

CAPACITY ASSURANCE PLAN
FOR THE
STATE OF NEW JERSEY

Volume 2 of 4
Chapter 4

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Submitted to the USEPA
October 17, 1989

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Chapter 4

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Hazardous Waste Minimization
In the State of New Jersey

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4.0 Pollution Prevention in the State of New Jersey

4.1 Introduction

New Jersey is committed to reducing the amount of hazardous waste generated by industry. Both the Governor and the Commissioner of New Jersey Department of Environmental Protection (NJDEP) have emphasized pollution prevention as a number one priority. In fact, in August 1989, Governor Kean formally announced the creation of an Office of Pollution Prevention within the DEP (See Attachment 4-1). The state is aggressively pursuing pollution prevention by implementing the programs described here and also by accepting the direction for the program which was recommended by the Hazardous Waste Facilities Siting Commission and their adjunct Source Reduction and Recycling Task Force. The Task Force is comprised of representatives from industry, academia, government and key public interest groups. These organizations, together with the New Jersey legislature have dedicated substantial effort and resources toward the development of our pollution prevention program.

Focusing on a multi-media approach, pollution prevention stands to be one of the most effective preventive remedies for future hazardous waste problems; waste that is not generated does not have to be regulated, treated, or disposed and cannot become a future health and environmental liability. Therefore, New Jersey supports a comprehensive, multi-media pollution prevention program which supports the waste management hierarchy: Source Reduction, Recycling, Recovery, Treatment and Incineration and Secure Storage/Disposal. The following narrative is meant to give a fuller picture of pollution prevention in New Jersey than can be represented in the attached form alone. The following sections detail activities either proposed or underway in New Jersey.

4.2 New Jersey's RITTA Program

The overall goal of the New Jersey's RCRA Integrated Training and Technical Assistance (RITTA) program is to establish a comprehensive long-term plan to (1) achieve RCRA program goals using training and technical assistance as effectively as possible; and (2) develop and initiate a statewide, multi-media pollution prevention program that will achieve a quantifiable reduction of hazardous waste generated within the state with training and technical assistance for both the regulators and regulated community as a major focus.

In order to achieve these goals our project has established a number of objectives. They are:

1. through the Technical Assistance Program (TAP), develop and implement training, technical assistance, technology transfer, education and outreach that will serve as the basis for a long-term program;

2. provide pollution prevention initiatives that are multi-media in scope to the greatest extent possible;
3. develop basic training modules for industry and government that are directed towards comprehensive RCRA program improvement, improved facility compliance, technical assistance, and meeting pollution prevention goals.
4. demonstrate results in pollution prevention technical assistance and training through pilot projects and evaluations, and;
5. increase the overall awareness, sensitivity and commitment to pollution prevention within the regulatory and regulated communities and the public.

At this time it is unclear as to the precise, optimal cost effective methods for projecting, achieving and measuring waste reduction. Although we have used a method for developing waste reduction factors in this plan, we propose to further define these methods in the future through several initiatives (Ref. fig. 4.1):

- A. A Business-to-Business/Supplier-to-Client "Big Brothers" Project, which contributes to waste reduction by providing an effective technology transfer/technical assistance mechanism;
- B. Assessment of Reduction and Recycling Opportunities for Hazardous Waste (ARROW) grant through documentation of waste minimization techniques, awareness, and information sharing;
- C. Leadership, Awareness and Commitment - an Outreach Program originated through the Assistant Commissioner's Office to management of industry for the purpose of fostering commitment and cooperation of the private and public sectors to pollution prevention;
- D. A Technical Assistance Program based at New Jersey Institute of Technology which utilizes and integrates talent and experience presently available in both university and industry settings and the similarity of implementation and assessment mechanisms.

This approach has an important component, people talking to people. It provides incentive to do so, vests industry in the program, maximizes the scope of methodology to be used for identifying likely prospects for pollution prevention projects and provides a similar reference point for assessing the success of the program. Actual site-specific measurement of waste reduction and potential for industry wide reduction is the true measurement of an effective hazardous waste pollution prevention program. RITTA will advance the state pollution prevention program at an expedient pace and can provide a short term experience that will lead to a more effective and efficient long term state program. It is hoped that legislation will be passed late this year in New Jersey which will establish a statutory pollution prevention program for the state.

A strong political base of support for pollution prevention has been developed among state elected officials and regulators, industry, local communities, environmentalists, and academic institutions. The Source Reduction and Recycling Task Force represents such a cross section of interests. Their report recommends establishing a sound foundation upon which New Jersey can build a program. The Task Force recommendations complement current or proposed activities underway at both the federal and state level and include: (1) establishment of a Technical Assistance Program (TAP) to assist hazardous waste generators in voluntarily reducing wastes; and (2) examination of existing regulatory and information gathering efforts.

4.2.1 Technical Assistance to Industry

At this time the NJDEP feels that far more will be achieved through cooperative efforts of advisement and assistance than through the use of a regulatory "big stick". The Technical Assistance Program (TAP) as conceived jointly by the Source Reduction Task Force and various programs within the Department, will assist companies that are not aware of potential source reduction and recycling practices (Ref. fig. 4.2). In particular, the program will target companies that lack the in-house technical expertise to evaluate and choose various waste reduction and recycling options. The TAP will provide confidential service and will be housed in a non-regulatory organization. The TAP program can provide services in areas such as training, on-site consultations, information/technology transfer, education, and assistance in performing waste minimization audits through referral to ARROW or private consultants. The TAP will also be an important mechanism for developing training and technical assistance components under RITTA. We expect a waste minimization training module for the regulators and regulated community to be prepared under RITTA by the TAP in cooperation with DEP. This may take the form of a course for credit offered at the TAP's host academic institution.

4.2.2. Outreach

An outreach program already initiated through the Office of the Assistant Commissioner for Hazardous Waste Programs will reinforce the intent of the TAP and the Advisement Program by promoting communication at the highest levels of management (Ref. fig 4.3). Thus a forum is established to encourage dialogue and exchange of ideas on a variety of topics, the foremost being waste minimization.

4.2.3 Business-To-Business

Many in industry want to reduce wastes, but do not know how to start or how to move beyond the simplest measures. One common obstacle to waste reduction in many smaller companies is that they have a "cookbook" approach to using raw materials. While they purchase much of their technology and raw materials from larger companies, it is not necessarily the case that there is an understanding and communication

between the two concerning need and usage. Some of those larger companies believe that they have accomplished all the waste reduction they can and if more opportunities are represented they will respond in any feasible way. For example, a small printing company may not be able to eliminate solvent based ink printing process unless a major supplier brings it out or makes the water-based ink printing technology available. NJDEP's proposed Business-To-Business initiative is a call to suppliers to expand the technical assistance already offered to some degree by more progressive companies (Ref. fig. 4.4). More efficient techniques for using raw materials and successful material substitution alternatives can only enhance supplier/client relationships.

4.3 ARROW

The NJDEP Division of Hazardous Waste Management's (DHWM) Hazardous Waste Advisement Program (HWAP) has obtained a grant from USEPA to sponsor the ARROW (Assessment of Reduction and Recycling Opportunities for Hazardous Waste) project (Ref. fig. 4.5). The project is designed to evaluate waste generation and management practices in various industries and will result in suggestions for ways to reduce or eliminate the types and volumes of waste generated. The project also field tests EPA's waste minimization opportunities assessment manual.

This pilot project allows the state to evaluate voluntary waste minimization assessment techniques, including auditing, data collection, evaluation and analysis and drawing conclusions based on the assessment. The project consists of conducting approximately 3 audits at facilities representing 10 industrial activities utilizing the recently prepared EPA manual for Waste Minimization Opportunities Assessments. It will: (a) evaluate the usefulness of the manual itself (b) improve the understanding of the status and potential of waste reduction for selected industrial activities, (c) highlight areas of need within industry relative to pollution prevention, and (d) identify future initiatives for waste reduction at the facilities tested.

The schedule of the proposed waste minimization audit demonstration project calls for conducting assessments at selected industries from January, 1989 to January, 1991; identification of pollution prevention opportunities from October, 1988 to February, 1991 and development of industry specific audit requirements as appropriate during March, 1989 to June, 1991. These efforts will provide first hand experience that will be integrated into the RITTA program expanding the use of the audit program and enhancing the training and technical assistance program. A good support for this non-regulatory, voluntary project is shown by the industry since the project may serve as a buffer against the advent of mandatory waste reduction program legislations involving standard settings and regulations.

The ARROW project will serve 3 primary functions spilt into two phases

- 45 -

Phase I

- A. The project will evaluate the usefulness of EPA's waste minimization opportunities assessment manual. It will do so across a broad scope of industries. The evaluation will conclude with recommendations for using or revising the manual where appropriate. Those suggested amendments will be transferred to the state and EPA in writing with input from the businesses audited.
- B. Through the audit process, the status of existing processes, material handling, waste handling, waste reduction activities and potentials for waste reduction in the studied industries will be ascertained.

The DHWM oversees and administers the project. Funding is passed through to the contract awardee, University/Industry Cooperative Research Center for Hazardous and Toxic Wastes at the New Jersey Institute of Technology. This consortium encompasses leading New Jersey academic institutions and industrialists.

Advertising for industry participants has begun with the final program approval and is accomplished by the DHWM, associated entities and the contractor through mailings, presentations to trade associations, articles in trade journals, newspapers, seminars, and Waste Minimization Conference. At this point we have overwhelming response from the volunteer companies encompassing several different industries.

The selection of individual businesses for waste minimization assessment done through an application/review process conducted by NJIT with DEP approval. The industries eligible for a waste minimization audit would include, but would not necessarily be limited to:

Pharmaceuticals	Metal Manufacturing
Paints and Allied Products	Automotive Repair and Paint Shops
Industrial Organic and	Pesticide Formulators and
	Applicators
Inorganic Chemicals	Plastics Manufacturing
Plating and Polishing	Printing and Ceramics
Chemicals and Allied Products	Research Institutions
Medical and Surgical Hospitals	Circuit Board Manufacturers

Upon selection, a schedule and written agreement for performing the assessments will be developed between the NJIT and volunteers.

There is no fee associated with the assessment program nor is there an obligation on the part of the participants to implement the recommendations developed as a result of the assessment. A final report will be prepared by NJIT at the end of the project which will address:

1. Audit procedures developed on the basis of EPA's manual for all industries assessed.

2. Results of the Waste Minimization Assessment Demonstration Project.
3. Identification of the sources of waste generation and opportunities for waste reduction.
4. Recommendations to implement opportunities for waste reduction.
5. Projections of cost/benefit to each business studied.
6. Extrapolation of cost/benefit and waste reduction potentials within industries studied, its relationship to needed hazardous waste treatment/disposal capacity in New Jersey and potential effect on environmental quality in New Jersey.
7. Technical and regulatory obstacles for waste reduction in the process of implementing recommendations.
8. Recommendations concerning mandatory Waste Minimization Assessments.
9. Recommendations for future state or federally funded waste reduction programs.
10. Comments and recommendations concerning the EPA waste assessment manual format and contents.

Phase II

- C. Several of the businesses audited in Phase I will be targeted for a long term study to evaluate how recommendations implemented as a result of the audit affected waste generation and the effect of the audit on the business as a whole. The DEP does not have a separate grant or loan program to implement pollution prevention alternatives identified through the program. However, such a possibility is being actively explored.

The businesses chosen will use the self-audit manual, developed by EPA and amended through the Phase I process, on an annual or as needed basis. Through direct consultation and written reports directed to the consultant, the effects of implementing process and material handling reforms can be tracked. The phase II long term study may take three years to achieve implementation results.

4.4 The Waste Reduction, Innovative Technology Evaluation (WRITE) Program

The part of the overall EPA hazardous waste pollution prevention program concerned with research, development, and demonstration of pollution prevention technologies is the responsibility of the Waste Minimization Branch of the Risk Reduction Engineering Laboratory of the Office of Research and Development in Cincinnati, Ohio.

The Waste Reduction Innovative Technology Evaluation (WRITE) Program is a multi-faceted research demonstration program designed to evaluate the use of innovative engineering and scientific technologies to reduce the volume and/or toxicity of wastes produced from the manufacture, processing, and use of materials. It encourages the interaction of government and industry in the demonstration and evaluation of available innovative production and recycling options for reducing waste generation. These evaluations are being funded through a \$300,000 grant by EPA and a DEP matching obligation. Certification and quality assurance is being conducted by staff of the Advanced Technology Center at NJIT.

4.5 Regulatory Review

The Division of Science and Research (DSR) has completed a regulatory review to identify how the regulatory structure can aid minimization, and second, how that structure may impede progress by placing excessive requirements on those companies attempting to minimize.

4.6 The Hazardous Waste Advisement Program

The Hazardous Waste Advisement Program (HWAP) located in the Division of Hazardous Waste Management, is one of several NJDEP units pursuing the goals of waste minimization awareness and program implementation in the state. HWAP was organized in 1981 to advise industry concerning regulatory compliance through the development and distribution of publications. HWAP also offers short training/educational workshops on those topics to trade associations and individual companies as requested and maintains an Information Hotline for generators.

Among the HWAP's publications in the production phase is a Technical Information Publication Series (TIPS) on hazardous waste regulation affecting various manufacturing activities and industry classes. The series details source reduction and waste minimization techniques for all identified wastes in manufacturing processes. A Small Quantity Generator (SQG) Newsletter has been published based on the content of the TIPS series to help SQG's in the state access waste reduction opportunities and for improving compliance with the hazardous waste regulations pertaining to storage, reuse, recycling, treatment and disposal. HWAP is actively implementing a Hazardous Waste Reuse Program which encourages waste reuse through a direct substitution of waste in place of raw material(s) to make useful product(s). HWAP has also conducted three seminars on waste minimization.

4.7 Data Collection and Analysis

The 1984 Hazardous and Solid Waste Amendments to Section 3002 of the Resource Conservation and Recovery Act (RCRA) mandated that industries report information on their waste minimization efforts. The Division of Hazardous Waste Management (DHW) in NJDEP designed and

distributed a two part Waste Minimization Report for the first time in 1986 in fulfillment of these requirements. Information on the waste minimization and source reduction activities of more than 3,200 New Jersey generators was received in the first year. In 1987 over 3,300 generators responded to the survey. Part I of the report -- Hazardous Waste Minimization Survey -- contains questions about the waste minimization plans of the generators, obstacles to waste minimization encountered by them and their preferences for various types of State provided assistance (see Attachment 4-3). Part II -- Waste Minimization Report Data -- was designed to collect actual waste minimization data for the year of the report and the preceding year. The information collected included: gross generation, generation per unit of production and several pieces of information related to the source of the waste. Additionally the methods used for managing and reducing the waste stream were to be listed.

The information provided in Part II of the report was developed into a computerized database by the consultant. The data was analyzed in comparison with past trends of manifested wastes to estimate future waste reduction factors. The factors were then used to revise the projection of demand for commercial facilities given in Chapter Four. Table 4-1 lists minimization factors used in New Jersey's CAP. These factors are simple multipliers which are applied after economic shifts and regulatory impacts are accounted for.

The original database containing data from the 1986 report contained 8,493 records and reported a total of 6,341,673 tons of waste for 1985 and 5,455,715 tons of waste for 1986. The 1987 reports were filed by 3,354 generators and contained 9,337 records. In comparison with the hazardous waste generation in New Jersey, Table 3-1, which is based upon the 1987 Manifest Data and TSD Facility Annual Reports, the Hazardous Waste Minimization Reports received by DHWM fully describe both on-site and off-site wastes generated in the State. Therefore, it was necessary to identify a study population of waste streams for which waste minimization report data could be analyzed to identify only the reduction of manifested wastes.

Each of the databases (1985-1986 and 1986-1987) was examined first to identify missing or invalid entries which would render the data unusable. This was done with the use of computer programs which examined generator identification number, SIC codes, waste units, waste reduction, and disposal codes and calculations. Where possible, the missing data was gathered from other sources such as manifest data and TSD annual reports. In many instances it was necessary to call large generators to resolve omissions such as units to maximize the amount of useful data and therefore enhance the representativeness of the database.

The normalization of the 1985-1987 data from the two databases was carried out in three steps: first, invalid records were removed from each of the two databases; second, wastes which were treated on-site (non-manifested wastes), were removed, third, after the data from the two years was combined, wastes which were determined to be one-time wastes were removed. The process of normalization will be illustrated by the change in the number of records in the 1985-1986 database. (In this illustration and throughout this chapter a waste stream refers to a set of data for a particular RCRA or New Jersey waste code.)

Records were declared invalid when there was no quantitative data for a waste stream for either year (557 records), no valid waste code (an additional 155 records), no waste per unit production information (682 records), SIC codes could not be established, or there was other missing information. Next, wastes which were treated on-site by recycling, incineration or chemical treatment were removed as were wastes identified as one-time wastes. Finally, the two databases were merged, discrepancies resolved and one-time waste identified and removed. The databases were merged by first matching the generators, waste codes and quantities reported for 1986 in the two databases. If that match was not successful, a second level of matching was done on generator plus 1986 quantities because a single waste stream could have been reported under different waste codes in the two reports. And failing that, a third matching was done on generator plus waste code to identify streams where the quantities may have varied slightly from one reporting year to the next. Finally, the merged database was screened manually to identify mismatches or to merge records which had not been successfully matched by the computer programs. This resulted in a database containing 5,138 records for the two years of reports. The total quantity represented was 196,623 tons for 1985, 185,591 tons for 1986 and 159,732 tons for 1987.

4.7.1 Study Population

The merged database was examined to remove one-time wastes and waste streams which were reported in only one of the study years. The final study population (1,008 records, 541 generators) consisted of waste streams for which three years of data was available and complete. The quantities represented by these records were 98,422 tons in 1985, 87,082 tons in 1986 and 78,429 tons in 1987.

4.7.2 Methodology for Assessment of Waste Reduction

In order to evaluate the assumed relationship between the level of business activity (production or service) and the quantity of waste resulting from this activity, DHWM had required the inclusion of waste per unit product information for each waste stream reported by generators in their survey of waste minimization. For each report, change in production of waste per unit produce between the two years was calculated. To determine an analogous change for the three years,

regression analysis was applied on the three years data for each waste stream and the slope determined. Change in waste per unit product data could not be aggregated directly because it contained a variety of production units. Non-dimensionalization (the process of eliminating units by mathematically combining quantities so that the units will cancel) was therefore required. This non-dimensionalization was carried out as follows:

let a_{85_i} the waste per unit product generated in 1985 for stream "i"

let a_i = the annualized change in waste per unit product for stream "i"

let a_i = dimensionless waste reduction factor for stream "i"

The dimensionless waste reduction factor was then calculated for an individual stream using the following equation:

$$a_i = a_i / a_{85_i}$$

An aggregated waste reduction factor for a group of waste streams could then be calculated by applying a weighting factor (based upon waste quantities) to the individual waste reduction factors developed for the component waste streams. This weighting factor reflects the contribution of waste reduction efforts for individual waste streams to those for a group of waste streams, and was calculated as follows:

let w_i = the weighting factor for waste stream "i"

let W_{85_i} = the quantity of waste reported in 1985 for stream "i"

then W_{85_i} = the sum of the 1985 quantities of all waste streams being aggregated and

$$w_i = W_{85_i} / W_{85_i}$$

The aggregated waste reduction factor, "a", is then defined as follows:

$$a = (w_i * a_i)$$

This method of non-dimensionalization has been used throughout the analysis. The range of values for "a" is from "-1", which indicates the complete elimination of a waste stream, to infinity which indicates the introduction of a new waste stream. Within that range, a reduction factor of "+1" would indicate the doubling of the waste generated per unit product.

4.7.3 Waste Minimization Reported by the Study Population

The waste streams in the study population were subjected to the above methodology to determine historical (1985-1987) and potential long term

(2009) reduction factors; the short term (1989, 1995) factors were assumed to fall proportionally between the current and long term factors. The short term factors were derived using data from all waste streams and the long term reduction factors by using only the waste streams for which reduction in waste per unit product had been achieved. The assumptions inherent in this procedure are that the successful reduction efforts during 1985, '86 and '87 represent the maximum attainable reduction under current regulatory and economic considerations, that these reductions have not been, but can be attained for all waste streams of the same type and that minimization will increase linearly between current and long term levels.

