New Jersey Department of Environmental Protection

NEW JERSEY INDUSTRIAL SURVEY

FINAL REPORT

Office of Science and Research

The New Jersey Industrial Survey Project
N.J.A.C. 7:1F
1979-1982

FINAL REPORT

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FOREWARD

Between 1979 and 1982, the New Jersey Department of Environmental Protection conducted the Industrial Survey Project. The goal of the project was to trace the fate and effect of toxic substances throughout the state. This report will aid the many requests NJDEP has received for an overall review of the Industrial Survey Project focusing on methods used to conduct the survey. This report is intended to address those requests and to also give a general summary of the major finding of the New Jersey Industrial Survey Project. Hopefully this report will provide guidance and suggestions to government agencies, lawmakers, and public interest groups considering similar programs.

The design and development of the Industrial Survey Project was conducted with the guidance of Dr. Michael Greenberg of Rutgers University and Dr. Judith Louis of the Office of Science and Research. This report was prepared with the assistance of the following staff members in the Office of Science and Research: Alan Bookman, William Mennel, Jack Schooley, and Barbara Sergeant. Special thanks are extended to Cindy Cox and Mary Jo Baker whose patience and diligence made preparation of this report possible.

NEW JERSEY INDUSTRIAL SURVEY

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EXECUTIVE SUMMARY
Final Report: New Jersey Industrial Survey Project

Prepared: July 1986

The Industrial Survey Project, conducted between 1979 and 1982 by the New Jersey Department of Environmental Protection (NJDEP) Office of Science and Research, was designed to identify the types and quantities of toxic substances used by manufacturing industries as well as to determine the fate and effects of these toxic substances in the environment. The final report summarizes the major findings of the Industrial Survey Project and the strategies used by NJDEP to conduct the survey.

By requiring industries to conduct a modified mass balance, the Industrial Survey sought to establish a statewide chemical inventory and to identify specific sites of potential toxic contamination. Recent interest on the part of other states and the federal government to conduct chemical inventories has heightened the national significance of the New Jersey Industrial Survey.

The New Jersey Project is considered to be one of the first and most successful attempts by any state to use a cross-media approach to assess toxic substance use and to design an effective mechanism to gather and analyze toxic substance data. The Project has provided information to virtually all regulatory programs of NJDEP. Site-specific information collected on the Industrial Survey formed the basis for major investigations of toxic contamination, such as the state's identification of dioxin contamination sites. The Industrial Survey provides a valuable cross-check for programs including the Toxic Catastrophe Prevention Act, the Environmental Cleanup and Responsibility Act, the New Jersey Pollution Discharge Elimination System permitting program and the state's role in implementing the Resource Conservation and Recovery Act. The Industrial Survey data has also been used to set research directions for the NJDEP Office of Science and Research by providing a baseline of information about toxic substance use and by identifying specific chemicals and pathways which pose potential risks to public health. In addition, the Industrial Survey database provides substantive support for the development of regulatory programs and legislation, including the New Jersey Safe Drinking Water Act. In a larger sense, the Industrial Survey Project laid the foundation for the development and implementation of the Community Right to Know Act which provides for the consistent performance of comprehensive chemical inventories in New Jersey.

The Industrial Survey was a research project and it must be stressed that there are certain limitations with the data collected that point to the need for an updated chemical inventory. However, all data included in this report is presented as reported by the respondants. Extensive efforts to field check and validate the reported data were undertaken by NJDEP. It should also be noted that, in some cases, industries may have modified the types or quantities of substances used or released by their facilities since the time of their Industrial Survey report.

Of approximately 15,000 industries surveyed, 6,595 responded and 1,312 reported using the chemicals included in the survey. The group of chemicals produced in the largest quantity in New Jersey is the aromatic hydrocarbons with toluene comprising 60 percent of the group total. The route through which the largest quantity of chemicals were released to the environment is stack emissions. Approximately 32 million pounds of aromatic hydrocarbons were reportedly released through stack emissions annually, more than 90 percent being toluene. Most industrial discharges to water were sent to publicly owned sewage treatment works. Inorganic compounds comprised 32 percent of the waste reported going to those plants. The largest amount of chemicals reportedly disposed of as waste belong to the Ethers, Epoxides, Aldehydes and Anhydrides group with Maleic Anhydride contributing more than 90 percent to the group total. With the exception of confidential business information, all data collected on the Industrial Survey was compiled in a computer database.

The results of the Industrial Survey raise several broader issues concerning the protection of public health and the environment. The Industrial Survey illustrates the need to use a cross-media approach to evaluate toxic substance contamination rather than regarding air, land and water as separate entities as many government agencies have done in the past. Also, the Industrial Survey clearly points out that the establishment of a comprehensive base of information is essential in order for issues regarding toxic substance contamination to be aggressively addressed. Using the Industrial Survey Project as an initiative, New Jersey has led the way nationally with applying an integrated approach to environmental protection. New Jersey's national influence is evidenced by the state's role in the Environmental Protection Agency's Integrated Environmental Management Division (IEMD) demonstration project as well as by the inclusion of a national chemical inventory in proposed Superfund Legislation which is based on the approach used in the New Jersey Industrial Survey and Community Right to Know Act.

New Jersey's integrated approach provides a better understanding of the processes, sources and exposures related to toxic substances. This understanding ultimately results in a more comprehensive assessment of human health risks and, in turn, leads to strategies that are more effective in solving toxic substance problems rather than utilizing historic approaches to environmental protection that generally resulted in transferring pollution from one medium to another. It is hoped that the Industrial Survey data will have broad applications for both researchers and regulators. In New Jersey, the cross-media evaluation of sources, exposures and risk forms the cornerstone for the Office of

Environmental Health Assessment (OEHA), a new initiative announced by Governor Kean in February 1986. The ultimate goal of OEHA, which is being integrated into the NJDEP Office of Science and Research, is to use cross-media strategies to better understand environmental and public health risks and to apply that understanding to improved decision making. In addition, OEHA will strive to more effectively communicate health risks to New Jersey's citizens in order to promote understanding of the environmental decision making process.

I. INTRODUCTION

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As in other states during the 1970's, New Jersey established a regulatory framework for limiting the emissions and discharges of certain pollutants into the air and water of the State. However, this regulatory framework provided New Jersey with little information on specific substances because both State and Federal permitting regulations controlled releases of classes of compounds, such as particulate matter or suspended solids, but not individual substances in most instances there was not State or Federal program to provide comprehensive information on the use and release of individual toxic chemicals.

Without information on specific chemical substances, it was difficult for the New Jersey Department of Environmental Protection (NJDEP) to regulate reducing the level of toxic substances released in the state and to correlate exposure to specific toxic substances with an increased disease risk.

In 1976, the NJDEP created the Toxic Substances Program, now the Office of Science and Research, to concentrate on understanding the link between exposure to contaminants and disease and to recommend ways to lessen exposure to harmful agents. The need for information about specific substances was evident to the Toxic Substances Program and, as a result, NJDEP initiated a regulatory program to survey industries throughout the State.
The Industrial Survey was conducted without specific legislative mandate; regulations governing the project were based on the broad powers of the Department (N.J.A.C. 7:1F-1.1 et. seq.)

The general objectives of the Industrial Survey Project were:

1. To establish a database about the manufacture, use, storage, processing, formation, release, disposal and repackaging, in New Jersey of a group of chemical substances selected on the basis of their carcinogenicity or toxicity. Of special concern are especially those substances produced or used in large quantities in the State.

2. To identify areas of the State and population groups that are subject to an increased disease risk due to the exposure to cancer-causing substances and other toxic agents in the environment.

3. To use the database as support documentation for the study of methods aimed at reducing or eliminating the release of carcinogens and other toxic substances into the environment.

NJDEP convened an advisory board of representatives from industry, various divisions within NJDEP, other State agencies, and Rutgers University. This Industrial Advisory Board oversaw the development of the survey questionnaire and gave guidance on other aspects of the project, most notably, NJDEP's collection and management of Confidential Business Information.

II. SURVEY DEVELOPMENT

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The first steps in developing the Industrial Survey Project were to: compile a list of toxic substances for which to survey; select types of industries to survey; and develop a comprehensive survey form.

1. Selected Substance List:

When the Office of Science and Research (OSR) instituted the Industrial Survey, it compiled a list of 155 chemicals based upon suggestions from the Division of Water Resources, the Bureau of Air Pollution, the Bureau of Hazardous Waste, and the State Department of Health. Three major criteria were used to evaluate the chemicals for inclusion on the Selected Substances List:

1. Evidence of a chronic health effect such as carcinogenicity mutagenicity and/or teratogenicity;

2. Evidence of production in commerical quantities in the United States; and

3. The presence on EPA's Priority Pollutant List. The list is used extensively in environmental analysis and consists of 126 organic and inorganic compounds. (at that time, this list included 129 chemicals)

A few compounds that were no longer commerically produced were retained on the list (Kepone, DDT, PCBs) since past disposal practices were also being surveyed. The list of 155 chemicals compiled for use under the Industrial Survey Project was called The Selected Substance List (Appendix A). The Selected Substance List is subdivided into chemical groups and includes the Chemical Abstracts Services (CAS) number of each compound.

Companies were required to report any use of any quantities of the selected substances since no minimum reporting requirements were established.

Exempt from the survey were quantities of selected substances which were manufactured, used, formed or processed for purposes of scientific experimentation, analysis or chemical research (including research or analysis for product development), provided that such quantities of each substance were less than 1,000 pounds in a one-year period. Also exempted were quantities of selected substances present as impurities, without regard to why the substance in which such impurities were contained was produced, provided the concentration of selected substance present as impurity was less than 1% and the total amount of selected substance present as impurity was less than 1,000 pounds in a one-year period.

2. Covered Facilities:

NJDEP chose to focus the Industrial Survey on the manufacturing sector, where the bulk of toxic substances are used, and several other industry types that were known to handle a large amount of toxic substances. Employer coverage in the Industrial Survey was based on Standard Industrial Classification system developed by the federal government. The 15,000 facilities included in the Industrial Survey were those in SIC Major Group 22 through 39, inclusive (manufacturing industries); selected facilities in codes 46 through 49, inclusive (pipelines, transportation services, communication, and electric, gas and sanitary services); code 51 (wholesale trade, nondurable goods); and code 76 (miscellaneous repair services). In general, NJDEP sent surveys to facilities with more than 5 employees. NJDEP identified names and addresses of companies in covered SIC codes by using the State's existing unemployment insurance file, the most complete listing of employers available at that time.

3. Requested Information

The questionnaire developed for use in the Industrial Survey Project is called the Selected Substance Report (Appendix B). NJDEP designed the Selected Substance Report to allow easiest possible completion by participating facilities. The Advisory Council and Rutgers University provided excellent guidance in reviewing the Selected Substance Report for clarity. NJDEP concluded that it was essential to collect the following information:

1. Plant location, number of employees and general use of selected substances;

2. Operations at the plant involving each selected substance, the raw materials used and the products manufactured;

3. Selected substances released into the atmosphere and the quantities released;

4. Selected substances released into waste disposal streams, disposal methods and sites, waste disposal technology employed, and previous disposal practices;

5. Selected substances in the wastewater streams, treatment prior to discharge, and quantities discharged to POTWs; and

6. Information on other points of release of the selected substances.

In short, the Selected Substance Report required facilities to conduct a modified "materials balance" for each Selected Substance at the facility. A materials balance traces the quantities of a substance entering an industrial process as well as the amount of the substance leaving the facility as a waste, final product, or through environmental releases. Yet, the Industrial Survey was not necessarily a "true" materials balance because selected substances could conceivably have been counted in more than one of the categories

for reporting throughput quantities. Throughput quantities are amounts of the substance brought on-site, maintained as inventory at the facility and shipped off-site as (or in) a product. Industrial survey respondents were required to supply actual figures in their report when quantities could be determined from existing records or testing. If respondents were unable to supply actual figures, they were required to supply estimates, using information from engineering estimates, process materials balance studies, field tests made by the plant, equipment manufacturers, or government agencies.

One question included in the Selected Substance Report does not directly relate to a materials balance but provided NJDEP with information that proved to be very valuable in subsequent projects. Question 15 asks facilities to identify previous disposal sites of hazardous substances either on-site or off-site. As discussed later in this report, information submitted under this question provides NJDEP with a basis for identifying previously utilized hazardous waste sites.

4. Enforcement Provisions:

Having effective enforcement provisions can dramatically affect the impact of an environmental regulatory program. Although the enforcement provisions included in the Industrial Survey Regulations (Appendix C. -7:1F-1.7) address non-compliance on the part of industry, the regulations did so by placing the burden of proof on the part of the state. The steps that the enforcement provisions require the State to take include: offering the facility an informal opportunity to comply with the regulations; calling on the facility to comply in writing; issuing an order requiring compliance with specific citations of non-compliance; commencing civil action; bringing court action for civil penalty of up to $10,000.

5. Confidential Business Information:

Provisions related to industry claims of confidential information N.J.A.C. subchapter 2(7:1F-2.1) allow NJDEP to accept such confidential information while preventing disclosure of such information to the public. The regulations require any facility claiming information to be of trade secret value, proprietary or related to national security to submit two Selected Substance Reports to NJDEP. One submitted report was to include the confidential information while the other should not. The Industrial Survey regulations N.J.A.C. subchapter 2, (7:1F-2.3) require NJDEP to review confidentiality claims to determine the validity of the company's request. The NJDEP must treat confidentiality requests as confidential unless the Department determines the information is not entitled to such treatment. NJDEP is to use criteria in the Industrial Survey regulations to review confidentiality claims (N.J.A.C. 7:1F-2.4) and must inform the company requesting confidentiality if it determines information does not require confidential treatment. Access to the survey report containing confidential information is limited to certain, designated NJDEP employees or other people specified in writing by the Commissioner.

The regulations also stipulate that although the confidential information may be included in data cumulations, it may not be included in such reports that may disclose the nature of the specific confidential information. (N.J.A.C., Subchapter 2, 7:1F-2.2)

6. Employer Assistance:

NJDEP provided facilities with assistance in completing the Selected Substance Report. Facilities were encouraged to call the Toxic Substances Program to obtain aid in completing surveys. NJDEP received requests on a number of aspects of completing the survey including interpreting questions, explaining requirements, and answering technical questions about the Selected Substance List.

