NEW MEXICO LAW REVIEW

Volume 21
Issue 1 *Winter 1991*

Winter 1991

Waste Reduction, Solid Waste, and Public Policy

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WASTE REDUCTION, SOLID WASTE, AND PUBLIC POLICY

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I. INTRODUCTION

Of the many recently prominent environmental crises, the growing problems of solid waste generation and disposal are among the most democratic, for every person makes waste and waste generation decisions every day. While state and federal law addressed solid waste law for many years, solid waste policy has become a central concern in communities and environmental legislation in the last few years.

Solid waste concerns have risen to the top of the environmental agenda for citizens, governments, and businesses because of a now identifiable set of critical problems resulting from historical solid waste policy. Solid waste is becoming increasingly expensive for generators and disposers to handle, disposal and processing facilities are reaching capacity and/or closing more rapidly than they are being replaced, and contamination problems are increasing the economic and natural resource risk of landfilling or burning waste for facility neighbors and operators alike.

The words "solid" and "waste" are used together frequently in the public policy arena. The legal definition of "solid waste," however, is itself a focus of controversy because of implications the definition has for reusable waste materials and other subsets within the waste stream. Federal law in the Solid Waste Disposal Act defines "solid waste" as:

> any garbage, refuse, sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility and other discarded material, including solid, liquid, semisolid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations, and from community activities, but does not include solid or dissolved materials in domestic sewage, or solid or dissolved material in irrigation return flows or industrial discharges which are point sources subject to permits under section 1342 of title 33, or source, special nuclear or byproduct material as defined by the Atomic Energy Act. . . .[1]

Some in the regulated community consider this definition overly restrictive and exclusive of recycling activities when waste materials become reusable raw materials.[2] Other interest groups reportedly admire the definition for its thorough tackling of so complex an issue.[3] The actual

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1. 42 U.S.C. § 6903(27) (1988).

2. Garelick, *EPA's Definition of Solid Waste: Making Distinctions Between Shades of Gray*, 17 ENVTL. L. REP. 103,49 (Sept. 1987).

3. *Id.*

definition of solid waste in any law or ordinance, of course, limits the application of that ordinance. In this discussion, the term "solid waste" actually describes the Solid Waste Disposal Act definition.

Historically, solid waste policy has been divided between local, state and federal authorities, with solid waste collection and disposal most commonly a responsibility of local county or municipal governments. Since the mid-1980s, however, the combined problems of solid waste capacity, cost, and contamination, in addition to the growing interstate transportation of garbage, have pushed solid waste policy from the local sanitation department to the top of the agenda of elected officials all across the country.

Some environmental crises may come and go as a function of dramatic spills or organized educational campaigns. Public attention to solid waste problems is almost certain to grow, however, for along with its own cost and disposal problems, solid waste is closely intertwined with air, water, and energy policy. Public recognition of the rapidly growing cost, natural resource, and health risks associated with solid waste management has generated a reassessment of the post-World War II "throw-away society." This re-evaluation encourages consideration of waste reduction as a societal philosophy, where attention to the waste volume and toxicity associated with product manufacturing and packaging is more important than convenience or disposability.

II. THE DIMENSIONS OF THE SOLID WASTE PROBLEM

United States citizens generate more than 3.6 pounds of solid waste per day, eighty percent more per person than in 1960.[4] This converts to 160 million tons per year, a volume expected to grow twenty percent within ten years.[5] A growing volume of land is being allocated to a shrinking number of landfills. Seventy percent of the 14,000 landfills in operation in 1978 had closed by 1989.[6] Of those landfills remaining open, many are reaching capacity limits or are unable to meet new resource protection requirements.

