REPORT OF THE
SOLID WASTE COMMISSION

TO
THE GOVERNOR
AND
THE GENERAL ASSEMBLY OF VIRGINIA

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COMMONWEALTH OF VIRGINIA
Department of Purchases and Supply
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Richmond, Virginia

December 1976

TO: Honorable Mills E. Godwin, Jr., Governor of Virginia

and

The General Assembly of Virginia

I. INTRODUCTION

A. Creation of the Commission.—During the 1973 Session of the General Assembly the Commission to Study and Advise Upon the Disposal of Solid Wastes was created by Senate Bill No. 856, introduced by Senator Walker. Under the provisions of Senate Bill No. 856 the Commission was directed to study all problems relating to the causes, collection and disposal of solid wastes. During the 1976 Session of the General Assembly the name of the Commission was changed to the Solid Waste Commission. (Senate Bill 383)

The members of this Commission as of July 1, 1976 are: Dr. Robert F. Testin, Richmond; William M. Beck, Jr., Norfolk; Callis H. Atkins, Ruckersville; Delegate Richard M. Bagley, Hampton; Robert Cosby, Powhatan; Ernest C. Edwards, Jr., Chase City; Joseph M. Guiffre, Alexandria; Delegate Joan S. Jones, Lynchburg; Jonathan Murdoch-Kitt, Richmond; J. D. Pennewell, Chincoteague; William T. Reed, Manakin-Sabot; Delegate Richard Saslaw, Annandale; Senator Stanley C. Walker, Norfolk. Mr. R. E. Dorer, Director of the Bureau of Solid Wastes and Vector Control, served as consultant to the Commission, and Mr. William M. Amrhein as counsel. Bragdon R. Bowling, Jr., and Susan T. Gill serve as staff from the Division of Legislative Services.

B. Background.—The major activity of the Commission during 1976 was studying the advisability of a comprehensive statewide solid waste management plan.

As background for this effort, the Commission in late 1974

funded a State-of-the-Art study on "Solid Waste in Virginia" by the firm Hayes, Seay, Mattern and Mattern. The final report on this study concluded that while "there has been significant improvement in solid waste disposal practices in the past decade" ..."Virginia is still faced with complex solid waste problems." The first problem area noted by the consultant was: "There is a lack of long-range comprehensive planning for handling Virginia's increasing volume of solid waste." A number of other problem areas were also noted by the consultant. These have been summarized in Reference 1.

In the spring and summer of 1975 a series of public hearings were held by the Solid Waste Commission in eight different locations around the Commonwealth. These hearings gave the Commission a valuable insight into a number of broad problem areas facing the citizens of Virginia. A summary of the results of these hearings is included in the Commission report for 1975 (Reference 2).

Finally, the 1976 Session of the Virginia General Assembly passed a resolution "That the Commission is urged to continue its efforts and studies to the end that a statewide solid waste management and disposal plan can be implemented to encompass the needs and problems of all areas of the Commonwealth in the most practically efficient and realistically economical manner..." (Senate Joint Resolution No. 48).

In carrying out its general and specific charges during the past year, the full Commission met 5 times. In addition, there were numerous meetings of Commission subcommittees during the year.

This report is a summary of the Commission activities during the year 1976.

II. DELIBERATIONS OF THE COMMISSION

A. Trip to Wisconsin and Connecticut.—During January, 1976, Dr. Testin, Mr. Guiffre, Mr. Dorer, Mr. Amrhein and Ms. Gill traveled to Wisconsin and Connecticut (Mr. Edwards joined the group in the latter state) to review the establishment of state Resource Recovery Authorities for the purpose of implementing state solid waste management plans. These two states have pioneered in this area and the Commission believed that it would be advantageous to review their efforts before attempting to formulate a plan for Virginia.

The Commission representatives met with Directors of each state's Resource Recovery Authority and their staffs and gained valuable insights into the innovative programs being established by both states.

B. Williamsburg Seminar.—As a result of the Wisconsin and Connecticut trips, the Commission believed that it would be highly desirable to get the views of a cross section of states regarding the development and implemenation of comprehensive state solid

management plans. In order to expedite this approach, to conserve funds (that would otherwise be expended in out-of-state travel by the Commission) and to establish a forum for information exchange, the Commission decided to sponsor a conference on state solid waste planning to be held in Virginia.

It was decided to invite only a limited number of states, but to select those representing a wide variety of approaches to the problem. Representatives from the Federal government and the private sector were to be invited to participate. The conference was to be structured to provide a candid exchange of information that would assist the participating states in their approaches and, at the same time, would give the Commission the deepest possible insight into other states' plans. The basic approach was to ask each participant for an informal half-hour presentation on his state's approach to the problem. Questions were to be solicited at the end of each presentation. This was to be followed by a round-table discussion among all conference participants, with the conference concluding with a question-and-answer session between the participants and the audience.

The list of invitees was limited to the top solid waste management or resource recovery official in each state and their counterparts in the Federal government and the private sector. The invited audience was to include the Solid Waste Commission and a limited number of members of the Virginia General Assembly, state, and local government officials with interests in this area and representatives from business and environmental groups.