After surveys were returned, NJDEP technical staff reviewed them for accuracy. This technical review assured the reliability of information to be included in the database. In some cases NJDEP staff telephoned facility representatives to verify information or, in other cases, on-site audits were conducted. On-site audits consist of a tour of the process facilities and property along with interviews with pertinent staff, such as engineers, plant managers, etc. NJDEP inspectors record results of the audit on an "audit form". In most instances, figures for air and wastewater discharges were revised or updated as a result of the audit. Also, the audit process at times resulted in identification of illegal discharges and/or waste disposal practices. These findings were referred to the appropriate regulatory agencies. If facilities were requested to submit additional information in writing, they were given and additional 30 days to do so.

III. DATABASE DEVELOPMENT

IV. RESOURCES

III. DEVELOPMENT OF A DATABASE

The Toxic Substances Program chose to enter the information obtained by the Industrial Survey onto a data system called RAMIS (Rapid Access Management Information System). RAMIS uses nonprocedural language and permits a wide variety of integration techniques with the data. These two factors were major considerations in the choice of this particular system. Information from the Selected Substance Reports can be stored indefinitely, until needed for the generation of reports. RAMIS has the capability of providing data in a variety of formats, including tables and graphs. The Industrial Survey Project was the first within NJDEP to use the RAMIS data system and it proved so successful that the Department subsequently purchased the data system for Department-wide use. In 1979, NJDEP did not have adequate capabilities to develop a database as large as RAMIS. The Department, therefore, contracted the establishment of the database to the Department of Urbon Planning and Community Development of Rutgers University in New Brunswick.

Due to space limitations, facilities reporting small quantities of selected substances were not entered into the database. Therefore, the database and this report reflect trends of hazardous substance use among large quantity generators at the time of the survey.

IV. RESOURCES

The Industrial Survey was initiated in 1978 with a $55,000 grant awarded to NJDEP from the U.S. EPA. The majority of this funding was used to finance a contract with Rutgers University for establishing the database. In 1979, NJDEP conducted the mailing of Selected Substance Reports to 15,000 companies. NJDEP estimates that the cost of printing and mailing these surveys was approximately $30,000. An additional TSCA grant of $85,000 was received by NJDEP in 1979 to establish a monitoring, analysis, and site audit program to verify and supplement information obtained under the Survey Project. In 1980, a majority of the Industrial Survey data was entered into the RAMIS database, costing approximately $30,000. Maintenance and access charges for this database currently costs NJDEP approximately $5,000 annually.

During the course of the Industrial Survey Project, NJDEP generally maintained a professional staff of 3 to 4 people. Personnel funding was partially covered by monies received under the TSCA grants. Additional State appropriations were sought to fund additional staffing positions.

V. SUMMARY OF SURVEY RESULTS

V. RESULTS OF THE INDUSTRIAL SURVEY

A. Toxic Substance Use:

NJDEP sent Selected Substance Reports to approximately 15,000 facilities included in SIC Codes 22-39 and certain facilities in SIC codes 46-49, 51, and 76. NJDEP mailed surveys in a random phased approach to allow processing and follow-up of surveys to be done in a consistent manner. 6,595 companies or 44 percent of those surveyed responded to the survey. However, this response rate does not include companies that did not receive surveys because they were out-of-business or had moved, which NJDEP expects accounts for at least 2,000 companies. The response rate would thus be adjusted to approximately 50 percent. Of the 6,595 companies submitting reports, 1,312 or 20 percent are producers or users of Selected Substances. 3,806 or 58 percent are non-users or non-producers of Selected Substances. The remainder of companies responding (22 percent) identified themselves as being out of business.

TABLE 1
RESPONSE RATE

SURVEYS MAILED	RESPONSE	USERS	NON-USERS	OUT OF BUSINESS
15,000	6,595 (44%)	1312 (20%)	3,806 (58%)	22%

Of the 6,595 companies responding to the Industrial Survey, companies in 80 locations requested confidentiality of their throughput quantities. This is approximately 6 percent of Selected Substance users. Approximately 25 percent of these requests were ruled invalid by NJDEP. The facilities listed in Appendix H claimed confidential business information for items requested on the Selected Substance Report. (See Section II.5.) As demonstrated in Appendix H, 70 percent of the 80 facilities claiming confidential buisness information are included in the SIC Major Group 28, Chemical Manufacturing. In addition, the list of companies claiming confidential business information includes some of the largest chemical manufacturing facilities in the State. In compiling the Industrial Survey data, it became apparent that firms with confidential requests accounted for the bulk of the total reported throughput quantity. More than 30 of the 112 Selected Substances reportedly used or produced in New Jersey are produced and/or purchased by only one company. Therefore, in order to comply with the Confidential Business provisions of the regulations, it is necessary to report the data summaries of the Industrial Survey Project in quantity ranges and in a form that will not allow people outside of the Department to deduce details of the confidential business information.

Of the 155 substances on the Selected Substance List, 43 were not reported at all in the Industrial Survey. (See Table 3) Of the 112 remaining substances, production and use were greatest, but not confined to, the following groups: aromatics hydrocarbons, halogenated alkanes and alkenes, phenols and phthalates. (See Table 3) These substances were found mainly in the chemical manufacturing industry. The major production group is the aromatic hydrocarbons which also comprises the bulk of selected substances purchased by companies in New Jersey. Most notable in the aromatic hydrocarbons group are the production and usage rates of benzene and toluene.

The second largest production group by volume consists of ethers, epoxides, aldehydes and anhydrides. This is primarily due to large scale production of formaldehyde and maleic anhydride. A third major production group is the phthalates, primarily due to production of bis (2-ethylhexyl) phthalate, butyl benzyl phthalate and dibutyl phthalate. The group of nitro compounds comprises the fourth largest production, mainly due to the production of nitrotoluenes used in organic chemical synthesis and production of synthetic dyes. Finally, the halogenated alkanes and alkenes are the fifth largest group of chemicals produced in New Jersey. Manufacture is mainly in the form of methyl chloride, and trichlorofluoromethane.

Throughput data is highlighted in the four tables which follow (Table 3,4,5 and 6). Each table examines for each of the 14 chemical groups one of the four throughput parameters: statewide production rates; statewide purchase rates; statewide shipped off site levels; and statewide maximum inventory. The tables also identify the Selected Substance(s) which contributes most to the group total and the percentage of the group total which that individual Selected Substance(s) comprises. In addition, the tables illustrate the overall total of Selected Substances reported in each throughput parameter and the 3 chemical groups which contribute the greatest to each parameter's total.

It must be noted that in these tables selected substances are reported in throughput parameters (amount produced, amount purchased, amount shipped off-site, maximum inventory) are reported in inventory ranges according to requirements of the Industrial Survey Project discussed in the body of this report. Hence, all percentages are given in pairs. The first percentage number is the minimum range which the individual chemical or chemical group comprises and the second is the maximum range.

All quantities are reported in pounds and the following abbreviations are used in the tables:

T = Thousand
M = Million
B = Billion

In reporting maximum inventories of Selected Substances, companies were required to indicate the maximum quantity of the

TABLE 2

SELECTED SUBSTANCES NOT REPORTED ON INDUSTRIAL SURVEY * (43)

CAS NO.	SUBSTANCE NAME	GROUP NO.	RETAINED ON EHSL
75-27-4	Dichlorobromomethane	1	
540-59-0	1,2-Dichloroethylene	1	
78-87-5	1,2-Dichloropropane	1	X
542-75-6	1,3-Dichloropropylene	1	X
87-68-3	Hexachlorobutadiene	1	
77-47-4	Hexachlorocyclopentadiene	1	X
75-35-4	Vinylidene Chloride	1	X
534-52-1	4,6-Dinitro-O-Cresol	2	
88-06-2	2,4,6-Trichlorophenol	2	
91-58-7	2-Chloronapthalene	3	
13654-09-6	Polybrominated Biphenyls (PBBs)	3	
1264-23-8	Polychlorinated Triphenyls (PCTs)	3	
542-88-1	Bis (2-Chloromethyl) Ether	5	
1462-53-5	Diepoxybutane	5	
57-57-8	B-Propiolactone	5	
57-14-7	1,1-Dimethyl Hydrazine	6	X
75-55-8	Propyleneimine	6	
55-18-5	N-Nitrosodiethylamine	7	
62-75-9	N-Nitrosodimethylamine	7	
138-89-6	p-Nitrosodimethylaniline	7	
156-10-5	p-Nitrosodiphenylamine	7	
60-35-5	Acetamide	8	
55-21-0	Benzamide	8	
92-87-5	Benzidine	8	
309-00-2	Aldrin	9	X
133-90-4	Cloramben	9	
510-15-6	Chlorobenzilate	9	
50-29-3	DDT	9	
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	9	
60-57-1	Dieldrin	9	
72-20-8	Endrin	9	
76-44-8	Heptachlor	9	X
2385-85-5	Mirex	9	
82-68-8	Quintozene (PCNB)	9	X
61789-48-2	Strobane	9	
156-62-7	Calcium Cyanamide	11	
7440-28-0	Thallium	11	
79-46-9	2-Nitropropane	12	X
60-11-7	C.I.Solvent Yellow 2	13	
6358-53-8	Citrus Red No. 2	13	
2602-46-2	Direct Blue 6	13	X
10300-74-0	Direct Brown 95	13	
3564-09-8	Ponceau 3R	13	

*does not include confidential data

Retained on EHSL are those Selected Substances that were included on the Right to Know Environmental Hazardous Substance List.

substance stored or used of the facility at any time during the reporting year. As indicated in Table 6, the three chemical groups which comprise the greatest portions of the statewide maximum inventory total are the aromatic hydrocarbons, the inorganics and the halogenated alkanes and alkenes. The maximum inventory of toluene comprises more than half of the aromatic hydrocarbons total. Copper and lead each comprise approximately 43 percent of the maximum inventory of inorganics and carbon tetrachloride comprises 46 percent of the halogentated alkanes and alkenes group total.

The table included in Table 7 lists the total non-confidential maximum inventories of Selected Substances reported by industries under the covered Standard Industrial Classification (SIC) codes In addition, the table identifies the single Selected Substance which was reported in the greatest quantity for each SIC code as well as the quantity and percent of the SIC group total which that Selected Substance comprises.

Total maximum inventories in 11 SIC codes or Major Groups exceed one million pounds annually. Seven of the 11 are under the SIC major group 28, chemicals and Allied Products. The 11 groups are:

2819 - Manufacture of industrial inorganic chemicals
2821 - Manufacture of plastics materials, synthetic resins, and nonvulcanizable elastomers
2833 - Manufacture of medicinal chemicals and botanical products
2842 - Manufacture of specialty cleaning, polishing, and sanitation preparations
2851 - Manufacture of paints, varnishes, lacquers, enamels, and allied products
2865 - Manufacture of coal tar crudes, chemical intermediates, dyes and organic pigments
2869 - Manufacture of industrial organic chemicals
29 - Petroleum Refining and Related Industries
30 - Rubber and Miscellaneous Plastics Products
33 - Primary Metal Industries
42 - Motor Freight Transportation and Warehousing

The largest inventory of Selected Substances was reported by SIC major group 42: Motor Freight Transportation and Warehousing. More than 107 million pounds of Selected Substances were reported by industries in this SIC group and 74 percent of that inventory total is Phenol. Manufacturers in the Petroleum refining and related industries (SIC 29) maintain the second greatest inventory of Selected Substances, almost 95 million pounds. More than 60 percent of that total is toluene. Industries in assorted SIC codes under the Major Group 28 reported the third greatest inventory of Selected substance, more than 39 million pounds is the Major Group's total. Primary metal industries (SIC 33) reported the fourth greatest inventory of Selected Substances with copper comprising 96 percent of the appromiately 34 million pounds reported as the SIC group total. Lastly, the fifth greatest inventory of Selected Substances was reported by Industries

TABLE 3

SUMMARY OF PRODUCTION TOTALS AND LARGEST CONTRIBUTORS FOR EACH CHEMICAL GROUP

GROUP NO. and NAME	TOTAL AMT PROD	LARGEST CONTRIBUTOR
1 - Halogenated Alkanes & Alkenes	20 M - 102 M	Trichlorofluoromethane 49% Methyl Chloride 49%
2 - Phenols	600 T - 2 M	2,4-Dimethylphenol 75%
3 - Halogenated Aromatics	1 M - 5 M	Decabromodiphenyl Oxide 98%
4 - Phthalates	155 M - 610 M	Bis(2-ethylhexyl)phthalate 74%
5 - Ethers, Epoxides Aldehydes & Anhydrides	110 M - 550 M	Formaldehyde 91%
6 - Imines, Nitriles, and Hydrazines	100	Hydrazine 100%
7 - Nitroso Compounds	50 T - 100 T	N-Nitrosodiphenylamine 100%
8 - Amides and Amino Compounds	3 M - 15 M	C-Napthylamine 33% Aniline 33% MOCA 33%
9 - Pesticides	5 M - 10 M	Toxaphene 100%
10 - Aromatic Hydrocarbons	710 M - 2 B	Toluene 60%
11 - Inorganics	2 M - 7 M	Lead 64%
12 - Nitro Compounds	60 M - 160 M	2,4-Dinitrotoluene 75%
13 - Dyes	631 T - 1 M	Direct Black 38 62%
14 - Miscellaneous	10 M - 50 M	Phosgene 100%
TOTAL	1 B - 3.5 B	

3 CHEMICAL GROUPS CONTRIBUTING MOST TO PRODUCTION TOTAL

First - Aromatic Hydrocarbons 66% - 58%

Second - Phthalates 14% - 17%

Third - Ethers, Epoxides, Aldehydes & Anhydrides 10% - 15%

TABLE 4

SUMMARY OF PURCHASE TOTALS AND LARGEST CONTRIBUTORS
FOR EACH CHEMICAL GROUP

GROUP NO. and NAME	TOTAL AMT PURC	LARGEST CONTRIBUTOR
1 - Halogenated Alkanes & Alkenes	270 M - 1 B	Carbon Tetrachloride 38% Vinyl Chloride 38%
2 - Phenols	111 M - 555 M	Phenol 90%
3 - Halogenated Aromatics	62 M - 170 M	Chlorobenzene 72%
4 - Phthalates	13 M - 72 M	Bis(2-ethylhexyl)Phthalate 64%
5 - Ethers, Epoxides, Aldehydes & Anhydrides	80 M - 251 M	Propylene Oxide 51%
6 - Imines, Nitriles, and Hydrazines	1 M - 6 M	Acrylonitrile 91%
7 - Nitroso Compounds	0	--
8 - Amides and Amino Compounds	6 M - 12 M	Aniline 85%
9 - Pesticides	6 M - 14 M	Captan 76%
10 - Aromatic Hydrocarbons	752 M - 2 B	Toluene 57%
11 - Inorganics	223 M - 1 B	Copper 46% Lead 46%
12 - Nitro Compounds	1 M - 5 M	Nitrobenzene 100%
13 - Dyes	189 T - 776 T	C.I. Disperse Yellow 3 59%
14 - Miscellaneous	10 M - 51 M	Asbestos 98%
TOTAL	1.5 B - 5.6 B	

