REPORT OF THE

SOLID WASTE COMMISSION

TO

THE GOVERNOR

AND

THE GENERAL ASSEMBLY OF VIRGINIA

SENATE DOCUMENT NO. 29

COMMONWEALTH OF VIRGINIA
DIVISION OF PURCHASES AND SUPPLY
RICHMOND
1979

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Report of the

Solid Waste Commission

To

The Governor and the General Assembly of Virginia

Richmond, Virginia

February, 1979

To: Honorable John N. Dalton, Governor of Virginia

and

The General Assembly of Virginia

I. INTRODUCTION

The need to study the problems of solid waste management in Virginia with particular emphasis on the causes, collection, and disposal was acknowledged during the 1973 General Assembly by the passage of Senate Bill No. 856. This legislation, introduced by Senator Stanley C. Walker, created the Commission to Study and Advise Upon the Disposal of Solid Wastes. During the 1976 Session of the General Assembly the name of the Commission was changed to the Solid Waste Commission in Senate Bill No. 383.

The members of the Commission as of July 1, 1978, are: Dr. Robert F. Testin, Richmond; William M. Beck, Jr., Norfolk; Callis H. Atkins, Ruckersville, Delegate Richard M. Bagley, Hampton; R. E. Dorer, Norfolk; Ernest C. Edwards, Jr., Chase City; Joseph M. Guiffre, Alexandria; Delegate Joan S. Jones, Lynchburg; Jonathan Murdoch-Kitt, Richmond; Edward T. DiBerto, Virginia Beach; William T. Reed, Manakin-Sabot; Delegate Richard L. Saslaw, Annandale; and Senator Stanley C. Walker, Norfolk. Mr. William M. Amrhein has been retained as counsel to the Commission. Ms. Susan T. Gill of the Division of Legislative Services served as staff to the Commission and drafted the 1979 report and recommended legislation.

II. DELIBERATIONS AND MEETINGS

The full Commission met a total of eight times during 1978 and considered the following topics: industrial waste exchange, reorganization of State government in terms of solid waste, State aid to localities for solid waste management, truck weight limits for garbage trucks, automobile disposal tax, financing for the Division of Litter Control, Virginia's proposed State Solid Waste Management Plan and proposed revisions of Title 32 of the Code of Virginia, the federal Resource Conservation and Recovery Act (RCRA), and resource recovery facilities in other states.

III. REVIEW OF SOLID WASTE LEGISLATION

A. Progess in the Implementation of the Resource Conservation and Recovery Act of 1976. - Public Law 94-580, the comprehensive federal solid waste law, was digested in last year's Commission report. As noted in last year's digest, RCRA provides for the promulgation of guidelines, criteria, standards and regulations by the U. S. Environmental Protection Agency (EPA). In many instances, these promulgations have been delayed significantly beyond the RCRA-required deadlines.

The current situation on guideline promulation is extremely complex due to the multiplicity of requirements by RCRA.

Significant progress on implementation of RCRA includes landfill guidelines and criteria which were proposed in February, 1978. The landfill guidelines are now scheduled to be promulgated January, 1980 and promulgation of sanitary landfill criteria are scheduled for July, 1979.

RCRA also requires EPA to develop a management control system for hazardous wastes. Key segments of the proposed regulations for hazardous waste management were issued in December, 1978. They are scheduled to be promulgated in January of 1980.

A third segment of major interest to the Commonwealth is the requirement of a state Solid Waste Management Plan, including regional identification within the Plan. EPA promulgated interim guidelines for the regional identification in May, 1977, and guidelines for the development of state solid waste management programs were proposed in August of 1978. Final promulgation of both are scheduled for June of 1979.

Numberous other aspects of this federal act are now being implemented. It is believed that the three areas above, landfill criteria, hazardous waste management and the requirement for state solid waste managment plans, will have the most significant impact upon the Commonwealth.

Developments in these areas are constantly monitored by both the Solid Waste Commission and the State Health Department. At the state level the Health Department's division of Solid and Hazardous Waste Management has taken several significant steps to implement Public Law No. 94-580. These include upgrading the State agency to division status and staffing it in order to carry out the provisions of the federal law (RCRA provides for the EPA to operate the state program if the state does not develop a satisfactory state plan). Two major developments as a result of the division of Solid and Hazardous Waste Management activities in 1978 are discussed below.

B. Development of State Solid Waste Management Plan.—In response to the requirements of the Resource Conservation and Recovery Act of 1976, the Division of Solid and Hazardous Waste Management of the Health Department has proposed a draft Solid Waste Management Plan for Virginia. This draft plan was the subject of a series of public hearings held during October and November 1978 and has been revised in accordance with comments made at the public hearings.

The draft plan establishes the twenty-two state planning regions as those regions within which solid waste management program planning will take place. The cities and counties within the planning regions will be responsible for implementing solid waste management and resource recovery programs. Also, the plan calls for the development of legislation to ensure that items with the highest practicable percentage of recycled materials be purchased when federal funds are employed for such purchases.

The plan calls for a first year action program by the State Health Department that includes: an inventory of solid waste disposal sites, with closing or upgrading those sites that are unsatisfactory; development of a ground and surface water monitoring program at selected disposal sites; preparation of expanded rules and regulations for the control of new solid waste processing and disposal sites; and preparation of guidelines for the regional and subregional solid waste management plans.

The Division of Solid and Hazardous Waste Management has submitted copies of the preliminary and revised draft plans to the Solid Waste Commission for review and comment. The Commission will work closely with the Division of Solid and Hazardous Waste Management as the State Solid Waste Management Plan evolves, commenting and advising when appropriate.

C. Proposed revisions to the Code of Virginia.—The Virginia Code Commission is currently in the process of recodifying Title 32 of the Code of Virginia relating to health. A new chapter, the Solid and Hazardous Waste Management Act, is being proposed in order to bring the State into compliance with provisions of the Federal Act including rules and regulations to be promulgated by the Federal Environmental Protection Agency. The Solid Waste Commission, the Department of Health, Code Commission and Environmental Protection Agency (hereafter referred to as EPA) have reviewed the draft of the proposed legislation which will be considered by the General Assembly for approval during the 1979 Session.

The Health Department solicited comment from local health officials and the general public as to their comments on the proposed title revisions.