Natural resource contamination associated with landfills adds yet another dimension to the solid waste problem. The United States Environmental Protection Agency ("EPA") found that 146 out of 163, or ninety percent, of municipal solid waste landfills surveyed nationwide showed evidence of groundwater contamination.[7] Furthermore, 73 of the 163 landfills, or forty percent, showed evidence of surface water contamination.[8] Groundwater contamination was found to extend as deep as 300 feet in one case, and had migrated more than a mile down-

4. NATIONAL SOLID WASTES MANAGEMENT ASSOCIATION, SPECIAL REPORT: LANDFILL CAPACITY IN THE YEAR 2000 1 (1989).
5. *Id.*
6. *Id.* at 3.
7. 53 Fed. Reg. 33,319 (1988).
8. *Id.*

gradient from the disposal area in another case.[9] Solid waste landfill contamination also figures prominently on the Superfund National Priority List. Twenty-two percent, or 184 out of 850, sites on the Superfund List as of May 1986 were identified as municipal solid waste landfills.[10] Moreover, municipal landfills represented twenty-five percent of the sites in the Superfund data base, which as of May 1986 had documented more than 27,000 cases of contamination less severe than that found at Superfund List sites.[11] These incidents of contamination indicate the extent to which older, poorly located, and poorly operated landfills have been shown to have damaged water resources.

Air pollution associated with landfill operations is also widespread. Methane, produced at landfills by anaerobic decomposition, and which is potentially explosive in sufficiently high concentrations, is a significant health and safety risk associated with landfills. Like other aspects of the solid waste dilemma, methane produces both risks and resource recovery opportunities. More than 100 landfills produce methane through collection systems for energy production.[12] Not all landfills, however, manage methane well. In twenty-three of twenty-nine damage cases assessed by the EPA, methane concentrations exceeded the lower explosive limit and was documented as far as 1000 feet off the generating landfill site.[13] Explosions and fire have already occurred at twenty of twenty-nine sites, with fatalities associated with five of these sites.[14]

Designing new landfills to significantly reduce water and air contamination is an increasingly expensive solution to the water resource and air quality problems created by solid waste disposal. The cost to people generating solid waste to replace or upgrade the nation's landfills is a primary reason for the significantly heightened visibility of solid waste in public policy discussions. The cost of new disposal sites ranges from $650,000 to $1,000,000 per acre.[15] These costs will be borne by residents of communities who use the nation's next generation of landfills either through direct fees, taxes, or waste-related price increases.

III. RCRA AND NATIONAL SOLID WASTE POLICY

Because of the continually growing volume of solid waste and its associated monetary and environmental costs, the traditional legal approach of "pollution control" does not address the rapidly increasing costs and risks associated with the solid waste problem. Allowing our rate of waste generation to continue to grow and only controlling pollution at the discharge point—the "pollution control" approach—

9. *Id.*
10. *Id.*
11. *Id.*
12. *Id.*
13. *Id.*
14. *Id.*
15. EPA 1989 Regulatory Compliance Cost Estimates. At the Cerro Colorado landfill in Albuquerque, New Mexico, the per ton cost is $25, at a $1,000,000 per acre cost level.

will not control the rate of growth of waste or waste disposal sites, nor will it encourage the collection and reuse of materials in the waste stream. A well-recognized alternative to this "pollution control" framework is waste minimization, a concept which includes solid waste volume and toxicity reduction through strategies such as source reduction and materials recycling, recovery, and reuse. This strategy involves the development of public policy to effectively reduce the health and safety risks associated with the amount of materials entering the waste stream by the collection and remanufacture or reuse of waste materials prior to waste disposal. The foundation for this waste reduction strategy was laid in federal solid waste law in the optimistically named Resource Conservation and Recovery Act of 1976 ("RCRA"),[16] but little resource recovery or conservation has resulted from that legislation since its passage.

