom a survey was mailed responded, Most of the respondents (86 and 76 percent, respectively) were satisfied with the service or thought that the advice offered had aided their decisionmaking, Twelve percent of the respondents (6 percent of the survey population) reported that the assistance offered had resulted in wastes being minimized. It is not known how much of this minimization has been a reduction in the generation of wastes or how much has been a reduction in the volume of wastes being sent offsite for management, Pennsylvania's and Georgia's numerical evaluations are even less relevant in terms of waste reduction. Since waste reduction is not a major focus of either program, the information is not needed for program justification.

State programs do collect data on their *activities*. In New York, North Carolina, and Minnesota, TAP activity is tabulated. Thus, in 1984 to 1985 New York's program handled 219 technical assistance calls, made 44 onsite consultations, and made 31 promotional contacts. In 1985, North Carolina's program staff responded to about 900 telephone and letter requests for information, While records are kept of these contacts, no tabulation has yet been made and it is not known how many involved regulatory compliance or waste reduction or how many callers needed technical or grants information. Most importantly, it is not known whether the responses by the staff encouraged good waste management or waste reduction practices. Minnesota handled 320 telephone calls in 1985 and conducted 35 onsite consultations excluding those related to its intern program,

Eventually, more results from the grant programs will be publicly available; at this point it is too early to assess their effectiveness in increasing the potential for waste reduction. Minnesota's first grants were awarded in 1985;

North Carolina's Challenge Grants were awarded in 1985 and its Research and Education Grants in 1984. California awarded its first research grants in June 1986. No State has a system in place to aggregate and analyze the information provided by the grants.

WASTE REDUCTION: FEDERAL AND STATE COOPERATION

State programs will need to focus their activities on waste reduction if it is to become a significant factor in environmental protection at the State level and if they are to be effective in preventing pollution. At the same time, both the size of these programs and their share of overall State environmental activities will need to be increased, Shifts in focus or resources will require that a stronger political base of support for waste reduction be developed among State elected officials and regulators, industry, local communities, and environmentalists. Such support will be required to overcome the traditional attitude that pollution control is the only environmental protection strategy.

The Federal Government now offers limited support to State waste reduction programs with its waste minimization regulations and some grant funding, These activities, however, tend to encourage good RCRA hazardous waste management among small business rather than multimedia waste reduction throughout industry. If national policy as stated in the 1984 RCRA Amendments is to be the Nation's goal in actuality—not only in theory—then the State programs will need a leadership role from the Federal Government. In that role, the Federal Government could advance the primacy of waste reduction at the State level by a variety of activities, each of which has different political and budgetary costs (see ch. 2).

Current Federal Support

Since the passage of the 1984 RCRA Amendments, the Federal role in waste minimization, one component of which is waste reduction, has been minimal. The Federal role is regulatory and comprises the waste minimization regulations, which define certification and reporting or recordkeeping requirements for RCRA hazardous waste generators (see ch, 5). Using

OTA'S minimum criteria developed to define State waste reduction programs, the Federal regulatory system does not qualify as a waste reduction program.

The current system of regulations appears to have had little impact on State waste reduction programs and planning efforts; most were underway prior to the RCRA 1984 Amendments. In OTA'S State survey, four States—Massachusetts, Illinois, Tennessee, and Connecticut—cited the amendments as one of many reasons for their waste reduction efforts. People involved in most State programs feel that the presence of the regulations has increased RCRA generators' awareness of waste minimization as an issue. At the same time, however, those generators are often confused as to what "having a waste minimization program in place" means. In Georgia, questions about the Federal waste minimization regulations now come up during seminars and the regulations are part of that State's program to assist generators with RCRA compliance, Minnesota's TAP has not noticed any major change in the office's incoming telephone queries. Only about five calls have been received in the last year requesting help with the Federal "waste minimization plan" requirement, [57] Those in the California program feel that the waste minimization manifest certification has prompted telephone calls and raised consciousness among generators. In general, the callers are confused as to the requirement of the manifest certification. [58]

If the outcomes of the Federal voluntary waste minimization program cannot eventually be assessed (see ch. 5), then its potential for being of assistance to State programs will be in

[57]Cindy McComas, Director, Minnesota Technical Assistance Program, personal communication, Apr. 30, 1986.

[58]Kim Wilhelm, Waste Reduction Unit, California Department of Health Services, personal communication, Apr. 30, 1986.

doubt as well, As mentioned above, States are not collecting relevant waste reduction data. While the Federal regulations require that some RCRA generators submit certain information, its content is not relevant to determining the effectiveness of waste reduction. The biennial reporting statement is a narrative, is only made by generators who ship wastes offsite (ignoring those who produce and manage wastes onsite), and only covers RCRA hazardous wastes, Apparently, when EPA set up the reporting system it did not intend to make any use of the incoming information since the statements are not to be forwarded to EPA but are to remain at the State level, [59]

While some State RCRA regulatory or waste reduction programs are looking into the possibilities of using or supplementing some of the information collected as the result of the Federal regulations, most are not. In answer to a question on OTA'S State survey, one State felt that information sent in response to the reporting regulations should begin to provide them with data to assess the effectiveness of waste reduction. Minnesota's TAP is now considering how it might use the next set of waste minimization statements that result from that State's generator reports on 1986 activities.[60] North Carolina's RCRA program, which requires annual reporting by its generators, is planning to conduct a small number of followup visits to firms in selected industrial categories that have reported waste minimization activities to determine whether the statements are justified. The conclusions drawn from these visits will be part of a report to the State legislature requesting State waste minimization funds for the regulatory program. These activities will be coordinated with the State waste reduction program[61] California is reviewing the statements provided in the Federal biennial reports covering 1985 with the intent of developing a waste reduction report from all its RCRA hazardous waste generators, as required by the State's Hazardous Waste Reduction, Recycling, and Treatment Research and Demonstration Act. Unlike the Federal system, California's will require waste reduction statements from generators who ship offsite and from those who manage their wastes onsite.