IV. REPORT ON RESOURCE RECOVERY PLANT SITE VISITS

The Commission kept abreast of the continually expanding area of resource recovery by visiting facilities that are pioneering in this area. The sites chosen and Commission members who visited them are as follows:

A. Recovery 1, New Orleans: Mr. DiBerto and Mr. Beck;

B. Gas Pyrolysis Plant and Resource Recovery Plant, Baltimore City and Baltimore County: Mr. Edwards and Mr. Reed;

C. Americology Recycling Plant, Milwaukee: Mr. Guiffre and Mr. Dorer;

D. Refuse Systems Energy Company Plant, Saugus, Mass.: Mr. Atkins and Mr. Murdock-Kitt.

The Commission members made detailed reports on the various facilities to the full Commission which are included in this report as appendices. Summaries of the site visits are as follows:

A. Site Visit, Recovery I, New Orleans, La., October 18, 1978.

The New Orleans facility is a joint effort by the National Center for Resource Recovery, Waste Management, Inc. and the City of New Orleans.

It is a moderately sized (650 tons per day system) designed to recover materials from solid waste and prepare the residue for landfilling. As designed, the system is to recover ferrous and non-ferrous metals and glass with the remainder of the refuse being utilized in shredded form to reclaim land at the processing plant site. The system handles approximately one-half of the daily tonnage generated by the City of New Orleans. At the time of the visit, the front half of the system (the reduction module) which shreds the refuse for materials separation and preparation for landfilling was in operation. The materials recovery system was shut down for maintenance and general cleanup. The final impression of the visitors was that the materials recovery portion of the operation is highly capital intensive and at this stage of development cannot be considered as a substitute for landfill or incineration. In the materials recovery area, ferrous recovery appears to be most advanced, followed by aluminum. Economical glass recovery appeared to be questionable at the present time. The plant is now investigating the addition of a refuse derived fuel or energy market to supplement its ongoing activities.

B. City of Baltimore, Maryland

Commission representatives visited the Pyrolysis plant constructed by Monsanto Corporation in conjunction with the federal EPA, the City of Baltimore and the State of Maryland. The original purpose of this plant was to pyrolyze (heat in the relative absence of oxygen) municipal refuse, creating a combustible gas which will be burned to generate steam. Ferrous metal recovery was also anticipated. The plant was plagued with troubles from the onset of its operation and after about a year and a half of operation, was shut down for extensive renovation and repair, including a major addition to the air pollution control facilities at the plant. Monsanto is no longer part of the operation. The plant is scheduled to be restarted early in 1979.

The Commission representatives who visited this operation felt that the plant has made a valuable contribution to the advancement of solid waste disposal in its planned role as a test facility. Commission representatives recommend a follow-up visit in the fall of 1979 to determine the effectiveness of the revisions to this facility.

B-1. Baltimore County Resource Recovery Plant

This facility, which is operated by Teledyne, Inc. in cooperation with the State of Maryland and the federal EPA, is a "front end" material recovery system designed to produce a refuse derived fuel in pellet form. It processes about 600 tons per day of domestic and commercial waste and

about 200 tons per day of compacted waste from a transfer station.

The plant uses proven processes and machinery and design performance standards are being achieved. Some mechanical difficulties still exist with the plant and specific cost data were not available. The primary problem as encountered by the plant to date has been difficulty in obtaining long term contracts to sell the refuse derived furel. At a minimum the facility is recovering ferrous and non-ferrous metals and doing a good job in reducing the volume of material at the landfill. The plant is actively seeking a viable long term market to sell refuse derived fuel.

C. Milwaukee, Wisconsin, Resource Recovery Plant

The resource recovery plant in Milwaukee was built and is operated by the Americology Division of American Can Company. The plant was built with private capital and can process up to 1,600 tons of refuse per day. The plant is a front-end separation system, preparing refuse derived fuel for nearby power boilers. The plant recovers ferrous metals mechanically, separates newsprint when the price warrants it and has a capability to recover aluminum (which is scheduled to start in the near future). Currently the plant is operating at an annual loss of about $3 million. The operators anticipate that it will break even in 1980 and show a profit of $1.5 million 1981. Unfortunately there are no changeovers in the design so if an operation in one of the lines goes down, then the whole line closes. Storage is also minimal with only one day of raw refuse storage being available in the plant and no storage at all for the recovered refuse derived fuel. The refuse derived fuel must be hauled daily to the power plant. The refuse derived fuel produced by the plant has a BTU value of approximately 5,000 BTU's per pound which dovetails very well with information of this type from other souces. It is believed that the data being accumulated will be of value to anyone who may be considering the recycling approach.

One of the most interesting parts of the Milwaukee project as it may apply in Virginia is the method of financing. Private capital put up all of the money and is operating the facility. The state's only cost is in the tipping fee. Such an arrangement might be very welcome to local governments in Virginia which could have problems in raising funds to build and operate their own facilities.

It seems doubtful that even large companies, however, will continue to build and operate plants unless more favorable economics can be worked out.

D. RESCO Plant, Saugus, Massachusetts

The RESCO (Refuse Systems Energy Company) plant in Saugus, Massachusetts, was built and is operated by Wheelabrator-Frye, Inc. It is a mass burning water wall incinerator of a type developed in Europe. The steam generated in the facility is piped across the Saugus River to furnish process steam for a General Electric plant.

The plant processes 1,000 to 1,200 tons per day and brings in refuse at a tipping fee of $14.20 to $15 per ton.

The plant cost $50 million and was financed through private equity and industrial revenue bonds.

The plant seems to be working very well, and although it is not without problems, it has met with the approval of government officials, citizens and solid waste professionals.

* * * * *

V. FINANCING FOR THE LITTER CONTROL ACT

In 1976 the Virginia General Assembly enacted the Virginia Litter Control Act. The Division of Litter Control was subsequently established in the Department of Conservation and Economic Development. The Division came into existence on July 1, 1976, but did not receive full funding until January 1, 1977. In the process of establishing the Division, the General Assembly enacted some special taxes to fund the Litter Control Program. There were taxes in three areas: beer and malt beverage, soft drink, and a litter tax on every business establishment that may generate items that end up as litter.

A number of projections were made at the time the Litter Control Act was passed. The yearly tax projections were:

1. Excise Tax on beer and malt beverages..	$ 550,000.00
2. Soft drink tax.....	200,000.00
3. Five Dollar business tax.....	250,000.00
TOTAL.....	$1,000,000.00

The General Assembly estimated the budget for the Virginia Division of Litter Control to be approximately 1.2 million dollars. This exceeded the tax projections by $200,000.00 which was to be made up from the General Fund. The General Assembly reasoned that since this Division would be for the benefit of the citizens of the Commonwealth, and that the people had a stake in this program, $200,000.00 should be contributed from the General Fund.

The budget for the Virginia Division of Litter Control is broken down roughly as follows: $600,000.00 goes to a grant program to the localities for litter control projects, and $600,000.00 is used for the Statewide education and promotion of litter control, as well as for the administration of the program.