While many of the local and state policies recently enacted to address solid waste management involve innovations beyond RCRA, this national legislation provides a context in which local and state policies can be considered. RCRA constitutes the national policy on solid waste, hazardous waste, and underground storage tanks. Congress determined "that the continuing technological progress and improvement in methods of manufacture, packaging and marketing of consumer products has resulted in an ever-mounting increase, and in a change in the characteristics, of the mass material discarded by the purchaser of such products";[17] and

> [t]hat while the collection and disposal of solid wastes should continue to be primarily the function of the State, regional and local agencies, the problems of waste disposal . . . have become a matter national in scope and in concern and necessitate Federal action through financial and technical assistance and leadership in the development of new and improved methods and processes to reduce the amount of waste and unsalvageable materials and to provide for proper and economical solid waste disposal practices.[18]

These findings resulted in the development of eleven objectives "to promote the protection of health and environment and to conserve valuable material and energy resources,"[19] which include the following:

(1) providing technical and financial assistance to state and local governments for the development of solid waste management plans to promote improved solid waste management techniques and new and improved methods of collection, separation, and recovery of solid waste;[20]

(2) prohibiting open dumping in the future and requiring the conversion of existing open dumps to facilities which do not pose a danger to the environment or to health;[21]

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16. 42 U.S.C. §§ 6901-92(k) (1976).
17. *Id.* § 6901(a)(1).
18. *Id.* § 6901(a)(4).
19. 42 U.S.C. § 6902(a) (1984).
20. *Id.* § 6902(a)(1).
21. *Id.* § 6902(a)(3).

(3) providing for the promulgation of guidelines for solid waste collection and disposal;[22] and

(4) promoting the demonstration, construction, and application of solid waste management, resource recovery, and resource conservation systems which preserve and enhance the quality of natural resources.[23]

The findings and objectives contained in RCRA culminate in a statement of national policy indicating that "[w]herever feasible, the generation of hazardous waste is to be reduced or eliminated as expeditiously as possible. Waste that is nevertheless generated should be treated, stored, or disposed of so as to minimize the present and future threat to human health and the environment."[24] As many other statutes, RCRA was broadened with amendments prior to the completion of the rulemaking activities authorized in 1976. These amendments, the Hazardous and Solid Waste Amendments of 1984 ("HSWA"), significantly modified the major solid waste section of RCRA, Subtitle D.

The EPA's emphasis on developing the regulatory system to implement other waste management areas with RCRA, along with the rethinking of solid waste policy mandated by HSWA, have left solid waste authority in RCRA largely unimplemented. As of July 1990, the EPA had not promulgated final solid waste rules under RCRA. During the past decade, a period in which the solid waste problem has worsened dramatically, RCRA enforcement has focused on hazardous waste and underground storage tank standard setting and implementation, rather than solid waste. The steep increases in waste volume and management cost per person, the lack of implementing solid waste treatment and disposal regulations, the low percentage of existing landfills which meet anticipated criteria, and the lack of national waste minimization assistance programs and demonstrative projects all attest to the lack of effective RCRA implementation for solid waste, in spite of clear statutory direction.

The EPA proposed to draft solid waste regulations directed only to disposal criteria in August 1988.[25] These rules served as a focus for state legislative and administrative debate on solid waste and were finalized on October 9, 1991.[26]

IV. FEDERAL WASTE REDUCTION POLICY

The EPA has begun to incorporate solid waste reduction, including both volume and hazard reduction, into its rulemaking with the promulgation of proposed rules for municipal waste combustors, often called

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22. *Id.* § 6902(a)(8).
23. *Id.* § 6902(a)(10).
24. *Id.* § 6902(b).
25. 53 Fed. Reg. 33,314-422 (to be codified at 40 C.F.R. pts. 257 & 258) (proposed Aug. 30, 1988).
26. *See* 40 C.F.R. pts. 257 & 258 (1991).

incinerators.[27] In material supplementing the proposed rule, the EPA set forth a waste reduction policy objective in which it recommends