Statistically significant trends in minimization during the three years for which data was available were found in waste streams totalling only approximately 2% of the quantity of waste produced by the study population. This is not unexpected with only three years of data; it is felt that with additional years of data, more sophisticated, nonlinear modelling can be introduced and a greater percentage of the waste streams will exhibit discernible trends in waste generation. In other words, estimates of waste minimization will get better with each future CAP submittal. As an interim estimate of waste minimization, a best fitted line algorithm was applied to the three years of data.

Table 4-1 presents the waste reduction factors derived for the short term, near long term and long term projection periods. These were applied at one of three levels of aggregation: at the SIC-waste type level, the SIC level or as an overall factor.

4.7.4 Findings

Of the six industry groups represented and reporting more than 1,000 tons of manifested waste, four reported decreasing waste per unit product generation. The largest of the groups, the Chemical Products Industry, reported a reduction factor for -0.10. Several of the other large industries: Metal Products (SIC 33), Personal Services (SIC 72) and Non-electric Machinery (SIC 35) reported increases in their waste per unit product.

All states should fill out this form. States should copy and complete the form and include it and any additional necessary documentation. Please attach additional information if more space is needed to answer any question.

Name of Respondent: Frank Coolick
Telephone Number: (609) 633-1418
Address: NJDEP, Div. of Hazardous Waste Management
401 E. State St., CN-028, 5th Floor
Trenton, NJ 08625

1. Does legislative authority exist to implement a waste minimization program in your state? If authority exists through general broad authority, please answer yes and cite the authority if known.

☒ Yes ☐ No

- 1a. If yes, what are the titles of the legislation and when was it enacted?

The New Jersey Solid Waste Management Act (N.J.S.A. 13:1E) authorized this state to perform the necessary functions to manage solid and hazardous waste. New Jersey has been performing some of the components of our waste minimization program under this statute's authority.

- 1b. Is future legislation anticipated, and when does the state plan to have it enacted?

There has been consistent legislative interest in waste minimization for the past two years. Attachment 2 summarizes the waste minimization bills which are currently pending in our legislature. It is anticipated that one or more of these bills will be enacted by the end of this year or, at the latest, the beginning of next year (1990).

2. Indicate which of the following waste minimization program components are specifically in use or authorized in your state:

Component	In Use	Authorized	Comment
Technical Assistance Division of (TAP)	X		Through Hazardous Waste Management's Hazardous Waste Advisement Program. (see preface). Formal TAP is pending in legislature (see Attachment 1). Part of the formal TAP is already

		initiated by the RITTA grant.
Economic Incentives		N/A
Waste Exchange	X	Through the State Chamber of Commerce
Research & Development	X	Through the Division of Science Research, Risk Reduction Unit
Regulatory Requirements	X	Waste reuse regulations exist. Waste minimization reporting required annually.
Education, Advisement	X	Through the Division of Hazardous Waste Management's, Hazardous Waste Advisement Program
All programs are authorized under a legislative enactment		N/A
Other	X	A Waste Audit Program is being conducted through the Hazardous Waste Advisement Program and the New Jersey Institute Technology.

3. In your state, are there any pending statutes, or regulations to waste minimization that are expected to be enacted within the next two years?

 X Yes No (Please refer to 1b and Attachment 2)

a. Please briefly describe the anticipated changes and their expected impacts on waste minimization.

The pending legislations would provide statutory mandates for some existing initiatives, will provide for expansion of existing programs and will provide long term funding for the existing and expanded initiatives.

4. **What administrative agency or agencies implement(s) your state's waste minimization program (list all applicable agencies and the waste minimization component they are responsible for).**
 - a. NJDEP, Division of Hazardous Waste Management is primarily responsible for oversight of New Jersey's waste audit grants, providing technical advisement and educational initiatives.
 - b. NJDEP, Division of Science and Research is primarily responsible for all research initiatives on hazardous waste minimization in the State of New Jersey.
 - c. The New Jersey Hazardous Waste Facilities Siting Commission's Source Reduction and Recycling Task Force is designed to assist in the analysis, formulation and implementation of policies aimed at waste minimization.
5. **What is the amount of funding received from the following sources (in thousands of dollars) for your waste minimization program?**
 - a. General Revenues - \$ 40,000 - salaries in DHWM
125,000 - funding provided by DSR research
budget annually to waste reduction
6,000 - salaries in HWFSC
 - b. Dedicated Taxes - \$0
 - c. Tipping Fees - \$0
 - d. Federal Grants - 320,000 - RITTA Grant
300,000 - Source Reduction Grant (RITTA 2)
150,000 - ARROW Grant
*These grants are for a 3-y.
period.
 - e. Other - 23,500 - The DSR funds this money to the DE
for the ARROW project.
54,000 - HWFSC Waste Minimization study
6. **Please estimate the number of person-years of staff supported by the state, working on waste minimization.**
 - a. State Professionals on staff 1.50 (DSR)
.25 (HWFSC)
1.0 (DHWM)
6.0 (Office of Pollution Prevention)
 - b. Consultants 1.0 (DHWM)
 - c. Other 0.0

Form II: WASTE MINIMIZATION ANALYSIS

States that incorporate waste minimization estimates in their capacity projections should complete this form. States should copy and complete the form and include it and any additional necessary documentation (in particular, tables of quantitative estimates for each year in which waste will be minimized and thus less capacity will be used as a result). Please attach additional information if more space is needed to answer any question.

Name of Respondent: Frank Coolick

Telephone Number: (609) 633-1418

Address: NJDEP, Div. of Hazardous Waste Management
401 E. State Street, CN-028, 5th Floor
Trenton, New Jersey 08625

1. Please estimate the amount of waste expected to be reduced (in tons) by waste minimization for each of the SARA waste types for projection years 1989, 1995, and 2009. These estimates should be easy to incorporate into your waste projections and should build on the analyses described in Chapter III. They should not include anticipated changes in production rates, but should show only those reductions based on waste minimization efforts. States should explain how they have avoided duplication of reductions (from waste minimization) that already may be included in economic projection factors. Please summarize these estimates in Table IV-1. (Waste minimization projections for intermediate years used to evaluate capacity utilization need not be included).

Refer to Section 4.7 and Table 4-1

2. Please briefly describe the basis of your technical estimates. A list of bibliographical references and a short narrative describing how they were used is sufficient. Examples of appropriate material that might be used to develop waste minimization estimates include:
 - o State surveys of waste generation trends.
 - o Waste minimization plans prepared by industry in your state (Please describe or include these plans).
 - o Reports from Advisory Councils on the potential effects of waste minimization for the state.
 - o Reports from Federal Agencies and Trade and Technical Associations estimating trends in waste minimization applicable to the industries in your state.
 - o Engineering studies and analysis of potential waste stream changes applicable to industries in your state.

- o Programs conducted by non-state agencies such as non-profit organizations that affect the industries in your state.

These estimates are based on an analysis of historical manifest data, which is designed to highlight any major waste reductions already achieved in the state and a detailed analysis of the 1986 and 1987 New Jersey Waste Minimization Reports in which reduction factors are derived for projections of future waste generation. The analysis of the Waste Minimization Reports includes the selection of a study population and comparison of the study population database with the manifest data to assure its representativeness. A methodology for calculating waste reduction factors was developed by the consultant and applied to the study population to derive reduction factors for projections. Waste reduction factors are calculated by waste types for the study population (Table 4-1).

3. How do you measure the effectiveness of your program (such as by checking whether estimates were realized)? Please elaborate on your method.

- _____ No other measures besides that obtained from EPA's Biennial Report
- _____ Number of information requests handled
- _____ Number of industries/plants participating
- _____ Savings to industry (cost ratios)
- _____ Change in waste quantity generated
- ___X___ Change in ratios of waste generated per unit product-as reported in the NJ Waste Minimization reports
- ___X___ Other

At this time, it is unclear as to the precise, optimal cost effective methods for projecting, achieving and measuring waste reduction. We propose that a technique for evaluating the effectiveness of our program will be defined through the Big Brothers project, the ARROW grant outputs, the Outreach program and the TAP. Actual site-specific measurement of waste reduction and potential for industry wide reduction is the true measurement of an effective hazardous waste pollution prevention program. RITTA will advance the state waste minimization program at an expedient pace and can provide a short term experience that will lead to a more effective and efficient long term state program.

4. How will you acquire this information?

- _____ By examining waste minimization program records

- ☒ By conducting industry surveys
____ New EPA Biennial Report
____ By examining state regulatory files
☒ Other -- See above

5. Briefly describe your communication strategy with the industrial community.

See description of Outreach, Education and Technical Assistance initiatives in the preface.

6. In addition to your waste reduction estimates, are there any other activities in your state (announced programs by one or more key industries to reduce waste, pending legislation or regulations, component implementation schedule) that might be useful in evaluating your waste minimization projections?

Date Activity

--8/89-- Announcement of the formation of an Office of

Pollution Prevention within the NJDEP

Form III: DESCRIPTIONS OF PROGRAM

Name of Respondent: Frank Coolick
Telephone Number: (609) 633-1418
Address: NJDEP, Div. of Hazardous Waste Management
401 E. State St., CN-028, 5th Floor
Trenton, NJ 08625

1. Please indicate the approximate emphasis that your state places on the following waste minimization components as a percentage of your waste minimization budget.

<u>Component</u>	<u>Approximate Percentage of Budget</u>
Technical Assistance	20
Economic Incentives	0
Waste Exchange	0
Research & Development	20
Regulatory Requirements	5
Education, Advisement	40
Other (Waste Audit)	15
	<hr/> 100%

III-a. TECHNICAL ASSISTANCE

1. Indicate which of the following Technical Assistance components are currently in use or proposed for use in your waste minimization program.

Technical Assistance

On-going Proposed

(Date Anticipated)

_____	_____ 12/89	On-site assistance*
_____	_____ 12/89	Information clearinghouse/Library*
_____	_____ 12/89	Technical workshops*
_____	_____ 12/89	Feasibility studies*
_____	_____	Other* Toll free hotline; training modules; education; determination of waste reduction measurement method

2. For Technical Assistance, please provide the following information for existing programs or proposed programs:

2a. Describe the specific target of the Technical Assistance program (e.g., waste streams, industry categories, or both).

both

2b. Why did you choose to implement this program?

2c. What problems to implementing the Technical Assistance program do you anticipate or have you experienced?

Contractual problems and passing legislative amendment

2d. What quantities of waste do you expect to reduce through Technical Assistance? (Please provide quantities and dates that correspond to the analysis in Form II, Question 1). This question is not applicable because our estimates are based on historical data.

* All of these initiatives are being initiated by the RITTA grants. Legislative provisions are needed for long term maintenance of New Jersey's TAP program.

III-b. ECONOMIC INCENTIVES

1. Indicate which of the following Economic Incentives components are currently in use or proposed for use in your waste minimization program.

Economic Incentives

On-going Proposed

(Date Anticipated)

_____ _____ Awards/matching grants

_____ _____ Taxes/Fees

_____ _____ Low-interest loans

_____ _____ Tax credits

_____ _____ Other _____

2. For Economic Incentives, please provide the following information for existing or proposed programs:

- 2a. Indicate the number of grants provided in the baseyear as part of this component.

0

- 2b. What is the current (or projected) annual budget for grants provided in your waste minimization program as part of Economic Incentives (in thousands of dollars)?

0

- 2c. If taxes or fees are imposed, describe the tax (\$ per ton, for example) and the amount of revenues generated by the tax in the most recent state fiscal year.

0

- 2d. Why did you choose to implement this program?

N/A

- 2e. How effective have each of your economic incentives been in minimizing wastes?

N/A

- 2f. What quantities of waste do you expect to reduce through economic incentives? (Please provide quantities and dates that correspond to the analyses in Form II, Question 1).

New Jersey's waste minimization projection factors are based upon survey data which reflects actual industrial efforts. Therefore, this question is not applicable.

III-c WASTE EXCHANGE

1. Indicate which of the following Waste Exchange components are currently in use or proposed for use in your waste minimization program.

Waste Exchange

<u>On-going</u>	<u>Proposed</u>
1. The proposed project is a new building for the City of Los Angeles, located at 1234 Main Street, Los Angeles, California. The building is a 10-story structure, with a total area of 100,000 square feet. The building is designed to be a modern, energy-efficient structure, with a green roof and solar panels. The building is expected to be completed in 2025.	2. The proposed project is a new building for the City of Los Angeles, located at 5678 Main Street, Los Angeles, California. The building is a 15-story structure, with a total area of 150,000 square feet. The building is designed to be a modern, energy-efficient structure, with a green roof and solar panels. The building is expected to be completed in 2026.

(Date Anticipated)

 X State-promoted

 X State-managed

 X State-financed

_____ Regional or multi-state effort

_____ X Other Will be incorporated into the
Business to Business Initiatives at
the TAP

2. For Waste Exchange, please provide the following information for existing programs or proposed programs:

- 2a. What is the current (or projected) annual contribution to the Waste Exchange (in thousands of dollars) that you participate in? 0
- 2b. What is the name of the Waste Exchange that you participate in? New Jersey Chamber of Commerce Industrial Waste Information Exchange
- 2c. Which states participate in this Waste Exchange (Please list)? Primarily New Jersey, although facilities in other states do request listings.
- 2d. Describe the specific target of the Waste Exchange program (e.g., waste streams, industry categories, or both). New Jersey industries.
- 2e. Why did you choose to implement this program? The program was implemented by the New Jersey Chamber of Commerce to facilitate information exchange.
- 2f. What problems to implementing the Waste Exchange program do you anticipate or have you experienced? This exchange needs to be more fully publicized. This problem should be solved upon implementation of the TAP.
- 2g. What quantities of waste do you expect to reduce through waste exchange? (Please provide quantities and dates that correspond to the analyses in Form II, Question 1).

III-d RESEARCH AND DEVELOPMENT

1. Indicate which of the following Research and Development components are currently in use or proposed for use in your waste minimization program.

Research and Development

On-going Proposed

(Date Anticipated)

<u> X </u>	<u> </u>	Options development/feasibility studies
<u> X </u>	<u> </u>	Pilot scale or demonstration projects
<u> X </u>	<u> </u>	Economic or policy analysis
<u> X </u>	<u> </u>	Manuals for audits or technology implementation
<u> X </u>	<u> </u>	Other: identifying institutional and regulatory obstacles to waste reduction.

2. For Research and Development, please provide the following information for existing programs or proposed programs:

- 2a. What is the current (or projected) annual budget for Research and Development (in thousands of dollars)?

DSR has expended approximately \$125,000-\$150,000 per year to waste reduction since 1987.

- 2b. Describe the specific target of the Research and Development program (e.g., waste streams, industry categories, or both).

DSR research focuses on identifying institutional and regulatory obstacles to waste reduction; exploring long term waste reduction policies and setting statewide waste reduction priorities.

- 2c. Why did you choose to implement this program?

This research is part of a 1986 Governor's initiative to integrate risk assessment, risk communication and risk reduction.

- 2d. What problems to implementing the Research and Development program do you anticipate or have you experienced?

Little available funding from federal government to conduct research other than technology development.

- 2e. What quantities of waste do you expect to reduce through research and development? (Please provide quantities and dates that correspond to the analyses in Form II, Question 1).

New Jersey's waste minimization projection factors are based upon survey data which reflects actual industrial efforts. Therefore, this question is not applicable.

III-e. REGULATORY REQUIREMENTS

1. Indicate which of the following Regulatory Requirement components are currently in use or proposed for use in your minimization program.

Regulatory Requirements

On-going Proposed

(Date Anticipated)

<u> X </u>	<u> * </u>	Reporting Requirements
<u> </u>	<u> </u>	Reduction Standards
<u> </u>	<u> * </u>	Design or operating standards (e.g., required chemical substitutions)
<u> </u>	<u> * </u>	Management Standards (e.g., mandatory waste reduction and audits, listing on waste exchanges)
<u> </u>	<u> </u>	Other

2. For Regulatory Requirements, please provide the following information for existing programs or proposed programs.

- 2a. Describe the specific target of the Regulatory Requirements program (e.g., waste streams, industry categories, or both).

The NJDEP's permit programs incorporate waste reduction reporting. As of May, 1989, waste reduction reporting requirements had been included in six environmental permits. The NJDEP's Division of Hazardous Waste Management also collects waste minimization information as an annual reporting requirement. This "waste minimization report" address total waste generation, waste streams, total production, SIC codes, reduction and disposal codes, and projected future waste reduction.

As part of the pollution prevention initiative described in Attachment 1, NJDEP is calling for legislation which would give legislative authority to require preparation of pollution prevention plans, multi-media facility wide permitting and expansion of the reporting requirement.

- 2b. Why did you choose to implement this program?

To enhance pollution prevention in this state.

- 2c. What problems to implementing the Regulatory Requirements program do you anticipate or have you experienced?

We need legislative authority.

- 2d. What quantities of waste do you expect to reduce through regulatory requirements? (Please provide quantities and dates that correspond to the analyses in Form II, Question 1).

New Jersey's waste minimization projections are based on survey data which reflects actual industrial efforts. Therefore, this question is not applicable.

III-f. EDUCATION

1. Indicate which of the following Education components are currently in use or proposed for use in your waste minimization program.

Education

On-going Proposed

(Date Anticipated)

_____	_____	Governor's or other award programs
<u> X </u>	_____	Public Education (e.g., seminars, workshops, pamphlets)
<u> X </u>	<u> 12/89 </u>	Outreach
_____	_____	Feasibility studies
<u> X </u>	_____	Other (waste minimization assessments)

2. For education, please provide the following information for existing programs or proposed programs.

- 2a. Describe the specific target of the education program (e.g., waste streams, industry categories, or both)

Both waste streams and industry categories are specific targets of the education program.

- 2b. Why did you choose to implement this program?

The NJDEP feels that very much can be accomplished through cooperative efforts of advisement and assistance to industry.

- 2c. What problems to implementing the education program do you anticipate or have you experienced?

Publicity

- 2d. What quantities of waste do you expect to reduce through education? (Please provide quantities and dates that correspond to the analyses in Form II, Question 1).

New Jersey's waste minimization projections are based on survey data which reflects actual industrial efforts. Therefore, this question is not applicable.