The General Assembly, in establishing these taxes and in establishing the Virginia Division of Litter Control, decided not to create a special fund, but decided to have these taxes flow directly to the General Fund, and likewise, the budget for the Virginia Division of Litter Control came from the General Fund.

The problem was that the collection of these special taxes fell below the projected revenues. The excise tax on beer and malt beverages was projected at $550,000.00. This tax was the only one that came close to its projection: from July 1, 1977 to June 30, 1978 the tax produced $500,418.00. Therefore, the problem was more with the soft drink tax and the busines tax.

Section 58-404.02 of the Code of Virginia provides for a tax on the wholesalers or distributors of soft drinks. The projection of the revenues for the fiscal year from July 1, 1977 to June 30, 1978 was approximately $200,000.00. This projection was made by the Virginia Soft Drink Association and the Department of Taxation. There were a number of reasons why the actual tax collected of $41,905.00, was so far below the projection. First, the tax years for many of the wholesalers and distributors of soft drinks were different. Some were on a calendar year basis, some were on a fiscal year basis. There were also a number of industries that had extensions in their tax returns. Therefore, a timing problem existed. Second, the projection made by the Virginia Soft Drink Association and the Virginia Department of Taxation was not accurate because they had no history on gross receipts tax to the soft drink industry to base its projection. Third, as it turned out, the rate of tax was not enough to raise the projected revenues. Fourth, there was some confusion in the law as to whether the tax was on a per company basis, or a per establishment basis. For example, one corporation may own a bottling plant, and four or five warehouses, each of which would be a separate establishment.

The Virginia Soft Drink Association was instrumental in establishing the soft drink tax initially and has proposed a solution to the tax department to solve this shortfall in the soft drink tax. It has proposed an increase in the gross receipts tax rate on soft drink wholesalers and distributors. The Virginia Soft Drink Association is made up of franchise bottlers only, and they represent approximately 75% of the soft drink industry in Virginia. They estimated that last year in Virginia, the soft drink industry did $245 million worth of business in the Commonwealth. Most of the revenues raised by the soft drink tax comes from the franchise bottlers, since the private label soft drinks are generally bottled outside of Virginia, and are delivered directly to retail establishments in Virginia. Since the Virginia Soft Drink Industry has made a commitment to the Litter Control Program and to the General Assembly for approximately $200,000.00 in soft drink tax revenues, they are cooperating with the tax department to ensure that these revenues are indeed raised. The developments in this area should be monitored to see that the proposed corrective action achieves the desired results.

With regard to the Five Dollar Litter Tax per litter causing business establishment, (Section 10-201.1 of the Code of Virginia), there were a number of reasons why the tax raised only $77,398.00 between July 1, 1977 and June 30, 1978 instead of the $250,000.00 projected. First, most industries that did remit this tax did it on the basis of the five dollars per corporation rather than

five dollars per establishment. Secondly, just as with the soft drink industry, a number of the corporations had different timing periods for their taxes, some being on a fiscal year, while others were on a calendar year. In fact, the tax department pointed out that in roughly three and one-half months, from July 1, 1978 to October 31, 1978 almost $108,000.00 was raised from this tax. This rate would indicate that the projection will be met. Third, the tax rate was increased from $2.50 to $5.00 effective July 1, 1977. Not many tax returns were filed that reflected this higher rate. And fourth, the tax department admitted that it was difficult to collect this five dollar per establishment tax.

It appears from this examination, that the problems that arose between the projected revenues and actual revenues collected to fund the Litter Control Act are in the process of being solved. The Commission recommends that no additional action be taken at this time in this area, except the proposal by the Vir ginia Soft Drink Association to increase the rate of soft drink tax to meet the initial projections.

VI. AUTOMOBILE DISPOSAL TAX

It had come to the attention of the Commission that there would be approximately a $5 million surplus in the Abandoned Vehicle Fund in 1978-1979. This fund was created in 1974 by the General Assembly. Section 46.1-78 of the Code of Virginia provides for Two Dollars of the Seven Dollar original certificate of title charge, to be set aside in a special fund in the State Treasury to be used by the Division of Motor Vehicles to reimburse localities for the proper disposition of abandoned motor vehicles. Section 46.1-555.9 of the Code of Virginia provides that the Commissioner of the Division of Motor Vehicles shall reimburse a locality $12.00 for each motor vehicle that the locality disposes of, at the locality's expense. The Abandoned Vehicle Fund has accumlated a surplus of approximately $3.5 million as of June 30, 1978. The question presented to the Commission was what might be done about or with this surplus.

The General Assembly has been transferring funds from the Abandoned Vehicle Fund to the General Fund of the State. In April of 1977, the General Assembly transferred $5 million from the Abandoned Vehicle Fund to the General Fund and in 1978 it transferred over $7 million. Projections from the Division of Motor Vehicles indicate that the General Assembly will probably transfer $4 million in 1979 and $3 million in 1980. This raises the question as to the appropriate use of any surplus. The alternatives are as follows:

First, transfer the funds from the Abandoned Vehicle Fund to the General Fund as has been done by the General Assembly; Second, reduce the amount of money charged for the original certificate of title that goes to this special fund from Two Dollars to something less than Two Dollars; and third, increase the amount of money that the State reimburses to the local governing body for disposing of abandoned vehicles.

An additional point was made by the Division of Motor Vehicles. It was the Division's position that a special fund within the Division of Motor Vehicles is not appropriate. They advocated dissolving this special fund and placing the money within the State's Highway Fund. The main reasons for doing this would be administrative convenience and to eliminate the tendency to have this money withdrawn from the special fund to be used for other purposes when surpluses are generated. The Commission takes no position and makes no recommendation with regard to the proper location of this fund, but does suggest that perhaps that area should be examined by the General Assembly.

After an examination of the above alternatives, the Commission recommends that the amount of money that a locality is reimbursed for disposing of an abandoned motor vehicle be increased from the present $12.00 for each vehicle. There are three reasons for this recommendation. First, there are adequate surplusses available in the fund to take care of an increase. Second, the fund was set up for the purpose of encouraging localities to remove abandoned motor vehicles from its roadways. This would go a long way to encourage the localities to take that action. And third, because of inflation, it has been shown that many localities do not make any claim against this special fund because their actual cost to dispose of an abandoned vehicle is much more than $12.00 and it is not worth the trouble to make the claim. Evidence was presented that it actually costs many localities $25.00 to $30.00 and more to dispose of an abandoned vehicle. The Commission feels that if the amount of reimbursement were increased, the desired effects would be obtained.

