

MUNICIPAL SOLID WASTE POLICY FORUM

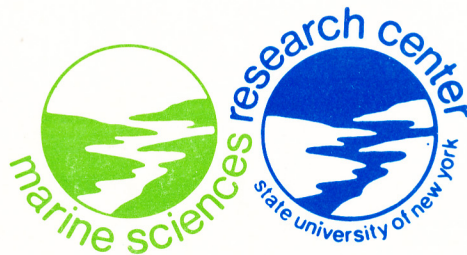
Results and Conclusions

of a

Forum

J.R. Schubel and H.A. Neal
Conveners

1 November 1985



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Report of
Waste Management Institute
Marine Sciences Research Center
State University of New York at Stony Brook

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INTRODUCTION

A Municipal Solid Waste Policy Forum held on 1 November 1985 at Stony Brook marked the creation of the Marine Sciences Research Center's new Waste Management Institute. The Agenda for the Forum is contained in Appendix A; the list of the participants in Appendix B.

The Forum was designed to bring together a small group of knowledgeable people to explore a wide range of municipal solid waste management issues. This report summarizes the major conclusions and recommendations which emerged from the discussion which are particularly pertinent to Long Island and the metropolitan New York City area. While all participants had the opportunity to review and comment on this document before printing, it does not necessarily follow that all participants endorse all of the findings presented here.

CONCLUSIONS AND RECOMMENDATIONS

- o The per capita production of municipal solid wastes is higher in the United States than in any other country in the world.
- o One factor which contributes to the magnitude of this waste disposal problem is the failure to assess the full costs of disposal. According to many, this subsidy encourages production of wastes and discourages recycling.
- o Any significant federal involvement in municipal solid waste management activities was terminated in 1981.

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NATIONAL OVERVIEW

ESTIMATED MASS OF
 UNITED STATES RESIDENTIAL AND COMMERCIAL SOLID WASTE
 (Excludes material currently recycled)

<u>Year</u>	<u>Millions of tons/yr</u>	<u>Pounds/person/day</u>	<u>Paper Content</u>	
			<u>Millions of tons/yr</u>	<u>percent of total</u>
1980	144.2	3.4	43.0	29.8
1990	168.8	3.7	52.3	31.0
2000	197.5	3.8	60.3	31.0

Source: Franklin, William E., et al., 1982, Waste Paper: The Future of a Resource, 1980 - 2000. By Franklin Associates, Ltd., for the Solid Waste Council of the Paper Industry, American Paper Institute.

NATIONAL OVERVIEW

ESTIMATED COMPOSITION OF
UNITED STATES RESIDENTIAL AND COMMERCIAL SOLID WASTE
1980

(Excludes material currently recycled)

Combustible Fraction

	<u>Millions of tons/yr</u>	<u>% of total</u>	<u>% of total combustibles</u>	<u>As-disposed BTU/lb</u>
Paper	43.0	29.8	37.9	6,682
Plastics	6.9	4.8	6.1	14,058
Rubber & Leather	3.7	2.5	3.2	9,473
Textiles	3.34	2.3	2.9	6,775
Wood	5.0	3.5	4.4	6,666
Food	24.1	16.7	21.2	1,915
Yard Waste	<u>27.5</u>	<u>19.1</u>	<u>24.2</u>	<u>2,729</u>
Subtotal	113.5	78.7	100.0	

Non-combustible Fraction

Glass	15.1	10.5		42
Metals	13.3	9.3		86
Misc. inorganics	<u>2.3</u>	<u>1.6</u>		<u>86</u>
Subtotal	30.7	21.3		
GRAND TOTAL	144.2	100.0		

Source: Franklin, William E., et al., 1982, Waste Paper: The Future of a Resource, 1980 - 2000. By Franklin Associates, Ltd., for the Solid Waste Council of the Paper Industry, American Paper Institute.

- o There is a dearth of comprehensive long-range planning in the United States; municipal solid waste management is no exception.
- o New York State generates more than 50,000 tons of municipal solid waste every day; 18,250,000 tons per year. More than 90 percent of the total is landfilled; the remainder is incinerated.
- o As of September 1985, New York has 404 active landfills: 47 have valid permits, 105 are operating with signed consent orders, the remainder have no permits.
- o Inappropriately sited, designed and operated landfills have caused widespread and serious contamination of groundwater and surface water resources of the State. The problems are particularly severe on Long Island, but are not limited to the Island.
- o In 1983, the New York State Legislature approved and the Governor signed a law requiring closure by 1990 of nearly all landfills on Long Island located above the deep recharge zone of the Island's sole source aquifer.
- o In August 1985, the New York State Department of Environmental Conservation extended this policy to prohibit new or expanded landfills above primary and secondary aquifers anywhere in the State.