TABLE 4-1

SUMMARY OF ESTIMATED REDUCTIONS OF ALL GENERATED WASTES DUE TO WASTE MINIMIZATION
(Tons)
(As Calculated in Projection Section)

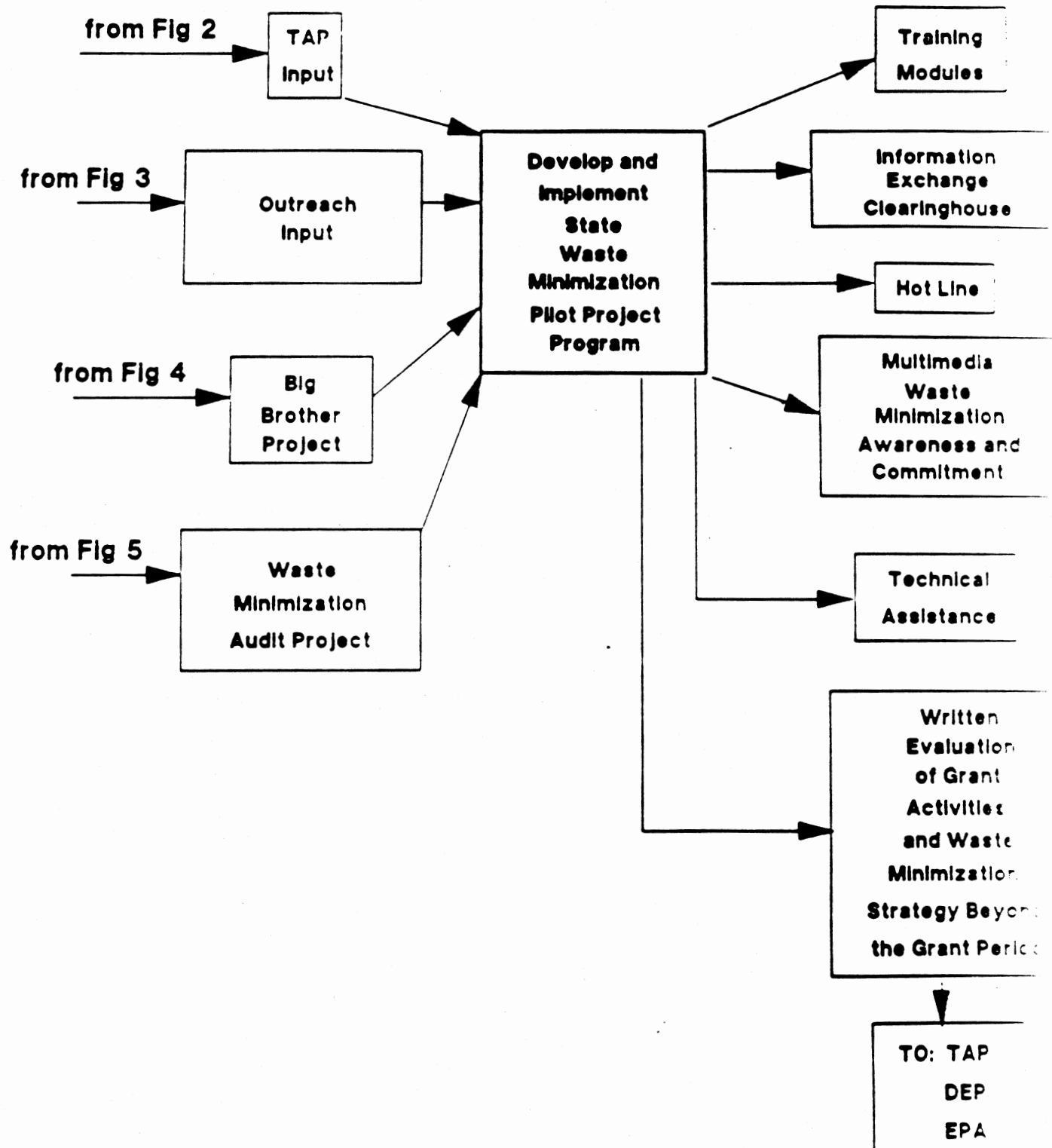
Waste types	1989	Projection Years 1995	2009
1. Contaminated Soil	0	0	0
2. Halogenated Solvents	668	738	867
3. Nonhalogenated Solvents	3,132	4,374	7,356
4. Halogenated Organic Liquids	0	0	0
5. Nonhalogenated Organic Liquids	0	0	0
6. Organic Liquids, NEC	-5,025	1,626	17,775
7. Mixed Organic/Inorganic Liquids	-1,333	-1,137	0
8. Inorganic Liquids with Organics	908	1,747	3,903
9. Inorganic Liquids with Metals	1,454	1,654	2,352
10. Inorganic Liquids, NEC	1,582	1,559	1,621
11. Halogenated Organic Sludges/Solids	-2,340	578	7,288
12. Nonhalogenated Organic Sludges/Solids	202	236	315
13. Organic Sludges/Solids, NEC	7,236	8,646	11,288
14. Mixed Organic/Inorganic Sludges/Solids	0	0	0
15. Inorganic Sludges/Solids with Metals	12,135	15,916	22,272
16. Inorganic Sludges & Solids, NEC	5,227	5,512	6,740
17. Other Wastes	3,259	4,316	6,963
Total	27,177	45,765	88,740

Note: A Negative Quantity Indicates Increased Generation

10/11/89

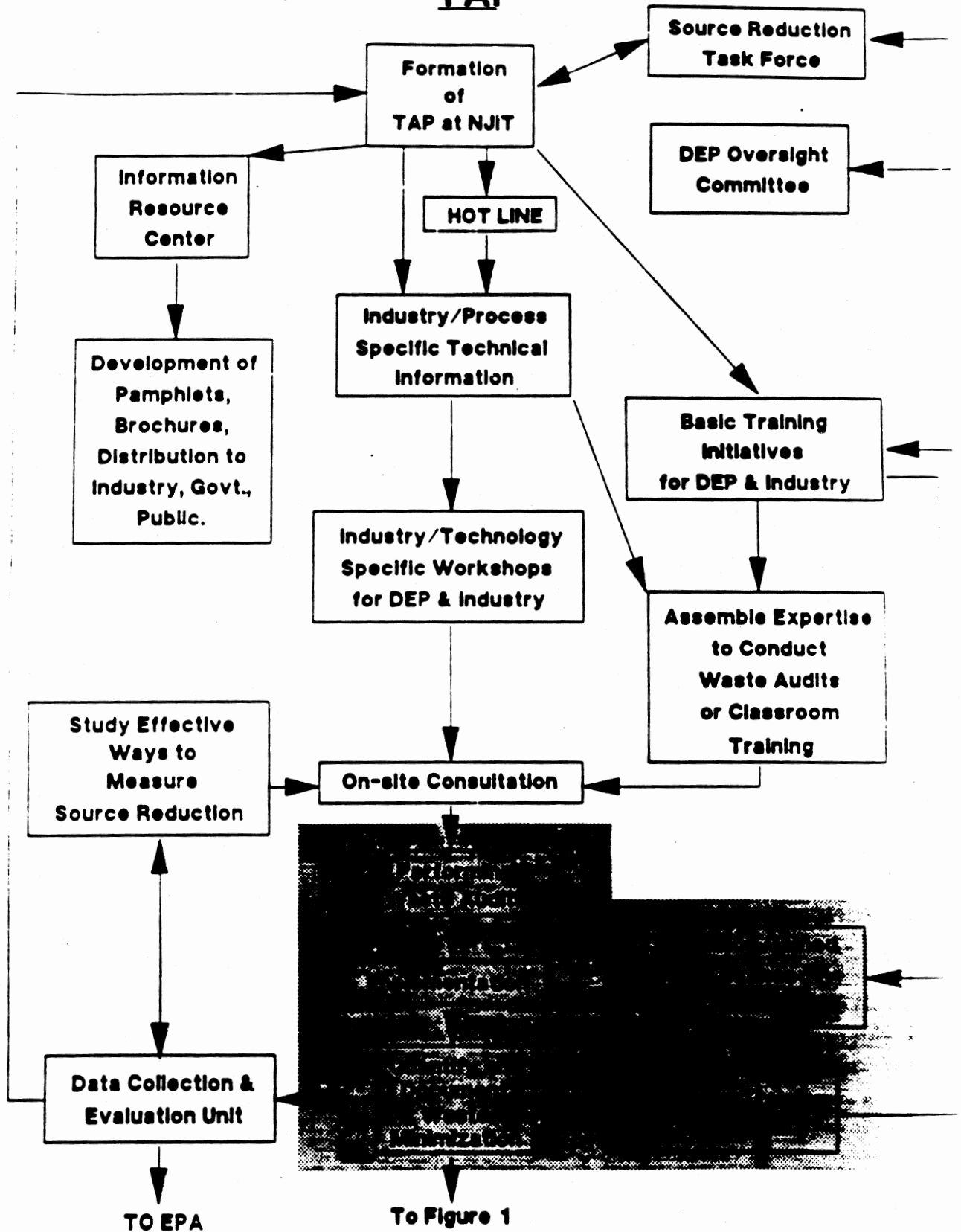
RITTA TA Pilot Project Summary and Outputs

Figure 1



TAP

Figure 2



Shaded activities will not be funded through RITTA Grant, but will be performed under the State TAP budget.

Figure 3

Outreach

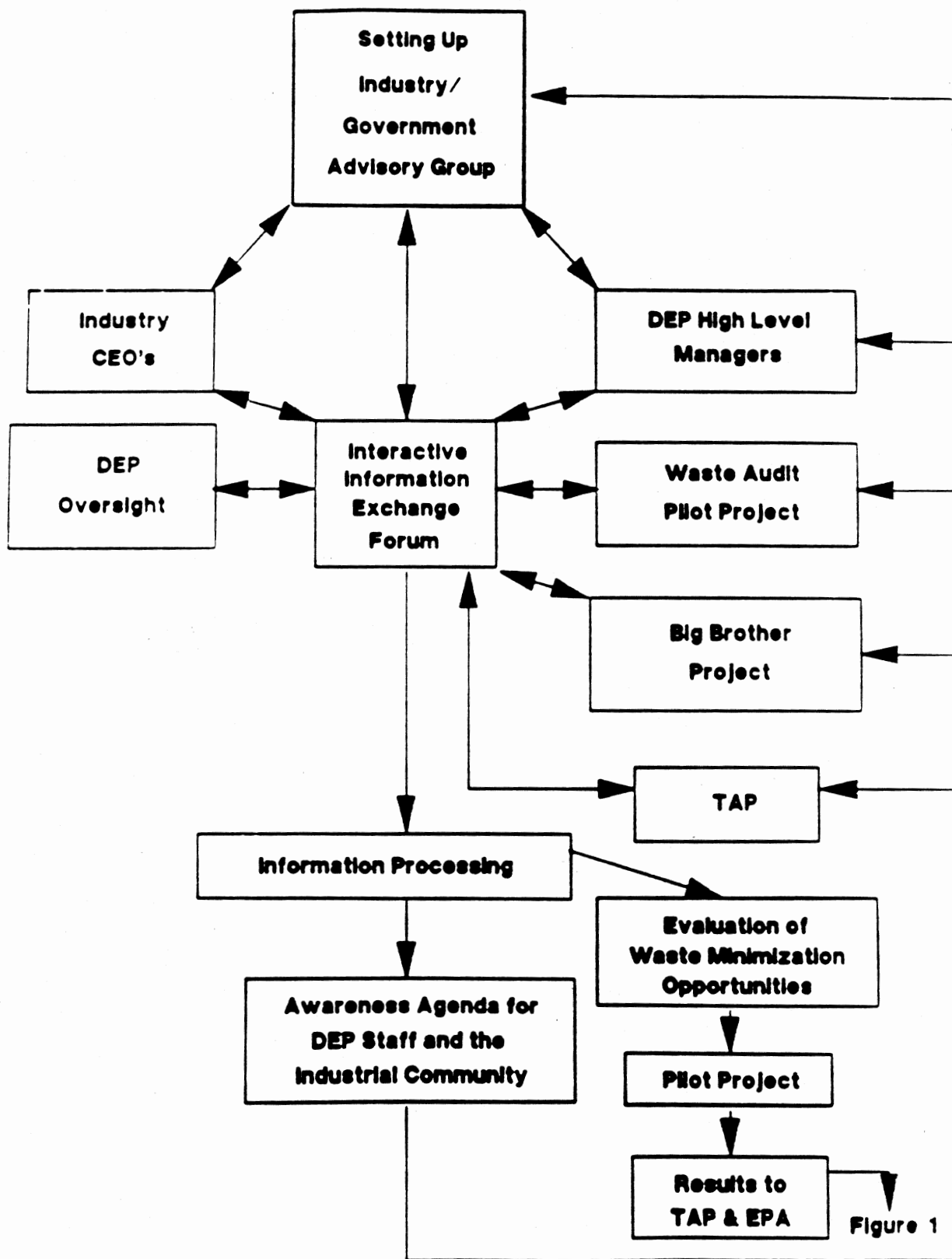


Figure 1

Big Brothers Project

Figure 4

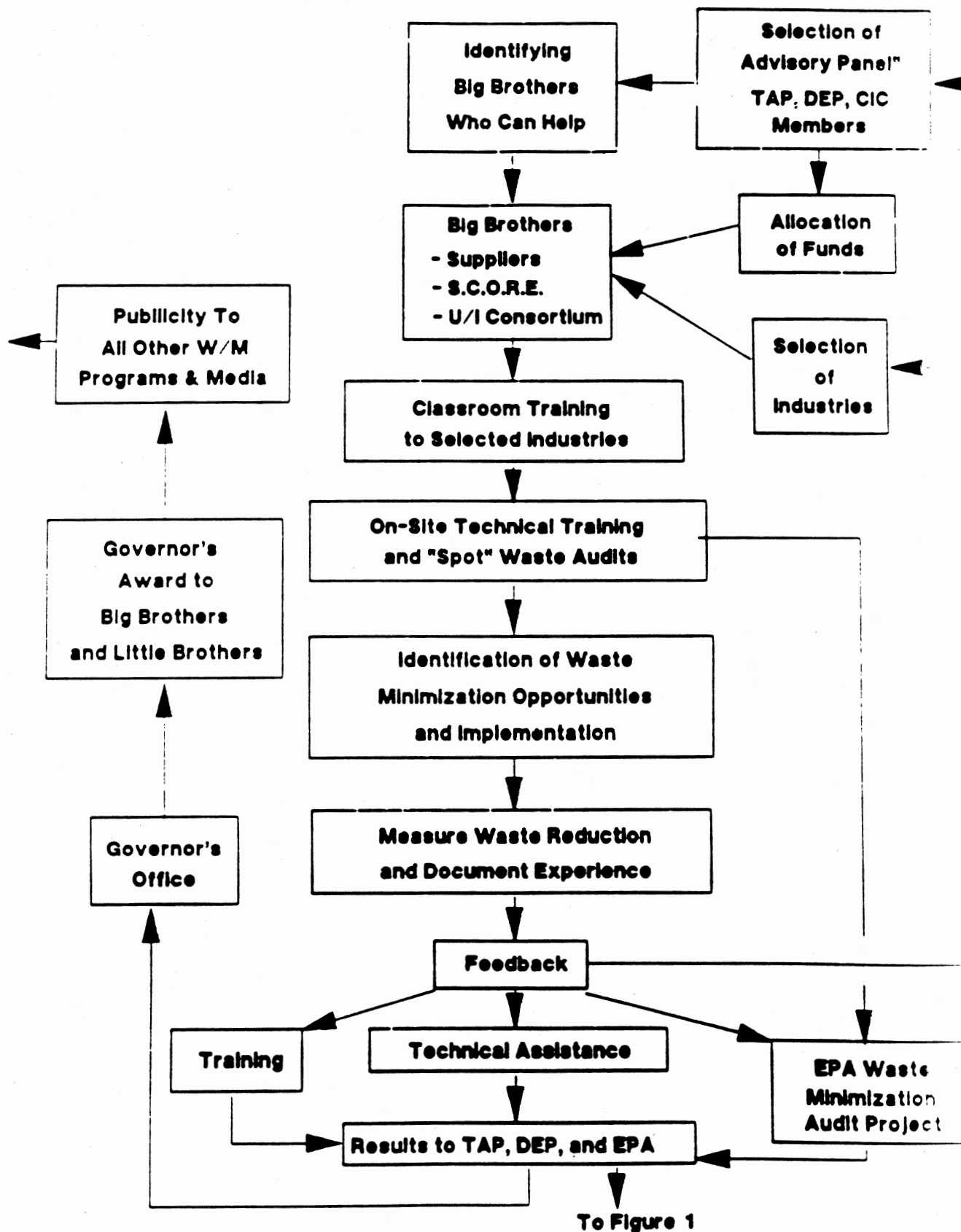
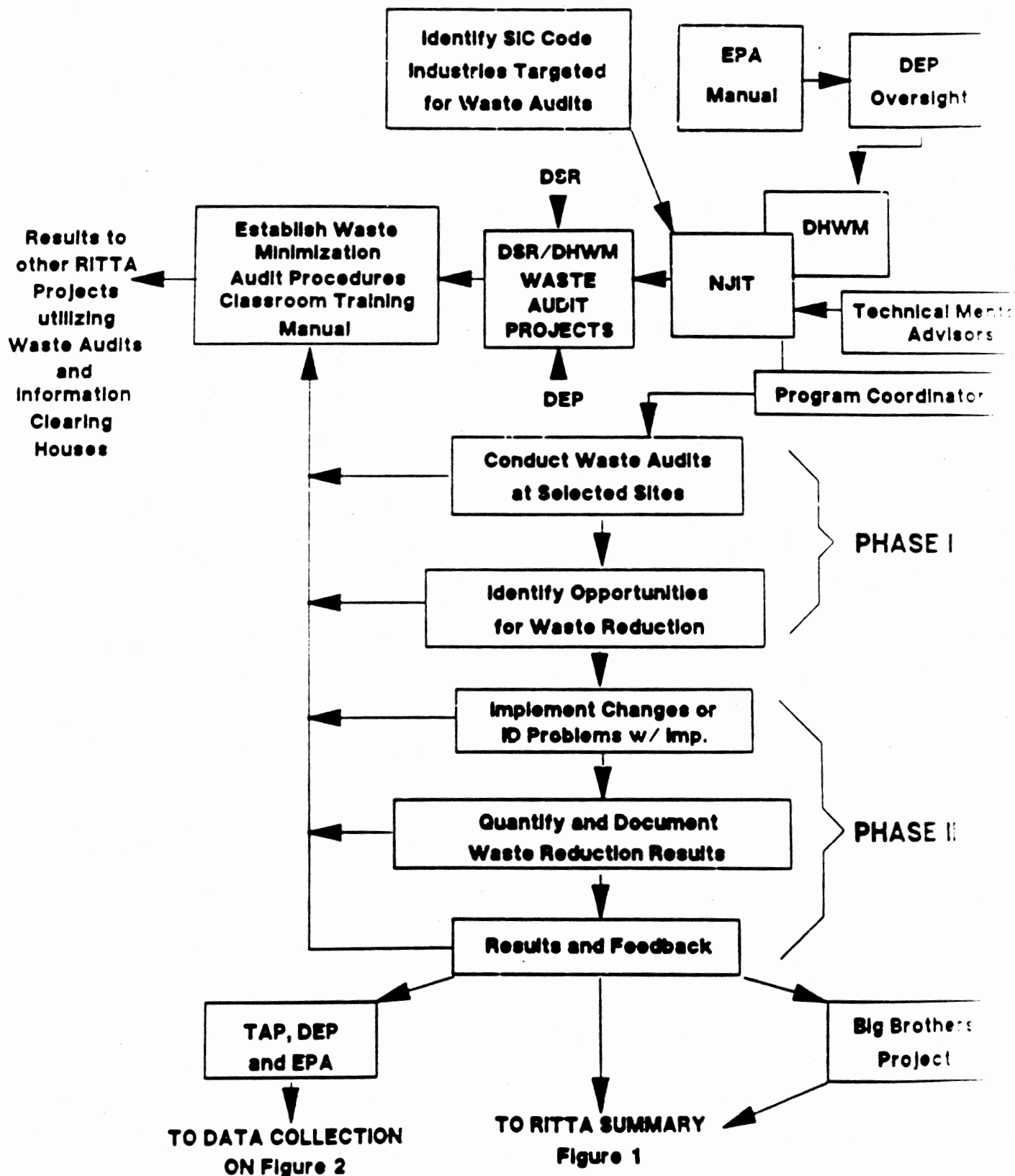


Figure 5

ASSESSMENT OF REDUCTION AND RECYCLING OPPORTUNITIES FOR HAZARDOUS WASTE - ARROW



HAZARDOUS SUBSTANCE POLLUTION PREVENTION: THE KEY TO A NEW ERA OF ENVIRONMENTAL PROTECTION



**NEW JERSEY DEPARTMENT OF
ENVIRONMENTAL PROTECTION**

August, 1989

**HAZARDOUS SUBSTANCE POLLUTION PREVENTION:
THE KEY TO A NEW ERA OF ENVIRONMENTAL PROTECTION**

This paper proposes an approach for a statewide industrial hazardous substance source reduction and recycling program. The proposed program would be achieved through a combination of legislative and administrative actions. The purpose of this paper is to outline the proposed program and to suggest approaches for integrating the program's legislative and administrative components.

Preamble

An ounce of prevention is worth a pound of cure. Until recently, most Americans did not consult a physician unless they felt sick. During the past several years, Americans have become conscious about preventing illness rather than waiting to treat it. As a result, many more of us are eating balanced diets and exercising regularly to prevent serious illnesses. Now New Jersey is taking the next step in its environmental protection efforts by applying this prevention lesson. It is an exciting challenge, one that will require commitment of all sectors of society, from the largest industry to the smallest household.

The first Earth Day, celebrated in 1970, made many Americans aware of the need to consider the environmental consequences of their actions. That swell of environmental awareness sparked two decades of environmental laws and public policies that have greatly improved the quality of life in the United States. We have established an intricate regulatory web that lessens environmental impacts by focusing on safely managing pollution after it is generated.