VII. WEIGHT LIMITS FOR GARBAGE TRUCKS

In its 1977 Report, the Commission reported its intent to bring to the attention of the General Assembly a problem noted during the course of the Commission's workshops held during the year in different localities throughout the Commonwealth. That problem involved the weight limits imposed by statute upon vehicles using the highways of the Commonwealth. The Commission supported a bill introduced by Delegate Jones which would have amended § 46.1-343.1 of the Code of Virginia. The bill was carried over until the 1979 session, and upon reflection it was determined that an amendment to § 46.1-343, Code of Virginia, would be a more appropriate vehicle by which to present this issue.

The Commission intends to present testimony in support of this bill and to continue its efforts to bring this problem to the attention of the General Assembly. Should the legislation not be enacted, the Commission will work with the local solid waste management associations during the forthcoming year to document the need for such legislation during the 1980 session.

VIII. STATE AID TO LOCALITIES

During the 1978 Session of the General Assembly, Senator Walker introduced legislation based upon a Commission's recommendation relating to State aid to localities for solid waste management. This legislation, S. B. 497, called for a yearly appropriation from the General Fund to each county and city in the Commonwealth the sum of $30,000 plus 75¢ per capita. S. B. 497 passed with an amendment deleting the provision for the specified amount substituted "such sums as are appropriated for such purposes".

The 1978 Budget Bill stated the following in reference to S. B. 497: "Notwithstanding any contrary provision of S. B. 497, as amended by the 1978 General Assembly, the distribution for Financial Assistance to Localities for Solid Waste Disposal shall be based upon and not exceed $2,500 plus 5 cents per capita to each county and city."

The Commission discussed this situation during the last year and decided to question localities as to their opinions on S. B. 497. the question and responses are as follows;

1) Do you favor the basic concept of S. B. 497?
   Yes - 84 No - 4

2) Do you think the law should be repealed?
   Yes - 2 No - 82

3) Do you think the original amount ($30,000 per 75¢ per capita) should be appropriated?
   Yes - 82 No - 3

As a result of this questionnaire, the Commission voted to recommend to the Governor and the General Assembly that the full appropriation be made. The Commission believed that additional data would be needed on expenditures of local tax dollars for solid waste management in order to support the localities desire for a higher appropriation. So a second questionnaire was sent to the localities requesting information on their expenditures for solid waste management.

The questionnaire was sent to all counties and cities in the State. Responses were made by the following:

51 counties

24 cities

30 towns

The total local tax dollars spent during 1977 by the abovementioned localities as reported totaled $65,031,296.00. The total population of the localities which replied was 2,947,000, over half the population of the Commonwealth. A per capita figure based upon this population figure would total $25.00 with an estimated total local government cost of $128,362,500.00 per year for solid waste

management. It should be noted that much of the collection costs are not represented due to the bulk of private haulers/collectors who provide contractual collection services within localities. The Division of Solid and Hazardous Waste Management estimates that the public/private cost may be considerably higher if the majority of collection figures were reflected in these figures.

Senatory Marye is introducing legislation to include in this State aid those eight towns operating solid waste disposal facilities approved by the State Health Department. The Commission voted to support this measure.

IX. LOCATION OF SOLID WASTE WITHIN STATE GOVERNMENT

Two years ago the Commission initiated a review of the function and location of the solid waste management program within State government. At this time the designated State organization, the Bureau of Solid Waste and Vector Control, was located in Norfolk with a budget of approximately $156,000 per year and a staff of eleven within the Health Department. The Commission supports the concept of elevating solid waste to an equal footing with water and air in State government. This trend was being evidenced not only in other States but also on the national level with the organization of the federal EPA and passage of the federal Resource Conservation and Recovery Act of 1976 (RCRA). This act placed stringent guidelines and timetables upon states for compliance with regulations to be promulgated by EPA relating to the development of a State solid waste management plan. In this sense, RCRA places solid waste management in a parallel structure with the federal air and water programs. The Commission also investigated methods employed by other States which has pioneered in unique approaches to tackling the solid waste management problem. Members of the Commission visited Connecticut and Wisconsin for an indepth review of the approaches in these two States. The Commission also hosted a conference with the abovementioned states as well as New York, Alabama, South Carolina, and Florida. The trend with a few exceptions throughout the states was the evolution of a high level, resource recovery oriented program as a way to cope with the ever increasing amounts of solid waste generating by today's "throwaway society". It became apparent to the Commission that solid waste in Virginia needed more exposure, budget and staff than it had received as a small bureau division within the Health Department.

At this time the Hopkins Commission made a recommendation that the solid waste function within state government be transferred from the Health Department to the Secretary of Commerce and Resources in the form of S. B. 83 in the 1978 Session of the General Assembly. The Commission placed its support to this legislation which was reviewed by the Senate Committee on General Laws which carried over the bill for study and legislative action in 1979.

The Health Department in the meantime transferred its Bureau of Solid Waste and Vector Control to Richmond and is carrying out plans for its own reorganization and upgrading of function. The new Division of Solid and Hazardous Wastes Management is a result of this upgrading. The Division is actively working with EPA in terms of implementing the provisions of RCRA. A majority of Commission members, however, still maintain their original position in support of Senate Bill No. 83.

Senate Bill No. 83 will be acted upon in the 1979 Session. The Commission will continue to monitor the progress of solid waste management at the State level and will make such recommendations in the future as are deemed necessary.

X. PLANS FOR 1979

The Commission intends to work with the Department of Health on jointly hosting a Virginia Conference on the federal Resource Conservaton and Recovery Act, the State Solid Waste Management Plan and the concept of an Industrial Waste Exchange. It was felt that this would be beneficial a wide range of Virginians including State and local officials, interested persons, manufacturers of products, generators of solid waste and all segments of the solid waste management industry and operators and handlers of solid waste. The conference is tentatively scheduled to follow the termination of the 1979 General Assembly.

In addition, the Commission will closely follow the federal government's implementation of RCRA. The emerging EPA guidelines, federal government policies, and reports of the Resource

Conservation Committee can be expected to have profound ramifications in vast segments of the public and private sectors in Virginia.

The Commission will continue to monitor progress in other segments of the solid waste management problem, including hazardous waste generation, the emerging field of resource recovery, the continuing problems of site availability for solid waste processing or disposal and the organizational structure of the State solid waste management program.

Respectfully submitted,

Robert F. Testin, Chairman

Callis H. Atkins, Vice Chairman

William M. Beck, Jr.