- o Selected Long Island landfills outside the deep recharge zone shall be designated for disposal of ash from resource recovery facilities.
- o The implications of the 1983 New York State Landfill Law are far reaching and were not fully appreciated at the time of passage of the Law.
- o Different regions of the State have different strategic imperatives concerning municipal solid waste management. The best strategy for Long Island may not be the best strategy for northern New York State.
- o The capacity of existing landfills in the metropolitan New York City area is nearly exhausted. New sites are difficult to identify and even more difficult to secure.
- o New York City's 4 existing landfills will be reduced to 1--Fresh Kills--by the end of this year. Its present elevation is nearly 150 feet. To extend its lifetime to the end of the century its elevation limit would have to be raised to 500 feet.
- o Legislation and the lack of available and appropriate landfill sites have forced local governments to reassess how they will deal with their municipal solid wastes in the future.

- o Every scenario of municipal solid waste management which was considered by the Forum to be practical, at least in the short term--the next decade--for Long Island and the Metropolitan New York City area had as a component, mass burning of garbage and trash in modern resource recovery facilities.
- o All municipal solid waste disposal strategies entail some risk; risk to human health and to the environment. Risk should be reduced to acceptable levels, but it can not be eliminated.
- o A coordinated regional approach to municipal solid waste management is the rational approach, but will be difficult to implement particularly on Long Island because of strong local rule.
- o One of New York's most successful recycling programs is in the Town of Islip on Long Island. Islip has achieved a reduction in the volume of their municipal solid wastes of about 3%.
- o Reforms in packaging practices could significantly reduce the volumes of solid wastes generated without adversely affecting public health or the convenience of the consumer. Such reform probably would require legislation. Changes in state and federal procurement practices could, however, make a significant difference.

- o New York's returnable beverage container law has reduced the volume of municipal solid wastes an average of 3 to 5%. There are other more significant savings in energy, in reducing litter, and in creating jobs.
- o New Jersey has an active legislative program outlining a solid waste management plan covering the years 1985 through 2000. One major goal is to recycle 25% of its municipal solid waste.
- o The largest export product from the Port of New York and New Jersey is waste paper. Most goes as ballast, but is sold at the other end. The second largest export product is scrap metal.
- o Recycling is a laudable goal. It can reduce pollution of air, land and water; conserve energy; save money; create jobs; and conserve valuable and limited natural materials.
- o If recycling programs are to succeed over the longer-term, they must be rooted firmly in public education, in financial incentives and disincentives which are applied rapidly and predictably, in the creation of stable markets for recycled materials, in appropriate state and federal procurement practices, and in an economic system which does not offer unfair advantages to items made from virgin materials.
- o It is very likely that even with the most successful programs of recycling and source separation, large amounts of mixed municipal

solid waste will remain which will require processing and disposal.

- o A recycling strategy for New York City which depends upon individual families sorting their wastes into multiple--even two--trash cans may be difficult to implement because of the vertical layering of the majority of dwellings.
- o All waste disposal options must be realistically priced to include the full costs. None is at present.
- o Tipping fees at New York's landfills range from zero in some towns to about \$25 per ton at some private landfills.
- o Even the fees at the high end of this range fail to reflect the actual costs of landfilling. If all costs were included, tipping fees would rise to at least \$50 per ton on Long Island and in New York City.
- o The New York Legislative Commission on Solid Waste Management has estimated that the elimination of all tax benefits to waste-to-energy facilities would raise tipping fees by at least \$20 per ton, making a total tipping fee of at least \$60 per ton for a modern, properly constructed facility.
- o For Long Island and the metropolitan New York City area the most probable municipal solid waste management strategy includes

source reduction through recycling and changes in packaging, incineration in waste to energy plants, and disposal of ash in landfills or in the ocean.

- o The ash may create a more significant disposal problem than anticipated.
- o Through research, creative, economical and safe uses can be developed for stabilized ash from resource recovery facilities.
- o Greater attention should be directed at assessing the ocean option for disposal of ash in stabilized and unstabilized forms from resource recovery facilities.
- o If a combination of source reduction through recycling and incineration in resource recovery facilities is unable to handle all of Long Island's municipal solid wastes by 1990, the present law would require that Long Island export its garbage and trash to other parts of the State or to other states.
- o Air emissions of concern from resource recovery facilities fall into three general categories: particulates, acid gases, and trace organic compounds such as dioxins and furans.
- o Existing technology for removal of particulates from the stacks of modern resource recovery facilities is considered by most scientists to be adequate to protect public health, the environment, and aesthetics.