3 CHEMICAL GROUPS CONTRIBUTING MOST TO PURCHASE TOTAL

First - Aromatic Hydrocarbons 49% - 38%

Second - Halogenated Alkanes and Alkenes
17% - 23%

Third - Inorganics 15% - 19%

TABLE 5

SUMMARY OF OFF-SITE SHIPPING TOTALS AND LARGEST CONTRIBUTORS
FOR EACH CHEMICAL GROUP

GROUP NO. and NAME	TOTAL OFF-SITE	LARGEST CONTRIBUTOR
1 - Halogenated Alkanes & Alkenes	143 M - 386 M	Trichlorofluoromethane 31% Vinyl Chloride 31%
2 - Phenols	101 M - 501 M	Phenol 99%
3 - Halogenated Aromatics	3 M - 12 M	Decabromodiphenyl Oxide 39% 1,4-Dichlorobenzene 39%
4 - Phthalates	166 M - 666 M	bis(2-ethylhexyl)Phthalate 68%
5 - Ethers, Epoxides, Aldehydes & Anhydrides	116 M - 566 M	Formaldehyde 87%
6 - Imines, Nitriles, and Hydrazines	60 T - 150 T	Acrylonitrile 75%
7 - Nitroso Compounds	10 T - 50 T	N-Nitrosodiphenylamine 100%
8 - Amides and Amino Compounds	3 M - 11 M	α-Napthylamine 43% MOCA 43%
9 - Pesticides	11 M - 23 M	Captan 45% Toxaphene 45%
10 - Aromatic Hydrocarbons	1.2 B - 2 B	Toluene 66%
11 - Inorganics	321 M - 1.6 B	Copper 32% Lead 32% Nickel 32%
12 - Nitro Compounds	15 M - 61 M	2,4-Dinitrotoluene 75%
13 - Dyes	308 T - 1 M	Sudan I 34% C.I. Disperse Yellow 3 34%
14 - Miscellaneous	10 M - 50 M	Asbestos 99%
TOTAL	2 B - 6 B	

3 CHEMICAL GROUPS CONTRIBUTING MOST TO OFF-SITE TOTAL

First - Aromatic Hydrocarbons 58% - 35%

Second - Inorganics 15% - 27%

Third - Phthalates 8% - 11%

TABLE 6

SUMMARY OF MAXIMUM INVENTORY TOTALS AND LARGEST CONTRIBUTORS FOR EACH CHEMICAL GROUP

GROUP NO. and NAME	TOTAL MAX INV	LARGEST CONTRIBUTOR
1 - Halogenated Alkanes & Alkenes	24 M - 101 M	Carbon Tetrachloride 46%
2 - Phenols	11 M - 52 M	Phenol 96%
3 - Halogenated Aromatics	2 M - 12 M	1,2-Dichlorobenzene 47% Chlorobenzene 47%
4 - Phthalates	6 M - 13 M	Bis(2-ethylhexyl)Phthalate 83%
5 - Ethers, Epoxides, Aldehydes & Anhydrides	4 M - 16 M	Epichlorohydrin 30% Formaldehyde 30% Maleic Anhydride 30%
6 - Imines, Nitriles, and Hydrazines	201 T - 1 M	Acrylonitrile 49% Hydrazine 49%
7 - Nitroso Compounds	50 T - 100 T	N-Nitrosodiphenylamine 100%
8 - Amides and Amino Compounds	2 M - 7 M	Aniline 59%
9 - Pesticides	2 M - 12 M	Captan 41% Toxaphene 41%
10 - Aromatic Hydrocarbons	81 M - 251 M	Toluene 51%
11 - Inorganics	24 M - 118 M	Copper 43% Lead 43%
12 - Nitro Compounds	2 M - 7 M	2,4-Dinitrotoluene 61%
13 - Dyes	234 T - 845 T	C.I. Disperse Yellow 3 52%
14 - Miscellaneous	5 M - 10 M	Asbestos 98%
TOTAL	163 M - 601 M	

3 CHEMICAL GROUPS CONTRIBUTING MOST TO MAXIMUM INVENTORY TOTAL

First - Aromatic Hydrocarbons 50% - 42%

Second - Inorganics 15% - 20%

Third - Halogenated Alkanes and Alkenes 15% - 17%

in the SIC major group 30; manufacturers of Rubber and Miscellaneous Plastics Products. The total inventory for this group was more than 1.5 million pounds with vinyl chloride comprising 35 percent of the total.

Of SIC codes under Major Group 28, the greatest amount of Selected Substances are used by industrial organic chemical manufacturers. Of the more than 19 million pounds of Selected Substances used in this SIC group, 85 percent are due to the Formaldehyde inventory. Industries in SIC groups 2821 maintain the second greatest amount of Selected Substances, more than 8.5 million pounds annually. Benzene comprises 33 percent of that SIC group total. The maximum inventory of industries in SIC group 2865 is the third greatest in the State. The intermediates produced by manufactures in the SIC group include derivatives of benzene, toluene, napthalene and anthracene. Coal tar crudes include light oils products. A substantial number of Selected Substances are included in this SIC group's inventory and anthracene, which is the largest contributor to the SIC group's total, comprises only 14 percent of the total. Maximum inventories in four other SIC groups, 2819, 2833, 2942, and 2851, are all within the 1 to 2 million pounds range.

Toluene is the most commonly used Selected Substance. It was reported to be the greatest contributor in 10 different SIC groups. Lead is the second most commonly used Selected Substance, being reported as the greatest contributor in four SIC groups.

TABLE 7

TOTAL MAXIMUM INVENTORY* BY SIC CODE AND THE SELECTED SUBSTANCE IN EACH SIC CODE WITH THE GREATEST MAXIMUM INVENTORY

		GREATEST REPORTED SELECTED SUBSTANCE		
SIC	TOTAL MAX INV	NAME	QUANTITY	% OF TOTAL
20	266,460	Toluene	118,400	44
22	7,743	Tetrachlorethylene	5,200	67
23	15,000	Lead	15,000	100
24	7,374	Methyl Chloride	6,493	88
25	16,719	Toluene	10,164	61
26	48,177	Toluene	32,094	67
27	121,888	Lead	100,000	82
2811	5,000	1,1,1-Trichlor.	4,000	80
2813	2,000	Selenium	2,000	100
2815	256,758	Propylene Oxide	104,036	41
2816	686,487	Lead	292,777	42
2818	53,747	1,1,1-Trichlor.	27,410	51
2819	1,615,620	Antimony	1,355,000	84
2821	8,752,113	Benzene	2,900,000	33
2833	1,037,507	4-Nitrophenol	550,000	53
2834	941,197	Toluene	444,519	47
2841	242,058	PCB	90,694	38
2842	1,233,951	1,4-Dichlorobenzene	400,000	32
2843	410,754	Toluene	154,000	37
2844	342,942	Toluene	99,985	29
2850	15,950	Methyl Chloride	6,000	38
2851	1,876,737	Toluene	758,611	40
2865	5,322,351	Anthracene	764,975	14
2869	19,577,261	Formaldehyde	16,653,174	85
2874	710	2,4-D	710	100
2879	737,669	Captan	401,050	54
2891	337,009	Toluene	136,382	41
2892	31,608	Dibutyl Phthalate	19,680	62
2893	303,648	Lead	151,109	50
2898	7,600	Methylene Chloride	6,600	87
2899	846,543	Chromium	248,018	34
29	94,740,625	Toluene	59,978,700	63
30	1,738,936	Vinyl Chloride	606,400	35
31	10,823	Chromium	3,670	34
32	684,800	Asbestos	510,000	75

TABLE 7 (Cont.)

SIC	TOTAL MAX INV	GREATEST REPORTED SELECTED SUBSTANCE NAME	QUANTITY	% OF TOTAL
33	34,008,794	Copper	32,759,148	96
34	719,417	Zinc	154,063	21
35	263,393	Copper	96,667	38
36	798,881	Copper	253,565	32
37	242,448	Trichlroroethylene	157,224	65
38	159,350	1,1,1-Trichloroethane	91,020	57
39	205,779	1,1,1-Trichloroethane	59,862	29
42	107,468,653	Phenol	8,000,000	74
5698	19,766	PCB's	11,000	56
6731	60,575	Toluene	35,000	58

* Non-confidential data

B. ENVIRONMENTAL RELEASES:

Releases to the Air-

Air emissions were greatest for the group of aromatic hydrocarbons, with more than 30 million pounds of stack emissions and 1 million pounds of fugitive emissions released to New Jersey's air annually. The substances reportedly emitted to the air in the greatest quantities are benzene and toluene. A second large group emitted to the air are the halogenated alkanes and alkenes with more than 10 million pounds of combined stack and fugitive emissions. The largest quantities of emissions in this group are methylene chloride, methyl chloride, and trichlorofluoromethane. The group ethers, epoxides, aldehydes, and anhydrides is a third major source of air emissions with more than 600,000 pounds of fugitive and stack emissions being reported. It is expected that this is due to large-scale production of formaldehyde and maleic anhydride. Reported emissions to the air of inorganic substances, more than 300,000 pounds, mainly included lead, antimony, and zinc. The large emissions of lead are attributed to extensive activity of petroleum refineries in New Jersey. Other substances reportedly emitted to the air in large quantities include halogenated aromatics (Decabromodiphenyl oxide and chlorobenzene), phenols (mainly phenol), nitro compounds (2,4-DNT, and nitrobenzene) and miscellaneously grouped substances, most notably 49,000 pounds in stack emissions of phosgene. Tables 8 and 9 illustrate this data in the same format used for Tables 3-6.

TABLE 8

SUMMARY OF STACK EMISSIONS TOTALS AND LARGEST CONTRIBUTOR FOR EACH CHEMICAL GROUP

GROUP NO. and NAME	TOTAL STACK	LARGEST CONTRIBUTOR
1 - Halogenated Alkanes & Alkenes	6,931,750	Methyl Chloride 46%
2 - Phenols	97,650	Phenol 99%
3 - Halogenated Aromatics	215,011	Chlorobenzene 61%
4 - Phthalates	132,870	Bis(2-ethylhexyl)Phthalate 48% Diethyl Phthlate 45%
5 - Ethers, Epoxides, Aldehydes & Anhydrides	560,100	Maleic Anhydride 54% Formaldehyde 36%
6 - Imines, Nitriles, and Hydrazines	2,100	Acrylonitrile 95%
7 - Nitroso Compounds	0	---
8 - Amides and Amino Compounds	6,020	∝-Napthylamine 83%
9 - Pesticides	1,270	Carbaryl 87%
10 - Aromatic Hydrocarbons	32,226,320	Toluene 93%
11 - Inorganics	297,792	Lead 50% Antimony 44%
12 - Nitro compounds	27,680	Nitrobenzene 58% 2,4-Dinitrotoluene 41%
13 - Dyes	101	C.I. Vat Yellow 4 20%
14 - Miscellaneous	49,840	Phosgene 98%
TOTAL	40,548,504	

CHEMICAL GROUPS CONTRIBUTING MOST TO STACK EMISSIONS TOTAL

First - Aromatic Hydrocarbons 79%

Second - Halogenated Alkanes and Alkenes 17%

Third - Ethers, Epoxides, Aldehydes, & Anhydrides 1.4%

TABLE 9

SUMMARY OF FUGITIVE EMISSIONS TOTAL AND LARGEST CONTRIBUTORS
FOR EACH CHEMICAL GROUP

GROUP NO. and NAME	TOTAL FUGITIVE	LARGEST CONTRIBUTOR
1 - Halogenated Alkanes & Alkenes	3,792,701	Vinyl Chloride 34% Dichloromethane 21%
2 - Phenols	51,100	Phenol 98%
3 - Halogenated Aromatics	1,310	1,2-Dichlorobenzene 46%
4 - Phthalates	5,510	Bis(2-ethylhexyl)Phthalate 38% Butyl Benzyl Phthalate 36%
5 - Ethers, Epoxides, Aldehydes & Anhydrides	98,100	Formaldehyde 92%
6 - Imines, Nitriles, and Hydrazines	660	Acrylonitrile 92%
7 - Nitroso Compounds	0	---
8 - Amides and Amino Compounds	1,030	Aniline 97%
9 - Pesticides	2,191	Carbaryl 55%
10 - Aromatic Hydrocarbons	1,181,101	Toluene 76% Benzene 17%
11 - Inorganics	21,010	Lead 48% Zinc 33%
12 - Nitro Compounds	130	Nitrobenzene 100%
13 - Dyes	102	C.I. Disperse Yellow 3 20%
14 - Miscellaneous	1,050	Asbestos 76%
TOTAL	5,155,995	

3 CHEMICAL GROUPS CONTRIBUTING MOST TO FUGITIVE EMISSIONS TOTAL

First - Halogenated Alkanes & Alkenes 74%

Second - Aromatic Hydrocarbons 23%

Third - Ethers, Epoxides, Aldehydes, & Anhydrides 2%

Discharge to the Water -

Water discharges reported in the Industrial Survey were to Publically Owned Treatment Works (POTWs) and to surface waters. POTWs are municipal or regional wastewater treatment facilities. Under provisions of New Jersey Pollution Discharge Elimination System (NJPDES), operators of POTWs are required to monitor only the general nature and quantities of industrial wastes discharged into the POTW system. Discharges to surface waters are released directly to a body of water usually by an effluent pipe. Industries that release surface discharges are also required to comply with provisions of NJPDES.

More than 250,000 pounds of Selected Substances were reportedly discharged to surface waters annually (Table 10). Inorganics comprise a significant majority of total surface water discharges, 37 percent. Zinc and arsenic contribute the greatest amount to the total inorganic surface water discharges.