Richard M. Bagley

R. E. Dorer

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Joseph M. Guiffre

Joan S. Jones

Jonathan Murdoch-Kitt

Edward T. DiBerto

William T. Reed

Richard L. Saslaw

Stanley C. Walker

APPENDIX I

A. SITE VISIT, RECOVERY I, NEW ORLEANS, LA.

October 18, 1978

PERSON INTERVIEWED :
Mr. Kelly Runyon, Test Engineer,
National Center for Resource Recovery

PERSON TO CONTACT FOR FURTHER INFORMATION :
Mr. W. Parker, Directing Engineer
1700 Chef Menteur Highway, New Orleans
(504) 254-2227 or
Mr. Kelly Runyon

HISTORY

In the late 1960 and early 1970 period, the city of New Orleans was faced with the same problem of many major urban centers: antiquated incinerators and lack of landifll space. The high water table and wetlands nature of available terrain for landfilling requires special and unique landfilling techniques.

As a result of a comprehensive study by the city of New Orleans in early 1970, it was concluded and recommended that a shredding and landfill system be utilized for the disposal of municipal solid waste. During the study, contact was made with the National Center for Resource Recovery (NCRR). As a result of preliminary conceptual design work by NCRR for a facility to produce a shredded fraction of Municipal Solid Waste (MSW) and a material recovery process, the NCRR system appeared compatible to the New Orleans requirements.

The City retained NCRR as technical consultant in preparing the request for proposals, contracting, building and operating the facility. Waste Management INC. (WMI) was the successful bidder to own and operate the facility.

Ground breaking was held in November 1974 by NCRR and the city of New Orleans on a 350 acre site purchased by the city for use as a landfill. The NCRR continues to serve as technical consultant to both the city and WMI.

DESCRIPTION OF PROCESS

The system is divided into two major functional modules, a Reduction Module and Recovery Module, with shredded residue placed into an adjacent landfill. The Reduction Module contains the shredder lines, with air classifying equipment and magnetic separation. A trommel screen is a unique feature of this Reduction Module. This large, cylindrical, revolving screen removes smaller objects (less than 4 5/8 inches) from the waste stream to be moved directly to the Air Classifier Units and by passing the Shredder Unit. This reduces the volume requiring shredding, improves the efficiency of the Shredder Units and permits more efficient materials recovery.

The Recovery Module contains the process lines to remove ferrous metals, aluminum and glass.

Of the 650 tons accepted at the "front end" of the system, approximately 18% by weight is recovered and the remaining 82% is placed in the landfill.

POPULATION SERVED

Orleans Parish - 580,000 - 600,000.

CHARACTER OF WASTE

Household and light commercial.

AMOUNT OF WASTE

Plant handles approximately 700 tons per day or about 50% of the daily tonnage generated by the city of New Orleans.

The city landfill at Gentilly is used for the disposal of the remaining city solid waste and as a back up to the Recovery I facility.

MARKETS FOR THE PRODUCTS

NCRR has developed the markets and agreements with various companies for the sale of recovered products. These are reported as 5-year commitments, generally providing floor prices and referenced material specifications.

ECONOMICS

The capital costs were given as approximately 7 million for construction of the facilities. Operating costs and revenue data was not available, and we were advised that further operating experience would provide a basis for establishing the economics of the Recovery I facility. We were referred to the publications by the NCRR for economic data.

The Reduction Module - including the landfill - capital and operating costs are intended to be offset by a disposal fee the city of New Orleans pays the owner/operator (WMI). The Recovery Module capital and operating costs are intended to be offset by the revenue from the sale of recovered material. To reduce the possible losses that (WMI) may occur in the operation of the Recovery Module, NCRR has provided a $1,000,000 grant/loan to WMI. EPA has also provided funding for a series of tests of unit operations.

The plant is a research development, and testing facility under the three party structure of WMI, NCRR and the city of New Orleans.

PROBLEMS

The main theme expressed by the project engineer was the need to build in greater redundancy of equipment, due to the high maintenance, repair, or breakdown of a single unit which causes a shut down of a complete process line. During the time of our visit, the Recovery Module was shut down for maintenance and general clean up. The quantities of dust and lint observed would indicate that greater attention to dust collection equipment is needed.

The Reduction Module has operated with greater reliability than the Recovery Module. During the visit shredding and direct landfilling were underway.

There were no reported serious accidents or injuries. Material "picker" laborers are stationed at the conveyor line to check refuse for hazardous items prior to entering the shredder.

The labor turnover was reported as being high. The overall "on line" availability of the plant was reported as approximately 80%. This is assumed to apply to the Reduction Module only.

GENERAL IMPRESSIONS

The Materials Recovery plant is highly capital intensive and at this stage of development, cannot be considered as a substitute for landfill or incineration.

The ferrous recovery appears to be the most advanced, followed by aluminum. Glass recovery appears to be questionable at this time.

Recovery I is now investigating a possible energy market or a Refuse Derived Fuel to supplement the current ferrous and aluminum materials recovery. This would appear to support the premise that Resource Recovery Plants require an energy market to attain economic viability.

APPENDIX II

B. CITY OF BALTIMORE, MARYLAND

Oct. 26, 1978

PERSON INTERVIEWED : Donald F. Ward

PERSON TO CONTACT FOR FURTHER INFORMATION

Name: Donald F. Ward
Address: 1801 Annapolis Road, Baltimore, Md. 21230
Phone: 301-396-1148

PROCEDURE IN CARRYING OUT INVESTIGATION
Plant Tour

HISTORY

System used prior to present facility was landfill and incineration

WHO ADMINISTRATES THE FACILITY : Original Monsanto &

City of Baltimore

INVOLVEMENT OF STATE AND E.P.A. : E.P.A. - State - City

GENERAL INFORMATION

DESCRIPTION OF PROCESS (GENERAL) : Gas Pyrolysis

POPULATION SERVED : 1/2 city of Baltimore

CHARACTER OF WASTE : Domestic and commercial

AMOUNT OF WASTE : 1000 Tons a day

DAYS PER WEEK FACILITY IS IN OPERATION : 7

AVAILABILITY OF WASTE (CONSTANT SUPPLY) : Collections and storage

MARKET FOR BY PRODUCTS : Steam for local Government

BACK UP FACILITY : Landfill

ECONOMICS

CAPITAL COSTS : $20 million

HOW FINANCED : E.P.A. - State - Local

WHO PAYS WHAT : EPA $7M - State $4M - City $9M

OPERATING COST $ PER TON : $13.15 estimated

INCOME FOR SALE OF BY PRODUCTS : $13.13 (estimated)

PROBLEMS

PROBLEMS WITH SALE OF BY PRODUCTS : See attached summary

PROBLEM WITH OPERATING THE PLANT : See attached summary

WHAT IS DONE IN THE EVENT OF A CLOSE DOWN :

Landfill and Incineration

HOW OFTEN IS THERE A CLOSE DOWN : See attached

SAFETY PROBLEMS : Explosions in shredder

ENVIRONMENTAL PROBLEMS : Stack emissions

This plant was built through the cooperative efforts of EPA, the State of Maryland and the city of Baltimore. It was intended to be a demonstration installation to determine the feasibility of the process.