Accordingly, on May 17 and 18, 1976, the Virginia Solid Waste Commission hosted a seminar in Williamsburg on state solid waste management planning. Representatives attended from eight states including Wisconsin, Mr. Arloe W. Paul, Chairman, Wisconsin Solid Waste Recycling Authority; New York, Mr. William G. Bentley, Director, Division of Solid Waste Management; Virginia, Mr. R. E. Dorer, Director, Bureau of Solid Waste and Vector Control; Michigan, Mr. Fred Kellow, Chief, Resource Recovery Division, Department of Natural Resources; Alabama, Mr. Fred Chipley, Director, Division of Solid Waste and Vector Control; Florida, Mr. Franchot Buhler, Executive Director, Resource Recovery Council; South Carolina, Mr. H. Gerald Edwards, Director, Solid Waste Division, Bureau of Special Environmental Programs, South Carolina Department of Health and Environment Control; Connecticut, Mr. Richard W. Chase, President, Connecticut Resource Recovery Authority. Three representatives attended from the private sector: Mr. James Greco, Technical Director, National Solid Waste Management Association; Mr. Charles W. Ballard, Vice President, Dillon, Read & Co., Inc.; and Mr. John Cunningham, Vice President, Resource Recovery Systems, Combustion Engineering, Inc.; Mr. Sheldon Meyers, head of the United States Environmental Pollution Agency's Solid Waste Office and Dr. James G. Abert, Vice President of Research at the National Center for Resource Recovery, also participated in the conference.

The conference gave the Solid Waste Commission valuable insight into solid waste management planning in other states. The

proceedings were recorded by a court reporter and have been edited and corrected by the conference participants. The Commission intends to publish the full proceedings early in 1977. In the interim, a summary of the approach to State Planning taken by each State participating in the conference is included as Appendix I to this report.

III. PRESENT STATE OF SOLID WASTE MANAGEMENT IN VIRGINIA

At the state level, solid waste is the responsibility of the Bureau of Solid Waste and Vector Control within the Engineering Division on the State Health Department. The Bureau consists of the Director, Mr. R. E. Dorer, six professional regional consultants [1], one chemical engineer and two secretaries[1]. The Bureau also employs an entomologist for vector control. Its total budget is less than $160,000 of State funds supplemented by $50,000 in federal grants.

The only other state activity with responsibility for solid waste is the Commission, which serves as an advance planning function and also studies particular problems from time to time as directed by the General Assembly. The Commission budget is $25,000 per year.

Regional approaches to solid waste management are being studied in at least five[2] areas of the Commonwealth. These approaches, either through the present Planning Districts or though an informal coalition of affected cities and counties, have awarded contracts to consultants for the development of solid waste management plans for their regions. These regional approaches involve the implementation of resource recovery systems as an alternative to traditional disposal methods. No contracts have yet been awarded for proceeding with construction in any of these programs. Several areas of Virginia have also cooperated on the development of regional landfill projects, where a number of small open dumps were closed and a centrally located regional landfill was substituted.

The primary responsibility for planning, implementation and financing solid waste management programs is at the local level with city and county officials. The state's role is to inspect and to issue permits for the disposal sites and to provide what limited technical assistance it can with its present staff.

At last report, 94 per cent of the state's residents in communities of 5,000 people or more were serviced by public or private collectors. In many rural areas where collection of the household level is impossible, the centrally located "green box" system is in effect. Fifty-five counties now employ this system. Once collected, the sanitary landfill is the usual disposal method. At last report, of 209 permits issued by the Health Department, 204 were for landfills and 5 were for incinerators. A few counties still do not have permits for approved facilities.

While the above comments are directed primarily toward domestic solid wastes, state law requires permits for the disposal of other types of solid waste, such as industrial, institutional and demolition wastes unless such wastes are disposed of in a general purpose facility (such as a county landfill) that already has a permit. There may be well over a thousand businesses and institutions

generating solid waste, and the number needing permits is only now being determined. While a few permits have been issued to industrial sites, programs to ensure that all such private sites are permitted are only beginning.

Hazardous wastes are currently handled on a case-by-case basis, as brought to the attention of the Bureau of Solid Waste and Vector Control. Statewide data on the magnitude of this problem are not available. Information is being developed by the Bureau as part of a Federal EPA grant to survey industrial solid wastes. Baseline data will also be developed in the very near future by the Toxic Substances Advisory Council. The Commission conducted a special study of hazardous wastes in 1974 and made a number of recommendations (Reference 3). These have not been acted upon and are repeated in the "Recommendations" section of this report.

Finally, passage of the new Federal Resource Recovery Act of 1976 will be important in the development of state solid waste management programs. The Federal law is outlined in detail in Appendix II ofthis report. It appears to place responsibility for all residuals with the solid waste function. Thus, sludges, liquid wastes (that are the end product of a processing sequence), toxic wastes, hazardous wastes, etc. fall within the technical purview of state and local solid waste authorities. This fact, coupled with the national movement toward complex, capital intensive regional solid waste management and resource recovery programs would indicate the need for substantial upgrading of Virginia's solid waste efforts in the coming years. Also of interest here is that the Federal law requires the states to implement programs for comprehensive state planning and hazardous waste control. The Federal government has the authority under this new legislation to step in and run the programs if the states fail to act.