The bulk of wastewater discharges reported under the Industrial Survey were discharged to POTWs. POTWs are normally intended to treat sewage and household wastes. Treatment processes employed by POTWs are not generally efficient in removing many types of toxic substances. Yet, many industries are finding it cost effective to discharge their wastes to POTWs, rather than upgrade or construct new on-site treatment systems. This trend is demonstrated by the data presented in Table 11 and Appendix E.

More than 6.5 million pounds of selected substances were reportedly discharged to POTWs. Inorganics comprise 32 percent, the most significant portion of that total. The two groups phenols and Ethers, Epoxides, Aldehydes and Anhydrides each comprise 16 percent of the POTW discharge total. Individual substances that contribute significantly to POTW discharges are zinc, lead, phenol and Formaldehyde. (Table 11).

The listing of POTW discharges included in Appendix E illustrates that the most significant levels of selected substance discharge to POTWs was reported for the Middlesex County Sewage Authority and the Passaic Valley Sewage Commission. At the Middlesex County facility, Toluene POTW discharges comprise 46 percent of the 1,733,039 pounds total; Formaldehyde and methylene chloride comprise 23 and 14 percent of the total, respectively. At the Passaic Valley facility, POTW discharges of Phenol comprise 38 percent of the 1,871,580 pounds total; discharges of lead and chromium comprise 14 and 13 percent of the total, respectively.

The POTW information reported under the Industrial Survey was used to identify facilities included in a wastewater study conducted by the Office of Science and Research (OSR) between 1981 and 1983. This study focused on analyzing influents, effluents, and sludges for toxic substances. It formed the basis for an in-depth study initiated by OSR which used a multidisciplinary approach to determine the extent that toxic pollutants are discharged to representative New Jersey POTW facilities, and to further explore the fate and impact of the toxics.

This OSR study concluded that POTWs are a major source of priority pollutants in the environment. The study concluded that implementation of pretreatment programs along with the upgrading of existing treatment facilities is of utmost importance.

The information collected during OSR's POTW study correlates closely with the data collected from the Industrial Survey Project. The POTW study tested for priority pollutants in the following media influents; effluents; sludges; and ambient air near influent wastewater samples. Both influent and effluent analyses detected that volatile organic compounds and metals accounted for large majorities of the total priority pollutant concentration. In sludge samples, Benzene and Toluene were the volatile compounds detected most frequently and in the highest concentrations. Phthalate esters were the most frequently detected base/neutral compounds in final sludge and copper, lead, and zinc were the most frequently occuring metals and were also the metals found at the highest mean concentrations. As part of OSR's POTW study, air samples of volatile organic were taken near the influent wastewater sampling locations at three facilities. Analysis conducted during the study indicates that there are strong correlations between the air samples of volatile organics taken near influent wastewater and the volatile organics actually detected in the wastewater.

Two considerations must be kept in mind. First, the OSR POTW study determined that "comparison of influent and effluent concentrations revealed that the tested POTWs removed an average of 43 percent of the influent priority pollutants." Second, the data collected under the Industrial Survey Project is several years older than the POTW study data. Thus, the status of POTW discharges may have changed since the time when the Industrial Survey was conducted and direct correlations of the Industrial Survey and POTW study will have limitations.

TABLE 10

SUMMARY OF SURFACE WATER DISCHARGES TOTAL AND LARGEST CONTRIBUTORS FOR EACH CHEMICAL GROUP

GROUP NO. and NAME	TOTAL SUR WATER	LARGEST CONTRIBUTOR
1 - Halogenated Alkanes & Alkenes	31,930	Dichloromethane 31%
2 - Phenols	16,710	Phenol 79%
3 - Halogenated Aromatics	26,300	1,4-Dichlorobenzene 46%
4 - Phthalates	5,230	Di-N-Butyl Phthalate 54%
5 - Ethers, Epoxides, Aldehydes & Anhydrides	50,200	Formaldehyde 99%
6 - Imines, Nitriles, and Hydrazines	10	Acrylonitrile 100%
7 - Nitroso Compounds	300	N-Nitrosodiphenylamine 100%
8 - Amides and Amino Compounds	1,000	Aniline 100%
9 - Pesticides	0	----
10 - Aromatic Hydrocarbons	18,650	Naphthalene 54%
11 - Inorganics	109,410	Zinc 32% Arsenic 27%
12 - Nitro Compounds	36,410	2,6-Dinitrotoluene 52% 2,4-Dinitrotoluene 44%
13 - Dyes	10	Guinea Green B 100%
14 - Miscellaneous	600	Phosgene 100%
TOTAL	296,760	

3 CHEMICAL GROUPS CONTRIBUTING MOST TO SURFACE WATER TOTAL

First - Inorganics 37%

Second - Ethers, Epoxides, Aldehydes, & Anhydrides 17%

Third - Nitro Compounds 12%

table 11

SUMMARY OF POTWS DISCHARGES TOTAL AND LARGEST CONTRIBUTOR
FOR EACH CHEMICAL GROUP

GROUP NO. and NAME	TOTAL POTWS	LARGEST CONTRIBUTOR
1 - Halogenated Alkanes & Alkenes	973,910	1,2-Dichloroethane 49% Dichloromethane 34%
2 - Phenols	1,070,500	Phenol 98%
3 - Halogenated Aromatics	242,200	1,2-Dichlorobenzene 95%
4 - Phthalates	20,770	Bis(2-ethylhexyl)Phthalate 73%
5 - Ethers, Epoxides, Aldehydes & Anhydrides	1,070,500	Formaldehyde 84%
6 - Imines, Nitriles, and Hydrazines	350,050	Hydrazine 99%
7 - Nitroso Compounds	0	---
8 - Amides and Amino Compounds	7,210	Aniline 97%
9 - Pesticides	13	Captan 77%
10 - Aromatic Hydrocarbons	906,901	Toluene 38%
11 - Inorganics	2,216,770	Zinc 42% Lead 25%
12 - Nitro Compounds	30	Nitrobenzene 100%
13 - Dyes	1,971	Rhodamine B 41% Direct Black 38 36%
14 - Miscellaneous	400	Thiourea 100%
TOTAL	6,861,225	

2 CHEMICAL GROUPS CONTRIBUTING MOST TO POTW DISCHARGE TOTAL

First - Inorganics 32%

Second - Phenols 16%

- Ethers, Epoxides, Aldehydes & Anhydrides 16%

Waste Disposal Practices -

More than 40 million pounds of selected substance waste is disposed of annually by New Jersey manufactuers, according to data collected through the Industrial Survey Project. The chemical group Ethers, Epoxides, Aldehydes and Anhydrides is the largest contributor to the total amount of disposed wasted with more than 9 million pounds, or 23 percent of total waste, reported. Of those 9 million pounds, waste disposal of Maleic Anhydride comprises 94 percent. The chemical groups Aromatic Hydrocarbons and Halogenated Alkanes and Alkenes are also significant contributors to total waste disposal in New Jersey. Manufacturers reported disposing of more than 6.5 million pounds of Aromatic Hydrocarbons or 17 percent of the waste total and more than 6 million pounds of Halogenated Alkanes and Alkenes or 15 percent of the waste total. In the Aromatic Hydrocarbons group, Toluene is the greatest contributor, comprising 73 percent of the group total and Benzene comprises 26 percent of the group total. In the Halogenated Alkanes and Alkenes group, Dichloromethane contributes 41 percent to the group waste total. The group comprising the fourth greatest proportion of the total amount of Selected Substance waste disposed is the Inorganics which, with more than 3.5 million pounds of waste reported, contributes 9 percent to the total amount of waste. Copper and Zinc make up 39 and 27 percent, respectively, of the total amount of Inorganics waste. The remaining chemical groups and the percent of the statewide total amount of waste disposed of which they comprise are as follows: Phenols 4%; Halogenated Aromatics 4%; Phthalates .5%; Imines, Nitriles, and Hydrazines .1%; Nitroso Compounds 0%; Amides and Amino Compounds 2%; Pesticides .04%; Nitro Compounds 3%; Dyes .006%; Miscellaneous 2.6%. It should be noted that disposal of Asbestos waste comprises 99 percent of the total amount of waste in the miscellaneous group. See Table 12 for summaries of statewide waste data.

As discussed above, significant amounts of the following seven Selected Substances are reported disposed of as waste: Maleic Anydride, Benzene, Asbestos, Toluene, Dichloromethane, Copper, and Zinc. According to industry reports from the Industrial Survey Project, at final disposal sites most Maleic Anhydride is land buried in a solid state. A distinction must be made between the frequency of a disposal method and the number of facilities utilizing certain disposal methods. In the case of Maleic Anhydride, most facilities reported disposing of Maleic Anhydride as a solid through land burial or as a solid in sanitary landfills, specifically.

Most Benzene is disposed of as liquid in non-specified methods. Yet more companies dispose of Benzene as a liquid through incineration than the number of companies using non-specified methods. For asbestos, the largest quantities of the substance are disposed of as a solid in sanitary landfills although most companies dispose of asbestos through land burial.

Industries reportedly disposed of toluene using approximately 20 different methods. The largest amount of Toluene is disposed of as a liquid through incineration. For purposes of reporting, incineration includes burning as a supplemental fuel. Lesser, although significant

amounts, of toluene are disposed of as sludge in sanitary landfills or are recycled as a liquid.

Recycling of dichloromethane as a liquid is the most common method of disposal as well as the method of disposal in which the largest quantity of dichloromethane is disposed. Similarly, the most common form of disposal of copper.

Recycling zinc as a slurry is and disposal of zinc as a slurry are the most common methods of disposing of zinc waste and are the methods in which most zinc is disposed.

Under the Industrial Survey Project, manufacturers were required to report land burial and landfill of wastes separately. However, in many cases the data for these two categories is interchangeable and reporting companies did not make a distinction between them. Thus, the data for land burial and land fill is combined as it is reported in Appendix F Table A. Eighteen final disposal sites reportedly receive more than 1,000 pounds of selected substance waste for landfill or land burial. Eight sites are currently included on the Superfund National Priorities List, a list of abandoned hazardous waste sites across the U.S. The 8 sites are listed below along with their priority number on the Superfund List (note: #1 is the greatest priority),
as of October 1985.

Site	Superfund No.
Price Landfill	3
Lone Pine Landfill	6
*South Brunswick Landfill	18
Toms River Chemical Co.	25
*Combe Fill - Mt. Olive	36
Combe-Fill - Chester Site	44
Cinnaminson Township	66
*Sayreville Landfill	71

It should be noted here that a significant benefit of a statewide hazardous substance inventory, such as the Industrial Survey and Right to Know, is that the inventory can form the basis for investigations of hazardous waste sites. Data collected from the Industrial Survey Project was used to identify the aforementioned Superfund sites in New Jersey as well as the sites listed below which are included in the State Cleanup program.

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* These sites are not included in Appendix F because the total amount of selected substance waste that industries reported sending to them was less than 1,000 pounds, during the reporting year.

Ten of the landfill/burial final disposal sites reported under the Industrial Survey Project are currently included in the New Jersey State Hazardous Waste Cleanup Program of identified hazardous waste sites. The ten sites are listed below:

Cinnaminson Township
Combe Fill - Chester Site
Edgeboro Disposal, Inc.
Hillsborough Twp. SLF
Lone Pine Corporation
Price Landfill
Toms River Chemical Co.
*South Brunswick Landfill
*Hercules, Inc.
*Sayreville Landfill

The 18 final disposal sites reportedly accepting more than 1,000 pounds of Selected Substance waste for land fill/burial are currently authorized by the NJDEP Division of Waste Management as Registered Facilities. This authorization allows the facility to accept and process waste commerically. Thirteen of the facilities are currently operating; 4 are not in operation and operations at two are terminated.

Appendix F also includes disposal information pertaining to selected substance waste that was reportedly sent to final disposal sites where it underwent recycling resource recovery or chemical processing or treatment. After reviewing information that facilities reported pertaining to waste disposal methods, NJDEP staff determined that for several final disposal sites, facilities had reported that waste was land buried when the actual operations at those facilities were recycling, resource recovery or processing and treatment. For that reason, six final disposal sites (Earthline, Marisol, Scientific Chemical Processing, Chemical Control, Solvents Recovery Service) that were incorrectly reported as landfill or land burial sites are included in the discussion and in Appendix F, Table B as sites that conduct recycling, recovery, processing or treatment.

Twenty-five recycling sites reportedly received more than 1,000 pounds of Selected Substance waste. Of those 23 sites, only one, Chemical Control, is included on the Superfund National Priorities List as number 42. Chemical Control, Scientific Chemical Processing (Newark), Madison Industries (CPS), and Scientific, Inc. are currently included in New Jersey's Hazardous Waste Clean-up Program and another site,

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* These sites are not included in Appendix F because the total amount of selected substance waste that industries reported sending to them was less than 1,000 pounds, during the reporting year.

Marisol, Inc., is included in the New Jersey Program as an enforcement case. Eight of the recycling sites are currently authorized Commerical Hazardous Waste Management Facilities. This authorization allows the facility to accept and process hazardous wastes commerically. These eight facilities, all currently operating, are listed below along with descriptions of their activities and the types of wastes they are authorized to accept.