> [u]sing "integrated waste management" to solve municipal solid waste generation and management problems at the local, regional and national levels. . . . A key element of integrated waste management is . . . [a waste] hierarchy, which favors source reduction (including reuse) to first decrease the volume and toxicity and increase the useful life of products in order to reduce the volume and toxicity of waste. Recycling (including composting) is the preferred waste management option to further reduce potential risks to human health and the environment, divert wastes from landfills and combustors, conserve energy and slow the depletion of nonrenewable natural resources.[28]

The EPA has set a short-term "goal of managing 25% of our Nation's municipal solid waste through source reduction recycling by 1992."[29] The EPA further expects the goal for solid waste reduction and recycling to go beyond twenty-five percent after 1992.[30] In support of this goal, the EPA identifies a number of cities that have already achieved twenty-five percent materials separation, notably Seattle, Washington and San Jose, California.[31]

The proposed incinerator rules have several strong elements that enforce the EPA's twenty-five percent reduction policy. The EPA proposes to apply the incinerator regulations to municipal waste combustor ("MWC") units for which "construction, modification, or reconstruction is commenced before December 20, 1989."[32] This proposal, therefore, incorporates a prompt implementation schedule, instead of deferring implementation until after any administrative or court challenges to the rules are completed. To accomplish this, the EPA created a class of solid waste called "processed MSW [municipal solid waste] or RDF [refuse derived fuel]," which is defined as:

> MSW or RDF that has been processed to separate materials for recovery prior to combustion in an MWC unit. MSW or RDF is considered to be processed MSW or RDF if an overall 25 percent or greater reduction by weight (annual average) of MSW is achieved through separation of some or all of the following materials: paper and paperboard combined; ferrous metal; glass; plastics; household batteries; and yard waste. A maximum of 10 percent reduction (by weight) shall be attributed to separation of yard waste. . . . The 25 percent or greater overall reduction requirement may be achieved by on-site mechanical separation, on-site manual separation, off-site

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27. 54 Fed. Reg. 52,209-304 (1989) (to be codified at 40 C.F.R. pt. 60) (proposed Dec. 20, 1989). The proposed rules were issued under authority of the Clean Air Act, as amended, 42 U.S.C. §§ 7401-62, and not under the authority of RCRA.

28. 54 Fed. Reg. 52,245 (1989) (quoting UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, THE SOLID WASTE DILEMMA: AN AGENDA FOR ACTION [EPA 530-SW-88-052]).

29. *Id.*

30. *Id.*

31. *Id.*

32. *Id.* at 52,250 (to be codified at 40 C.F.R. § 60.32a).

> mechanical separation, off-site manual separation, or a curbside source reduction or materials separation (recycling) program or a combination thereof.[33]

Except in limited cases, no owner or operator of an affected facility shall cause unprocessed MSW or RDF to be combusted in such a facility.[34] With this language, the EPA requires incinerator operators to reduce waste twenty-five percent by weight for any new or modified incinerators.

This waste reduction requirement has a hazard reduction component that sets forth controls on vehicle and household batteries, two major sources of hazardous heavy metals in municipal solid waste. The EPA's proposed rules require that, except in limited instances, "no owner or operator of an affected facility shall cause vehicle batteries to be combusted in such facility."[35] Such a ban on vehicle battery incineration is designed to recycle the reusable materials in the batteries and prevent the emission of heavy metals which would not be destroyed in the incinerators. With respect to household batteries, the EPA requires that "a program to remove household batteries from [incinerators] prior to combustion shall be established."[36] Less stringent controls on household batteries are applied because of the EPA's view that little information is available on the economic and environmental impacts of battery removal, even though the EPA recognized that "reductions in mercury emissions and other MWC metal emissions (including cadmium and nickel) would result from separating batteries prior to combustion."[37]

Incineration is, at least partially, a disposal technology, and while the requirements for waste reduction and toxic material separation with respect to incineration are a step forward, similar requirements for waste reduction and toxic material separation before disposal have yet to trickle down to landfill disposal requirements under RCRA authority. Such proposals are, however, very likely in the near term in response to the EPA's agenda for action.