IV. PROBLEM AREAS

Virginia has made substantial progress in improving solid waste disposal practices during the 1970's. Prior to 1971, open dumping and open burning were prevalent throughout the state. Since that time virtually all disposal facilities have been converted to sanitary landfills (or in a limited number of cases, incinerators), operating with permits issued by the Commissioner of the State Department of Health.

Yet, there remain a number of specific problem areas that must be addressed at the state level. Specific examples of such problem areas include:

A. Urban areas.—The primary problem faced by urban areas is locating suitable disposal sites to handle solid wastes in a state-approved manner. For a number of cities there will be no remaining landfill sites within the city limits in ten years or less. Something will have to be done. Incineration is an alternative, but high capital costs (accelerated by the need for extensive air pollution control) makes incineration unattractive in many cases. Also, incineration

requires a backdrop landfill to dispose of unburnables and residue. In this context, the term "incineration" refers to traditional municipal incinerations. Energy recovery systems utilizing incineration as a means of providing heat, generating electricity or other means of extracting energy resources from solid waste may prove to be a cost efficient solid waste alternative.

Most of Virginia's cities are surrounded by counties with land that is suitable for a landfill or to serve as a site for regional incinerators or resource recovery plants. However, this places the problem squarely into the complex arena of city/county relationships.

Resource recovery systems have the potential for handling solid waste in urban areas less expensively and in a manner more consistent with national goals of resource and energy conservation than any purely disposal alternative. In this context resource recovery is defined to include all possible modes of energy and material utilization. Yet, resource recovery systems are also capital intensive and a key to their economic viability is the size of the operation. Currently, such systems appear to require a minimum of 500 tons per day of refuse (corresponding to a population base of 200,000 people) and the economics improve as system size increases above the minimum. Thus, resource recovery's viability is also, to a large measure, linked to a cooperative effort on the part of both cities and the urbanized portion of the counties surrounding them. The Commission believes, therefore, that a regional approach is desirable for efficient solid waste management in metropolitan areas and will quickly become a requirement as landfill sites in cities are exhausted.

B. Rural areas.—The problems in the solid waste area vary from locality to locality according to population, industry, geography and other related factors.

The problem of financing in the rural areas make the handling of solid waste difficult. In order to be in compliance with existing legislation a certain amount of financial expenditure is necessary. Many localities find it difficult to produce the finances for the necessary operations in solid waste management. There is an extremely high cost per ton of material disposed. Landfill sites and maintenance are expensive and appear to be the only answer in most rural areas. No state financing is available to aid in this area although Federal Rural Assistance has been given to a limited number of counties in the Appalachian region. At the time of the Solid Waste Commission hearings in 1975, some county officials expressed concern that they would be unable to meet state requirements for sanitary landfills without State or federal aid.

The disposal of brush and trees is a problem (particularly in Southwest Virginia) which needs further investigation. The counties previously involved disposed of these items by open burning. However, the regulations of the State Air Pollution Control Board prohibit this method in some instances. As a result, the answer lies in approved incineration and/or landfill disposal. The cost of approved incineration may be beyond county budgets. Also, the

material is not easily adaptable to landfill burying. The overabundance of trees and brush makes the problem even more difficult to solve.

The servicing of green boxes has been a problem. Green boxes overflowing with refuse can be commonly observed throughout the Commonwealth. It should be noted that the primary problem here is operational (servicing) rather than conceptual.

C. Hazardous wastes.—It is believed that hazardous wastes may be the single most important part of the solid waste problem since they pose a direct threat to humans, animals and property. As yet, Virginia has no coordinated hazardous waste management program. The Solid Waste Commission has commented on this area in the past and requests that its recommendations for a state effort in the "Recommended Program" section of this report be implemented.

D. Depletion of natural resources and pollution.—Current solid waste disposal practices of landfill and incineration are faulty on two main points: the depletion of natural resources and the possibility of environmental hazards.

This does not mean that landfills and incineration will (or should be) eliminated in the foreseeable future. Even the most sophisticated resource recovery system leaves a residual to be disposed of and alternatives other than disposal may not be economically practical for rural areas for many years, if ever. It should be recognized, however, that current disposal systems have shortcomings.

They do not recycle anything. Incinerators, without heat recovery, have the sole purpose of volume reduction. The non-degradable materials (glass, metals, plastics, rubber, etc.) placed in landfills are compacted, contaminated and diluted with dirt so that their reclamation is extremely unlikely and they are lost forever.

The potential for environmental problems resulting from current disposal methods is not fully understood. Air pollution from incinerators can be controlled, but at extremely high cost. Methane generation and the potential for surface and ground water pollution at landfills must receive adequate attention.

Methane seepage from an old dump in Richmond has resulted in closing an entire school and a request to residents in the area to "keep their windows open."

The seriousness of ground water pollution from landfills cannot be overstressed. Certain landfill sites are required to install special systems to monitor and control leechate problems.

V. FEDERAL LAW

The Congress, in October of 1976, passed the "Resource

Conservation and Recovery Act of 1976". Among other items, this legislation provides funds to assist states in establishing comprehensive state plans and setting up hazardous waste programs.