- o Existing technology for removal of acid gases from the effluent of resource recovery facilities is considered by most scientists to be adequate to protect public health, the environment, and aesthetics.

- o The federal government does not recognize dioxins and furans from resource recovery facilities as threats to the public health.

- o Recent studies indicate that there are wide variations in the levels of dioxins and furans in the stack emissions from modern resource recovery facilities and that the data are not sufficient to attribute the variations in emissions to variations in the composition of the source material, to burning efficiency, or to temperature.

- o The generation of dioxins and furans by mass burning facilities continues to be a matter of considerable public concern to New Yorkers.

- o The uncertainty of (1) the emission levels of dioxins and furans, (2) the conditions which promote and inhibit the formation of these compounds, and (3) their public health impacts remains unacceptably high in the minds of many citizens of New York and other states. Significant controversy also still exists within the scientific community about each of these issues.

- o The uncertainty surrounding the conditions which promote and inhibit the formation of dioxins and furans in resource recovery facilities and the fates and effects of these compounds once formed remains high.

- o Through the New York State Energy Research and Development Authority, the New York State Department of Environmental Conservation, and the New York State Health Department, New York State has taken a national leadership role in developing and implementing research programs to reduce uncertainty associated with the operation, emissions and effects of modern mass burning resource recovery facilities.

- o Major research efforts are underway in New York State, in Canada, and in Europe to address these questions, but it is unlikely that unequivocal answers will be forthcoming for at least several more years.

- o To date, little research attention has been focussed on the levels of dioxins and furans in ash (fly and bottom) from resource recovery facilities, on the conditions which promote leaching of these compounds from ash, and on the effects of stabilization of ash on mobility of dioxins and furans.

- o Major resource recovery industries should be encouraged to collaborate with the State and with the research community in

NATIONAL OVERVIEW

OF
MUNICIPAL WASTE TO ENERGY FACILITIES IN THE UNITED STATES
April 1985

	<u>Number of Facilities</u>
Operating or in shakedown	62
Under construction	14
Advanced planning (expected to break ground in 1985)	29
Currently closed, but still listed in U.S. Conference of Mayors survey	9
	<u>114</u>
Breakdown by size (includes all four categories above)	
300 tons per day and below	61
301 to 800 tons per day	19
801 tons per day and greater	34
	<u>114</u>
Breakdown by process	
Mass Burn	84
RDF	27
Other:	
Pyrolysis - 1 (not operating)	1
Anaerobic digestion - 1 (experimental)	1
Mechanical sort/no energy recovery	1
	<u>114</u>
Total design capacity in tons per day:	
Operating or shakedown 31,131	
Under construction 10,025	
Planned 30,953 (incomplete count)	
Currently closed 6890	

Source: U.S. Conference of Mayors, 1985, City Currents, April.