Site	Commerical Waste Activities	Types of Wastes
Earthline Co. - SCA 100 Lister Avenue Newark, N.J. 07105	Storage, Transfer Reprocessing, Oxidation - Reduction, Neutralization Physical/Chemical Wastewater Treatment, Non-commercial fuel blending, containerized waste transfer (bulk or containerized liquid wastes)	Oil Spill Cleanup wastes, waste fuel & lubricating oils, Cyanides mixed with heavy metal waste, organic aqueous wastes, solvents, chlorinated solvents, oily waste, acids, alkalis
Marisol, Inc. 125 Factory Lane Middlesex, N.J. 08846	Storage, solvent reclamation, non-commerical fuel blending (bulk or containerized liquids)	Chlorinated & non-chlorinated slovents, flammable liquids, paint, pigment residues, oils, flammable liquids, emulsions
Spectraserv, Inc. (former Modern Transportation) 75 Jacobus Avenue Kearny, N.J. 07023	Storage, Neutralization, gravity settling (Bulk liquid shipments only)	Wastewater, acids, alkalis, (Inorganic), No Industrial Sludges, No hazardous waste sludges, No waste oil & oil sludges

Perk Chemical Co., Inc. First Street Elizabeth, N.J. 07206	Storage, Transfer chlorinated solvent reclamation (bulk or containerized liquids)	Oils, 217 S. emulsions, (transfer only) chlorinated solvents, non-chlorinated solvents for transfer only, acids, alkali solutions, non-flammable liquids, emulsions (transfer only)
TP Industrial Inc. (formerly Baron Blakeslee, Inc) 49 Central Avenue Kearny, N.J. 07032	Storage, solvent reclamation (bulk or containerized)	Chlorinated, Fluorinated and Flammable solvents
Solvent Recovery Services 1200 Sylvan Street Linden, N.J. 07036	Storage, solvent reclamation, non-commerical fuel blending, transfer, (Bulk or containerized liquids)	Oils, emulsion, solvents, acids, alkali solutions, non-flammable liquids, paint, pigment residues, flammable liquids
Detrex Chemical Industries, Inc. Gold Sheild Division 835 Industrial Highway Cinnaminson, N.J. 08077	Storage, Solvent Reclaimation (Drummed waste only)	Chlorinated Solvents
S&W Waste, Inc. 115 Jacobus Avenue S. Kearny, NJ 07032	Storage, Transfer Recontainerization Sludge Solidification, (Drummed Wastes and Containerized Sludges (only)	Paint, Dyes, Pigment Residues, Heavy Metal Residues, Flammable Solids, Oil Wastes Oils, Emulsions Flammable Liquids Acids, Alkalis, Solvents

TABLE 12

SUMMARY OF WASTE DISPOSAL TOTALS AND LARGEST CONTRIBUTOR FOR EACH CHEMICAL GROUP

GROUP NO. and NAME	TOTAL WASTE	LARGEST CONTRIBUTOR
1 - Halogenated Alkanes & Alkenes	6,117,600	Dichloromethane 41%
2 - Phenols	1,750,300	Phenol 99.9%
3 - Halogenated Aromatics	1,656,500	Chlorobenzene 44% 1,2-Dichlorobenzene 32%
4 - Phthalates	215,350	Butyl Benzyl Phthalate 49%
5 - Ethers, Epoxides, Aldehydes & Anhydrides	9,556,000	Maleic Anhydride 94%
6 - Imines, Nitriles, and Hydrazines	55,001	Acrylonitrile 99%
7 - Nitroso Compounds	0	---
8 - Amides and Amino Compounds	913,000	Aniline 98%
9 - Pesticides	18,450	Captan 72%
10 - Aromatic Hydrocarbons	6,876,700	Toluene 73% Benzene 26%
11 - Inorganics	3,706,080	Copper 39% Zinc 27%
12 - Nitro Compounds	1,243,200	Nitrobenzene 72%
13 - Dyes	2,640	Rhodamine B 57% C.I. Disperse Yellow 3 38%
14 - Miscellaneous	1,100,170	Asbestos 99%
TOTAL	**41,428,991**	

3 CHEMICAL GROUPS CONTRIBUTING MOST TO WASTE TOTAL

First - Ethers, Epoxides, Aldehydes, & Anhydrides 23%

Second - Aromatic Hydrocarbons 17%

Third - Halogenated Alkanes & Alkenes 15%

VI. USE OF SURVEY DATA

VI. USE OF SURVEY DATA

It should be emphasized that the Industrial Survey was a research project. The survey results do not only indicate the extent of toxic substance use in New Jersey, but also indicate what methodologies can be successful in surveying industries for toxic substance use.

The data collected under the Industrial Survey Project has played a critical role in many subsequent projects, both within NJDEP and among other agencies and organizations. It has become evident that the type of information generated by the Industrial Survey provides a solid basis for other programs acting to regulate and control the use, production and release of toxic substances. Included here are some examples of projects to which the Industrial Survey data has contributed.

- NJDEP uses industrial survey data in enforcing the Environmental Cleanup and Responsibility Act (ECRA)(N.J.S.A. 13:1K-6, et. CEQ; P.L. 1983, C. 330), a law that requires companies to demonstrate that its premises pose no environmental or health hazards as a condition of any proposed facility sale. ECRA investigations begin with a check of Industrial Survey information about a company intending to sell its site thus giving NJDEP a reliable estimate of hazardous substances previously contained at the site and their final disposition.

- NJDEP uses the Industrial Survey database to identify generators under the DEP's abandoned sites program. The Industrial Survey data aids in identifying abandoned sites by identifying locations of toxic substance use. Industrial survey data provides information on types of materials at abandoned sites and the time period during which a particular industry operated or utilized an abandoned site.

- NJDEP has used the Industrial Survey database in its preliminary investigations of hazardous waste sites throughout New Jersey. By identifying where hazardous materials were used, stored, or produced, the Industrial Survey Database gives NJDEP investigators a good indication of where to begin on-site investigations.

- Relevant portions of the Industrial Survey database have been printed and transferred to local government and/or emergency response agencies. These local agencies have used the information during emergencies and to develop emergency plans for specific facilities. During emergencies the Industrial Survey Information aids emergency response personnel in determining how to approach an emergency event by identifying the types of hazardous materials present at the facility.

- The Division of Environmental Quality (DEQ) is currently using data from the Industrial Survey Project to aid in the development of an Air Toxics Strategy to revise regulations concerning the emissions of toxic chemicals into the environment.

- The Office of Science and Research (OSR) has used the Industrial Survey Project to target specific compounds in analytical efforts and to aid research efforts at specific sites in New Jersey.

- OSR has used the Industrial Survey Project to aid in the identification of potential users of dioxin precursors. In some cases, use of Industrial Survey data has lead to discovery of contaminated dioxin sites, such as those located in Newark, New Jersey.

- The public interest group INFORM, Inc. used information generated by the Industrial Survey as a basis for a 3 year study on source reduction, also known as "waste avoidance". The INFORM study analyzed the extent to which organic chemical plants in New Jersey, Ohio, and California were reducing their generation of hazardous wastes. The Industrial Survey data aided INFORM in choosing study facilities and in determining levels of hazardous substances used at these facilities.

- Other divisions within NJDEP, such as those enforcing air and water regulations (the Division of Environmental Quality and the Division of Water Resources), also use the industrial survey data in routine monitoring of permitted facilities. The data allows these divisions to trace air and water contaminants to certain facilities.

- The Industrial Survey Project was the precursor to implementation of the New Jersey Worker and Community Right to Know Act (P.L. 1983, C.315, C.34:5A-1). The New Jersey Right to Know Law, enacted in August 1983, is considered to be one of the most strict Right to Know Laws in the country. NJDEP has relied on its experiences from conducting the Industrial Survey to determine its approach for implementing the community portions of the Right to Know. For example, under the Right to Know, two SIC codes have been added because in conducting the Industrial Survey NJDEP found that companies in SIC codes 20 and 21 (food and tobacco manufacturers, respectively) used a considerable amount of hazardous substances. Also, NJDEP opted to establish a two-part method of administering surveys. First, all covered employers must complete two one page surveys that request basic information about quantities, storage containers, and hazard class. NJDEP employees review the one-page surveys and determine which employers are to receive a Part II survey. The Part II survey is similar to the original Industrial Survey, requesting

detailed information about throughput, emissions and disposal practices. This approach allows NJDEP to collect detailed information from selected appropriate industries while not burdening all employers with a detailed questionnaire. NJDEP's experience with the Industrial Survey also proved valuable in designing survey questionnaires, establishing the Right to Know database, and setting up programs to aid survey respondants.

Without having previously conducted the Industrial Survey Project, NJDEP's implementation of the Right to Know would not be as effective and comprehensive as it now is. Clearly, the Industrial Survey provided a basis and set directions for implementation of the Right to Know Act.

VII. LIMITATIONS OF THE INDUSTRIAL SURVEY PROJECT

VII. LIMITATIONS OF THE INDUSTRIAL SURVEY PROJECT

There are two major identifiable limitations to data collected through the Industrial Survey Project. The first relates to reliability of the collected data. Although technical reviews and field audits were done to verify survey information, it should be noted that both NJDEP staff and reporting companies applied conservative estimates to quantities of selected substances reported. In many instances when on-site audits were performed, NJDEP inspectors found that low estimates had been reported on survey questionnaires and corrected the figures. However, audits were not conducted at every facility. Thus, quantities of air emissions, wastewater discharges and waste disposal may, in fact, be much greater than those shown in this report. Therefore, interpretation of the data should be done with this in mind.

The other major limitation of the Industrial Survey results is the rate of non response which was up to 57 percent. This rate can be attributed, in part, to problems DEP encountered by using the Department of Labor's unemployment insurance mailing list. In some cases, incorrect SIC codes were assigned to employers and in other cases, surveys were sent to corporate and/or accounting divisions of a company whose industrial facility was housed in a different location. Yet, while several other states have indicated that a 43 percent response rate is considered adequate, NJDEP would encourage other states to strive for a greater response rate in conducting similar project.

Both of these limitations can be attributed to two factors mentioned previously in this report: enforcement provisions that put the burden of proof on the State and a level of funding that prevented extensive on-site auditing or other follow-up activities. In cases involving willful non-compliance, enforcement regulations of the Industrial Survey required the State to specify a company's omissions on the survey that the State charged violated the regulations. This approach put the State in the position of having to prove a company used, produced or released a certain substance in order to force the company to report information about the chemical under the Industrial Survey.

For some companies, completing The Selected Substance Report was their first encounter with environmental regulations. As a result, NJDEP found that constant follow-up was necessary to ensure compliance and that technical review of survey forms and field audits were necessary to guarantee that information was submitted properly by responding companies.

As discussed previously, the level of funding available to NJDEP to conduct the Industrial Survey was sufficient to conduct development and mailing of surveys; initial technical review of surveys; establishment of the database; performance of some on-site audits and other basic aspects of the program. However, if additional funding had been available, it is expected that NJDEP would have funded more staff positions to conduct additional extensive on-site audits to

verify submitted information and to generate greater response to the survey. Both of these aspects would have improved the reliability of the database and would have resulted in a better overall rate of response to the survey. Under the Right to Know, NJDEP has developed criteria for selection of employers to complete a Part II Environmental Survey which requires reporting of information similar to that required by the Industrial Survey. One of the criteria is that NJDEP may require non-responders to the Industrial Survey to complete the Environmental Survey Part II.

VIII. SUMMARY DATA

VIII. SUMMARY DATA ON FIFTEEN SELECTED SUBSTANCES

In preparing this report, the authors chose to include summary data on all 155 Selected Substances (Appendix D) while providing the following detailed discussions on 15 of the selected substances. These discussions are intended to provide the reader with a framework for reviewing the summary data of all 155 selected substances. The 15 chemicals having detailed summaries were chosen to be treated as such either because they had significant levels of production, use, disposal, or environmental release or because they are considered to be carcinogens by the federal Occupational Safety and Health Administration (OSHA). The reason for inclusion in this list of 15 is noted in the attached summaries. It should also be noted that several other chemicals were originally included in the list of 15 but had to be omitted from receiving detailed discussions because they were listed as confidential business information and were handled by only one or two companies. A detailed summary of those substances might have disclosed companies involved, thus violating the confidential business information provisions of the Industrial Survey regulations.

The fifteen substances for which detailed summaries are enclosed are: asbestos; benzene; bis (2-ethylhexy) phthalate; butyl benzyl phthalate; chromium; 1,2 dichloroethane; dichloromethane (methylene chloride); formaldehyde; lead; maleic anhydride; tetrachlorethylene; toluene, 1,1,1-trichloroethane; trichlorofluoromethane; and vinyl chloride. Preceding the data summaries of these 15 chemicals is a glossary of terms commonly used in the data summaries.

1. Glossary:

"CAS Number" - The Chemical Abstracts Service Registry Number is a numeric designation assigned by the American Chemical Society's chemical Abstracts Service to uniquely identify specific chemical compounds. The CAS number provides a standardized system of chemical identification.

"Confidential Business Information" - CBI is any information which has been determined to be entitled to confidential treatment, or any information for which a confidentiality claim has been made but upon which no determination has been made.

"Selected Substance List" - Under the Industrial Survey, companies were surveyed for this list of 155 substances. The list was compiled by scientists in NJDEP and was based on criteria that focused on identifying substances with the potential to cause chronic health effects or to threaten the quality of the environment.

"Use" - Industrial survey responders were required to describe their use of selected substances. The term "use" includes synthesis, whether the substance is incorporated into a finished product or produced only as an intermediate. The term "use" also includes raw material, where the chemical is chemically changed or incorporated into another; mixing, blending; repackaging or transshipment; use as a supplementary fuel or for cleaning and anything else.

"Quantity Produced on Site" - this refers to quantities of the substance synthesized in plant production processes. It includes isolated intermediates (those drawn off and stored for later use in the production process), but not transient intermediates (i.e., substances formed in the production process as intermediates (i.e., substances formed in the production process as an intermediate step but immediately transformed into something else). Also included are by-products and quantities generated as impurities or waste.

"Quantity Brought On Site" - This refers to substances brought into the facility from suppliers off-site, including other plants or divisions of the responding company. All substances shipped onto the site, whether for use as raw materials, cleaning materials, repackaging or reshipping, must be included.

"Quantity Consumed On Site" - This includes selected substances that may be consumed in a chemical reaction at the facility either through incorporation into the molecular structure of the product or by combining with a reactant or solvent to alter its structure and thus lose its identity. Substances that are used in plant processes but are not chemically transformed, are not included as "consumed".

"Quantity Shipped Off-Site" - The information included here is the amount of the selected substance that leaves the facility in product form or a form suitable for final use or for further processing leading to eventual final use. This includes substances shipped to other plants or divisions of the responding company but does not include any wastes.

"Maximum Inventory" - This indicates the largest amount of the selected substance on-site at any time during the reporting year.

"Stack Emissions" - Emissions that are released into the atmosphere from a readily identificable point source, such as a chimmey or exhaust vent.

"Fugitive Emissions" - Emissions other than stack emissions, including evaporation from tanks, vapor or dust emissions during blending, transfer discharging reaction vessels, etc.

"Surface Water Discharges" - Quantity of a selected substance that is released into surface waters, other than quantities that enter surface waters via POTW's.

"POTW Discharge" - The quantity of the selected substance that is discharged into a municipal sewer system or a sewer system owned by a municipal utilities authority, a sewage authority, or a regional utilities authority.

"Disposal of Water" - Companies report the location, physical state, disposal method, and quantity of disposal of the selected substance. Disposal includes facilities located at the plant site and refers to final disposal only with respect to the responding company.