Open dumps are banned and, in what may be the most sweeping change, the technical definition of "solid waste" is changed to encompass virtually all residues in whatever form (including gaseous and liquid wastes, sludges, toxic wastes, etc.) if they are the endpoint in a processing or purification sequence.

In reference to the timetable established in the federal legislation, action must be taken by the Governor regarding the establishment of solid waste regions by October, 1977. Recommendations by designated solid waste agencies should be made by this time.

Because of the possible importance of the Federal Program to Virginia, a detailed synopsis of this sweeping new Federal Law is included as Appendix II to this report.

VI. DIRECTION FOR THE FUTURE

During the course of the Commission's public hearings, symposiums, field trips and deliberations, it became apparent that Virginia does not currently have the organizational structure that will be necessary to deal with the solid waste problems of the future. Furthermore, it has become clear that the solid waste problem is extremely complex and that long term solutions will evolve over a period of years.

However, certain trends can be perceived that can be expected to intensify in the future. For example, as pointed out in this report, recent Federal legislation has expanded the role of traditional solid waste agencies into the areas of sludge handling and, more particularly, hazardous wastes. As this situation evolves, it is becoming apparent that solid waste agencies must assume responsibility for dealing with all "residuals" produced by an increasingly complex society. The technology of the past, oriented primarily toward vector control, landfill and low temperature incineration will not be adequate to deal with future problems.

Furthermore, it appears that the trend toward increased reliance on resource recovery as a method to curtail solid waste generation, while simultaneously preserving natural resources, can only accelerate in the future. As pointed out earlier in this report, and detailed in Appendix I, this trend has precipitated a number of comprehensive statewide resource recovery plans in other states. These statewide programs are today in their infancy but already have led to an outlay of tremendous amounts of public and private capital and the creation of innovative political and technological approaches. The Solid Waste Commission endorses the trend in this direction but recommends a cautious evolutionary approach in this area.

Resource recovery is, of course, not the only solution to the problem of solid waste disposal. Source separation (i.e., segregation of recyclables prior to their entrance into the solid waste stream), source reduction (the reduction in the number of products made or their weight and volume reduction), tax incentives (i.e. the encouragement to use reusable materials) and creation of a more favorable climate for recycling through adjustments in government and private procurement policies, freight rates, and tax structures all have their place in comprehensive approaches to finding solutions to the solid waste disposal problem.

As with many other problem areas, in dealing with solid waste the state must evolve an approach to handle solid waste issues on a regional and statewide basis rather than the current locality by locality approach. Recognizing the political implications inherent in any dilution of local control for local problems, the Commission does not recommend a major move toward regionalization at the present time. As recognized earlier in the report, at least five areas of the Commonwealth are moving toward regionalization in dealing with their solid waste problem, with materials and energy recovery as a main function. None of these approaches has, as yet, been culminated but the ability of regions to work out their own approaches on a voluntary basis should be carefully monitored by the appropriate state solid waste management agency to ascertain the need for specific state programs in this area. In addition there are 15 locations in the State where two or more towns, cities and counties are operating joint landfills. However, by whatever means it is achieved, the Commission endorses the concept of a regional approach to the handling of solid waste management problems and believes that the ultimate implementation of a region by region program is inevitable.

In addition, there are several solid waste related issues being handled in other parts of state government. There is a need to bring these issues into one organizational structure. Dredge spoils, land application of sewage sludge and activities being carried out under the Virginia Litter Control Act are examples of such areas.

Underlying all of these issues is the question of finances. State expenditures for all aspects of solid waste management are currently estimated at less than $185,000 per annum. This level of funding is woefully inadequate even to carry out current law, let alone permit expansion of the state waste management program into the areas discussed above. However, increased allocations at the state level for solid waste management is a small part of overall funding needs. The implementation of but one major resource recovery system could require tens of millions of dollars in capital. Clearly, in addition to adequate funding for state programs, a mechanism must be established through which the state and/or regional authorities can raise the funds necessary to carry out the programs of the future. The ability to generate such funds must be built into long range solid waste management planning.

In this section, there have been no attempts made to be specific. The Solid Waste Commission, recognizing both the need for prudence and the Commonwealth's current financial situation,

urges caution in the implementation of new programs. However, long-term needs and objectives must be established if specific program recommendations are to make sense. The following recommended program by the Solid Waste Commission is structured to provide, within State government, a focal point through which comprehensive state wide solid waste management activities can be implemented. The recommended program can be accomplished with relatively small additional expenditures but will set the stage for the program needs for the future. It is within the context of the ultimate program direction that the specific recommendations of the Virginia Solid Waste Commission should be viewed.

VII. RECOMMENDED PROGRAM

A. Reorganization of Solid Waste Management Programs.—

1. It is recommended that the solid waste function be transferred from the Engineering Division of the Virginia State Department of Health into thte Office of the Secretary of Commerce and Resources.

2. It is further recommended that the title of the function be changed from "Solid Waste and Vector Control" to the "Department of Solid Waste Management" reporting directly to the Office of the Secretary of Commerce and Resources. The Vector Control function should remain with the Virginia State Department of Health.