Yet, in addition to making many advances in the past 20 years, we have also learned many lessons. We have learned that there is a limit to our technological ability to control pollution. We have learned that controlling pollution after it is generated is a costly enterprise. We have learned that it is difficult to predict the future environmental consequences of our actions. In short, we have learned that if we are serious about protecting our environment, we must be willing to consider the nature of the actions that cause the pollution in the first place.

As we move toward the twentieth anniversary of that first Earth Day, pollution prevention will become the hub of our environmental protection ethic. This represents a fundamental shift in philosophy from managing pollution after its generation, to preventing the generation of pollution to the greatest degree possible. This positive shift in ethic calls for bold public policy initiatives that go beyond traditional "command and control" of the by-products of industrial activity.

"Pollution prevention" is a broad goal that can only be achieved through a mix of public policies that are directed at the consumers, as well as the producers, of products that cause pollution. To make pollution prevention a reality in New Jersey, we need to demonstrate vision in a variety of public policy areas. We need to emphasize environmental education in our schools to produce a population of citizens who understand the environmental consequences of their own actions. We need to establish an economic climate that fosters pollution prevention alternatives. And we need to design creative regulatory strategies that prompt innovative pollution prevention responses from industry.

DEP has already undertaken a number of pollution prevention efforts. We now require vapor recovery at gasoline pumps and regulate certain paints and aerosol sprays to meet ozone air standards. New Jersey has one of the most aggressive solid waste recycling efforts in the country, and a comprehensive program to prevent catastrophic releases of toxic chemicals. The state's Right to Know law has served as a model for federal programs, and our wastewater pretreatment program has prompted industrial waste minimization. The pollution prevention ethic of the 1990's must build on and complement these existing efforts in New Jersey by comprehensively reducing the overall load of pollutants in our environment. This pollution prevention initiative does not involve a totally new direction for DEP; rather it clarifies the next logical step for DEP to take in its efforts to protect New Jersey's environment and public health.

If New Jersey is serious about shifting its environmental protection ethic to pollution prevention, we will inevitably face some hard decisions both at the level of statewide policymakers and at the level of individuals. The mix of policies that New Jersey must adopt to achieve pollution prevention will inevitably lead to addressing individual behavior. To achieve pollution prevention, it is as important for us to affect a homeowner's choice about lawn care as it is for us to affect the efficiency at which an industrial facility operates. It is as pressing for us to foster consumer use of environmentally preferred packaging as it is for us to develop incentives for industry to use less environmentally harmful substances. It is as timely for us to provide alternatives to reduce automobile use as it is for us to restrict use of chemicals that cause cancer.

To move toward a broad statewide pollution prevention ethic, we must now proceed with a major, but manageable, initiative. DEP proposes that this pollution prevention initiative focus on industrial hazardous substance source reduction and recycling. This is an area that public and private sector leaders have pointed to as one where environmental and economic gains can often go hand-in-hand. This initiative, a crucial complement to DEP's traditional pollution control programs, will serve as a major step towards comprehensively reducing the overall load of pollutants in New Jersey's environment. Focusing on the industrial sector and on hazardous substances is not meant to discount the importance or necessity of other pollution prevention components. We will continue our efforts to pursue recycling goals and to develop comprehensive environmental education programs. But, at the same time, this particular initiative focuses our efforts and acts as a catalyst to undertaking broader pollution prevention steps in the 1990's. Planning these next steps must be accomplished through dialogue between the state's industrial, academic and environmental leaders. To this end, DEP will initiate dialogue with these groups in order to plan together the direction of the broader pollution prevention effort, and prompt a shift to a prevention environmental ethic in New Jersey.

This paper presents key elements that DEP recommends be the foundation of New Jersey's hazardous substance source reduction and recycling initiative. Thus, this paper only discusses the components of an industrial hazardous substance source reduction and recycling initiative. To be consistent with federal policy, source reduction and recycling will be termed "pollution prevention."

DEP's Hazardous Substance Pollution Prevention Initiative

DEP proposes that the focus of any legislative hazardous substance pollution prevention program in New Jersey be on source reduction and recycling. DEP further proposes achieving an effective program through the integration of two elements: facility identification of pollution prevention opportunities and facility-wide permitting. DEP proposes a multi-media initiative that builds pollution prevention components into existing DEP program units as well as assigning planning and coordination activities to a centralized focal point in DEP.

DEP believes that, in many cases, existing environmental statutes may already provide the agency with the authority to undertake several of the pollution prevention activities outlined in this paper. However, it is DEP's opinion that, since hazardous substance source reduction and recycling is an issue that is under legislative debate, it would be preferable and in the best interest of the citizens of New Jersey for DEP to have explicit authority to undertake the pollution prevention activities discussed in this

paper. Therefore, DEP will continue to exercise its existing pollution prevention authority by proceeding with pollution prevention activities currently underway in the agency while also seeking explicit statutory authority to direct the pollution prevention program.

To achieve the latter, DEP is establishing two internal entities to prompt the agency's concerted effort on hazardous substance source reduction. A DEP administrative order to establish a high-level Office of Pollution Prevention and an executive-level Pollution Prevention Planning and Advisory Committee has been issued together with this paper. The Office will be responsible for coordinating hazardous substance source reduction and recycling activities of DEP. The Pollution Prevention Committee will be responsible for planning the development of the state's hazardous substance source reduction and recycling initiative and providing the Office with guidance on coordinating pollution prevention activities within DEP.

The Office of Pollution Prevention will have three specific, initial mandates: to help determine the impact existing and planned regulatory efforts have on source reduction and recycling; to assist in the establishment of a mechanism for integrating pollution prevention into existing enforcement efforts of DEP; and to develop and propose a plan for approval by the Commissioner which outlines the framework for a facility-wide permitting process. DEP believes it is essential that this office remain relatively small so that it can work cooperatively with, and not usurp the authority of, program units, while still providing direction for New Jersey's pollution prevention initiative.

It is imperative to note that the establishment of a state Waste Reduction Technical Assistance Program (TAP) at the New Jersey Institute of Technology (NJIT) is important to implementing an effective pollution prevention program. State-supported pollution prevention technical assistance to industry is critically needed in New Jersey. Legislation (S-2502/A-3415) is currently pending in the state Legislature that would institute the TAP. There is general consensus that government, industry, the public, and academic communities must continue to demonstrate commitment to the need for the TAP.

I. Introduction

Federal and state efforts undertaken over the past two decades to control the environmental release of hazardous and non-hazardous pollutants have significantly improved the quality of life in New Jersey. Aggressive environmental protection measures initiated in New Jersey often serve as models for similar endeavors by other states and by the federal government. It is essential to recognize that the next era of environmental protection must

include a focus on preventing the use and generation of hazardous substances in conjunction with existing programs. Even with the most stringent pollution prevention program, New Jersey's industries and citizens will still use and generate hazardous substances. Accordingly, pollution control compliance standards cannot be relaxed; strong pollution control programs to ensure safe release and disposal of hazardous substances must go hand-in-hand with pollution prevention. But the new prevention ethic can only succeed if it is given a multi-media basis and if it is encouraged as a first choice over pollution control.

NJDEP has already initiated several aggressive efforts aimed at minimizing landfilled wastes and other liquid wastes regulated under the Resource Conservation and Recovery Act. In particular, the Hazardous Waste Advisement Program (HWAP) in the DEP Division of Hazardous Waste Management has provided regulatory waste minimization consultation to industry through responsive guidance, development of informational materials, and sponsorship of waste minimization seminars. The HWAP aggressively sought funding from USEPA to administer three waste minimization programs through the Division of Hazardous Waste Management and the Advanced Technology Center at the New Jersey Institute of Technology. These programs are designed to assess business activities which generate waste, recommend actions for reducing waste, provide technical assistance, and evaluate technology reported to be effective in reducing waste. These programs serve to document and verify existing waste minimization by industry and to encourage waste minimization technology transfer among industry. The first of these three programs is directed at determining how hazardous waste is generated as a result of a site-specific manufacturing process. The second consists of an initiative that promotes business-to-business endeavors, training, and outreach and start-up of the Technical Assistance Program (TAP) at NJIT. The third program assesses the effectiveness of novel waste minimization equipment or process modifications.

In addition to these programs, the DEP Division of Science and Research has undertaken several investigations pertaining to multi-media hazardous substance source reduction. These studies included assessing the potential of information resources within DEP to track source reduction progress, a review of existing regulations for their impact on source reduction, development of a protocol for industry-based incentives, and development of methods to set statewide source reduction priorities.

II. Defining the Scope

DEP recognizes that comprehensive management of hazardous substance use and waste involves the utilization of a range of programmatic tools and strategies. EPA and most states, including New Jersey, recognize a hierarchy that holds source reduction to

be the preferred and first choice strategy, followed by recycling and recovery; on-site treatment, destruction and/or reduction; and secure and safe storage/disposal. The issue that currently faces New Jersey is determining what components of that hierarchy should be the focus of a pollution prevention program. DEP proposes that the scope of New Jersey's initiative focus on multi-media pollution prevention, including both source reduction and recycling, and that the State seek to achieve three objectives:

- To clarify and state through legislation the policy of the State of New Jersey that recognizes the primacy of hazardous substance source reduction.

- To provide specific funding for the pollution prevention initiative. The Congressional Office of Technology Assessment (OTA) reported that "the level of funding for waste reduction also indicates that it has little status as a solution to environmental problems." By establishing a deliberate funding source, New Jersey will be putting its commitment to source reduction into action.

- To provide express authority for pollution prevention alternatives where it may not already exist or where it is not explicit. For DEP to fulfill a multi-media pollution prevention program, it would be preferable to have explicit authority to conduct multi-media hazardous substance source reduction and recycling activities.

Defining the scope of New Jersey's pollution prevention program to be source reduction and recycling is consistent with the national pollution prevention policy as adopted by EPA. In general terms, "source reduction" focuses on avoiding creation of hazardous substances at the front end of industrial processes primarily through use of facility material substitutions, operational changes, product reformulation, and process modifications. "Pollution prevention" has, in some cases, been used interchangeably with "source reduction" although, as mentioned earlier, in the case of the EPA policy, "pollution prevention" includes source reduction and environmentally sound recycling. "Waste minimization," generally refers to reducing wastes regulated under RCRA. Waste minimization can be accomplished not only by source reduction and recycling but also by reuse and treatment. Waste minimization initiatives may result in toxicity reduction, volume reduction, off-site recycling and off-site waste exchanges.

DEP's endorsement of source reduction and recycling as the focus of a new state pollution prevention initiative is not meant to suggest that waste minimization or post-generation treatment strategies are less critical in the overall management of hazardous substances. DEP recognizes the critical importance of both strategies to prevent use and generation of hazardous substances as well as strategies to reduce environmental release of hazardous substances via treatment. However, DEP also acknowledges the

findings of the Office of Technology Assessment (OTA) that "waste reduction tends to lose out to waste management in the press of immediate concerns ... most State programs stress good waste management practices rather than waste reduction." Therefore, DEP is using this pollution prevention initiative as an opportunity to establish the primacy of pollution prevention in New Jersey.

DEP believes it would be preferable to have explicit statutory authority for the agency to direct industry to explore the use of multi-media innovative treatment technologies. DEP will use this authority to complement the pollution prevention initiative, not to replace it. The exercise of this authority will be within existing pollution control programs. For example, facilities will report on source reduction and recycling activities in the proposed pollution prevention plans described in Section III below. If a facility still generates or uses hazardous substances, then DEP programs will have the ability to apply the innovative treatment authority to direct the facility to explore the use of certain forms of treatment.

III. Components of a Pollution Prevention Program for New Jersey

DEP proposes that the purpose of a hazardous substance pollution prevention legislative initiative should be to strive to establish an atmosphere in the State of New Jersey that prompts industry to evaluate and take advantage of its own opportunities for pollution prevention. This goal can be achieved by maximizing regulatory and economic incentives that foster pollution prevention and, in some cases, by providing technical assistance to industry to identify pollution prevention opportunities. It is DEP's conviction that the approach needed requires the integration of two concepts: (a) facility self-identification of pollution prevention opportunities and (b) facility-wide permitting.

(a) Industrial Identification of Pollution Prevention Opportunities: DEP proposes the establishment of a statewide effort that requires facilities to explore their opportunities for source reduction and recycling. By adopting this approach, industry will have the opportunity to assess the greatest pollution prevention potential at their facility and to also internalize the financial gains provided by pollution prevention. In addition, this approach will provide industry with an excellent opportunity to consider their own long-term strategies for reducing the generation of hazardous substances and for realizing more efficient operating practices. DEP will explore optimizing these pollution prevention activities by integrating them into the facility-wide permitting approach.

(b) Facility-Wide Permitting: DEP recognizes that environmental protection is gradually evolving towards the need for

a total facility regulatory framework. Currently, DEP's regulatory programs are often limited to end-of-the-pipe pollution control and are divided along environmental media lines. A facility-wide framework, rather than individual media-specific programs, will provide industry and the DEP with a more effective and efficient approach to overseeing facility operations and, thereby, enhance our ability to protect the environment. The facility-wide approach will include both consideration of source reduction and also end-of-the-pipe strategies to insure that a facility generates the least possible amount of hazardous substances and that the hazardous substances used and generated at the facility are most efficiently and effectively managed. In addition, a facility-wide approach will contribute to identifying source reduction and recycling opportunities at a facility by arresting the use of media-specific, end-of-pipe treatment strategies when that approach results in the transfer of a pollutant from one medium to another.

Even if New Jersey were not planning a pollution prevention initiative, DEP would pursue a gradual changeover to facility-wide permitting for a variety of reasons, including promoting efficiency in implementing existing end-of-pipe pollution control mandates. Incorporating the facility-wide permitting approach into a pollution prevention initiative complements other on-going DEP efforts to find a solution to the time-consuming and often complicated tangle of regulatory and administrative requirements that industry must weed through in order to gain regulatory compliance. Therefore, the facility-wide permitting concept offers a creative institutional incentive to industrial involvement in the pollution prevention initiative.

In addition to providing industry with an institutional incentive to embrace the state's pollution prevention initiative, the facility-wide permitting approach also provides a more direct link to pollution prevention. DEP sees the facility-wide approach as also prompting a facility to consider source reduction and recycling efforts by limiting a facility's potential to transfer pollution from one environmental medium to another. Therefore, DEP proposes that although facility-wide permitting and facility pollution prevention reporting could be developed separately, the marriage of the two greatly enhances the success of each.

The Proposed Approach

DEP proposes that legislation include a priority-setting scheme as outlined in Figure 1. All employers in SIC codes subject to the community portions of the New Jersey Worker and Community Right to Know Act would be covered facilities. DEP would identify a subset of industry groups which would be required to develop pollution prevention plans (PPP). DEP would select these industry groups based, in part, on: quantity or the degree of hazard associated with substances used or generated; potential for

catastrophic events; potential for adverse public health or ecological impacts; relative efficiency of chemical use; potential for pollution prevention opportunities; and non-compliance with environmental regulations. Subsequently, a subset of 15 facilities would be identified by DEP to be involved in a pilot facility-wide permitting effort.

A pollution prevention plan (PPP) would be a facility-wide, process-based report that documents the management, financial, and technological strategies that the owner intends to undertake to reduce the use and generation of hazardous substances. The information included in the pollution prevention plan is intended to identify source reduction and recycling opportunities at the facility as well as to document strategies the facility will undertake to capitalize on those opportunities. The PPP will address pollution prevention opportunities by objectively and quantitatively reviewing the use and release of hazardous substances at each production process and operation of the facility. DEP suggests that, at a minimum, the PPP must include information outlined in Figure 2.

Changing the current regulatory framework to a facility-wide approach will not happen overnight. Therefore, DEP proposes to use a manageable number of facilities in an initial facility-wide permit pilot effort. A subset of 15 facilities that prepared PPP's would be the focus of this pilot effort. Part of DEP's criteria for selecting the 15 facilities would be interest on the part of the facilities' owners and the potential for integrating the facilities' permits. Accordingly, the 15 facilities would be directed to submit an integrated permit application. Included as part of the permit application would be the facilities' PPP. Depending on resources, the TAP at NJIT may offer to assist the 15 facilities in preparing their PPP's, which would provide them with an additional pollution prevention incentive. DEP project teams, coordinated by the Office of Pollution Prevention, would review the integrated permit applications, including the PPP's, for the 15 facilities and render a decision on the integrated permit based, in part, on the PPP. Subsequently, pollution prevention components would be built into the integrated permit provisions. This facility-wide permit pilot effort will provide DEP with a basis for institutionalizing the facility-wide approach within DEP and for integrating pollution prevention as a part of that approach.

Note that, as discussed earlier, it would be preferable for DEP to have explicit authority to direct a facility to explore use of innovative forms of treatment. This authority will be housed in all existing regulatory program units and may be exercised by the program units for any facility within their jurisdiction. For the purposes of the 15-facility pilot effort, that authority will be exercised as part of the facility-wide permit review.

In addition to the components of the initiative just discussed, DEP will conduct "pollution prevention profiles" for five industry groups per year. Pollution prevention profile reports will be based on review of representative pollution prevention plans and community Right to Know information. Profile reports will outline: the status of source reduction and recycling activities within the industry group; future potential for pollution prevention within the group; financial, technological, regulatory and institutional needs particular to each industry group to undertake additional pollution prevention activities; and recommendations for industry-specific government activities to promote additional pollution prevention. These pollution prevention profiles will serve to direct the planning of the state's pollution prevention program with respect to those industry groups. DEP would work with industry associations to develop pollution prevention profiles.

DEP believes that, although its goal in this pollution prevention initiative is to prompt industry to recognize and adopt its own pollution prevention opportunities, as the state's regulatory environmental authority, DEP must be provided information needed to track pollution prevention progress at a facility level. To this end, DEP intends to utilize its existing mandate under the NJ Worker and Community Right to Know Act to collect necessary facility level information to track pollution prevention progress.

DEP also believes that it is incumbent on the State of New Jersey to be a model for the state's businesses and industries by taking the lead on identifying its own pollution prevention opportunities. For that reason, government operations and offices would also be affected by this initiative as a result of their inclusion on the list of covered SIC codes. DEP encourages other state programs to recognize this initiative as an opportunity not only to identify pollution prevention strategies within state facilities, but also to identify pollution prevention alternatives to relevant state operations, such as procurement practices and contract specifications.

IV. Implementing the Pollution Prevention Initiative

DEP proposes that the following four elements be included in a legislative initiative to establish the hazardous substance pollution prevention initiative as outlined in this paper.

1. Define the scope as hazardous substance source reduction and environmentally sound recycling, termed "pollution prevention." Define covered substances to be any chemical covered by state or federal Right to Know, CERCLA, RCRA and the New Jersey Spill Act and include facilities within SIC codes covered by the community portion of the New Jersey Right to Know Act. A list of proposed definitions is included in Attachment A.

2. Establish a pollution prevention advisory group (PPAG) comprised of academic representatives and environmental and industry leaders to advise DEP on the program's implementation and to establish a mechanism for periodically evaluating the progress of the pollution prevention initiative. One of the tasks of the Advisory Group will be to recommend the best timetable for future expansion of the pollution prevention program beyond the industrial sector in an effort to achieve the state's broader pollution prevention goals. In addition, the Advisory Group will assist in the development of a schedule for the preparation of industry group pollution prevention profiles. Last, DEP proposes to work cooperatively with the Advisory Group to develop a formal public participation plan for the pollution prevention program.

3. DEP believes that existing environmental statutes may already provide the agency with authority to undertake many of the pollution prevention activities discussed in this paper. However, DEP considers it important to provide the agency with explicit hazardous substance source reduction and recycling authority in conjunction with the development of a new legislative program in this area. Legislation should explicitly enable the DEP to develop new regulations or to clarify its existing authority to:

- direct facilities to explore the use of certain forms of treatment.
- integrate all environmental permits for a facility.
- utilize community Right to Know reporting as a tool to track facility level source reduction and recycling progress.
- include coverage in pollution prevention legislation of all businesses in SIC codes covered by NJ community Right to Know.
- require reporting of pollution prevention plans (PPP) according to the priority-setting scheme outlined in Figure 1.
- include pollution prevention provisions as a part of facility-wide permit applications, renewals, and reporting.
- phase down permit limits based on review of pollution prevention plans.
- model trade secret regulations on those adopted by the NJ community Right to Know regulations.