V. STATE WASTE REDUCTION POLICIES

Waste reduction goals are a prominent element in many state solid waste statutes. The relative level of the reduction goals, and whether they are mandatory or voluntary, provides a measure of the intensity of a particular state's commitment to waste reduction. State solid waste reduction goals[38] are summarized below.

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33. *Id.* at 52,298 (to be codified at 40 C.F.R. § 60.51a).
34. *Id.* at 52,299 (to be codified at 40 C.F.R. § 60.56a(d)).
35. *Id.* (to be codified at 40 C.F.R. § 60.56a(e)).
36. *Id.* (to be codified at 40 C.F.R. § 60.56a(f)).
37. *Id.* at 52,239 (1989).
38. Glenn, *The State of Garbage in America*, BIOCYCLE 34-41 (April 1990). The New Mexico goals were included in the state's Solid Waste Act of 1990, N.M. STAT. ANN. §§ 74-9-1 to -42 (Repl. Pamp. 1990).

SUMMARY OF STATE WASTE REDUCTION GOALS

State	Source Reduction	Recycling	Composting (if separate goal)	Other	Mandated	Deadline
California	50% (may include incineration or chemical treatment)				Yes	2000
Connecticut	No change in generation rate	25%			Yes	1991
Delaware		10%	20%	60% (incin.)	No	1994
Dist. of Columbia		35%		50% (incin.)	Yes	1994
Florida	30%	30%			Yes	1995
Illinois		25%			Yes	2000
Indiana		25%			No	1992 or 5 years
Iowa	50%	50%			No	2000
Louisiana	25%	25%	25%		Yes	1992
Maine		50%	50%		No	1994
Massachusetts	10%	38%	3%	49% (incin.)	No	2000
Michigan	8-12%	20-30%	8-12%	35-45% (incin.) 4-6% (reuse)	No	2005
Minnesota		25%			Yes	1993
Missouri	35%	35%	35%		No	2000
New Jersey		25% (excludes leaf composting)			Yes	N/A
New York	10%	40%	40%	33% (incin.)	No	2000
North Carolina	25%	25%	25%		Yes	1993
Ohio	25%	25%			Yes	1994
Pennsylvania	reduce generation	25%			Yes	1997
Rhode Island		15%			Yes	1993
Vermont		40%			Yes	2000
Virginia		25%			Yes	1995
Washington	50%	50%	50%		Yes	1995
Wisconsin	2%	10%	10%	45% (incin.)	No	2000
New Mexico	50%	50%	50%		No	1995-2000

Between 1989 and 1990, the number of states with waste reduction goals increased from eighteen to twenty-five, and the number of states with mandatory, rather than voluntary, goals rose from eight to fifteen.[39] The mandatory requirements take varying forms, ranging from statewide requirements to goals set at the state level but applied to local waste management programs.[40] The above table shows a wide range of percentile waste reduction goals, but in only one state, Connecticut, is the RCRA goal of twenty-five percent mandatory reduction by 1992 exceeded. Only Louisiana and North Carolina set twenty-five percent reduction by 1992 as a mandatory goal; all other states with mandatory goals are on a slower timetable.

The mix of mandatory and voluntary goals is striking and well-distributed among states in different regions: eastern, midwestern and western states vary in the firmness of their goals. Goals are stated in various ways for different states, resulting in a wide range of standards even among neighboring states. Several states, such as Pennsylvania,

39. Glenn, *supra* note 37, at 34-41.
40. *Id.*

Ohio, New Jersey, and New York, which have active interstate waste transport relationships with each other, have waste reduction goals that vary in amount and type of reduction and range from mandatory to voluntary in the enforceability of the goal.