3. It is recognized that the Commission on State Governmental Management has recommended that the creation of the position of Secretary of Natural Resources. Should this be implemented, it is recommended that the solid waste function be transferred from the Virginia State Department of Health, renamed the "Department of Solid Waste Management,' reporting directly to the Secretary of Natural Resources. Again, vector control would remain within the Virginia State Department of Health.

4. In making this recommendation, the Commission seeks recognition of solid waste as an environmental problem of equal concern with air and water pollution control. It is believed that the current minimal state effort on solid waste is directly attributable to the relatively low level position that solid waste occupies within the State Department of Health. Moving the solid waste function from the State Department of Health to equal status with air and water is a first step in assuring that the function will evolve into the type of organization necessary to implement the wide ranging state solid waste programs that will be necessary during the next several decades. In spite of the present fisal situation in the Commonwealth the Commission believes that the present solid waste function should be expanded in budget and manpower to set the stage for future growth. This expansion, while not massive, would set the stage for ultimate growth of the new Department of Solid Waste Management. It is assumed that, of current Bureau of Solid Waste

and Vector Control employees, only the entomologist would remain within the State Health Department. The current chemical engineer should be retained and his office established as the focal point for hazardous waste disposal within the state. Two additional engineering positions, at a minimum, are needed. One is an Office for Resource Recovery to begin working to implement state programs in this critical area and the other to deal with engineering systems for solid waste disposal including landfill, sludge handling and thermal treatment of solid wastes.

In addition, a single person professional planning function should be established to begin the work of developing a state comprehensive solid waste management plan. It is obvious, particularly with the new federal legislation, that comprehensive state planning is going to assume an ever-more important role in the state program. With the presence of a single planning professional within the new Department of Solid Waste Management, the Virginia Solid Waste Commission can perform that function for the Commonwealth until such time as a full-time program within the state solid waste management function has evolved. At this point, the need for a State Solid Waste Commission may be negated.

5. In addition to the above recommendations (which are geared toward the establishment of a vital growing solid waste management function within the Commonwealth) the Solid Waste Commission has perceived the need for corrective action in two areas that should be implemented as soon as possible.

B. Hazardous Waste Management.—

The first of these recommendations is in the area of hazardous wastes. The Virginia Solid Waste Commission first addressed the problem of hazardous waste management in its report covering the year 1974. In 1975 the Kepone incident brought to the attention of the Commonwealth the need for proper methods for the disposal of hazardous materials. At the present time, the disposal of hazardous wastes is handled on a case-by-case basis. Dealing with hazardous wastes first requires determination of the location, the amount, and the potential hazard of such wastes. Next, a safe disposal procedure and payment for the proper disposal must be determined. It is a highly technical problem, varying with each specific material involved.

The Toxic Substances Information Act passed by the 1976 General Assembly provides for the cataloguing of toxic substances and does not address the disposal of such wastes.

The Federal Resource Recovery and Conservation Act of 1976 in Subtitle C addresses Hazardous Wastes Management in eleven sections. The act authorizes $25,000,000 for fiscal years 1978-79 to be used to make grants to states for the purpose of assisting the states in the development and implementation of state hazardous waste programs. If appropriations are made to Virginia the State can expect some assistance in approximately two years.

However, the problem demands immediate attention. The

following recommendations were included in the Commission report covering the year 1974 and are reiterated here.

Legislation is needed to authorize the State Health Department to enter any establishment suspected of producing hazardous wastes. No one person or discipline has the expertise to determine the proper disposal of all of the various hazardous wastes. A panel of experts should be appointed to provide information and guidance on the health and environmental implications of each waste as they are discerned. The Solid Waste Commission renews its plea for implementation of these recommendations.

C. Financing of Solid Waste Handling. —

Also, as noted in the body of this report, there are several areas within the Commonwealth that are moving ahead on major regional resource recovery plans. It is, however, extremely doubtful that these plans will come to fruition without help in funding. One method that has been effectively implemented in other states is the availability of state-backed revenue bonds for the purpose of implementing regional resource recovery systems. It is recommended that serious consideration be given to the establishment of a program whereby bonds would be available to implement regional cooperative solid waste management programs.

FOOTNOTES

*1. Two regional consultants and one secretary are paid for with Federal Grant Monies.

*2. Including the Richmond Metropolitan area, the Pennisula Planning District, the Hampton Roads Authority, the Charlottesville area, and the City of Hampton in conjunction with the National Aeronotics and Space Administration.

Respectively submitted,

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APPENDIX I

SUMMARIES OF STATE SOLID WASTE MANAGEMENT PLANS DERIVED FROM THE WILLIAMSBURG CONFERENCE IN MAY, 1976.

1. Wisconsin.—In July, 1971, the Governor appointed a task force of eighteen to develop a feasibility study for the construction of resource recovery facilities to service the entire state. They determined that recycling will be evolutionary and not revolutionary, that one of the biggest problems would be marketing what can be recovered at the end of the line. Recycling on a regional basis was advocated in spite of the problems inherent in sparsely populated areas of the state. An educational program was conducted across the state to educate politicians and the general public. A quasi-independent authority was created to operate like a separate corporation. Under the concept of regionalization, three regions were created in 1974 with mandatory participation once the region is formed. The remainder of the state has not yet been divided. Landfills were a problem as a result of a scarcity of land and inflationary land fill costs.