U.S. Conference of Mayors
1620 Eye Street, N.W.
Washington, D.C. 20006

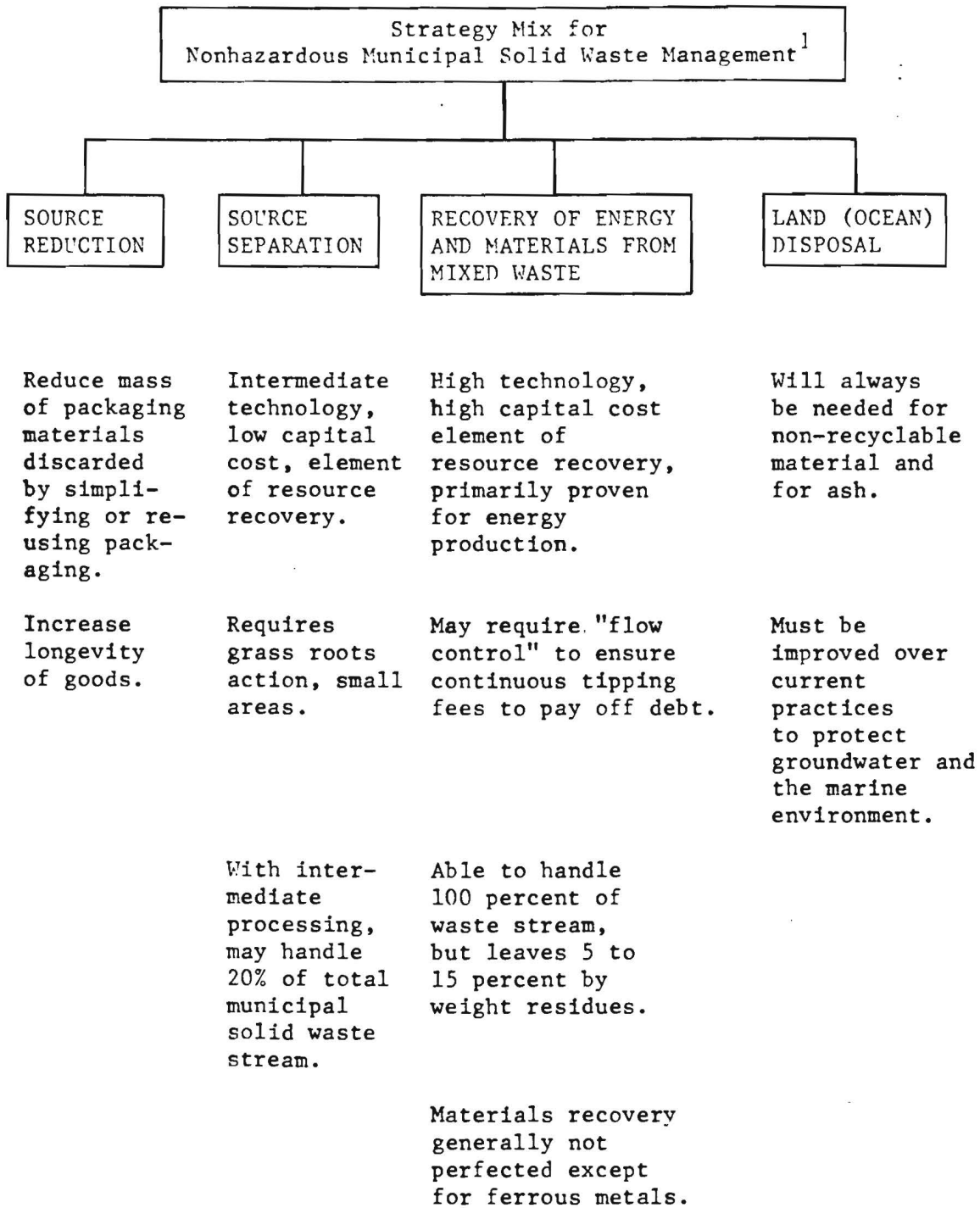
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conducting research and in sharing data and information to reduce the uncertainty over the health and environmental effects of modern resource recovery facilities. There appears to be far greater cooperation traditionally among industries in Europe than in the United States.

- o While efforts to reduce the uncertainties surrounding dioxins and furans in resource recovery facilities should be encouraged, steps must be taken promptly to deal with the continual flow of municipal solid wastes.

- o New York has 7 operating resource recovery plants; 3 under construction; and at least 15 more proposed, 5 of which are in New York City.

- o Modern, sophisticated mass burning facilities should be operated and maintained by well-trained, skilled professionals.



¹ Courtesy of Garrett Smith

A MESSAGE TO STATE GOVERNMENT

As their last task, each participant was asked to identify what he or she believed to be the most important recommendation that could be made to the State to significantly improve New York's management of municipal solid wastes over the next decade.

Variations of the most frequently mentioned responses have been aggregated into the following recommendations.

- o Clearly identify and assess the public health, environmental and economic issues associated with each municipal solid waste policy option, including a full disclosure of all uncertainties.
- o Design and implement an intensive and extensive program of public education and dialog from young children to adults on the magnitude and complexity of the municipal solid waste problem, the alternatives we have for dealing with it, and the advantages and disadvantages of each alternative. The benefits of recycling should be stressed not only in reducing the solid waste problem, but in conserving materials, energy and the environment for future generations. Citizens should be aware of the full costs--economic and environmental--of each alternative.
- o Increase efforts to establish mechanisms which will promote recycling. The educational component concerning the benefits of recycling already been mentioned. Attitudes are more difficult to change than behavior. Behavior could be changed through programs which (1) assess the full costs of disposal associated with each alternative, (2) create appropriate incentives and

disincentives which are applied quickly and predictably, (3) make it easy for the consumer to recycle, or to facilitate recycling by others, and (4) create appropriate markets for recycled materials.