4. Ensure that the pollution prevention activities of DEP and the state's academic Technical Assistance Program are parallel and reinforce each other. A formal mechanism to foster interaction between DEP and the TAP is included in the DEP grant that starts up the TAP.

Issues for Statewide Discussion:

With the introduction of legislation to establish a pollution

prevention program, New Jersey joins a small set of states that are currently considering formal multi-media hazardous substance source reduction and recycling programs. Since no legislated state programs as yet have been established, there is no precedent or model for New Jersey to refer to as we plan the components of this new initiative. Because the nature of source reduction is inherently different from end-of-pipe media-specific pollution control, we cannot totally rely on even our own past experiences to guide the design of a pollution prevention program's components. Therefore, DEP proposes that the following 5 issues need to be resolved through a collective dialogue involving DEP, environmental and industry leaders, and state legislators:

a) Periodicity of pollution prevention plans - Since the ultimate goal of this initiative is to integrate PPP's into facility-wide permits, DEP suggests that it may be appropriate to require updates and regular reporting of pollution prevention progress in conjunction with the integrated permit reporting schedule.

b) Submittal of pollution prevention plans - DEP strongly supports submittal of a facility's pollution prevention plan when that facility is undergoing total facility permitting. However, the state needs to consider whether, following the initial effort discussed in this paper, all facilities' pollution prevention plans should be submitted to DEP. Determining whether those facilities not involved in the initial total facility permitting pilot approach should submit PPP's is a complex question. The level of effort involved in having DEP staff review and/or approve PPP's is uncertain. There is a need to balance enforcement with productively managing the PPP information within DEP. At present, DEP cannot administratively absorb the potentially significant workload of PPP submittal and review. DEP suggests that if PPP's are not required to be submitted to DEP, then community Right to Know surveys also include facility certification that they have prepared a PPP. If PPP's are required to be submitted to DEP, then adequate resources to review those plans must be provided.

c) Program Expansion - The initiative outlined in this paper suggests the introductory phases of a statewide hazardous substance source reduction and recycling program. DEP anticipates that in subsequent years, facilities within additional SIC codes would be identified to prepare pollution prevention plans. However, what will be more difficult to determine is the most appropriate timing of the program's expansion. DEP recommends that the initial effort be limited according to a priority-setting approach as outlined in Figure 1 and that this initial effort include a timetable and mechanism for reviewing progress. As discussed in section IV-2, above, DEP believes it is critical to plan the program's expansion in conjunction with the Pollution Prevention Advisory Group. DEP suggests that, after two years of implementing the initial effort, the agency should report on the progress of the program. This

progress report will provide an opportunity for making mid-course corrections and for determining the means by which the effort will be expanded.

d) Funding - A fundamental question that requires resolution is whether the source of funding for this pollution prevention initiative should be limited to equipping DEP with a stable pollution prevention funding mechanism or whether it should also provide an inherent incentive to hazardous substance source reduction and recycling. A flat facility fee would not necessarily provide a financial motivation because it would not be increased or decreased based on the facility's level of hazardous substance generation. Establishing a funding source that also provides an economic incentive would be more complicated because it would need to be based on a facility's proportional multi-media generation of hazardous substances. The state may want to also study whether an increase in the state Spill Tax would provide a pollution prevention incentive to covered facilities. Other alternatives may also be worthy of consideration.

e) Economic Incentives - If New Jersey intends to establish pollution prevention as the fixed basis of the state's environmental protection ethic, then it is essential to foster an economy that favors pollution prevention alternatives for both businesses and individuals. Promoting such an economy is a complex undertaking and requires substantial planning. Employing strategies, such as reflecting the social cost of environmental protection in products and services, may necessitate a remodeling of certain segments of the state's economy. Yet, without the marketplace reflecting the preference of pollution prevention alternatives, any legislated pollution prevention initiative is likely to dwindle over time. DEP suggests that development of economic incentives be considered as part of the state's dialogue to gradually build a comprehensive pollution prevention ethic.

V. Summary

DEP recognizes the initiation of a pollution prevention program within the state's industries as a significant step towards comprehensively evaluating approaches that will reduce the overall load of pollutants in our environment. Facility-wide permitting is a critical component of this initial step. Establishing an advisory group of the state's industry, academic, and environmental leaders through this initiative will serve as a mechanism for planning expansion of DEP's pollution prevention efforts into other areas.

In the long term, pollution prevention efforts must expand beyond the industrial sector and involve pollution prevention measures affecting consumerism and individual behavior. New Jersey

has demonstrated national leadership in environmental protection. Aggressively undertaking a multi-media hazardous substance pollution prevention effort is our opportunity to lead the nation in planning and implementing such a comprehensive program. The state's pollution prevention initiative must demonstrate vision and innovation. This particular initiative, which focuses on industrial hazardous substance source reduction and recycling, will both complement existing pollution control programs as well as set the pace for the next era of environmental protection in which further pollution prevention will be achieved through consumerism and changes in individual daily behavior. Through the cooperation of the state's industry, government, environmental, public interest and academic communities, we can phase in a vital shift to a prevention environmental ethic. It is a challenge that we must take on together as we enter the 1990's.

FIGURE 1 - INITIAL PRIORITY SETTING SCHEME

<u>Covered Businesses</u> ----->	Priority Industry -----> Groups That Are Required to Prepare <u>A PPP*</u>	Facilities To Be In The Facility-Wide <u>Permit Pilot Effort</u>
4-digit SIC codes covered by NJCRTK (@ 35,000 facilities)	10 4-digit SIC Codes number of facilities is dependent on size of the SIC codes	15 facilities PPP's submitted to DEP with facility- wide permit applica- tion/renewal

* PPP = Pollution Prevention Plan

**FIGURE 2 - SUMMARY OF POLLUTION PREVENTION INFORMATION REPORTING
NEEDS**

NJ Right To Know

- Facility Level
- Amount of chemical brought on-site consumed on-site shipped off-site in product shipped off-site for disposal produced on-site, held in inventory
- latitude/longitude.
- Quantity of chemical stream reported by media prior to and after source reduction, prior to and after recycling, prior to and after treatment, and prior to disposal.
- Amount of chemical sent to POTW, released as fugitives, released via stack, discharged to surface water and groundwater.
- Certification that the facility has a PPP.
- Pollution prevention practices for past 2 years for each chemical.
- Amount of chemical expected to be reported for each year for the next 5 years.
- Quantity and units of production associated with use/generation of each chemical in previous year and in reporting year.
- Techniques used to identify prevention opportunities

Proposed PPP

- Process Level
- History and status of pollution prevention effort
- 5 year pollution prevention goal per process
- Evaluation of all potential pollution options per process and option feasibility, economic, and benefits analysis per process.
- Pollution prevention option elected to be employed by facility to achieve 5-year goal.
- Economic evaluation of elected option, schedule for its installment per process, and analysis of expected benefits, including environmental benefits.
- Quantity of chemical prior to and after reduction, prior to and after recycling, prior to and after treatment, prior to disposal.
- Production index

Attachment A - Proposed Definitions

pollution prevention: source reduction and recycling

source reduction: any method or technique applied at or before the point of generation, the application of which reduces or eliminates the use or generation of hazardous substances so as to reduce the risk to public health and the environment. Source reduction may be achieved through process modifications, in-process recycling, improvements in housekeeping and maintenance operations, input substitutions of chemicals, and development of new products resulting in reduced use or generation of hazardous substances.

recycling: means the processes constituting "use or reuse" and "reclamation." "Use or reuse" means the procedure whereby a residual is employed as an ingredient in an industrial process to make a product or employed as an effective substitute for a commercial product. "Reclamation" means a procedure whereby a material is treated to recover a useable product, or where a material is regenerated.

hazardous substance: any substance or chemical covered by state or federal Right to Know, CERCLA, RCRA and the New Jersey Spill Act.

covered businesses: 4-digit SIC codes pursuant to the community portion of the New Jersey Right to Know Act.

pollution prevention profiles: means a report on the status of pollution prevention activities within an industry group. Profile reports will serve to direct the planning of the state's pollution prevention program with respect to those industry groups. The information in pollution prevention profiles will include, but not be limited to: pollution prevention opportunities within the industry group; future potential for pollution prevention within the group; financial, technological, regulatory, and institutional needs particular to each industry group to undertake additional pollution prevention; and recommendations for industry-specific government activities to promote additional pollution prevention.

treatment: any method, technique, or process, including neutralization or other pH adjustment, designed to change the physical, chemical or biological character or composition of a material so as to (1) recycle energy or material resources from the material; (2) render such material non-hazardous, or less hazardous; (3) render the material safer to dispose of; or (4) render the material more amenable for recycling or storage.

pollution prevention plan: A pollution prevention plan (PPP) is a periodic, facility-wide, process-based report that documents the management, financial, and technological strategies that the owner intends to undertake to reduce use and generation of hazardous

substances. The information included in the pollution prevention plan is intended to identify source reduction and recycling opportunities at the facility as well as to document strategies the facility will undertake to capitalize on those opportunities. The PPP will address pollution prevention opportunities by objectively and quantitatively reviewing the use and release of hazardous substances at each production process and operation of the facility. The PPP will include, but not be limited to, the information listed in Figure 2.

DEP POLLUTION PREVENTION INITIATIVE

GOAL:

Reduce generation of hazardous substances by Industry

OBJECTIVES:

Industry self-identification of source reduction and recycling opportunities

Efficient, multi-media facility-wide permit process

APPROACH:

High-level Office of Pollution Prevention in DEP

DEP Executive level Planning Committee

Pollution Prevention Advisory Group with environmental, industry, academic leaders

Preparation of pollution prevention plans by facilities in 10 SIC codes

15 facility multi-media facility-wide permit pilot program

Reporting facility level pollution prevention information via Community Right to Know

Pollution Prevention Plan



Facility-Wide Permit



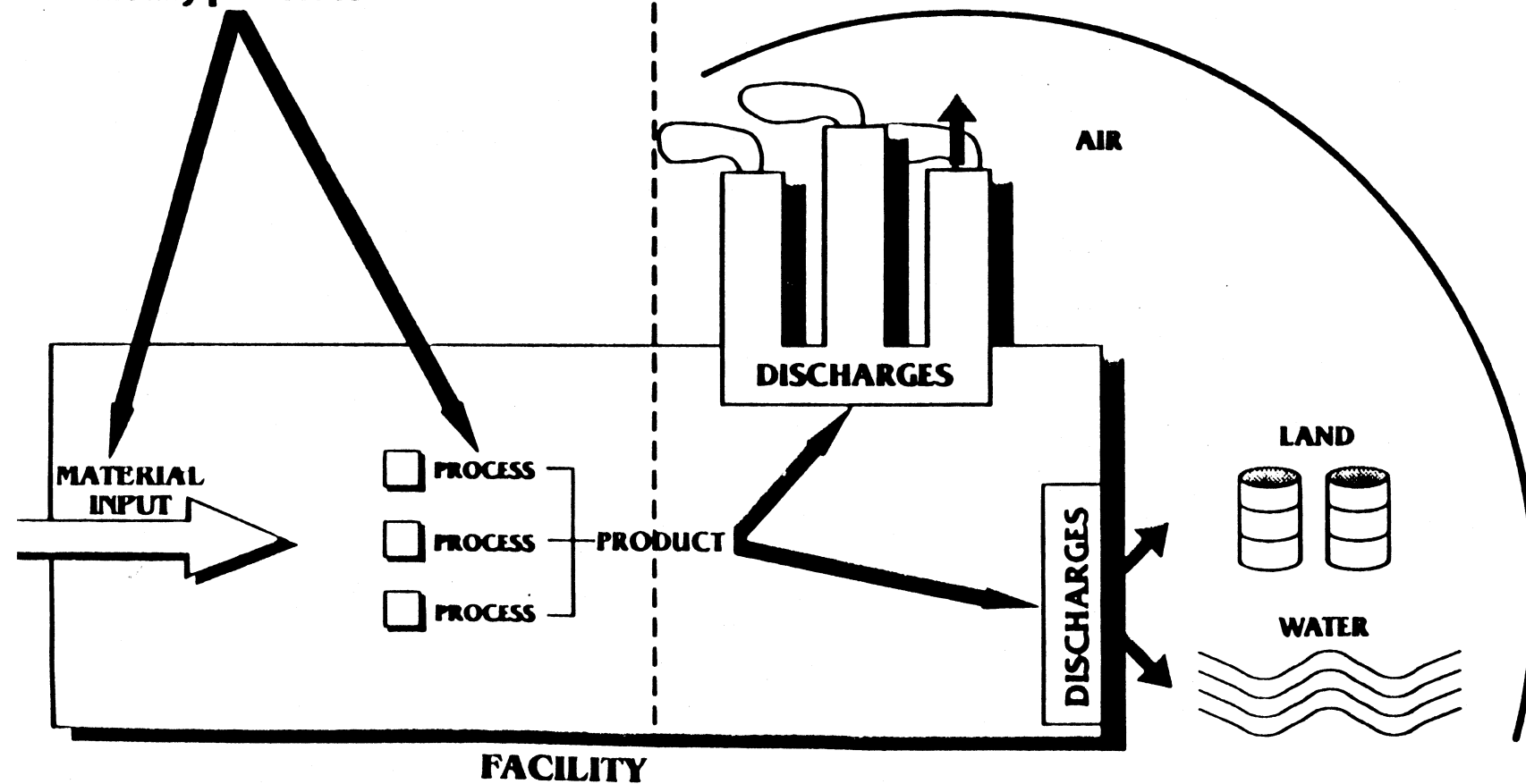
**DEP Pollution
Prevention
Initiative**

**Facility self-identification
of opportunities to:**

- ☐ substitute input materials
- ☐ improve operating practices
- ☐ reformulate product
- ☐ recycle on-site
- ☐ modify processes

**Pilot effort to develop
integrated facility-wide
permit to:**

- ☐ increase regulatory efficiency
- ☐ provide multi-media review
- ☐ ensure effective enforcement



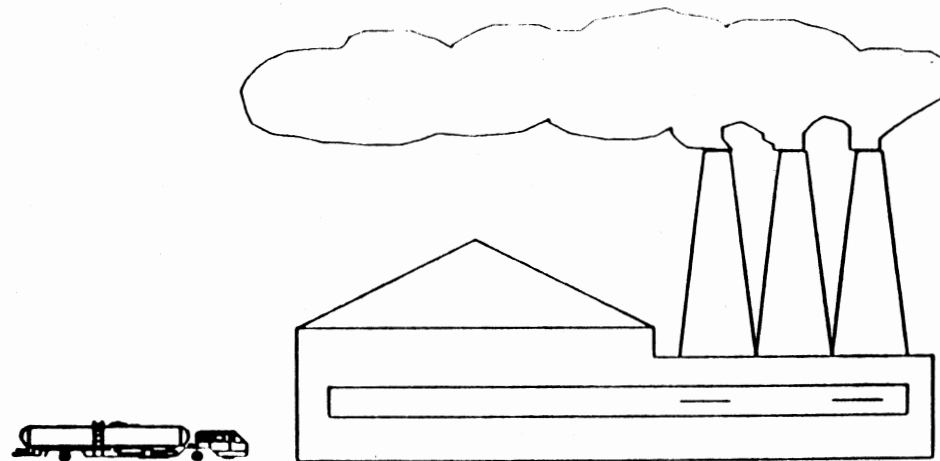
SUBJECT	BILL NO.	SPONSOR	SUMMARY/STATUS
HW Minimization;	SJR042	Gagliano	Memorializes Congress and EPA to simplify RCRA permit procedure. (Introduced 3/88).
	S3581	Dalton	The Pollution Prevention act. An act concerning pollution prevention and source reduction of hazardous substances. (Introduced 5/8/89).
	S2504	Lesniak	Provides for recycling and exchange of hazardous wastes. (Introduced 5/88).
	S2502	Gormley	Establishes technical assistance at NJIT program for multimedia hazardous waste minimization. (Introduced 5/88 Same as A3415, Shinn; introduced 6/88).
	S2037	Haines	Directs review of regulations in conflict with hazardous waste minimization. (Introduced 2/88).
	S1824	Dorsey	Exempts hazardous waste minimization equipment from property tax. (Introduced 1/88).
	S1721	Bassano	Creates the Office of Hazardous Waste Minimization and the Hazardous Substance Source Reduction Science Advisory Board. Appropriates \$1,000,000. (Introduced 1/88).
	S1476	McNamara	Provides for fast-track permitting for certain environmental permits. (Introduced 1/88).
	S0964	Hurley	Mandates a program to meet the needs of small quantity hazardous waste generators. Appropriates \$50,000. (Introduced 1/88).
	S0956	Hurley	Requires a permit for

SUBJECT	BILL NO.	SPONSOR	SUMMARY/STATUS
			toxic chemical discharge. (Introduced 1/88).
	S0528	Bubba	Establishes a program for systematic review of hazardous waste management practices by industrial establishments. Appropriates \$90,000. (Introduced 1/88). Note: Similar to "Environmental Audit Act", A3661 (Franks), 86/87.
	A3817	Kalik	Establishes Office of Hazardous Waste Minimization to promote multimedia hazardous waste minimization programs; appropriates \$800,000. (Introduced 10/88).
	A3721	Ogden	The Household Hazardous Waste Management Act. (Introduced 9/88. Released from AEQ 1/89.
	A2833	Farragher	Creates Rutgers Hazardous Waste Minimization Technical Advisory Program and Office of Hazardous Waste Minimization. (Introduced 3/88. S2260, Bassano, introduced 3/88).
	A2447	Hudak	Requires generators to report recyclable hazardous wastes and justify their disposal. (Introduced 2/88; passed Assembly 6/88, 73-1. Very similar to S2504, Lesniak, introduced 5/88.)
	AE144	Stuhltrager	Permits credit against CBT equal to certain costs of HW recycling & reduction equipment. (Introduced 1/88).
	A1822	Franks	The Environmental Audit Review Act. (Introduced 1/88).

SUBJECT	BILL NO.	SPONSOR	SUMMARY/STATUS
	A1624	Singer	Appropriates \$50,000 for Source Reduction and Recycling Task Force. (Introduced 1/88).
	A1337	Ogden	Directs DEP to establish a N.J. Chemical Waste Disposal Day Program to allow safe disposal of household chemicals. (Introduced 1/88).
	A1033	LoBiondo	Requires hazardous waste generators to submit minimization plans. (Introduced 1/88. S1955 introduced 1/88.)
	A1018	Collins	Exempts sales of hazardous waste minimization equipment from Sales and Use Tax Act. (Introduced 1/88. S1156 introduced 1/88.)
	A0617	Foy	Provides for a 100% credit against the CEF for hazardous waste minimization equipment. (Introduced 1/88).
	A0401	Kalik	Requires certification from generators of hazardous waste that hazards have been minimized as a condition of commercial disposal. (Introduced 1/88).
HW Minimization; Spill Fund;	A1988	Crecco	Authorizes use of Spill Fund for research on methods of recycling and detoxifying hazardous substances. (Introduced 1/88. Passed Assembly, 72-0, 9/88.)