The authority is prohibited from collecting or buying solid wastes or garbage. Also, they have no regulatory or taxing authority and bonds are self-amortizing backed by the state's "good faith". The number of employees (40) is kept low in order to make full use of the private sector. Local municipalities are unable to tax the authority.

In November, 1975, the Wisconsin Supreme Court ruled that the solid waste legislation was constitutional on all points. The bonding limit for the state authority was $16.5 million.

2. Connecticut.—After extensive preliminary review by the State Department of Environmental Protection and a $ 1.1 million General Electric report, the State of Connecticut established the Connecticut Resource Recovery Authority (CRRA) which is charged with developing through the private sector a statewide resource recovery program. The CRRA has a personnel limit of thirty members, operates with revenues generated by its projects and has a bonding limit of $ 250 million. The bonds are repaid out of revenues derived from regional resource recovery projects.

The localities' involvement in this state solid waste management plan is voluntary, not mandatory. Localities have the freedom to develop their own systems which might be less expensive, therefore, more attractive, to them than the state program. At this time one regional resource recovery project is under construction (Bridgeport) and contracts have been awarded

for a second (New Haven).

3. New York.—Within New York State there is a total of 20 million tons of municipal waste and 22 million tons of agricultural waste. The municipalities will pay $500 million a year for solid waste collection and disposal.

In 1972 a bond act was passed in the State providing $ 5 billion to aid towns and develop sewage disposal systems. $ 175 million of this was available to municipalities for grants in the area of solid waste. Numerous studies and reports have been produced on the subject of solid waste disposal and resource recovery in many localities in New York State. Most of these showed that engineering and marketing were two important aspects of resource recovery.

Marketing was emphasized as a key to the entire state plan. There are 21 projects in the planning stage under the bond act that would encompass about 40% of the solid waste stream.

Progress has also been made in insuring that present disposal facilities meet minimum public health standards. A total of 1700 open dumps throughout the state has been reduced to 675 landfills; consolidation of operations is important so that, for instance, one large landfill might be used to serve several localities.

4. Michigan.—A high volume of industrial waste as a result of mining and lumbering done in the state is a problem for Michigan. Approximately 50% of the solid waste business in Michigan is carried out through the private sector. Act 87 PA in 1965 provided statutory authority controlling refuse disposal. This was aimed at controlling water and air pollution. Water pollution has created the greater problems as Michigan has attempted to place restrictions on new sites to eliminate water pollution potential from open discharge of refuse as well as materials buried in land fills.

In 1971 the disposal act was amended to include transfer stations as one of the new handling techniques.

In reference to planning requirements, the act was amended in 1971 to require every county in Michigan and every town over 10,000 people to file a solid waste management plan. This has met with some resistance because there is no funding provided for implementing this planning at the local level. Mr. Kellow suggested that state financing might be the approach to follow.

The Michigan statutes require local plans to be updated every two years, but there has been little input on the resource recovery aspect of the program. Resource recovery will be encouraged as an alternative to waste handling procedures.

In 1974 the Resource Recovery Statute (Act. 366) was passed establishing the Resource Recovery Commission. The Commission's make-up is designated by statute with appointments made by the Governor. Representatives include those from local governments, private enterprise, citizen groups, the Department of Natural Resources and State Treasurer (beneficial to potential financing

activities). The authority does have the power to issue orders if, for example, a locality is not implementing part of an approved resource recovery plan.

Michigan hopes to have a solid waste plan within three or four years which will address resource recovery as well as provide solutions for the northern part of the state. Hopefully, greater responsibility by local government would improve the bond market. The orginal act does not permit the use of the full faith and credit of the state for any bond security. In the proposed amendments taxes would be levied on taxable property which may be imposed without limitation and in addition to any taxes which the unit is now authorized to levy.

A problem which the Michigan authority faces is the right of local units of government to invoke ordinances that could prevent the development of waste handling facilities. The Commission, however, can override township zoning and permit construction if, after reviewing the impact of a facilitity, it believes it is necessary.

In reference to hazardous waste, the Commission on Natural Resources feels that the state has the responsibility to provide land and perpetual care of the sites but private enterprise handles the operation.

5. Alabama.—Enabling legislation was needed to permit counties to enter into the business of solid waste management. A solid waste collection system and sanitary land fills were deemed the most problem so the legislation was created and passed. No provisions were made for the financing of this. Counties and cities found that the system was more economical if implemented on a cooperative basis. As of 1976 all 67 counties in Alabama have state approved sanitary landfill disposal sites; almost all have county-wide collection systems.

During the last session of the legislature an interim committee was set up to study the problems incident to resource recovery and report on its feasibility.

One area mentioned of greater concern was that of hazardous solid waste. No study has been done on the generation of it; no state approved disposal site exists for it.

The green box system, originally implemented is 1961, has been only somewhat successful on a statewide basis as a result of the difficulty in maintenance.