Generators in New Jersey who were required to complete the waste minimization section of the Federal report covering 1985 were provided with a separate survey designed by the New Jersey Department of Environmental Protection. The department—like all State RCRA offices nationwide—had no guidance from its EPA Region or from headquarters regarding the requirement, The State survey was not designed to gain consistent information from generators but was an attempt to forestall what the department feared would be a deluge of questions from generators asking what the narrative statement should contain, On the survey three questions each were asked regarding separation, substitution, efficiency, recycling onsite, and treatment onsite,[62] The responses, several thousand completed forms, were stored in boxes kept in the department since the waste minimization statement is viewed in New Jersey, as elsewhere, primarily as a device to increase awareness rather than as an information collection procedure.[63] The New Jersey Source Reduction and Recycling Task Force (of the Hazardous Waste Facilities Siting Commission), which became aware of the surveys after they were collected, is now planning to use them as a possible source of information in their planning for a waste reduction program for the State.[64]

[59] This is true unless a State does not have RCRA authorization. In such cases EPA regions distribute and collect the biennial reporting forms. See ch. 5 for details of this regulation.

[60] Cindy McComas, Director, Minnesota Technical Assistance Program, personal communication, Apr. 30, 1986. It should be noted that while the Federal system only requires biennial reporting, Minnesota, like many other States, requires annual reports. The State, in conducting the 1985 Federal reporting, inadvertently failed to include the waste minimization section.

[61] Bill Meyer, Chief, Solid and Hazardous Waste Management Branch, North Carolina Department of Human Resources, personal communication, May 8, 1986.

[62] Generators were warned that in future reports actual, rather than estimated, amounts of volume reductions would be required.

[63] Nancy power, Administrative Analyst, Bureau of Manifest and Information Systems, New Jersey Department of Environmental Protection, personal communication, Apr. 30, 1986.

[64] Susan B. Boyle, Assistant Director, New Jersey Hazardous Waste Facilities Siting Commission, personal communication, May 1, 1986.

The Federal regulations may help State programs by increasing an awareness of waste minimization—but not necessarily waste reduction—in industry. This may occur if those who sign the manifest certification, fill out biennial reports, and maintain operating records are the same people who design and maintain waste generating processes and equipment. It is more likely to occur in the small firms that States target for assistance, firms in which occupational duties are not as narrowly defined as in large firms. However, as discussed in chapter 5, the waste minimization regulations lead industry toward the avoidance of land disposal and not necessarily to waste reduction.

In addition to its regulatory support, EPA has helped to fund some State programs, Two sources of funding have been a Small Business/Small Quantity Generator Initiative program in the Office of Research and Development (ORD) and Add On Grant funds authorized by Section 8001 of RCRA, some of which were designated for outreach to SQGs. The ORD program gave out about $325,000 in fiscal year 1986 of which $200,000 went to the North Carolina and Minnesota programs for research grants. The Section 8001 funds provided $4.5 million in fiscal year 1986 to State and local RCRA activities. Some of this money was applied to SQG outreach that included waste minimization projects. (These funding programs are discussed more fully in ch. 5.]

State Program Needs

When State program people are asked what they need to increase their effectiveness they invariably answer: an increase in professional staffs. Programs that offer technical assistance would like to provide more onsite consultations. The number of outreach efforts (e. g., seminars, brochures) are viewed as too few. Current low staff levels, a consequence of low budgets, are referred to as an explanation of why there is no effort directed at program evaluation.

States need publicly expressed support for waste reduction from their Governors, but this does not always happen. This need seems analogous to the need expressed by environmental management people in large corporations for top-down or CEO support. Such backing provides visibility and visibility leads to clout. It enables small entities to increase their influence within their operating environment. However, a Governor who publicly supports waste reduction runs a risk of being identified as anti-business unless there is broad understanding of the environmental and economic benefits waste reduction confers.

State people are ambivalent about the prospects for Federal Government support for waste reduction. On the one hand they recognize that State programs need an infusion of money and the visibility that a Federal program could provide, But, the Federal Government is not seen as a reliable funding source today. It has been reducing support in many areas, leaving States to provide their own funds for popular programs, and the prospect of switching from State to Federal sources for funding is now seen as risky. Should the Federal Government decide to offer any type of financial support for waste reduction, a system of matching funds could provide continuity by requiring the continuing involvement and interest of State legislatures.

At the same time State staffs are protective of the gains for which they have fought, In general, these are the people who have guided program development from the conceptual stages. They are proud of their innovations in designing programs tailored to State needs and oft he initiatives undertaken to institutionalize them, States do not want a johnny-come-lately Federal program which will specify program content from a national perspective and require a redirection of their efforts.

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