States also vary as to the specificity of their goals. Many states have set goals which cover the full spectrum of wastes, while very few focus on specific waste constituents, such as compostable organic waste. Similarly, the states are not consistent in their approaches to incinerators and their role in waste treatment strategies. Most states address waste reduction through recycling goals. Only four states, Massachusetts, Michigan, New York, and Wisconsin, specify source reduction explicitly. Only two states, Connecticut and Pennsylvania, have general waste generation rate goals.

Half of the fifty states had waste reduction policies as of 1990, although those states with waste reduction policies include many of the more populous states. Of those states with goals, there is little agreement with respect to performance level or deadline for attainment. The data shows that the states have begun to set solid waste policy, but little can be shown in terms of enforceable standards. The states have generally given themselves more time to consider action than the RCRA timetable. The RCRA goal of twenty-five percent by 1992, a goal established in 1976, is still a target beyond the goals of most of the states in the waste reduction arena.

The waste reduction goals of the various states represent a measure of the penetration of waste reduction from the national to the state level. Most waste is, however, managed at the local city and county levels where waste management costs are considered a political issue and waste treatment and disposal facilities placement is considered a land use issue. Thus, solid waste is a more immediate concern for these local jurisdictions than it is for their respective legislators.

VI. COMMUNITIES WITH SUCCESSFUL WASTE REDUCTION POLICIES

While federal and state actions are moving in the direction of resource recovery and waste reduction policy, actual waste reduction activities currently occur at the local county and city levels across the country. Waste reduction is being accomplished largely within local communities. Utilization of waste reduction technology has also occurred in a range of small and large communities. In several cases, the twenty-five percent reduction figure, still a distant future goal in many states, has already been met or exceeded. The Institute for Local Self-Reliance, a Washington, D.C.-based organization, has gathered data on fifteen communities, five of which have a population over 250,000: Islip, New York (pop. 300,000); Lane County, Oregon (pop. 269,500); Seattle, Washington (pop. 490,000); Minneapolis, Minnesota (pop. 370,000); and

Portland, Oregon (pop. 471,000).[41] The waste recovery performance of those communities is tabulated below.[42]

WASTE RECOVERY PERFORMANCE FOR SELECTED CITIES

Community	ISLIP 1988	LANE COUNTY 1987	SEATTLE 1987-88	MINNEAPOLIS 1987	PORTLAND 1987
Population	300,000	269,500	490,000	370,000	471,000
Total Waste Generated - tons	403,158	202,128	686,695	373,000	442,000
Residential - tons (%)	176,000 (44%)	—	246,700 (36%)	161,000 (43%)	191,000 (43%)
Commercial - tons (%)	207,000 (51%)	—	439,995 (64%)	212,000 (57%)	251,000 (57%)
Pounds/Day/ Capita	2.97	4.11	7.68	5.52	5.14
Material Recovered - tons (%)	130,158 (32%)	57,628 (29%)	170,283 (25%)	90,460 (24%)	107,000 (24%)
Recycled - tons (%)	99,158 (24%)	57,128 (28%)	170,283 (25%)	82,960 (22%)	107,000 (24%)
Residential - tons (%)	30,000 (7%)	—	44,430 (7%)	9,960 (3%)	37,000 (8%)
Commercial - tons (%)	49,000 (12%)	—	128,853 (18%)	73,000 (20%)	70,000 (16%)
Bottle Bill - tons (%)	20,158 (5%)	12,128 (6%)	—	—	—
Composted - tons (%)	31,000 (8%)	500 (0.25%)	-0-	-0-	-0-
Program Characteristics					
Type	CS	CS DO	CS DO BB	CS	CS DO
Public/Private	Pub w/contract	Private	Pub w/contract	Pub w/contract	Private
Mandatory/ Voluntary	M	V	V	V	V
Pick Up Frequency	Biweekly	Varies	Varies	Biweekly	Varies
Containers Provided	Y	N	Y	N	N
Economic Incentives	Y	N	Y	N	Y
Same Day Collection	N	N	N	N	N
Commingle Set-Out	Y	N	N	N	N
Participation Rate	95%	11%	63%	45%	25%
Materials Collected At Curbside	N,M,H,G,A F,Y,L,C	N,G,F,A,C,O	N,M,C,G,A F,H,Y,L	N,C,G,A,F	N,H,C,G,F A,O,X
Drop-Off/ Buy-Back/ Bottle Bill	—	N,C,H,G,F,A S,W,O,L,Y	W,S,O,F,G,A C,H,Y,L	O,B,L	N,H,C,G,F A,O,X,Y,L
Target Materials (%)	64%	52%	66%	35%	51%