6. Florida.—The presentation from Mr. Buhler covered: (1) the primary enabling legislation and (2) current state activities in the area of resource recovery. The Resource Recovery and Management Act passed in 1974. The Department of Environmental Regulation, the equivalent of a state Environmental Protection Agency, has primary regulatory and enforcement responsibility for all environmental programs. The power granted to the Department for resource recovery purposes has not been fully utilized in the past due to political problems, but will be useful in the future.

The Act called for adoption of a statewide program by July 1, 1976, including conventional solid waste management, hazardous wastes and resource recovery. The first state rule, adopted in 1974, required permits for all solid waste handling facilities. One notable feature of this is the granting of temporary operating permits, the equivalent of a gesture of "good faith" so that those not now in compliance receive a TOP, their commitment to upgrade the site, acquire a new one, or do whatever else is necessary to meet state regulations. This feature illustrates the fairly comprehensive enforcement procedure now under way.

One problem somewhat unique to Flordia relates to landfill sites in an extemely high water table and precarious ecological area. The rule states that the bottom of all land fills should be at least five feet above the water table which can mean starting several feet above the ground in some locations.

All counties and municipalites are required to adopt, either individually or in conjunction with other counties, local resource recovery managment programs.

In reference to beverage container legislation, Mr. Buhler stated that for his support, it would have to be enacted at the state level; it would not be practical at the local level. If enacted, it would be most effective on a nation-wide basis.

The resource recovery and management grant fund was never funded. Five million dollars was orginally authorized. Incentives will be recommended this year toward a county-wide program or multi-jurisdictional plan. The Resource Recovery Council was appointed in anticipation of a large program in the future and bears resemblence in composition to the Virginia Solid Waste Commission. It is mandated to study all facets of resource recovery; to investigate the feasibility of resource recovery in Florida; and to approve the state resource recovery and management programs prior to adoption by the department.

The most important function of the Council is summarized in the following: "The Council shall specifically recommend to the department those counties, muncipalities or regions which will generate sufficient solid waste to make it economically practical to plan for recycling or to recycle solid waste and which therefore should be required to engage in recycling or resource recovery programs."

All areas of the state would be responsible for their storage, collection, disposal, transporation, operations and related matters. However, only those areas recommended by the council would be required to go the additional steps toward resource recovery.

In reference to the financing of solid waste, a central bonding division was set up at the state level in 1969 which may issue state GO bonds for pollution control facilities-water, air or solid wastes. No referendum is needed but they carry the full faith and credit of the state. The proceeds from any resource recovery project would be pledged by the local applicants toward payment of the bonds.

There was a major bond issue in January, 1976, at an interest rate of 5.97 percent.

The original law (§403.712) was amended so that the revenue that might be pledged from a project to the sale of products coming from the end of the resource recovery stream was not limited. In many cases the revenue stream is too narrow.

The State Department of Environmental Regulation is conducting a survey of hazardous wastes to identify generators, volumes, etc. in the first of a series of steps toward legislation on the issue.

During the past year the Resource Recovery Council has been dealing with the feasibility of resource recovery in Florida. The number one priority is marketing. It was determined that 80% of the waste is combustible. The first step was to identify primarily energy markets for converting solid waste to a useable fuel which seemed to be the most practicable route. Three areas were determined where coal-fired boilers could be converted.

7. South Carolina.—The Solid Waste Management Division of the Office of Environmental Quality Control has little legislative authority. In 1971 a program was initiated for minimum Standards of Sanitary Landfill Design. In 1972 the Pollution Control Authority promulgated the Industrial Solid Waste Disposal Regulation. These two agencies merged in January, 1974. At present the budget is $418,000 for a staff of approximately thirty. The state is divided into twelve health districts with a solid waste consultant in each one. As of 1976 nearly every county has set up a solid waste disposal facility, usually in the form of a sanitary land fill. Population distribution seems to be the reason for the success of this system. Green boxes are used almost uniformly throughout the state. One county has shredder operations ranging from 20 ton to 40 ton. The northern part of South Carolina is pursuing resource recovery.

Industrial waste is not handled in South Carolina so well as domestic waste. Industrial waste disposal sites will be constructed within the next few years.

South Carolina hopes for the passage of federal legislation in the area of Solid Waste and feels that statewide solid waste legislation is unlikely.

The contol of hazardous wastes is largely dependent upon industry revealing what chemicals they are producing. They are reluctant to do so and much of this area is untouched.

Virginia.—In 1965 the State Board of Health passed a resolution requiring each city, county and town to file information on their solid waste disposal. The Solid Waste Study Commission was created as a result of this resolution.

A shortage of personnel in the Health Department has been a major factor in the difficuluty of dealing with various solid waste problems. The regulations placed the responsibility for suitable

waste disposal on the local community. Permits are issued in coordination with the State Water Control Board. As of 1976 all except four counties in Virginia have approved disposal sites. This is a marked decrease from the 380-odd authorized disposal sites (most of them dumps) that existed in 1969, and the thousands of promiscuous dumps that marred the landscapes. In fifteen instances local communities have been convinced to merge in a regional system.

In the rural area (70% of the State) with 30% of the population it seems that the best method for disposal is the sanitary landfill. There are five areas in Virginia where the population may be sufficiently concentrated to justify resource recovery. The quantity of raw materials necessary to make it economically feasible is difficult to determine; it may average 500 tons a day. A market for the product and the hardware with which to do the job are also determining factors.