The original concept in the design was to build a facility to supply steam on a 24 hour basis to customers in the down town section of the city of Baltimore. The design was such that a small amount of waste could be stored in the receiving pits; however, the main storage was to be in a silo type building to which the waste was conveyed after shredding. This stored material was to be used during periods when waste pickup was not in operation. The material was to proceed from the shredder, or storage bin to a kiln in which fuel oil was used to ignite the waste and keep it burning in an environment with a controlled amount of oxygen; thus producing a gas which was collected, burned to generate steam, passed through scrubbers and discharged at ground level. The residue from the kiln was to pass through a water flotation process to float off the char. The heavy fraction was dried and passed to a magnetic separator to extract the ferrous material. The residue was screened to produce aggregate for highway construction and the ash and slag was to be landfilled. The amount going to the landfill was planned to be approximately 6% by volume of the original input to the plant.

Numerous problems were encountered with the plant. These are listed as follows:

1. The shredder is a hammermill. One of the first problems encountered was an explosion which did considerable damage. A pressure relief system was installed and apparently did an excellent job in relieving the pressure of four subsequent explosions. The second problem with the shredder is that of frequent jam-ups caused by certain materials, particularly rugs, large sheets of plastic and certain cloth items such as panty hose. It was also found that erosion of the hammers and screens was excessive. A solution to these problems of the hammermill has not yet been found.

2. The storage system for the shredded waste proved to be unworkable. It appears that after about 24 hours the material fuses into a mass so that it cannot be mechanically extracted from the silo. The storage silo has since been abandoned.

3. The kiln was originally designed to be automatically controlled. It was found that the instruments used for control would not react fast enough to keep the temperature in the kiln within acceptable limits. It was also found that manual control was the answer to this problem. It appears that without instant reaction to changes in volume, composition and moisture content of the waste, the kiln would either reach excessive temperatures creating slag or temperatures too low for adequate combustion. It is felt that manual control is acceptable and can be used in the future.

4. Magnetic separators - It was found that ash and slag adhered to the materials to the extent that the separators could not function properly without excessive labor to prevent massive jam-ups in the machinery. The cost of this labor exceeded the value of the material recovered; therefore, it has been determined that this feature of the plant will be eliminated and the metals will either fall out in the screening process and be used as part of the aggregate, or landfilled along with the char, slag and ash.

5. The scrubbers wre ineffective in cleaning the stack gas, therefore, emissions would not meet State and federal standards. This problem is to be overcome by the installation of electro-static precipitators and a tall stack.

In January of 1978, use of the plant was discontinued until the process could be changed and new equipment installed. The new process will eliminate the storage of shredded waste. It will eliminate the magnetic separators. It will also eliminate the scrubbers. In the process, material will proceed from the shredders to the kiln which will be manually controlled. The gas will be burned and the electro-static precipitator will clean up the stack gas so that air quality standards can be met. The concept of furnishing steam on a 24 hour basis is being abandoned. A rotating screen will be used to classify the residue from the kiln.

It is felt by Commission members who visited this plant that the construction of the original plant was justified and that it has contributed substantially to the advancement of waste disposal by this process. Although the plant never performed in accordance with expectations, it can still be

used as a valuable installation for waste disposal by the city of Baltimore. The lessons learned to date should be made available to other jurisdictions so that the same mistakes will not be repeated. A follow-up inspection should be made of this facility in the fall of 1979 to determine the effectiveness of the revised design. At that time meaningful cost date should be available.

Summary:

Plant designed and built by Monsanto Chemical Co. It was scaled 30 to 1 from pilot plant previously built by Monsanto. It operated about 50% of the time for 3 years before being closed for redesign. Operating cost data is of little value because of intermittent operation. When operating properly only 6% of refuse must be landfilled. The theory is good but mechanical and operating problems makes it necessary that extensive research and re-design be done before a Gas-Pyrolysis Plant could be recommended for Virginia localities.

BALTIMORE COUNTY RESOURCE RECOVERY PLANT, COCKEYSVILLE, MD. - Baltimore County
October 26, 1978

PERSON INTERVIEWED : E. Joyce Breidenbaugh

PERSON TO CONTACT FOR FURTHER INFORMATION

Name: E. Joyce Breidenbaugh
Address: 10320 York Road, Cockeysville, Md. 21030
Phone: 301-628-1130

PROCEDURE IN CARRYING OUT INVESTIGATION

Slide presentation and Plant Tour

HISTORY

SYSTEM USED PRIOR TO PRESENT FACILITY : Landfill

HOW STARTED (MOTIVATING FORCE) (PROBLEMS TO OVERCOME)

Problems in obtaining space for landfill

WHO ADMINISTRATES THE FACILITY : Teledyne National

INVOLVEMENT OF STATE AND E.P.A. : State of Md. - Baltimore Co.

GENERAL INFORMATION

DESCRIPTION OF PROCESS : Shredding and Separation

POPULATION SERVED : 225,000 Dwelling Units

CHARACTER OF WASTE : 800 Tons a day

AVAILABILITY OF WASTE (CONSTANT SUPPLY): 600 Tons a day local pick-up; 200 Tons a day from transfer station.

PROCESS

The plant receives about 600 tons of domestic and commercial waste per day from local pick-ups and about 200 tons of compacted waste per day from one transfer station. The local waste is dumped in a pit and fed to the shredder by a large clam shell. The compacted waste is usually fed directly to the shredder. After shredding, air flotation is used to get material for the production of fuel pellets. Metals are separated for sale to scrap dealers. The glass is screened for product manufacture and the residue is landfilled. The residue makes up 5 to 15% of the original volume; however, without a market for the products they too must be landfilled.

PRODUCT DEVELOPMENT

Teledyne National is very active in developing saleable products from the waste. They have had some acceptance of the fuel pellets in the market place and are trying to expand this market. The sale of both ferrous and non-ferrous metals appears to be going well. The glass fraction has been successfully used to produce building blocks, sewer pipes, pipe insulation and as aggregate for concrete and asphalt. It is anticipated that they will produce these products rather than sell the raw material to existing producers. Experiments are being conducted in which the combustible fraction is used to pyrolize sewage sludge to produce steam. Some experiments are being conducted in the production of fertilizer by means of composting sewage sludge and the combustible fraction.