"TLV-TWA" - Threshold limit value - Time weighted average refers to air concentrations of a given chemical to which an individual can be repeatedly exposed for 8 hours a day, 5 days per week without adverse effect. These values are set by the American Conference of Governmental Industrial Hygienists (ACGIH).

"Parts Per Million (PPM)"" - A measure of a contaminant per million parts of air for gases and vapors or milligrams of a contaminant per cubic meters of air (mg/m^3) for solids and mists, or millions of respirable particles per cubic foot of air for mineral dusts.

"OSHA" - The Federal Occupational Safety and Health Administration. This agency is responsible for setting and enforcing workplace safety standards.

"NESHAPS" - National Emission standard for Hazardous Air Pollutants, issued by EPA.

"NIOSH" - National Institute for Occupational Safety and Health. This agency is responsible for investigating and researching the toxicity of workplace environments and other aspects of workplace health and safety.

"ug/l" - milligrams per liter; a measure of weight by volume.

"substance group" - The chemical substance groups in which the selected substances are categorized are standard groupings which reflect similarity in chemical structure with the exception of pesticides and dyes which reflect commerical use and miscellaneous which contains substances not readily classified into existing chemical groupings.

2. Summaries:

The following summaries of 15 Selected Substances provide a general discussion on health effects, special circumstances, properties and regulations pertaining to each of the 15 chemicals. This information is expected to provide New Jersey citizens with a context for interpreting data on each chemical that was obtained under the Industrial Survey Project. While this information will aid in determining the kinds of hazardous substances to which New Jersey's citizens are exposed, it cannot be used to provide a comprehensive assessment of the risks posed by the reported levels of environmental releases due to several reasons. Assessment of environmental risks is related to an individual's exposure and to concentrations of a contaminant in an environmental media, usually air and/or drinking water. However, the data obtained under the Industrial Survey Project was not collected in a format directly related to concentrations or exposure. Rather, the Industrial Survey data is in a format based primarily on environmental releases of contaminants. Although the Industrial Survey data is not directly correlated to chemical concentrations in air or water, it can be used as a basis for scientific activities which would aid in assessing risks. However, such scientific analyses have not been conducted with the Industrial Survey data because broad assumptions would have to be incorporated into the analysis and because such analysis would have to be done on a localized level thus threatening the accuracy of the potential results of such time-intensive analyses. In addition, it must be emphasized that in order to conduct such scientific risk assessments, it was imperative for the NJDEP to first identify specific chemicals and regions of the State for which further study would be needed.

In this light, the Industrial Survey Project must be considered a preliminary inventory of the State's toxic substance use for which the major objective was to identify potential environmental and public health problems. Follow-up projects, including data collection being performed under the Right to Know Act, will lead the Department to better assess and, in turn, reduce risks posed by releases of hazardous materials in New Jersey. It should be noted here that in order to address the need for environmental health assessments based on various data, including data collected uner the Industrial Survey Project, an Office of Environmental Health Assessment is currently being established within NJDEP. The new office, which will evolve from the Office of Science and Research, is intended to aid in the protection of public health by: first, providing better scientific assessments of public health risks; second, recommending effective strategies to limit those public helath risks; and third, communicating with the public to encourage individuals to take recommended actions to limit their own exposure or risk.

One statewide map is included for each of the 15 Selected Substances discussed in this report. The maps were prepared using the DEP's Geographic Information System. Each map illustrates the distribution of selected substances throughout New Jersey municipalities.

Each map is based on one environmental release parameter. The three possible environmental release parameters are:

wastewater - reported releases of the Selected Substance to surface waters and POTWs combined

air - reported releases of the Selected Substance through stack and fugitive emissions combined

waste - reported quantities of the Selected Substance disposed of as waste

A pie chart on the lower left corner of each Selected Substance map provides a profile of the total environmental releases of the particular Selected Substance. The pie chart clearly illustrates the portion of the Selected substance's total environmental release that each of the three environmental release paramaters comprises. The environmental parameter which comprises the greatest portion of the total environmental release is the parameter which is displayed on the accompanying map.

It is important to note that development of the pie charts included data that was determined to be confidential business information. This was done so that an accurate determination could be made of the distribution of environmental releases for each of the 15 chemicals. However, NJDEP was unable to include confidential business information in development of the accompanying maps. Inclusions of confidential data on maps would have significantly increased the likelihood of such confidential data being disclosed, which is specifically against provisions regarding confidential data in the Industrial Survey regulations.

FORMALDEHYDE

CAS Number: 50-00-0

Formaldehyde is one of the most widely-used industrial chemicals, and is also one of the most controversial because serveral laboratory studies have indicated that formaldehyde may be a carcinogen although it has not been designated as such by either the EPA or OSHA. Formaldehyde is a clear, water-white gas with a pungent odor. Pure formaldehyde is not generally available commercially but is sold as aqueous solutions containing from 30 to 50 percent formaldehyde. Formaldehyde has been manufactured commercially since the early 1900's, its main use being in the manufacture of plastics and resins. Formaldehyde is also used in the manufacture of wallboards, foam insulation, textile waterproofing, dyes, and as a disinfectant and fungicide.

Formaldehyde has a short half-life in air because it is quickly degraded by photochemical processes. Decomposition of formaldehyde by photooxidation produces carbon monoxide, hydrogen, hydrogen peroxide, formic acid and other products. In the absence of water, formaldehyde solutions are stable. However, in water, formaldehyde is soluble and highly reactive.

Most non-occupational exposure occurs as a result of the consumer uses of formaldehyde. In addition, inadvertant production of formaldehyde from combustion sources, including automobiles and smoking, contribute to exposure of the general population to formaldehyde. The level of exposure due to emissions at manufacturing facilities, power plants, petroleum refineries and other combustion processes, is undetermined. The main route of exposure to formaldehyde is by inhalation, ingestion, or skin absorption. Studies show that formaldehyde is rapidly metabolized by the body.

Most people can detect formaldehyde by smell at air levels of about 1ppm. At levels of 2 to 3 ppm, most people begin to suffer mild irritation of the eyes, nose, and throat. Levels of about 10 ppm cause significant irritation as well as breathing difficulties and coughing. Cases of bronchial asthma have been reported as a result of occupational exposure to formaldehyde. The nature of chronic effects of formaldehyde are not yet fully understood. Several studies on plants, insects, and mammalian cells have shown formaldehyde to be a mutagen. The potential for carcinogenicity of formaldehyde is a hotly debated topic. A 1979 study by the Chemical Industry Institute of Toxicology (CIIT) that showed formaldehyde as causing nasal cancer in rats sparked the scientific community to reconsider the possibility of carcinogenicity of formaldehyde. A Federal panel of top government scientists reviewed studies on formaldehyde and concluded that "formaldehyde should be presumed to pose a carcinogenic risk to humans." However, as of this date, formaldehyde is not included on OSHA's list of carcinogenic substances. As a result of the Federal Panel's report, the Comsumer Product Safety Commission issued a ban against the use of urea-formaldehyde foam insulation.

OSHA has set a standard of 3 ppm for formaldehyde with a ceiling limit of 5 ppm. NIOSH recommends that this ceiling limit be lowered to 1 ppm. EPA regulates formaldehyde under the Clean Water Act, the Resource Conservation and Recovery Act, and the Clean Air Act although these regulations are based on toxic effects other than cancer. Under these regulations, dischargers must report all levels of formaldehyde emitted. Formaldehyde is also included on the Department of Transportation's Hazardous Materials Table due to its flammability and explositivity.

Of the 155 chemicals on the Selected Substance List, Formaldehyde is one of the five most highly produced chemicals in New Jersey. Facilities reported that 100 to 500 million pounds of formaldehyde are produced annually in New Jersey. An additional 10 to 50 million pounds of the substance are purchased by New Jersey facilities. A significantly high level of formaldehyde, 100 - 500 million pounds, were reportedly shipped off-site and one to 5 million pounds of formaldehyde were reported to be maintained as the statewide maximum inventory.

Industries reported that 200,000 pounds of formaldehyde were released as stack emissions and an additional 90,000 pounds were released annually as fugitive emissions. Discharges to water comprise the most significant levels of environmental release of formaldehyde. According to the Industrial Survey, 50,000 pounds of formaldehyde are discharged to surface waters and discharges of Formaldehyde to POTWS, 900,000 pounds, is the highest reported level of POTW discharge any of the 15 Selected Substances detailed in this report. Levels of formaldehyde disposed of as waste were reported to be 500,000 pounds.

Including confidential data, the total wastewater discharges of Formaldehyde comprise 54.5 percent of total environmental releases of Formaldehyde.

The number of municipalities where non-confidential wastewater discharges of Formaldehyde were reported and the names of municipalities in the highest reported inventory are listed below:

Inventory: Less than 1,000 pounds
Number of municipalities: 13

Inventory: 1,000 to 10,000 pounds
Number of municipalities: 7

Inventory: 10,000 to 100,000 pounds
Number of municipalities: 7

Inventory: 100,000 to one million pounds
Number of municipalities: 1

Newark (Essex County) - 300,000 pounds

FORMALDEHYDE

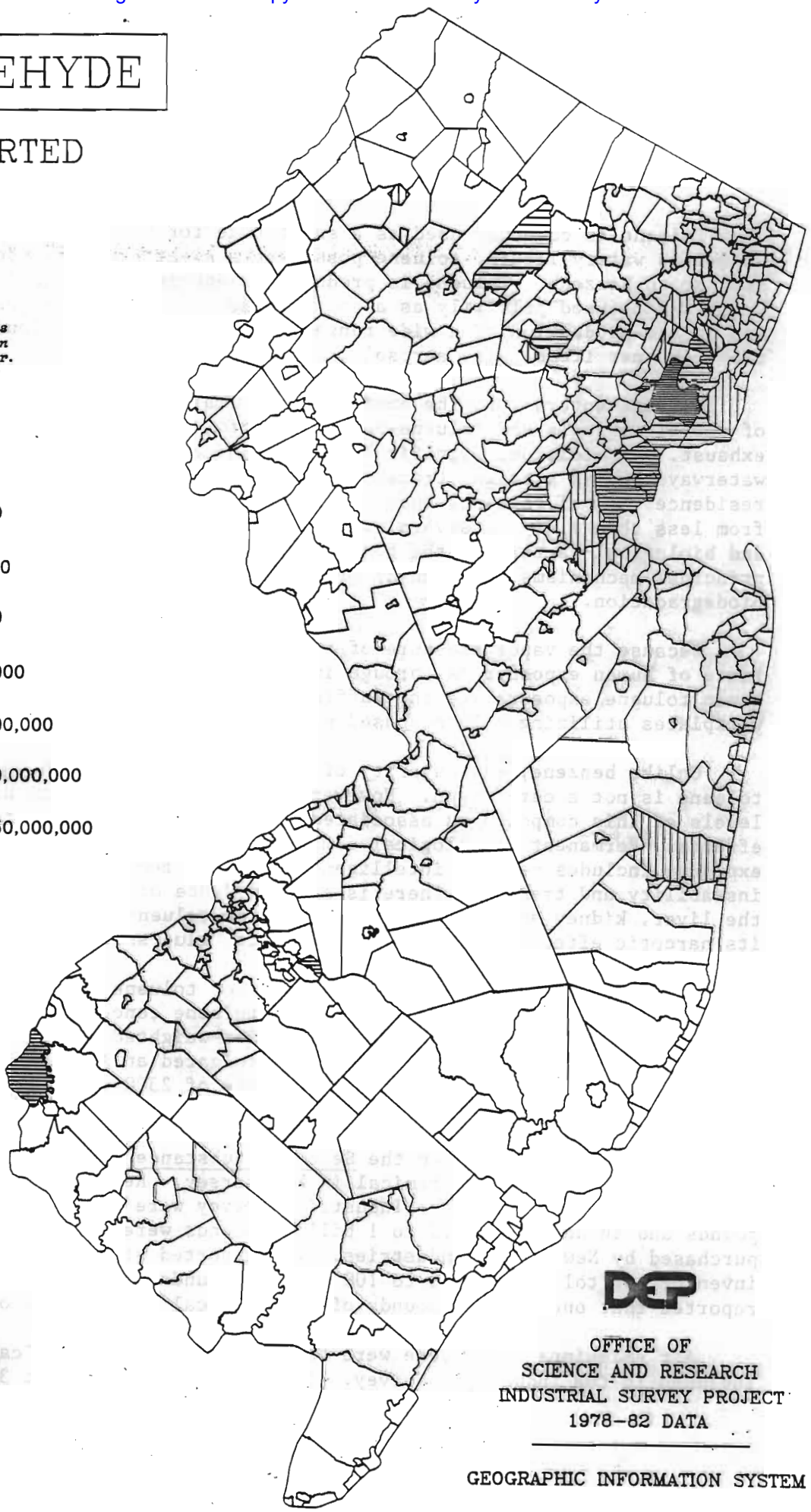
TOTAL REPORTED WASTEWATER DISCHARGES

BY MUNICIPALITY

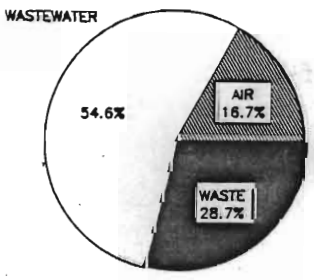
This map illustrates levels of the chemical reported in one environmental parameter. It is not intended to show exposure levels.

POUNDS

- NONE REPORTED
- LESS THAN 1,000
- 1,000 TO 10,000
- 10,000 TO 100,000
- 100,000 TO 1,000,000
- 1,000,000 TO 10,000,000
- 10,000,000 TO 50,000,000



FORMALDEHYDE ENVIRONMENTAL RELEASES



TOTAL RELEASE = 1740000 POUNDS

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1978–82 DATA

GEOGRAPHIC INFORMATION SYSTEM

TOLUENE

CAS Number: 108-88-3

Toluene is commonly used as a substitute for benzene. A colorless watery liquid, toluene possesses a sweet, pungent odor similar to benzene. Toluene is produced in enormous amounts in the U.S., and is used primarily as a solvent, as a component in gasoline and in the production of a wide range of chemicals. It is found in many consumer items, e.g. aerosols, paints and glues.

Toluene enters into the environment primarily via the evaporation of petroleum fuels and toluene-based solvents, and from automotive exhaust. In addition, significant quantities are discharged into waterways during storage, transport and disposal of fuels. The residence time of toluene, once in the aquatic environment, can vary from less than a day to several weeks, depending on several physical and biological factors of the contaminated body of water. The principal mechanisms for removal of toluene are volatilization and biodegradation.