**NEW JERSEY DEPARTMENT
OF ENVIRONMENTAL PROTECTION**

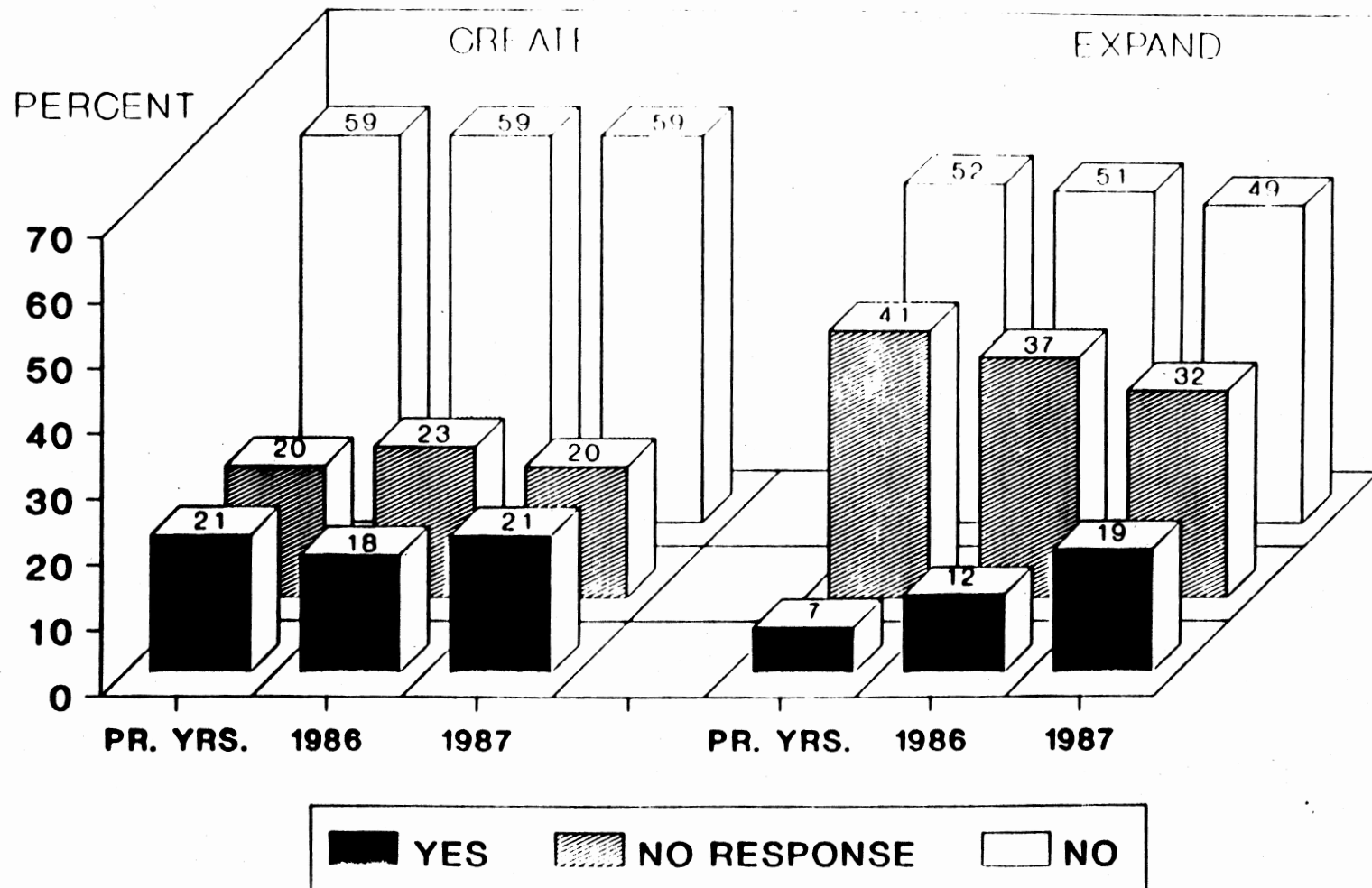
DIVISION OF HAZARDOUS WASTE MANAGEMENT



**HAZARDOUS WASTE GENERATOR
WASTE MINIMIZATION REPORT**

1 9 8 7

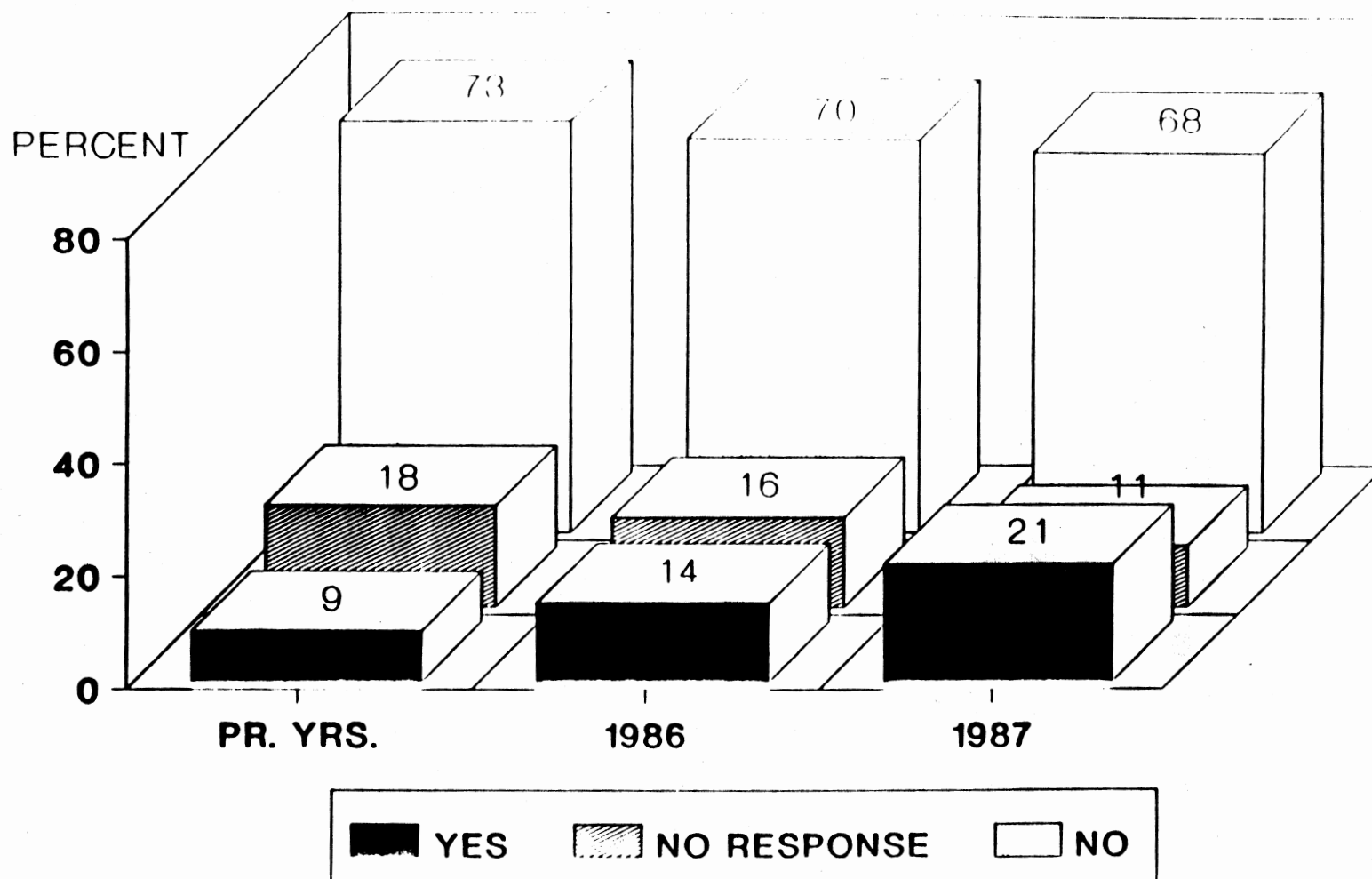
QUESTION 1: Did this site CREATE or EXPAND a source reduction and recycling program?



TOTAL: 3421 GENERATORS

QUESTION 2:

Did this site have a written policy or statement that outlined goals, objectives and methods for source reduction and recycling of hazardous waste?



TOTAL: 3421 GENERATORS

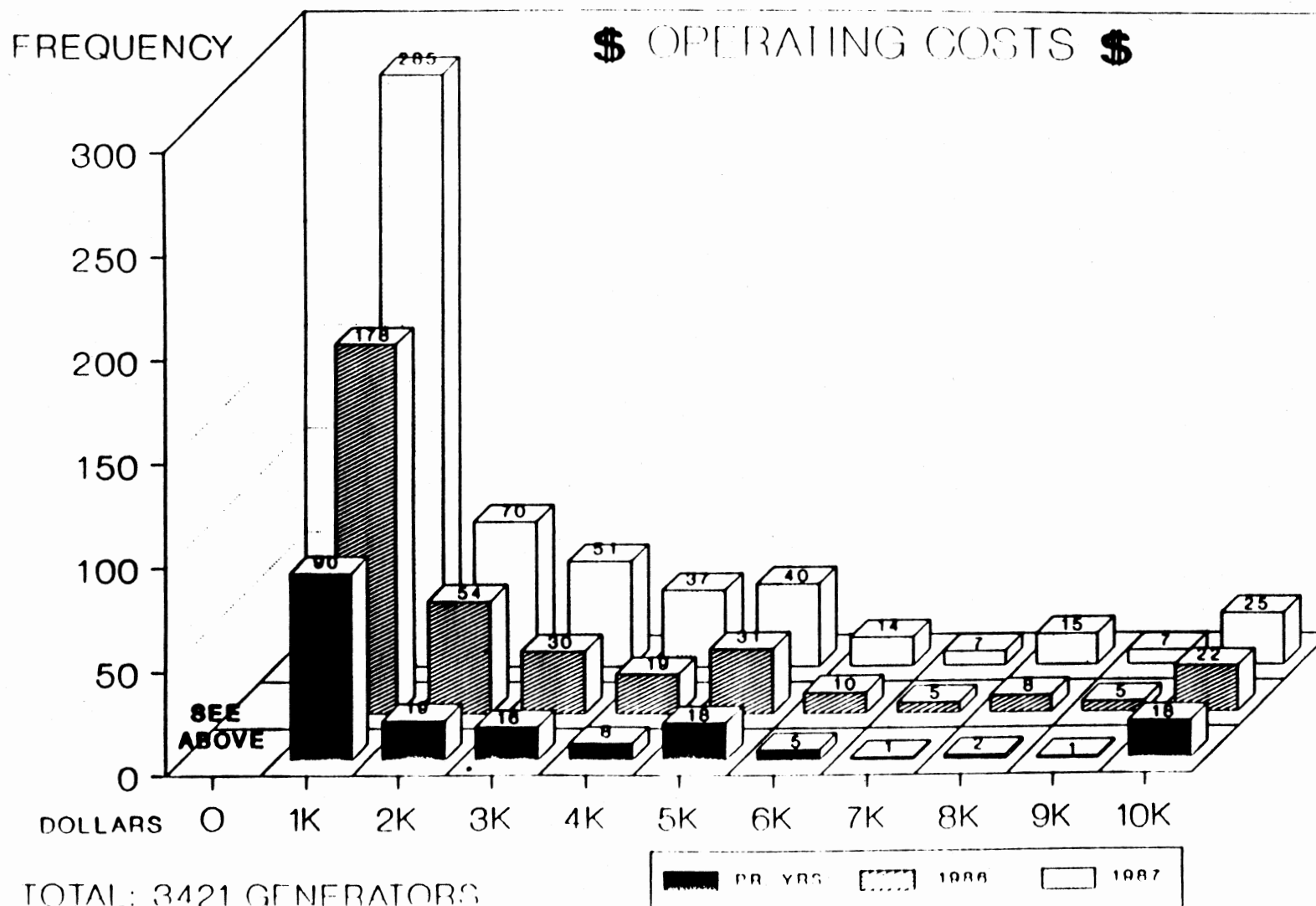
QUESTION 3: What was the dollar amount of operating costs devoted to source reduction and recycling of hazardous waste?

ZERO '0' TOTALS

PR YRS = 1317

1986 = 1261

1987 = 1227



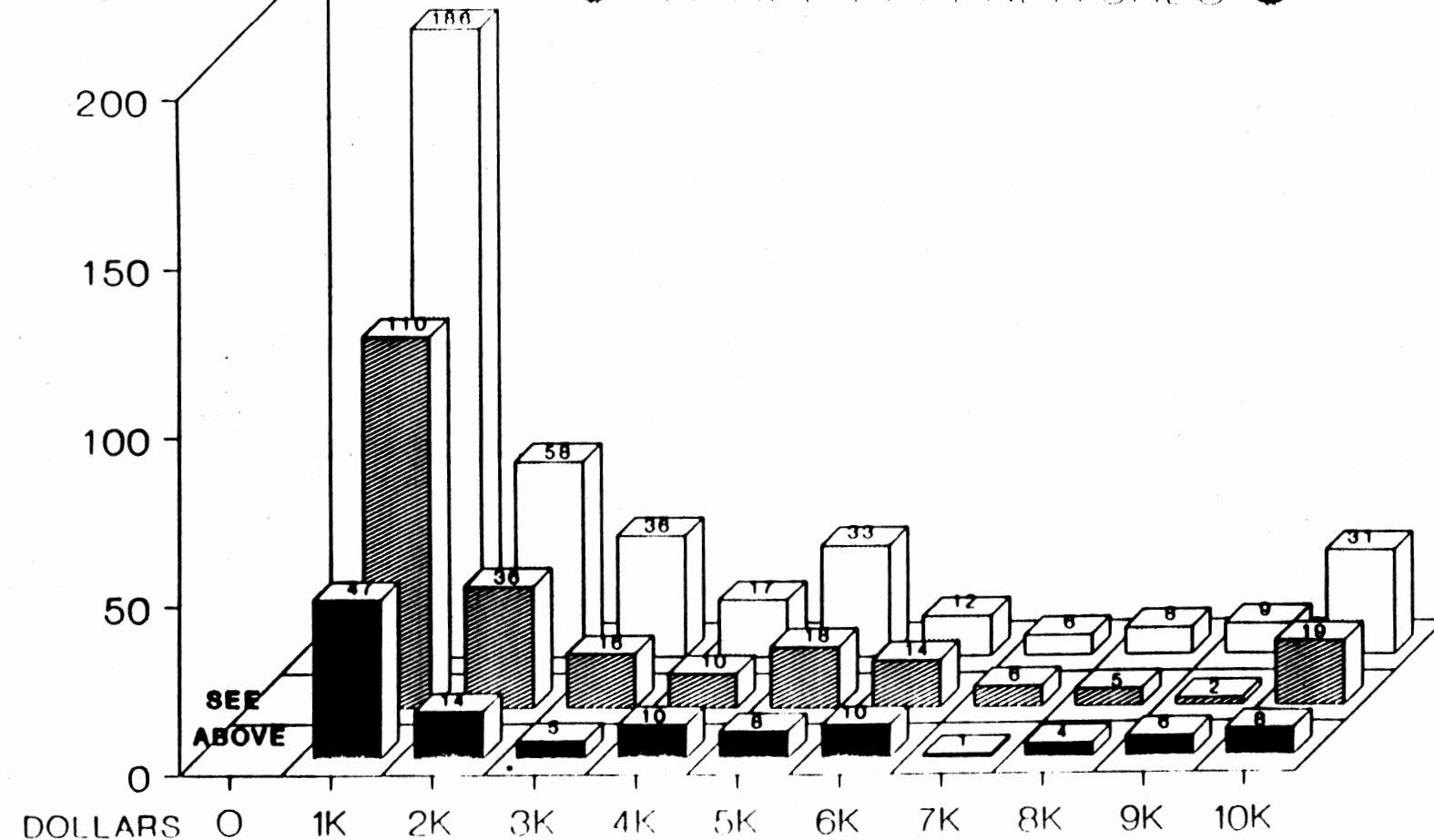
QUESTION 3: What was the dollar amount of capital expenditures devoted to source reduction and recycling of hazardous waste?

ZERO "0" TOTALS

PR YRS = 1481
1986 = 1493
1987 = 1515

FREQUENCY

\$ CAPITAL EXPENDITURES \$



TOTAL: 2421 GENERATORS



PR YRS



1986

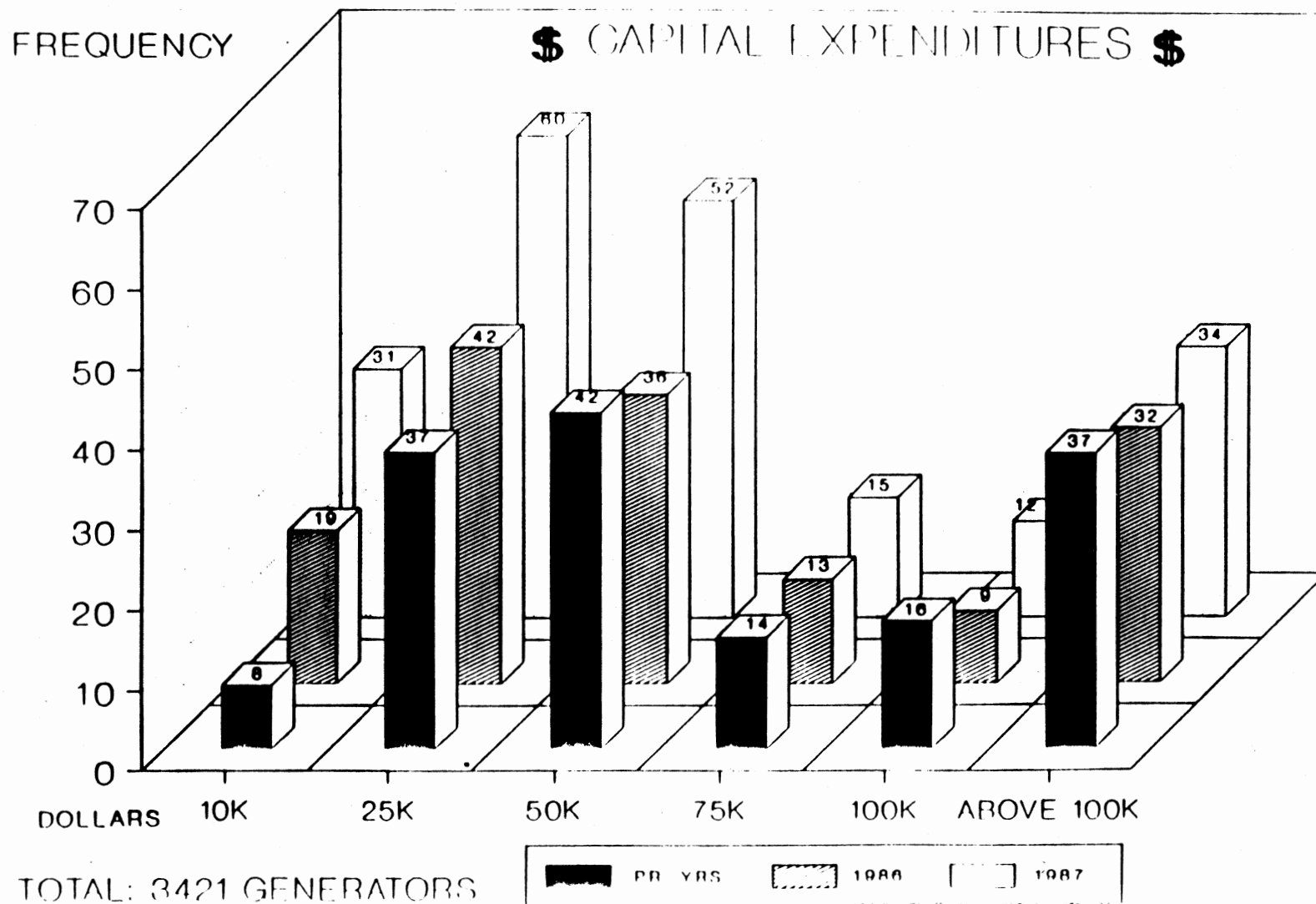


1987

QUESTION 3:

What was the dollar amount of capital expenditures devoted to source reduction and recycling of hazardous waste?