MATERIALS ABBREVIATIONS: N = Newspaper; C = Corrug. Cardboard; H = High Grade Paper; M = Mixed Paper; G = Glass; F = Ferrous Cans; S = Scrap Metal; W = White Goods; A = Aluminum; P = Plastics (PET &/or HDPE); O = Waste Oil; T = Tires; B = Batteries; L = Leaves; Y = Yard Debris; X = Other.

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41. Allen, *Beyond 25 Percent: Materials Recovery Comes of Age*, INSTITUTE FOR LOCAL SELF-RELIANCE, WASHINGTON, D.C. 12-13 (April 1989).

42. *Id.* The data in this table dates from 1987 to 1988 and substantial changes may have occurred in the solid waste management programs in these communities. Nevertheless, the data clearly demonstrates that there are many ways to successfully recover more than one-quarter of the waste generated by a community.

This table indicates not only the percentage of waste recovered by city, but also which materials are collected and by which method. The data reveal that most of the solid waste recovered is from commercial rather than residential sources. For cities which report such data, two to six times more commercial waste is recovered than residential waste. Very little, only five percent in one case—of the waste recovered is yard or wood waste. Further, very little of the waste recovered comes from bottle bill collections—five to six percent in only two cases.

These community recycling programs have successfully used various combinations of public, private, and public contractor strategies, as well as various combinations of pick-up, container availability, and economic incentives. A notable common element in these examples is that each successful recycling city has a curbside collection program, though some complement their curbside operations with Drop Off and Bottle Bill programs.

Importantly, each successful community targets much more than a twenty-five percent volume of material, allowing the twenty-five percent reduction target to be met without 100% collection of any one material. The communities target between one-third and two-thirds of their waste stream, indicating a significant opportunity for further increases in waste recycling. Each community has both commercial and residential programs, and participation rates vary widely, from a low of eleven percent in Lane County, Oregon, to a high of ninty-five percent in Islip, New York. No information is provided, however, as to the specific residential or commercial participation rates.

VII. CONCLUSION

This country is facing a solid waste problem wherein the volume, the hazards, and the costs of solid waste management are growing more rapidly than the capacity to address the problem. Future policymakers at the local, state, and federal levels will have some very complex and expensive choices to make if they are to significantly reduce the rate of growth of the volume of solid waste generated by the growing population of the United States. Federal and state decisionmakers have generally refused to decide the issues of volume and hazard reduction, deferring those decisions to future policymakers. At the same time, however, communities in the 250,000 to 500,000 population range have accomplished real waste reduction at or beyond the twenty-five percent reduction goals set by the 1976 Resource Conservation and Recovery Act.

European and Asian communities have long achieved greater than twenty-five percent waste reduction, resulting in better performance than most United States communities, with no apparent effect on United States management policy. Hopefully, identifying and demonstrating waste reduction in the United States at and beyond the twenty-five percent level in urban population centers will embolden elected officials to set firmer, more enforceable waste reduction goals for their con-

stituents. Without a willingness to enforce waste reduction policy, we will pass the risks and costs of our ever-growing solid waste problem to our children and their children. Public policy often works to defer costs to those yet unable to affect that policy, however irresponsible such an approach may appear. But with real examples of significant waste reduction in urban and rural communities, there is no basis for such a deferral of our solid waste costs to future generations.