CONCLUSIONS

The plant machinery operates very well; however, mechanical difficulties do exist. Much

research is still needed in process design and machinery design. The lessons learned are being applied to new plants being built by Teledyne at other locations. Specific cost data was not obtained. The impression was that the installation was the first major installation of this type by Teledyne and was being used as a research facility from which a new generation of plants could be designed. The facility is doing a good job in reducing the volume of material at the landfill.

REMARKS by Ernest Edwards

The construction and operation of a resource recovery facility of this design is a highly complex and technical undertaking. Public bodies, under ordinary circumstances would not have the personnel, interest or research funds necessary to develop uses for the recovered material, manufacture the products - such as building blocks, sewer pipe, insulating board, etc., and sell these materials on the open market in competition with exisiting suppliers. This observer feels that only private enterprise could satisfactorily undertake this type of operation. The public sector should support and encourage this type of development by private industry. The learning process is going to be expensive but this expense to the public sector and private sector is something that we must accept now in order to achieve the desired results in the future.

APPENDIX III

C. AMERICOLOGY RECYCLING SOLID WASTE PLANT
October 18, 1978

SITE LOCATION : 1313 West Mount Vernon, Milwaukee, Wisconsin 53233

PERSON INTERVIEWED :

(a) Ron Miller, Quality Control Manager, Americology
(b) Stanley Lawler, Sales Engineer, American Can/Americology
(c) Chet Stanley, Manager of A.C.R. (Air Classified Refuse) Wisconsin Electric Power Company

PERSON TO CONTACT FOR FURTHER INFORMATION : Stanley Lawler, Sales Engineer, American Can Company, American Lane, Greenwich, Conn. 06830 - (203) 552-2573

PROCEDURE IN CARRYING OUT INVESTIGATION :

(a) A two hour presentation was made by Mr. Lawler.
(b) Tour of Americology facility
(c) Lunch, informal discussion
(d) Tour of WEPCO with explanations
(e) At end of day, reviewed Data Sheet Guide with Stanley Lawler.

HISTORY

SYSTEM USED PRIOR TO PRESENT FACILITY :

(a) City collected garbage
(b) Waste Management Systems operated transfer stations and ran landfill (private enterprise).
(c) City paid $7.90/ton to Waste Management for the service.

HOW STARTED (MOTIVATING FORCE) (PROBLEMS TO OVERCOME):

(a) Awareness on the part of local public works officials that there was a growing shortage of landfill space close to Milwaukee.
(b) Awareness on the part of local politicians of the environmental concerns of a small group of people, especially in area of resource recovery.

WHO ADMINISTRATES THE FACILITY : American Can Company

TIME INVOLVED (START TO OPERATING STAGE):

(a) From conception to operation - 5 to 7 years
(b) From start of construction to first process run - 18 months
(c) Experience shows approximately seven years as usual lead time

INVOLVEMENT OF STATE AND E.P.A. :

(a) The state was not involved.
(b) E.P.A. has toured plant, but has no jurisdiction.
(c) E.P.A. has provided no money or manpower.

GENERAL INFORMATION

POPULATION SERVED : 800,000 people

CHARACTER OF WASTE : Domestic solid waste, predominately urban

AMOUNT OF WASTE :

(a) High in summer of 1,600 tons per day
(b) Low in winter of 600 tons per day

DAYS PER WEEK FACILITY IS IN OPERATION : Five days, two operational 8 hour shifts and one 8 hour clean up shift

AVAILABILITY OF WASTE (CONSTANT SUPPLY):

(a) City guarantees constant supply of all residential garbage.
(b) Schools and parks and recreation supply additional.

MARKET FOR BY PRODUCTS

(a) Ferrous is used for determining with a back up market to a local scrap dealer.
(b) Newsprint is segregated when price warrants it and is left in stream to be used as fuel when price is low.
(c) WEPCO uses light fuel fraction.
(d) Aluminum recycling is planned in near future.

BACK UP FACILITY : The private (Waste Management) landfill is used whenever a shut down of more than one day occurs, the charge to Americology for this is $8.00/ton plus transportation.

ECONOMICS

CAPITAL COSTS : $24,000,000. plus or minus, broken out as follows:

(a) $18,000,000. initial cost
(b) $1,600,000. modifications
(c) $4,000,000. at WEPCO for silo, WEPCO purchased silo from Americology and silo is paid for by the fuel purchase arrangements.
(d) 8.3 acres is leased from city at $1.00/year.

HOW FINANCED : Originally, financed internally by American Can Company. Approximately in January, 1978 the local Industrial Authority issued $15,000,000, in tax free bonds which were bought up immediately by three insurance companies.

WHO PAYS WHAT :

(a) The city pays $11.22 per ton to Americology as a tipping fee.
(b) Americology pays 54¢ per ton to Milwaukee County as a fee in lieu of taxes.
(c) Customer for ferrous metals pays a price based on #2 scrap.
(d) Newsprint at market price
(e) Fuel to WEPCO at a price based on B.T.U. values. WEPCO takes a sample from every other shipment delivered to its plant, compresses it and takes eight core samples and evaluates B.T.U. value in its own laboratory, which also evaluates B.T.U. value of coal.
(f) Commercial collectors pay tipping fee of $12.55/ton. (None currently use the facility.)
(g) Average income for the products is $8.00 per ton.
(h) The present contract with the city is for fifteen years and can be renegotiated after five years.
(i) City has option to purchase the facility.
(j) There is a cost of living index escalation clause on the tipping fee charge each year.
(k) The current operating losses are $3,000,000. per year. It is anticipated to break even in 1980 and to have a profit of $1,500,000. in 1981.

OPERATING COST $ PER TON :
$20.00 per ton plus $3,000,000. on unknown number of tons.

INCOME FOR SALE OF BY-PRODUCTS :
$8.00 to $10.00 per ton composed of approximately $40.00 per ton for ferrous; approximately $8.00 per ton as fuel. (This culd be improved by also recovering heavy fraction for fuel and by pre-drying light fraction prior to delivery to WEPCO.

PERSONNEL TO OPERATE AND THEIR PAY SCALE :

55 persons at approximately $15,000.00 per year, including fringes. It is a union operation.

PROBLEMS

PROBLEMS WITH SALE OF BY-PRODUCTS :

(a) Water in fuel fraction
(b) Excessive dependence on a few customers (One of the major customers is likely to be insecure financially).