Because the vapor pressure of toluene is high, the most probable route of human exposure is through inhalation. Three likely scenes of human toluene exposure are in traffic, near filling stations or at workplaces utilizing toluene-based solvents.

Unlike benzene, the majority of scientific evidence shows that toluene is not a carcinogen. However, exposure of humans to high levels of this compound as associated with narcotic or neuorotoxic effects. Permanent neurological damage which may result from toluene exposure includes reduced intelligence, loss of memory, emotional instability and tremors. There is also evidence of harmful effects to the liver, kidney and pulmonary systems from toluene exposure. Due to its narcotic effects, is directly linked to "glue sniffering".

The OSHA time weighted average (TWA) for toluene is 200 ppm. NIOSH standards limit worker exposure to toluene concentrations of 100 ppm of air (375 mg/m3), determined as a time-weighted average exposure for an 8 hour working day. USEPA has promulgated an Ambient Water Quality Criterion to protect freshwater life of 2300 ug/l, for a 24 hour averaging time.

Of the 155 compounds on the Selected Substance List, toluene is the most highly produced chemical in New Jersey. Reported levels of toluene production under the Industrial Survey were .5 to 1 billion pounds and an additional .5 to 1 billion pounds were reportedly purchased by New Jersey industries. The reported statewide maximum inventory of toluene was 50 to 100 million pounds and industries reported that one billion pounds of the chemical are shipped off-site.

Air emissions of toluene were the highest for any chemical included in the Industrial Survey. Industries reported that 30

million pounds of toluene are released through stack emissions and that an additional 900,000 pounds are released through fugitive emissions. While discharge of toluene to surface waters was comparatively low, 3,000 pounds, the level of discharge to POTWS, 800,000 pounds, was quite high. A significantly high level of toluene, 5 million pounds, was reportedly disposed of as waste.

Including confidential data, total air releases of Toluene comprise 84.2 percent of the total environmental releases of Toluene.

The number of municipalities where non-confidential of Toluene were reported and the names of municipalities in the highest reported inventory are listed below.

Inventory: Less than 1,000 pounds
Number of municipalities: 15

Inventory: 1,000 to 10,000 pounds
Number of municipalities: 30

Inventory: 10,000 to 100,000 pounds
Number of municipalities: 17

Inventory: 100,000 to 10 million
Number of municipalities: 14

Inventory: one million to 10 million
Number of municipalities: 2

South Brunswick (Middlesex County) - 3 million pounds
Freehold Township (Monmouth County) - 3,360,000 pounds

Inventory: 10 million to 50 million
Number of municipalities: 1

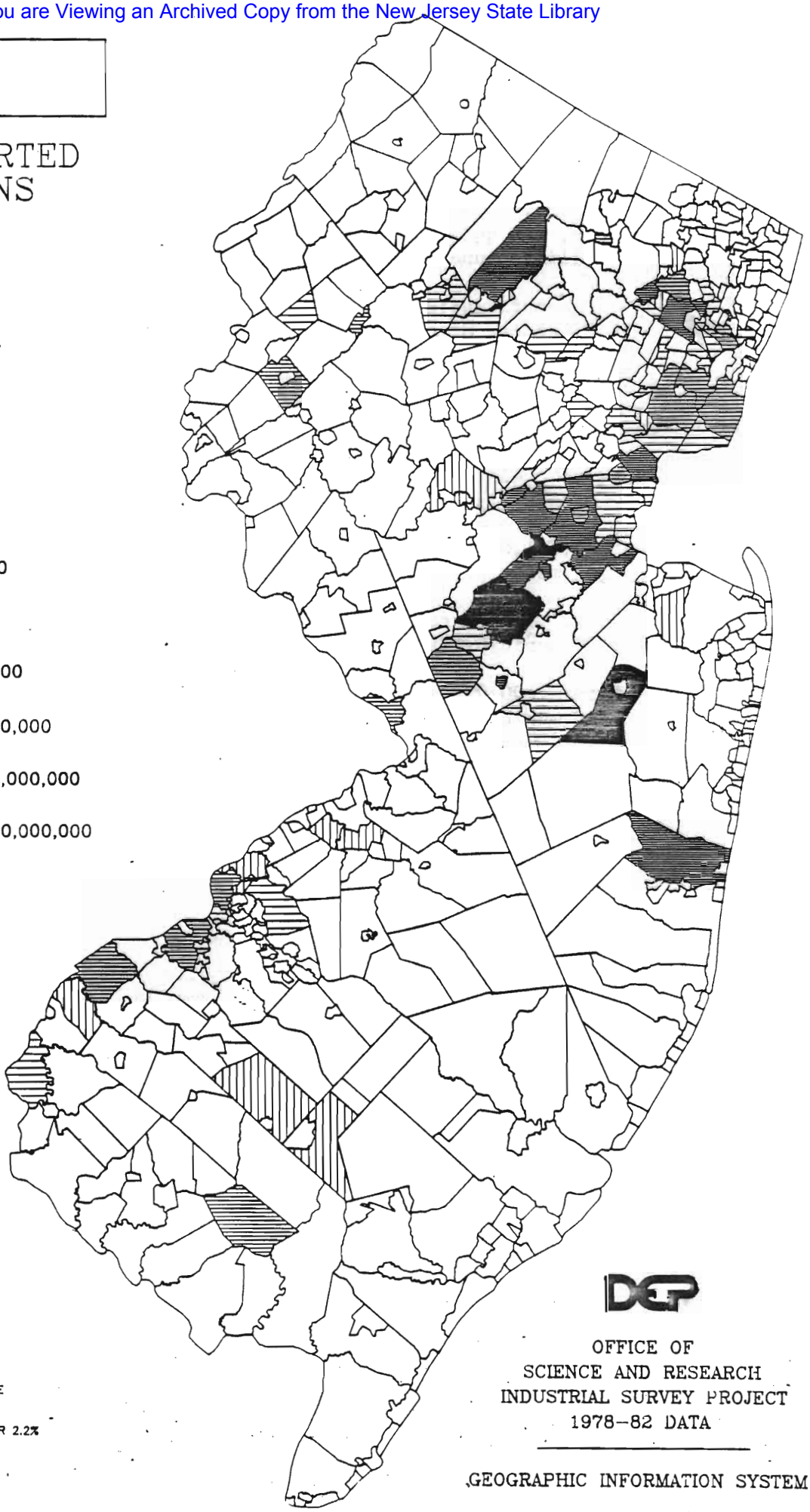
New Brunswick (Middlesex County) - 14 million pounds

TOLUENE

TOTAL REPORTED AIR EMISSIONS

BY MUNICIPALITY

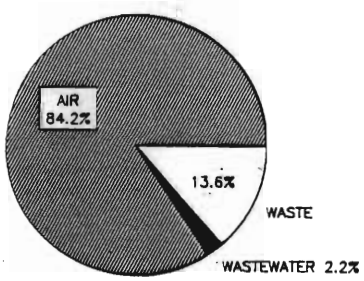
This map illustrates levels of the chemical reported in one environmental parameter. It is not intended to show exposure levels.



POUNDS

- NONE REPORTED
- LESS THAN 1,000
- 1,000 TO 10,000
- 10,000 TO 100,000
- 100,000 TO 1,000,000
- 1,000,000 TO 10,000,000
- 10,000,000 TO 50,000,000

TOLUENE ENVIRONMENTAL RELEASES



TOTAL RELEASE = 36703000 POUNDS

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LEAD

CAS Number: 7439-92-1

The heavy metal lead is a component of pigments, paints, solder, batteries and piping. It also plays a major role in the manufacturing processes of chemicals, including tetraethyllead and tetramethyllead. These two lead compounds are the gasoline additives used to boost octane ratings. The newer generation of U.S. cars does not use leaded gasoline, however, leaded gas is still used in many sections of the world. Other lead compounds include lead acetate, lead arsenate, lead carbonate, lead chromate, lead nitrate and lead oxide.

Lead is a bluish-white, silvery, gray metal. In its pure state, it is stored in large bars (also referred to as ingots or "pigs"). It is easily melted, cast, rolled or extruded, as it is very soft and malleable. This element occurs naturally in the number of ores and minerals.

Stationary industrial sources and mobile sources are the most significant routes of entry into the atmosphere for lead. The lead falls back to the earth by dry deposition or rainout. Lead is tightly bound to soil and does not tend to migrate. In water systems, lead tends to form compounds of low solubilty. As in terrestrial environments, it does not travel appreciably. Lead does not seem to bioaccumulate greatly in fish, but does so in certain molluscs such as mussels.

Severe poisoning is produced via ingestion or inhalation of lead and lead compounds. Since atmospheric lead pollution tends to deposit onto soils, exposure to lead of young children who chew and swallow contaminated soil is a major concern. Exposure of children (especially five years of age and under) has been associated with progressive mental deterioration, and a loss of motor skills and speech. Affected children also have experienced hematologic disorders.

The National Primary and Secondard Ambient Air Quality Standard for lead is 1.5 ug/m3. This is a quarterly average, i.e. it is the mean ambient lead concentration over a 90 day period. This standard was set to protect children. The OSHA TWA, which is much higher than the ambient air standard because it is designed to protect adults rather than children, and is also for a shorter averaging time, is 200 ug/m3. The recommended criterion for lead in bottled water is 50 ug/l.

The Industrial Survey found that relatively low levels of lead, 1 to 5 million pounds, are produced in New Jersey annually while a significant quantity, 100 to 500 million pounds, are purchased by New Jersey industries. The reported statewide maximum inventory of lead is 10 to 50 million pounds and industries reported that 100 to 500 million pounds of lead are shipped off-site annually.

Industries reported that 150,000 pounds of lead are emitted to the air through stack emissions and 10,000 pounds are released through fugitive emissions. Significant discharges of lead to waterways was also reported. Eleven thousand pounds of lead were reportedly discharged to surface waters and 550,000 pounds were reported to be discharged to POTWS. The level of lead disposed of as waste was reported to be an additional 550,000 pounds.

Including confidential data, the total amount of lead discharged to wastewater comprises 44.1 percent of the total environmental releases of Lead.

The number of municipalities where non-confidential waste disposal of lead was reported and the names of municipalities in the highest reported inventory are listed below.

Inventory: Less than 1,000 pounds
Number of Municipalities: 8

Inventory: 1,000 - 10,000 pounds
Number of Municipalities: 2

Inventory: 100,000 to one million pounds
Number of Municipalities: 1

Newark (Essex County) - 265,435 pounds

LEAD

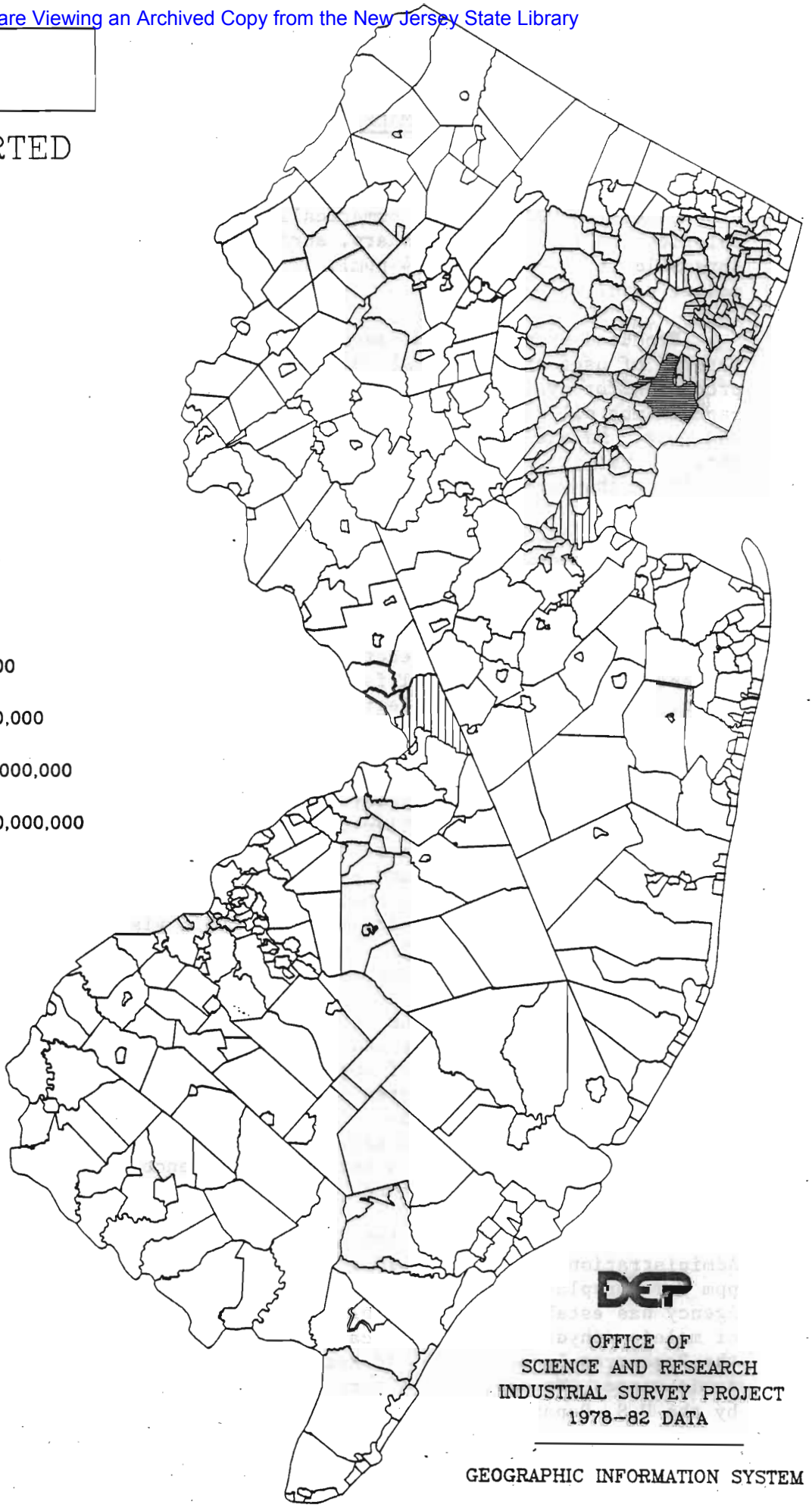
TOTAL REPORTED WASTEWATER DISCHARGES

BY MUNICIPALITY

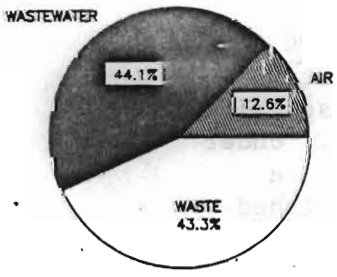
This map illustrates levels of the chemical reported in one environmental parameter. It is not intended to show exposure levels.