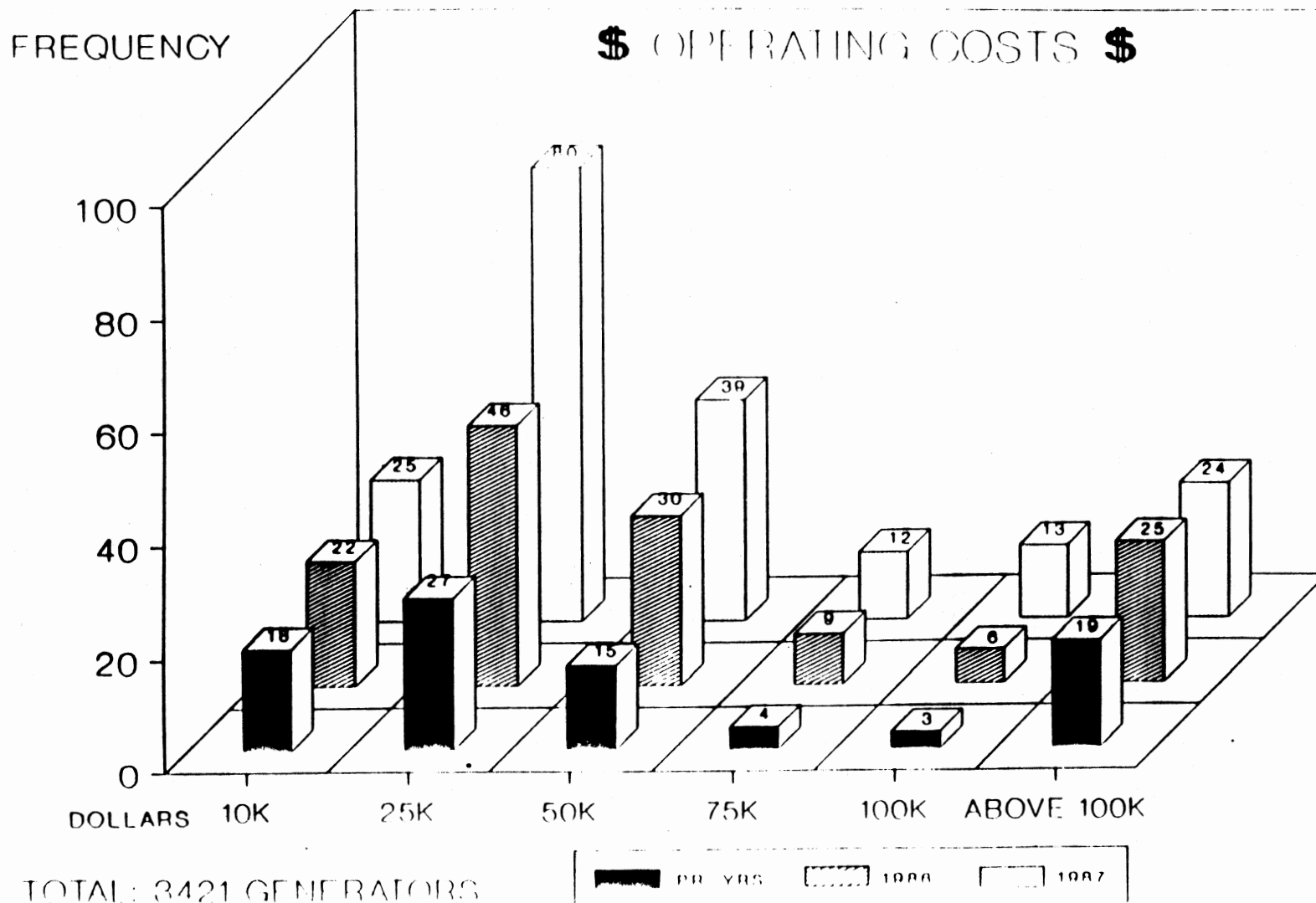
See previous capital expenditures graph for less than 10K



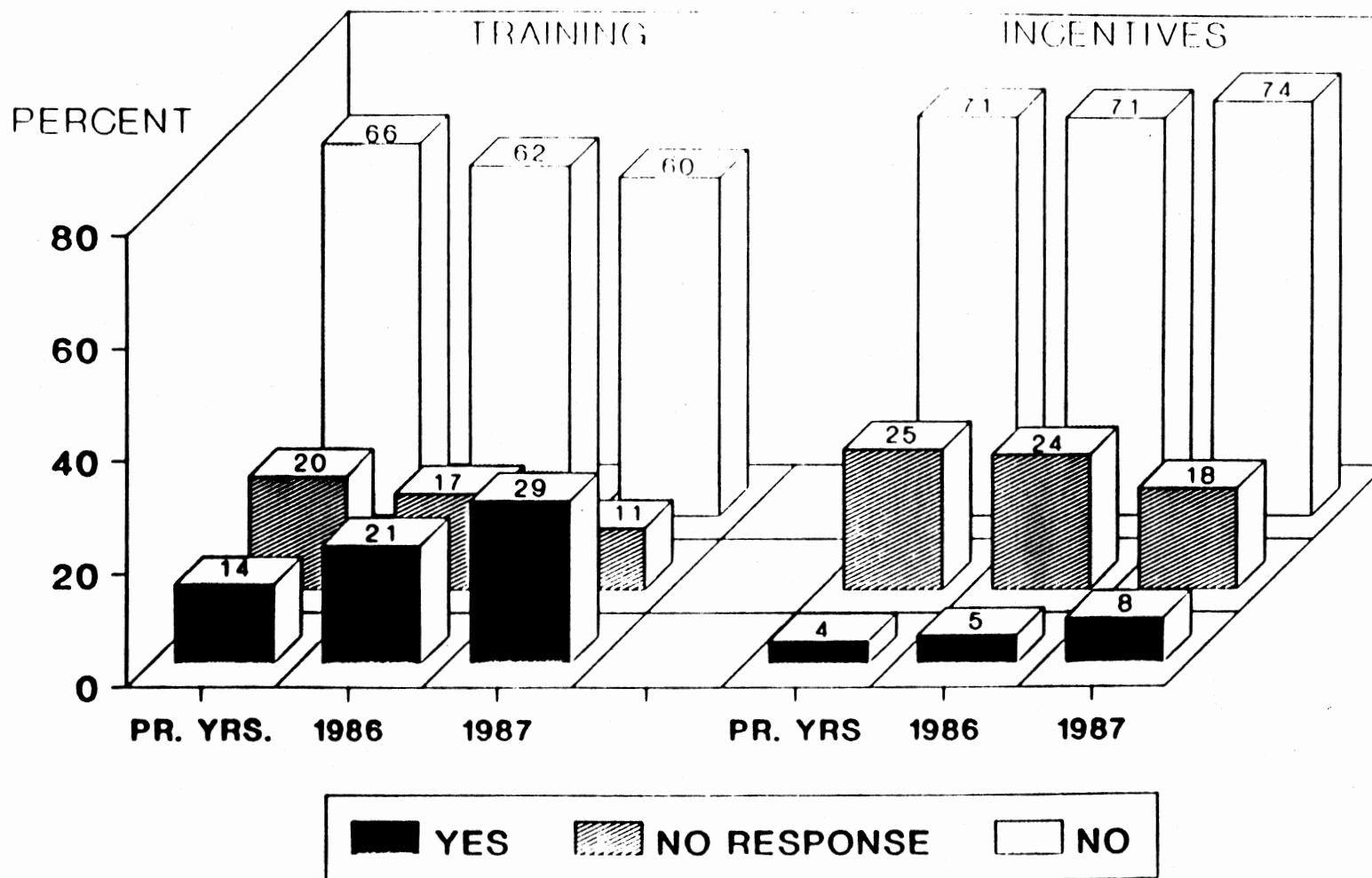
QUESTION 3:

What was the dollar amount of operating costs devoted to source reduction and recycling of hazardous waste?

See previous operating costs graph for less than 10K.

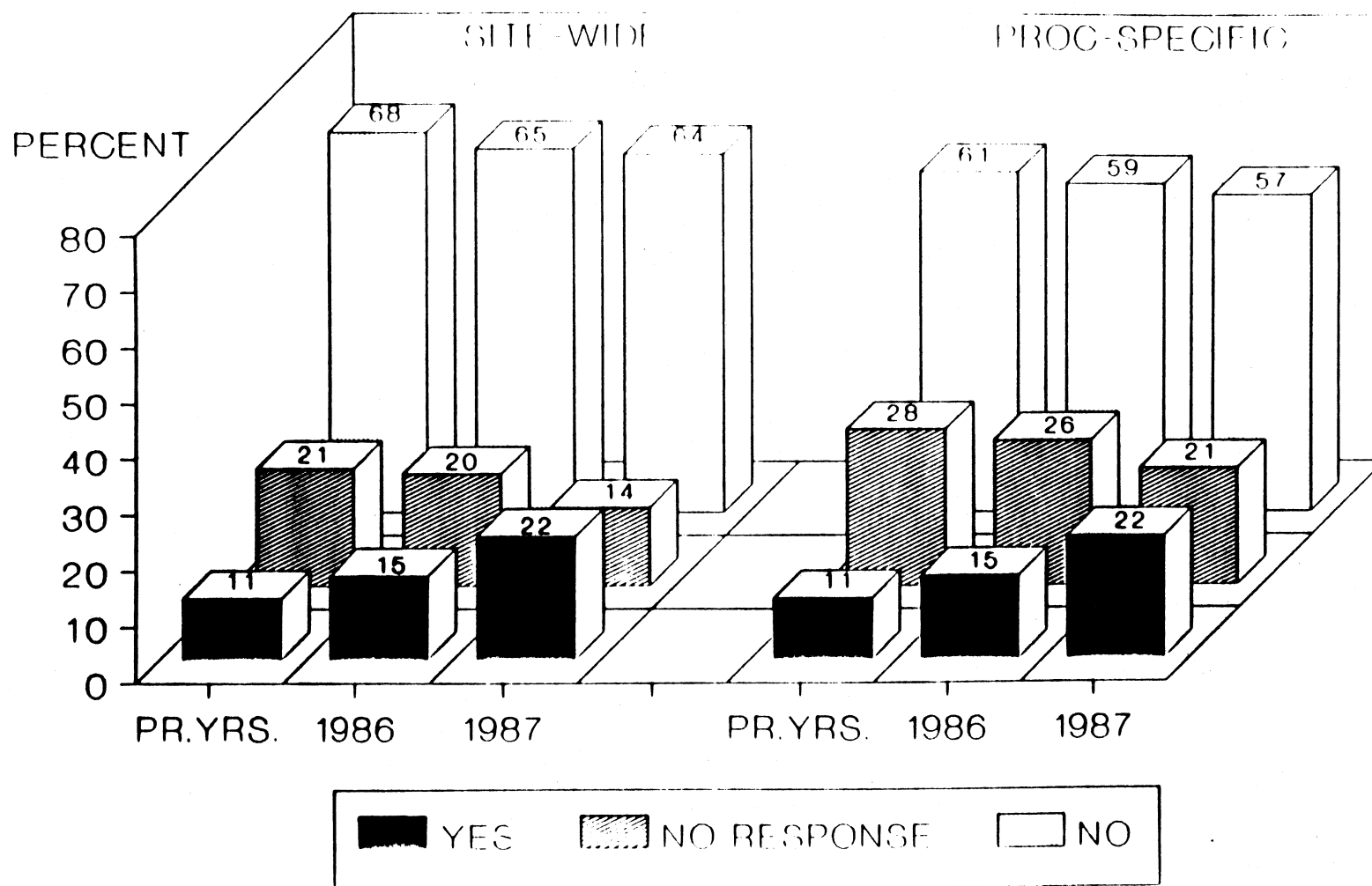


QUESTION 4: Did this site have an employee training program or provide incentives to identify and implement source reduction and recycling opportunities and activities?



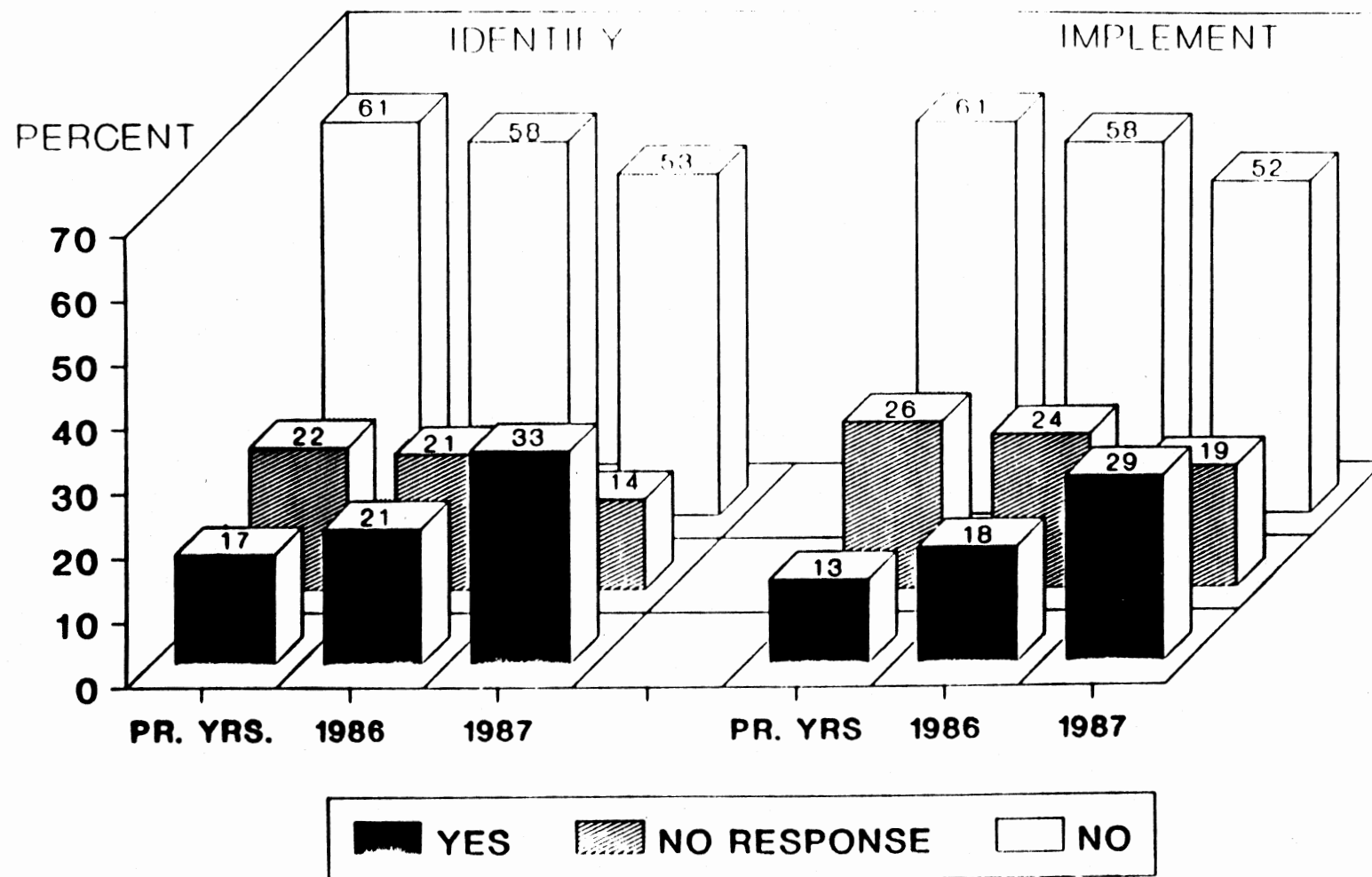
TOTAL: 3421 GENERATORS

QUESTION 5: Did this site conduct a source reduction and/or recycling opportunity assessment or audit?



TOTAL: 3421 GENERATORS

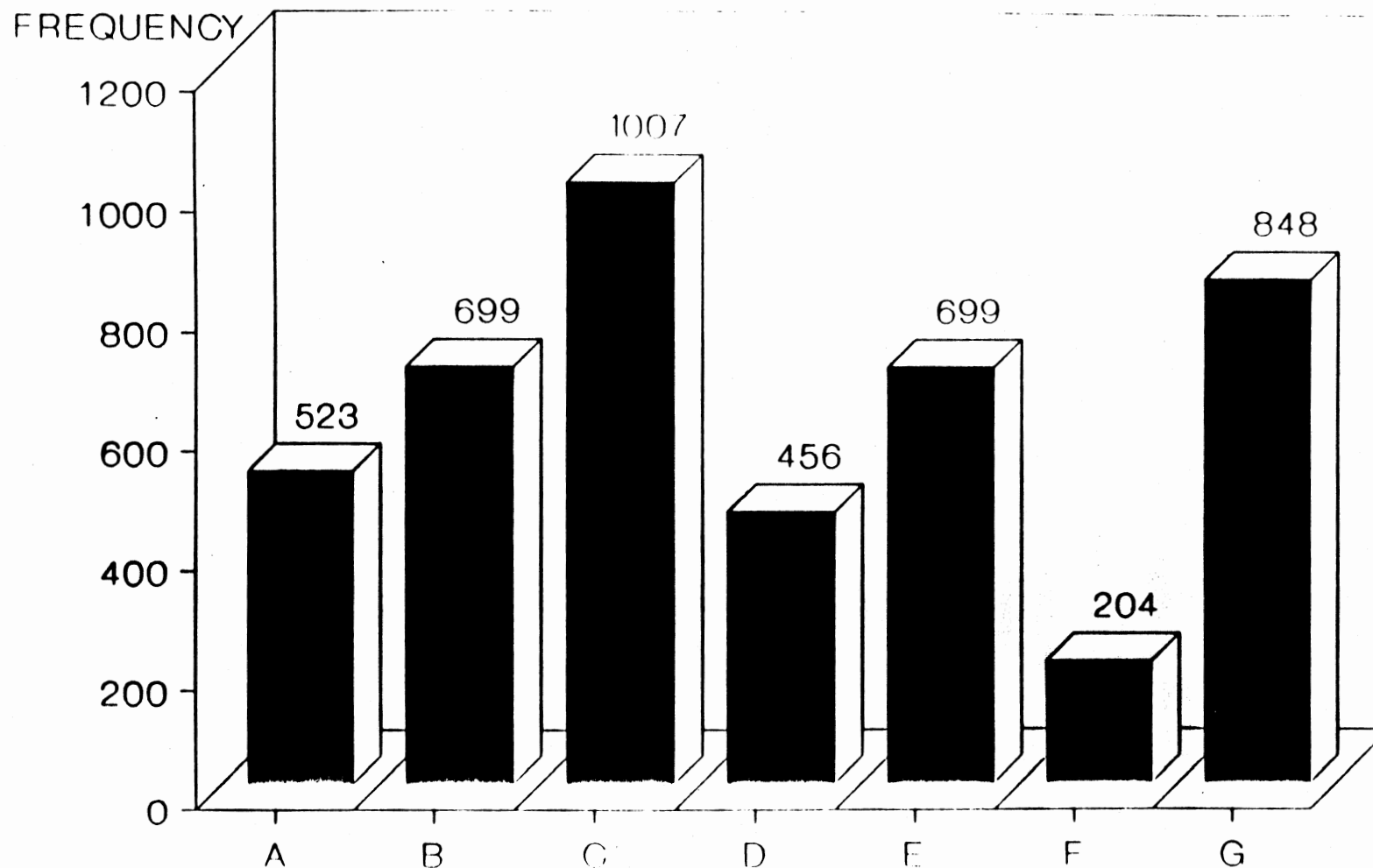
QUESTION 6: Did this site identify/implement new SOURCE REDUCTION opportunities to reduce the volume and/or toxicity of hazardous waste generated at this site?