Mr. Dorer considers hazardous wastes the number one priority, especially in relation to the Kepone incident. The matter should be treated on a case-by-case basis.

Second in priority is domestic solid waste. A tremendous quantity exists with potential for resource recovery. Industrial wastes are present, but not well-indentified. Institutional wastes from hospitals, veterinarians, etc. and agricultural wastes also exist although in smaller amounts. Old cars and demolition wastes present a problem.

The greatest need in Virginia is to elevate solid waste to an equal status with water and air. Local communities need some sort of state financial aid in the solid waste area. Better enforcement of regulations is necessary as is a definition of the hazardous wastes program. Local communities should have "guidelines" for collection and storage of solid wastes.

APPENDIX II

X. Federal Solid Waste Legislation

A. General provisions.—The Resource Conservation and Recovery Act was signed into law on October 22, 1976. The objectives are: (1) to promote the protection of health and the environment and to conserve valuable materials and energy resources, (2) to provide technical and financial assistance to states and local governments in developing plans and training grants, (3) prohibit open dumping in the future, (4) to regulate the treatment of storage, transport and disposal of hazardous wastes, (5) to provide guidelines for collection, transport, separation, recovery and disposal practices and systems, (6) to promote national research and development and demonstration systems, and (7) to establish a cooperative effort among all levels of government and private enterprise.

The term "solid waste" is given a broad definition including solid, liquid, semi-solid or contained gaseous material from industrial, commercial, mining or agricultural operations and community projects. It does not include materials in domestic sewage, irrigration return flows, or industrial discharges from point sources already covered in the federal Water Pollution Control Act, or nuclear by-products.

Under the provisions of this legislation Environmental Protection Agency must publish suggested guidelines for solid waste management, in essence, minimum criteria to be used by States. It also provides for the establishment of an office of solid waste headed by a deputy assistant administrator. Environmental Protection Agency will provide teams known as "Resource Conservation and Recovery Panels" to state and local governments upon request to provide technical, marketing, financial and institutional assistance in the area of solid waste. (Subsection B. Office of Solid Wastes.) Section 2005 authorizes $35 million in FY 1977, $38 million in FY 1978 and $42 million in FY 1979 to administer the act.

B. Hazardous wastes.—Within an 18 month period, Environmental Protection Agency will develop and promulgate criteria for identifying the characterisitcs of hazardous waste and for listing hazardous wastes. Hazardous wastes is defined as any solid wastes which because of quanity, concentration, physical, chemical or infectious quality may: (1) cause or contribute to an increase in mortality or incapacitating or irreversible illnesses, or (2) pose a threat to human health when improperly managed.

Other regulations relating to hazardous wastes include standards applicable to transporters of hazardous wastes, to owners and operators of treatment, storage and disposal facilities of hazardous wastes and to permits necessary for all those who treat, store or dispose of hazardous wastes. Guidelines will be

promulgated to assist states in developing hazardous wastes programs. States seeking to administer a hazardous wastes program must submit an application to Environmental Protection Agency.

The Act authorizes $25 million for fiscal years 1978 and 1979 for grants to states to assist in developing or implementing hazardous waste programs.

C. Approval of State or Regional Plans.—Section 4002 gives Environmental Protection Agency six months to publish guidelines to aid in developing state plans. Section 4003 requires that state plans ban new open dumps and close or upgrade existing ones, end barriers to long-term refuse supply contracts, provide regulatory powers to implement the plan and require environmentally sound utilization or disposal of all solid wastes. Environmental Protection Agency would have one year after enactment to publish criteria for defining open dumps and sanitary landfills with the ban on open dumps to take effect six months later or with the approval of state plans.

D. Appropriations.—$30 million will be appropriated for 1978 and $40 million for 1979 for grants to states for development and implementation of state plans. $2 500,000 for 1978 and 1979 for grants isto be used for conversion, improvement or consolidation of existing or new facilities. Funds will be allotted according to population with no state receiving less than 0.5% of the total. Another $15 million is authorized each year for local, state and regional agencies to implement specific waste management programs as well as $2.5 million to assist certain small communities receiving large amounts of waste from outside their jurisdiction.

E. Recoverable materials.—The Secretary of Commerce will develop guidelines within two years concerning specification and classification of recoverable materials for solid waste. He will identify geographical locations of existing and potential markets for recoverable material and economic and technical barriers and encourage new uses for recoverable materials.

The Environmental Protection Agency will develop, collect, evaluate and coordinate information on: methods and cost of collection, solid waste management practices, amounts and percentages of recoverable solid waste, source reduction, technology for resource and energy recovery, methods of proper disposal of hazardous wastes, methods of financing, availability of markets for recoverable material and research and development.

F. Research, Development, Demonstration and Information.—$2 million is authorized for the interogency resource conservation study. $8 million is authorized for all other special studies. $35 million is FY 1978 is authorized for the other research and development activities.

REFERENCES

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3. Report of the Commission to Study and Advice Upon the Disposal of Solid Waste, House Document No. 2, Richmond, Va. 1975.