- o Encourage and support research to develop new and better technologies for processing municipal solid wastes for maximum benefit to society.
- o Establish, through research, and adopt a rational and defensible comprehensive strategy to control air emissions from all sources, including resource recovery facilities.
- o Assess and clarify the appropriate roles of local, State and federal government in solving municipal solid waste problems through research, development, and implementation.

A FINAL NOTE

All participants expressed interest in a follow-up forum with scientific and technical directors of leading corporation involved in the design, construction and operation of resource recovery facilities. J.R. Schubel and H.A. Neal will organize such a forum early in 1986 through Stony Brook's Waste Management Institute.

Appendices

- A. Agenda
- B. List of Participants

Appendix A

MUNICIPAL SOLID WASTE POLICY FORUM

1 November 1985

AGENDA

Challenger Hall, Room 165

- 09:00 Welcome and Announcement of the University's New Institute for Waste Management. (President John H. Marburger)
- 09:10 Comments on studies of municipal solid wastes and the Institute for Waste Management and its relationship to the Marine Sciences Research Center (Provost Homer A. Neal)
- 09:20 An overview of the day's activities and what we expect to achieve. A few observations on the role of the Institute for Waste Management in the future development of MSRC (J.R. Schubel)
- 09:30 A National Perspective on Solid Wastes: Their generation, recovery and disposal. (Garrett Smith, USEPA)
- 10:00 A Regional Perspective on Solid Wastes: Their generation, recovery and disposal (Linda O'Leary, Port Authority of New York and New Jersey)
- 10:30 A New York State Perspective on Solid Wastes: Their generation, recovery and disposal. (Gordon Boyd).
- 11:00 New York and the U.S. in the International Arena of Wastes and Waste Management. (Charles Gunnerson, NOAA)
- 11:45 An Identification and Discussion of Alternative Management Strategies. (H.A. Neal and J.R. Schubel)
- 12:00-1:00 Lunch
- 1:00-1:30 Continued discussion of Alternative Management Strategies
- 1:30-2:00 An examination of how federal and New York State Policies affect the generation, recovery, and disposal of solid wastes.
- 2:00-2:30 Turning problems into opportunities: a challenge for the future and the role of the Institute for Waste Management in meeting that challenge. (Gerhardt Muller, Port Authority of NY & NJ; H.A. Neal and J.R. Schubel, Stony Brook)
- 2:30-3:30 Round-table discussion to formulate recommendations.
- 3:30 Adjourn

Appendix B

LIST OF PARTICIPANTS

1. Harold Berger, Director, Region 1, N.Y. State Department of Environmental Conservation
2. Gordon Boyd, Executive Director of NY State Legislative Commission on Solid Waste Management
3. Terence P. Curran, Executive Director, NY State Environmental Facilities Corp.
4. Norman G. Einspruch, Dean, College of Engineering, Univ. of Miami
5. Robert Fitzpatrick, Vice President Grumman Corp.
6. Theodore Goldfarb, Associate Vice Provost for Curriculum, SUNY at Stony Brook
7. Charles Gunnerson, National Oceanic and Atmospheric Administration
8. Myrna Jacobson, Graduate Student, Marine Sciences Research Center
9. Evan Liblit, U.S. Environmental Protection Agency
10. Bernice Malione, Graduate Student, Marine Sciences Research Center
11. John H. Marburger, President, SUNY at Stony Brook
12. Parker Mathusa, Program Director, Energy Resources & Environmental Research
13. Michael McCarthy, Associate, Environmental Scientist, Middleton Contakosta Associates
14. Gerhardt Muller, Supervisor, Oceanic Technologies, Port Authority of New York and New Jersey
15. Homer A. Neal, Provost, SUNY at Stony Brook
16. Linda O'Leary, Project Manager, Regional Waste Task Force, Port Authority of New York and New Jersey
17. Arthur Perritt, Port Authority of New York and New Jersey
18. Frank Roethel, Associate Professor, Nassau Community College, and Research Professor, Marine Sciences Research Center
19. Pat Roth, New York State Department of Health
20. J.R. Schubel, Director, Marine Sciences Research Center, SUNY at Stony Brook
21. Ronald Scudato, Research Associate, Rockefeller Institute of Government
22. Garrett Smith, Special Assistant for Air and Waste Management, U.S. Environmental Protection Agency
23. William Stasiuk, Director of Center for Environmental Health, NYS Department of Health
24. Kenneth Swider, Graduate Student, Marine Sciences Research Center
25. P.M.J. Woodhead, Research Professor, Marine Sciences Research Center



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DUE DATE