TOTAL: 3421 GENERATORS

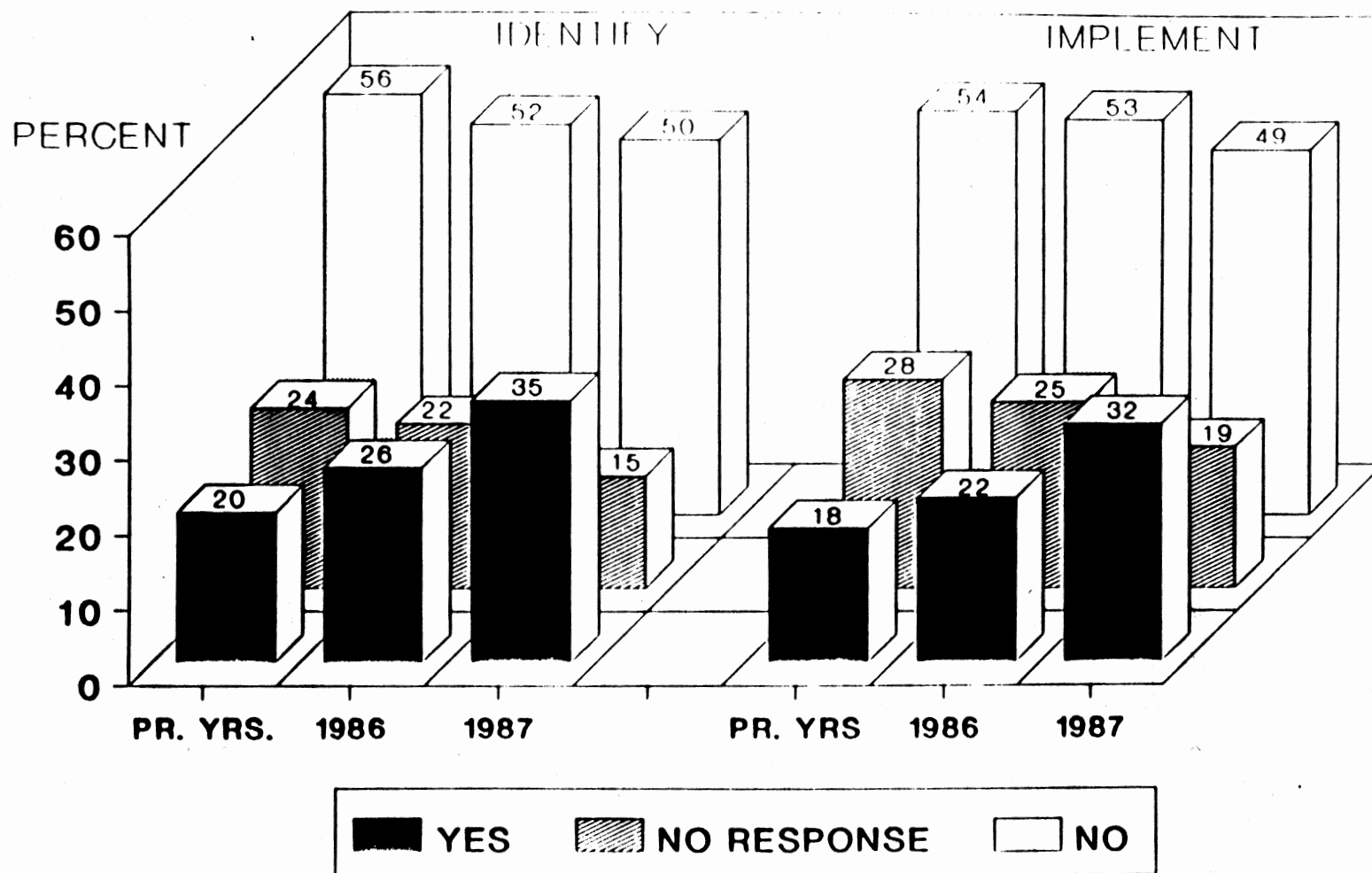
QUESTION 7: What factors have delayed or prevented implementation of "SOURCE REDUCTION" opportunities?

LEGEND	
A. Insufficient capital	F. Technical limitations
B. Lack of technical info	G. Permitting burdens
C. Not economic feasible	H. Other
D. Declining product quality	



TOTAL: 3421 GENERATORS

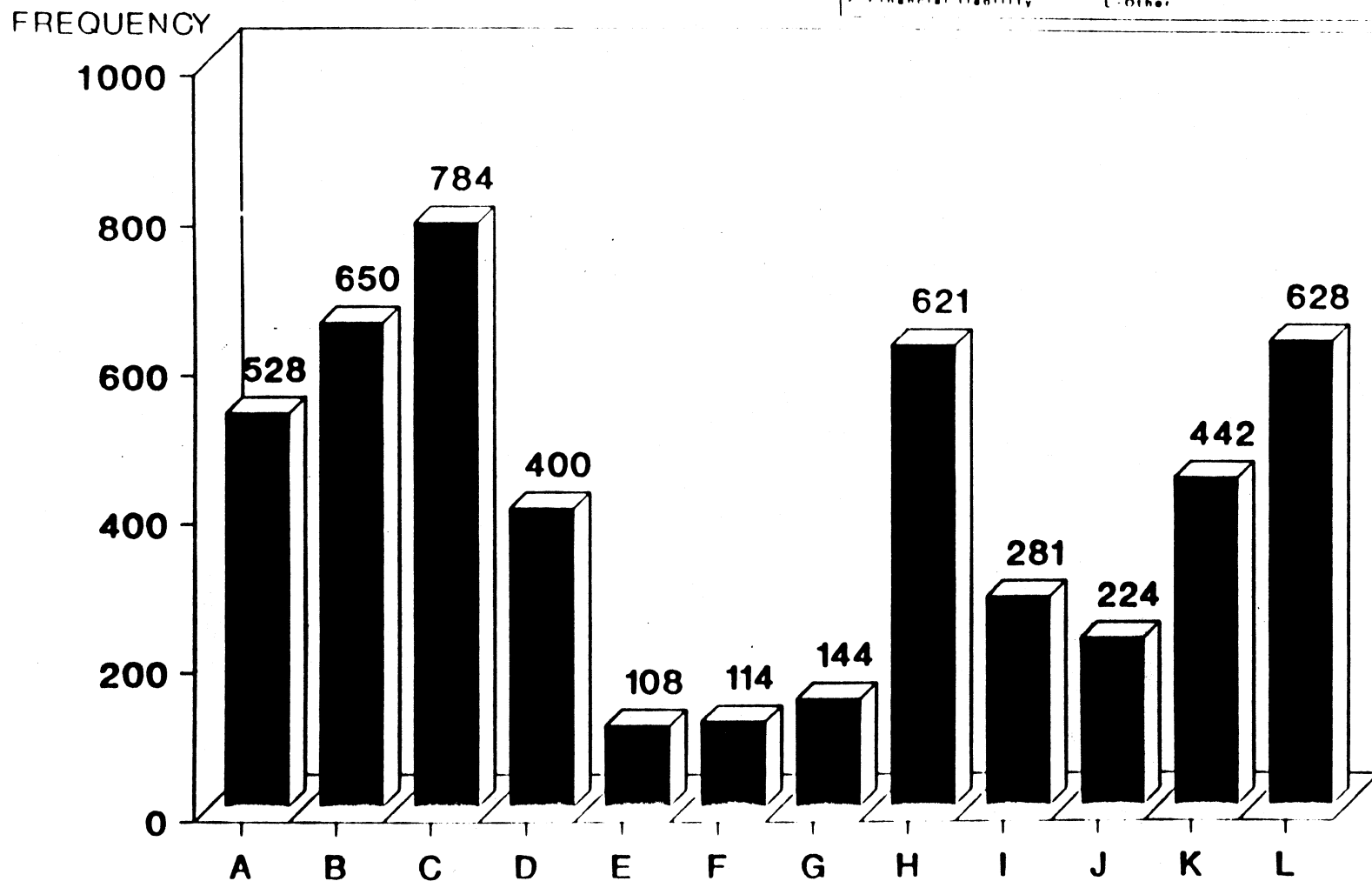
QUESTION 8: Did this site identify/implement new **RECYCLING** opportunities to reduce the volume and/or toxicity of hazardous waste generated at this site or subsequently treated, stored or disposed of on site or off site?



TOTAL: 3421 GENERATORS

QUESTION 9: What factors have delayed or prevented implementation of on-site or off-site RECYCLING opportunities?

LEGEND	
A. Insufficient capital	G. Techn. limits of product
B. Lack of techn. info	H. Techn. limits of production
C. Recycling not feasible	I. Permitting burdens
D. Declining prod. quality	J. Lack of off-site recy. facil.
E. Manifest requirements	K. No market
F. Financial liability	L. Other

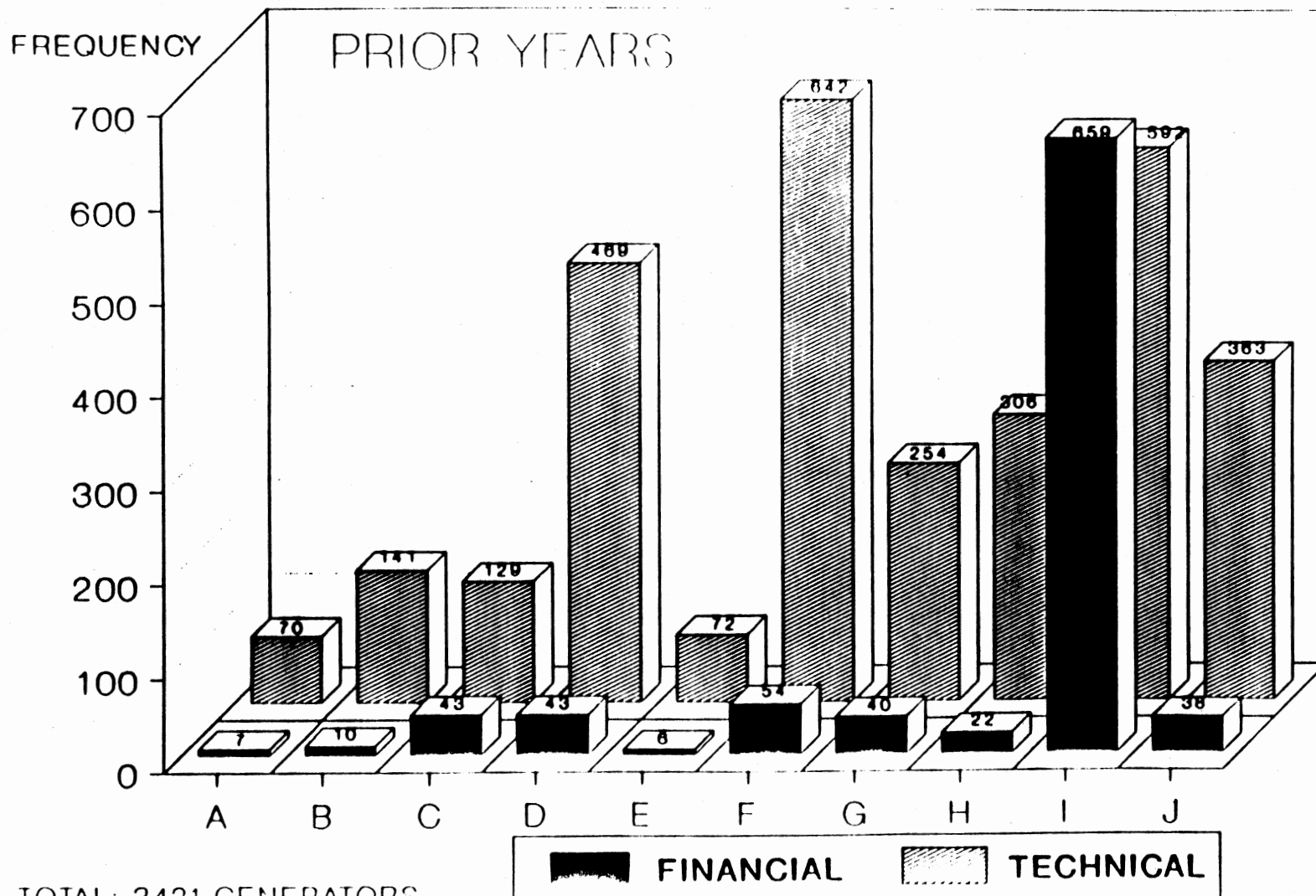


TOTAL: 3421 GENERATORS

QUESTION 10: Has this site requested/received technical/financial assistance on source reduction/recycling practices from any of the following sources?

LEGEND

A Local Govt	G-Other parts of firm
B State Govt	H-Other Firms/Consult
C Federal Govt	I No request made
D Trade Assoc	J-Other (conferences, literature, etc.)
F Educational Inst	
F Suppliers	



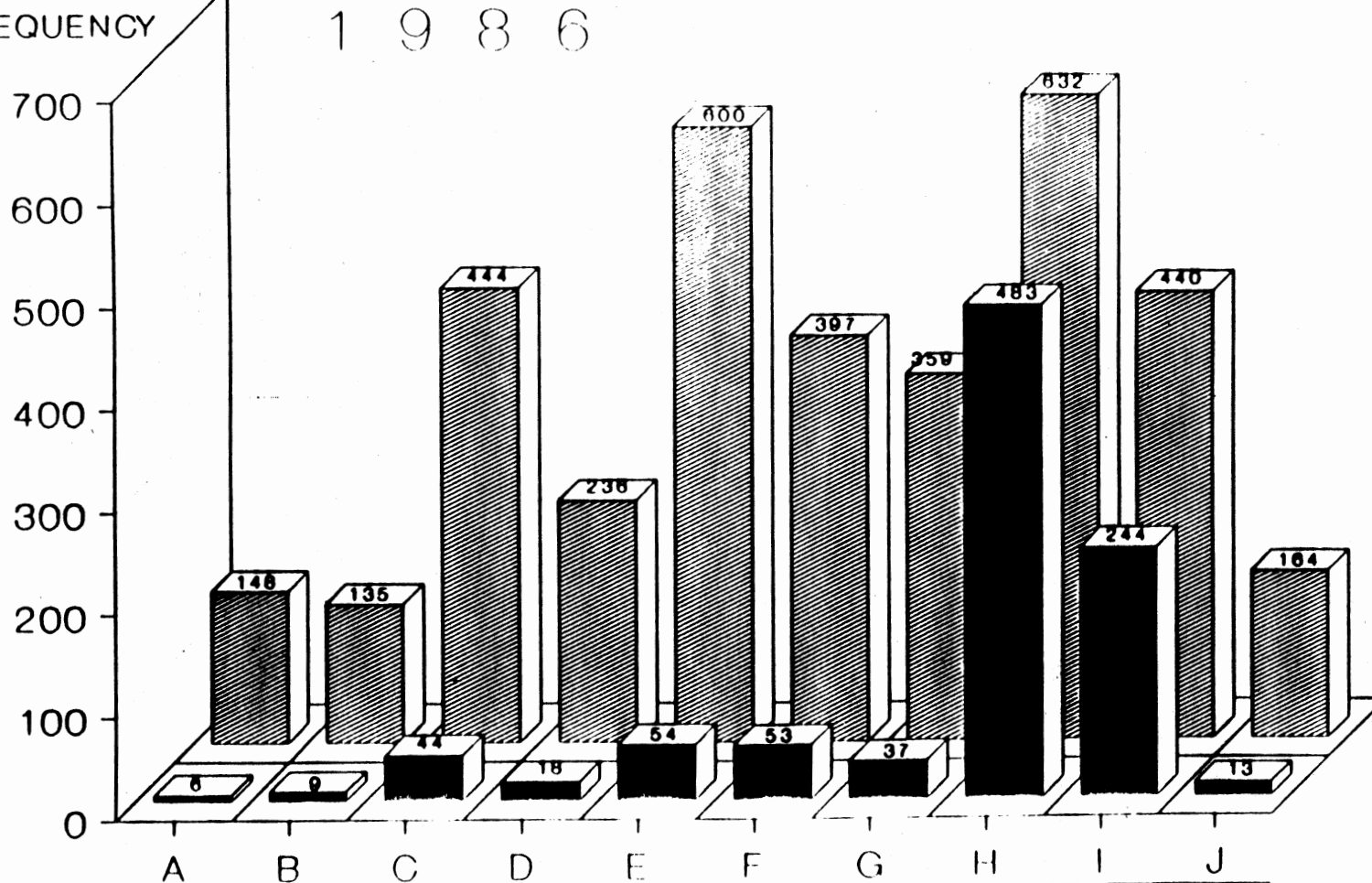
TOTAL: 3421 GENERATORS

QUESTION 10: Has this site requested/received technical/financial assistance on source reduction/recycling practices from any of the following sources?

LEGEND

A Local Govt	G Other parts of firm
B State Govt	H Other Firms/Consult
C Federal Govt	I No request made
D Trade Assoc	J Other (conferences, literature, etc.)
F Educational Inst	
F Suppliers	

FREQUENCY



TOTAL: 3421 GENERATORS

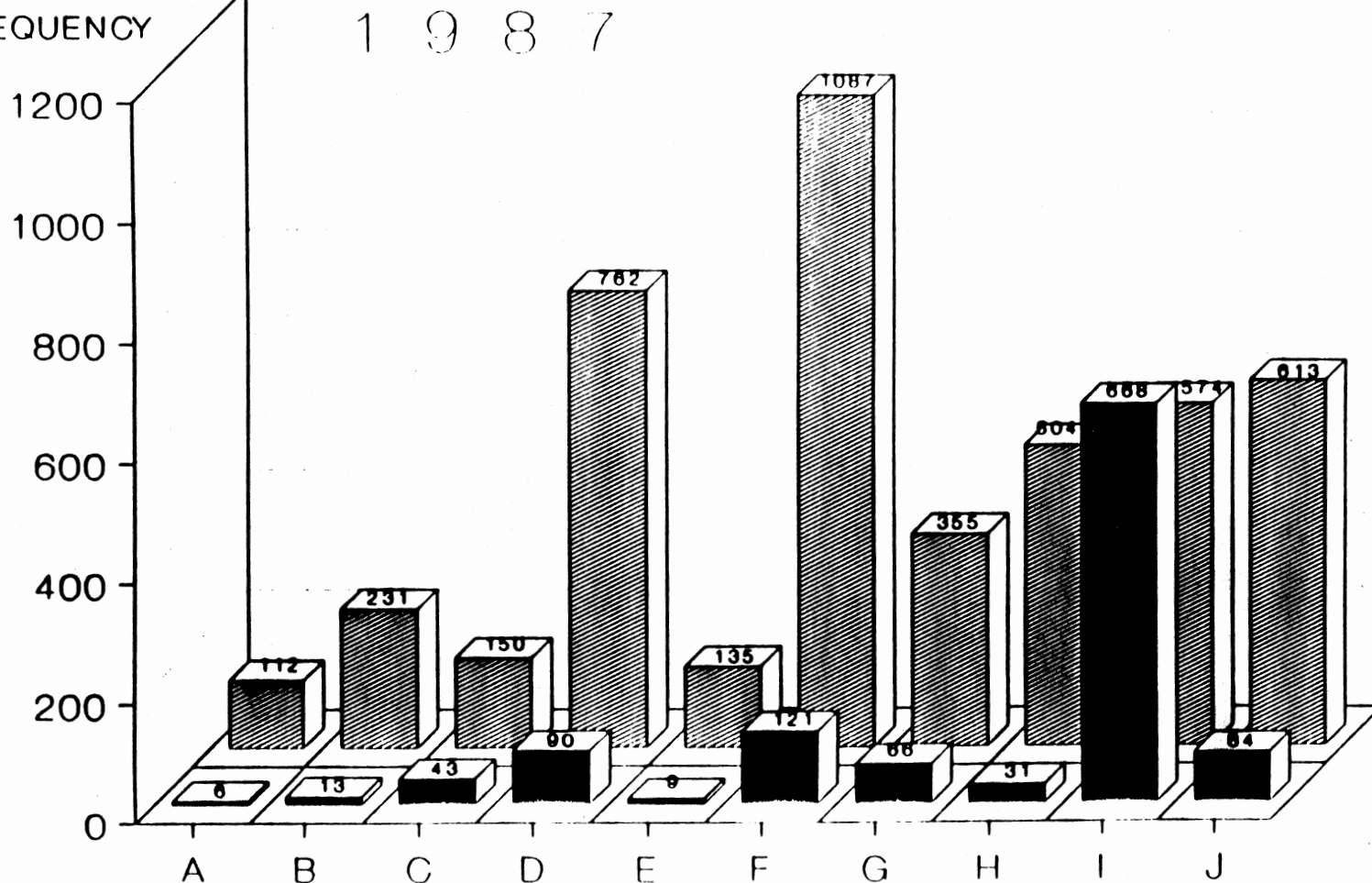
FINANCIAL **TECHNICAL**

QUESTION 10: Has this site requested/received technical/financial assistance on source reduction/recycling practices from any of the following sources?

LEGEND

A Local Govt	G Other parts of firm
B State Govt	H Other Firms/Consult
C Federal Govt	I No request made
D Trade Assoc	J Other (conferences, Literature, etc)
E Educational Inst	
F Suppliers	

FREQUENCY



TOTAL: 3421 GENERATORS



FINANCIAL



TECHNICAL

QUESTION 10: Has this site requested/received technical/financial assistance on source reduction/recycling practices from any of the following sources?

LEGEND	
A Local Govt	G-Other parts of firm
B-State Govt	H-Other Firms/Consult
C-Federal Govt	I-No request made
D-Trade Assoc	J-Other (conferences, literature, etc.)
E-Educational Inst	
F-Suppliers	