PROBLEM WITH OPERATING THE PLANT :

(a) Usual start of problem associated with new plant
(b) Breakdowns (These are reducing as modifications occur).
(c) Dust (Recommend future plants have built-in vacuum systems).
(d) Clean-up
(e) Plugging in air classifier

PROBLEM WITH COLLECTION
Not applicable

WHAT IS DONE IN THE EVENT OF A CLOSE DOWN
Haul to land-fill.

HOW OFTEN IS THERE A CLOSE DOWN :

(a) In the beginning plant was down 30 percent of time. It is claimed to be operating at 100 percent now; however, in the late P.M. of our visit, plant was not operating due to a breakdown.
(b) The plant is 100 percent redundant, except for aluminum recovery.

PROBLEMS WITH LABOR
A jurisdictional union fight over representation

SAFETY PROBLEMS

(a) Noise - solved by ear protection
(b) Explosions - solved by enclosure of shredders, plus suppression devices and the hand picking from waste conveyors of volatiles (paint cans, etc).
(c) Trucks backing and personnel walking behind moving vehicles
(d) Rapid movement of front-end loader

ENVIRONMENTAL PROBLEMS
Dust - aspirators are issued but did not see anyone using them

PUBLIC RELATIONS

WHAT WAS DONE TO SELL THE PROJECT IN THE BEGINNING :

(a) Local newspapers - One was favorable, the other opposed. (Owned by same people.)
(b) Local beautification committee as a speakers' bureau
(c) Provided films and slides
(d) Local public works department

WHAT IS DONE TO KEEP THE PUBLIC INFORMED :
Speakers' bureau, movies, slides, a children's film featuring "Garbage Gus" (Our impression was that American Can was not making this a highly visible effort.)

HOW IS THE OPERATION RECEIVED BY THE PUBLIC :
Well

WHAT ARE THE NATURE OF COMPLAINTS :
None. The plant is attractive, kept clean and in a purely industrial location.

REMARKS by Joseph M. Guiffre

1. My general impression is favorable. The plants were both clean, orderly and business-like. I was impressed by the willingness of Americology to invest the capital and to operate at its own risk the plant.

2. (a) I believe that the Solid Waste Commission could play a major role in the future of resource recovery by trying to help communities, not reinvent the wheel. It was observed that each and every locality known to the persons we interviewed had gone through very expensive and repetitive investigations and feasibility studies, etc. It is certain, at least to me, that much of this activity is expensive duplication of effort. It is my thinking that the Solid Waste Commission (extra staff would be needed) could provide the research for several communities at approximately the same time. it is my view that in the next five years there will be many Virginia communities "going off on their own" if there is no guidance provided to them in this area of interest.

3. It is obvious that what makes this system work is concentration of population. The system does not lend itself to rural areas. The advantages of conservation are obvious. The conservation of energy is a plus (a six to one benefit ratio is claimed for the light fraction). Capital costs would be a problem for Virginia; however imaginative financing plans could be developed. One strong plus for this system is American Can's apparent willingness to invest the capital and operate the plant.

General Impressions: by Rowland E. Dorer

The technical problems of converting domestic waste to useful products are being overcome to a degree. However, the current economics are not good. The Milwaukee operation required a capital investment of some $25 million. At the present time, even though the total revenues are approximately $20 a ton, the plant is losing $3 million per year. While the current plan calls for the operation to be a break even in 1979 and in the black by $1.5 million by 1980, the economics of the operation have yet to be demonstrated to my satisfaction. Approximately 35% of the total domestic waste received goes to a privately operated landfill at a cost of $8 per ton. This residue also has considerable BTU value which should be recovered. If and when this is done (e.g., through a steam producing incinerator) the overall cost of operation may be lower.

The city is paying $10.68 per ton tipping fee. Even though landfill costs are only $8 per ton, the city would have to bear the added cost of transporting material to the landfill since it's several miles away while the plant is in town.

The Milwaukee resource recovery plant is highly mechanized and two parallel lines are used to provide redundancy.

APPENDIX IV

D. RESCO (Refuse Energy Systems Co.) Saugus, Massachusetts

October 6, 1978

PERSON INTERVIEWED : Bill Briston, Wheelabrator-Frye, (603) 926-5911

PERSON TO CONTACT FOR FURTHER INFORMATION

Name: Alden H. Howard
Address: Liberty Lane, Hampton, N.H. 03842
Phone: (603) 926-5911

HISTORY

SYSTEM USED PRIOR TO PRESENT FACILITY : landfill

HOW STARTED (MOTIVATING FORCE) (PROBLEMS TO OVER COME):

General Electric plant nearby needed replacement steam.

WHO ADMINISTRATES THE FACILITY :

privately by RESCO

TIME INVOLVED (START TO OPERATING STAGE)

9 years

INVOLVEMENT OF STATE AND E.P.A.

no financing; State permits issued; little permitting by E.P.A.

GENERAL INFORMATION

DESCRIPTION OF PROCESS (GENERAL)

mass burning steam

POPULATION SERVED

625,000

CHARACTER OF WASTE

residential (60%); commercial and industrial

AMOUNT OF WASTE

1,500 tons per day

DAYS PER WEEK FACILITY IS IN OPERATION

7 days 24 hours per day

AVAILABILITY OF WASTE (CONSTANT SUPPLY)

municipal

MARKET FOR BY-PRODUCTS

General Electric high pressure steam

BACK UP FACILITY

two packaged boilers, large pit for overflow refuse

ECONOMICS

CAPITAL COSTS

$50 million

HOW FINANCED

private equity and $30 million industrial revenue bonds

private operation

OPERATING COST $ PER TON

50% energy; 50% tipping fee

PERSONNEL TO OPERATE AND THEIR PAY SCALE

62 people

PROBLEMS

PROBLEMS WITH SALE OF BY-PRODUCTS

depressed market, residue, steel scrap

PROBLEM WITH OPERATING THE PLANT

air pollution, corrosion, grates

PROBLEM WITH COLLECTION

tipping only in blizzard of 1978

WHAT IS DONE IN THE EVENT OF A CLOSE DOWN (BACK UP FACILITY)

6,000 ton pit is available

HOW OFTEN IS THERE A CLOSE DOWN

never turned away a truck

PROBLEMS WITH LABOR

none, non-union

SAFETY PROBLEMS

no lost time due to injuries

ENVIRONMENTAL PROBLEMS

temporary air pollution

WHAT WAS DONE TO SELL THE PROJECT IN THE BEGINNING

General Electric had control over solid waste in long-term contracts

WHAT IS DONE TO KEEP THE PUBLIC INFORMED

need more public relations

HOW IS THE OPERATION RECEIVED BY THE PUBLIC

well

WHAT ARE THE NATURE OF COMPLAINTS

black ash, noise, truck traffic; no complaints as to odor