POUNDS

- NONE REPORTED
- LESS THAN 1,000
- 1,000 TO 10,000
- 10,000 TO 100,000
- 100,000 TO 1,000,000
- 1,000,000 TO 10,000,000
- 10,000,000 TO 50,000,000



LEAD
ENVIRONMENTAL
RELEASES



TOTAL RELEASE = 1271000 POUNDS

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GEOGRAPHIC INFORMATION SYSTEM

MALEIC ANHYDRIDE

CAS Number: 108-31-6

Maleic anhydride is a commerically produced compound. It is a colorless solid, and has a sharp, acrid odor (the recognition threshold is a low a 0.3-0.4 ppm). It reacts with water, forming maleic acid.

Produced by a number of manufacturers, maleic anhydride has a variety of uses as a chemical intermediate, such as production processes for dyes, pesticides, pharmaceuticals, corrosion inhibitors, paper, lube oil dispersants, plasticizers, and preservatives for oils and fats. Maleic anhydride is used greatly in industrial processes but, because its primary use is as an intermediate, exposure occurs mainly in the workplace.

Since maleic anhydride hydrolyzes (reacts with water to form new compounds) rapidly in water, maleic anhydride is not generally found in wastewater discharges and degrades quickly if spilled in water. Its estimated half-life is 30 seconds in an aquatic environment. Fugitive emissions or vent gases escaping into the atmosphere degrade in a few hours because of reactions with ozone and other atmospheric elements. The environmental fate of the compound in soil is not known, but its observed biodegradation in sewage treatment plants and hydrolysis in water suggest the same reactions would occur in a soil medium.

Maleic anhydride is a powerful irritant and acute exposure can result in severe health problems. Spills and poor ventilation in the workplace are the major sources of acute exposure. Skin contact can cause burns or dermatitis, and eye contact can result in conjunctivitis, burns, and corneal damage. Vapor irritation has resulted in optic light sensitivity and double vision. Inhalation causes coughing, nasal irritation, headache, and may contribute to the development of pulmonary edema (buildup of fluid in the lungs). Infrequently, workers have complained of nausea, vomiting, and stomach pains after breathing the compound's vapors. Chronic bronchitis has been observed in workers exposed to maleic anhydride over many years, and the similiar behaviors of anhydrides and isocyanates in the development of certain diseases suggests a storing correlation with asthma and asthmatic symptoms. In laboratory tests, animals were subcutaneously injected with maleic anhydride and developed some localized tumors, but this is not strong evidence of the carcinogenicity of the compound.

The U.S. Department of Lab-- 's Occupational Safety and Health Administration has established a time weighted average (TWA) of 0.25 ppm for workplace air standards. The U.S. Environmental Protection Agency has established reportable quantities for spills and discharges of maleic anhydride. In both cases the amount is 5,000 pounds. Under the Resources Conservation and Recovery Act, it is designated as a toxic waste. No special labeling requirements have been established by the U.S. Department of Transportation for shipping, but container

and vehicle specification standards have been promulgated for maleic anhydride.

Maleic anhydride was included in the Industrial Survey Project because of its widespread use and evidence that repeated occupational exposure leads to asthmatic responses. However, maleic anhydride was not included in the subsequent Right to Know survey process because it was determined that sufficient evidence did not exist to document that chronic exposure to maleic anhydride lead to carcinogenic, mutagenic, teratogenic or other similar chronic health effects. The Industrial Survey illustrated the widespread use of maleic anhydride. Industries reported that 10 to 50 million pounds are purchased. The maximum inventory in the state is 1 to 5 million pounds and 10 to 50 million pounds were reportedly shipped off-site.

Stack emissions of maleic anhydride were reported to be 300,000 pounds and fugitive emissions were reported to be 2,000 pounds. Low levels of maleic anhydride, 100 pounds, were reportedly discharged into surface waters and 70,000 pounds were discharged to POTWs. At 9 million pounds, maleic anhydride has a largest reported levels of waste disposal. These are all annual figures.

The total amount of Maleic Anhydride reportedly disposed of as waste comprises 96 percent of the total environmental releases for this chemical. The number of municipalities where Maleic Anhydride waste was reported and the names of municipalities in the highest inventory are listed below.

Inventory: Less than 1,000 pounds
Number of municipalities: 2

Inventory: 1,000 to 10,000 pounds
Number of municipalities: 2

Inventory: 10,000 to 100,000 pounds
Number of municipalities: 1

Inventory: 100,000 to one million pounds
Number of municipalities: 1

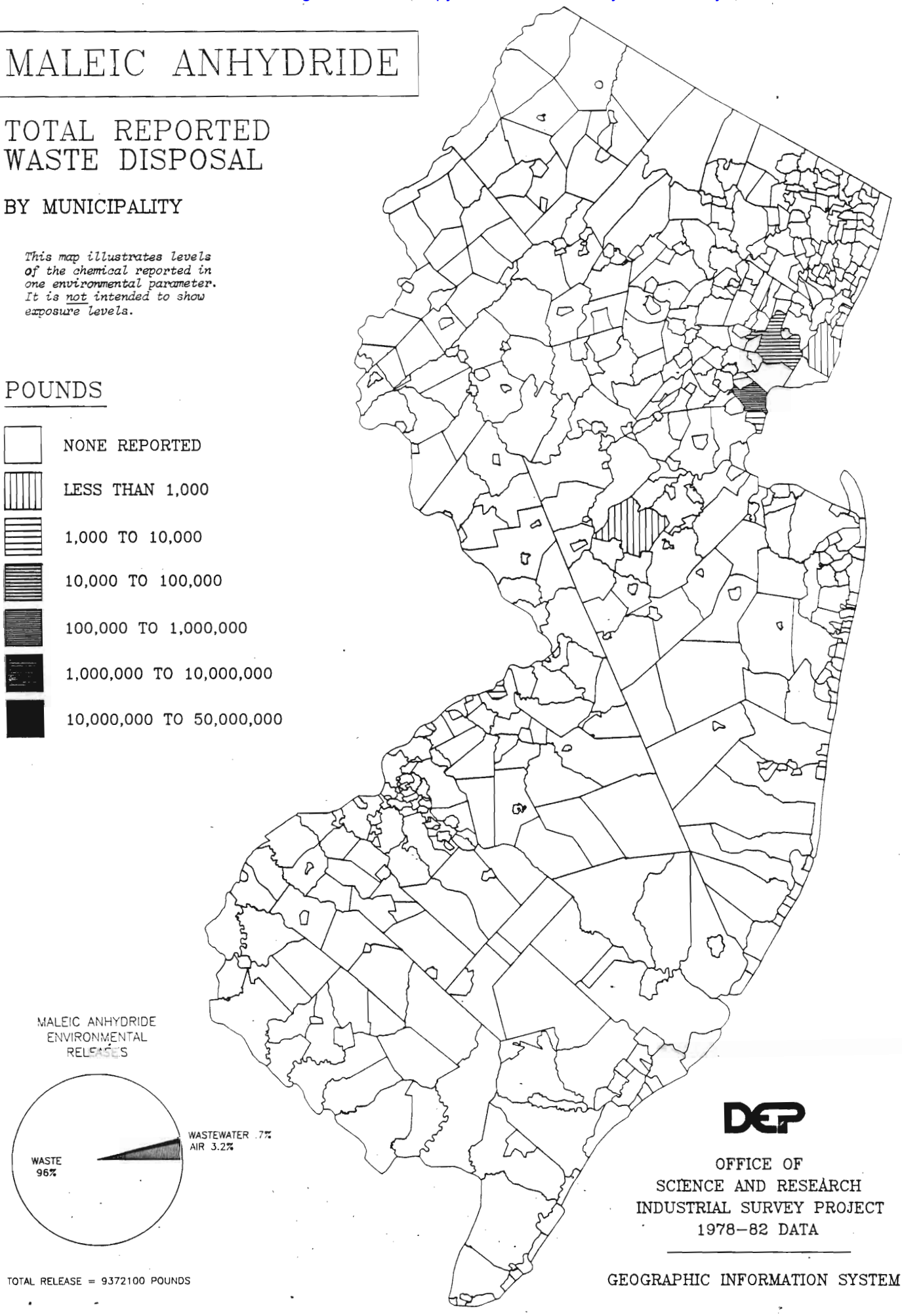
Linden (Union County) - 945,160 pounds

MALEIC ANHYDRIDE

TOTAL REPORTED WASTE DISPOSAL

BY MUNICIPALITY

This map illustrates levels of the chemical reported in one environmental parameter. It is not intended to show exposure levels.



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1,2-DICHLOROETHANE

CAS Number: 107-06-2

1,2-Dichloroethane is man-made chemical substance of carbon, hydrogen, and chlorine. It is a clear, colorless, oily liquid with a chloroform-like odor and a sweet taste. It is volatile and not readily soluble in water. It is stable at normal ambient temperatures but will begin to decompose slowly in the presence of air, moisture, and light. Decomposition increases its acidity and, if left untreated, 1,2-dichloroethane can corrode steel or iron containers.

1,2-Dichloroethane has a variety of uses. The major one is as a chemical intermediate in the production of vinyl chloride.. Other uses include: grain, orchard, and mushroom fumigant; extracting agent in food processing, particulary spices; a extractant for tobacco; solvent for fats, oils, waxes, gums, resins, and rubber; metal degreaser; leather, upholstery, and carpet cleaning agent; chemical intermediate in the production of 1,1,1-trichloroethane, trichloroethylene, tetrachloroethylene, vinylidene chloride, and ethylenediamines; solvents for processing pharmaceuticals; and lead scavenger in gasoline antiknock mixtures. The U.S. International Trade Commission reported 1983 production of 1,2-dichloroethane was approximately 11.5 billion pounds. Currently, it is the largest volume chlorinated organic compound produced in the U.S. The National Institute of Occupational Safety and Health estimates that as many as 2 million workers in the chemical manufacturing and processing industries may have been exposed to 1,2-dichloroethane. The exposure of the general population is primarily through gasoline and food, including agricultural products.

Exposure routes are through skin absorption, inhalation, and ingestion. The human central nervous system can be damaged by prolonged inhalation of 1,2-dichloroethane, resulting in headache, mental confusion, depression, and fatigue. Ingestion of the chemical has caused gastrointestinal problems such as nausea, vomiting, and severe cramping. Ingestion has also resulted in liver and kidney damage. Repeated skin contact has caused dermatitis, and eye burns have occured from accidental splashing of the chemical.

There is no sufficient epidemiological data for humans to suggest that 1,2-dichloroethane is carcinogenic although tests on rats and mice have indicated otherwise. A test on rats and mice receiving oral doses of the compound produced a variety of benign and malignant tumors in both species. In rats, it produced haemangiosarcomas (cancer of the vascular system) in both sexes; in females, benign and malignant mammary tumors appeared; and carcinomas of the forestomach occurred in the males. In mice, 1,2-dichloroethane produced, in both sexes, malignant lymphomas and both benign and malignant lung tumors. Hepatocellular (liver) carcinomas occurred in the male mice and mannary and uterine adenocarcinomas developed in the females. As a result of the animal experiments and the extensive use of and population exposure to 1,2-dichloroethane, the International Agency

for Cancer Research (IARC), of the World Health Organization, has recommended that the chemical be regarded as if it presented a carcinogenic risk to humans.

The majority of 1,2-dichloroethane released into the environment will enter the atmosphere as a result of from its production and use as a chemical intermediate and solvent, and its use as a lead scavenger in gasoline. Once in the atmosphere, it may be transported long distances and is removed primarily by photooxidation (an action promoted by light causing one substance to chemically react with another) over a period of 3-5 weeks. If it is released to water, 1,2-dichloroethane will be removed primarily by evaporation, often in a matter of hours. Releases of the chemical on land will dissipate by volatilization to air and by percolation into groundwater, where it will likely persist for a long time. It is not expected to bioconcentrate in the food chain, and its presence in some food products is more likely because of its use as an extractant. Major human exposures to 1,2-dichloroethane are from urban air, drinking water from contaminated aquifers, and occupational settings.

The Occupational Safety and Health Administration (OSHA) regulates the workplace to insure the health of the many people who work with 1,2-dichloroethane. The time weighted average (TWA) is 50 ppm, with a ceiling concentration of 100 ppm. A much lower TWA has been recommended by NIOSH of only 5 ppm. 1,2-Dichloroethane is a priority pollutant to the U.S. Environmental Protection Agency has established criterion to protect aquatic life. In fresh water the level is 3,900 ug/l (24 hr. avg.) not to exceed 8,800 ug/l, and in salt water 880 ug/l not to exceed 2,000 ug/l. Under Superfund, hazardous spill regulations require notification of any discharge equal to of greater than 5,000 lb. The compound is also subject to regulations promulgated under the authority of the Resource Conservation and Recovery Act. The U.S. Food and Drug Administration has established residue limits for 1,2-dichloroethane in fish protein concentrates not to exceed 5 ppm, and when used as an extracting agent in the manufacture of animal foods not to exceed 300 ppm. Shipping and storage methods are regulated by the U.S. Department of Transportation and the Interstate Commerce Commission. 1,2-Dichloroethane is required to be labeled as a flammable liquid and kept separate form oxidizing materials.

The Industrial Survey illustrates that while 100 to 500 thousand pounds of 1,2-dichloroethane are produced in New Jersey annually, a much higher proportion of the chemical (10 to 50 million pounds) is purchased by New Jersey facilities, for use here in the state. Ten to 50 million pounds were reported to be shipped off-site and the reported statewide maximum inventory was 5 to 10 million pounds.

The annual emission and discharge levels, of 1,2-dichloroethane are relatively low compared to the production and useage rates. Stack emissions were reported to be 300,000 pounds and fugitive emissions were reported to be 60,000 pounds. Discharge levels to surface waters were reported to be 8,000 pounds and discharge to POTWs were notably high at 480,000 pounds. A significant portion of environmentally

released 1,2-dichloroethane, 900,000 pounds, was reportedly disposed of as waste.

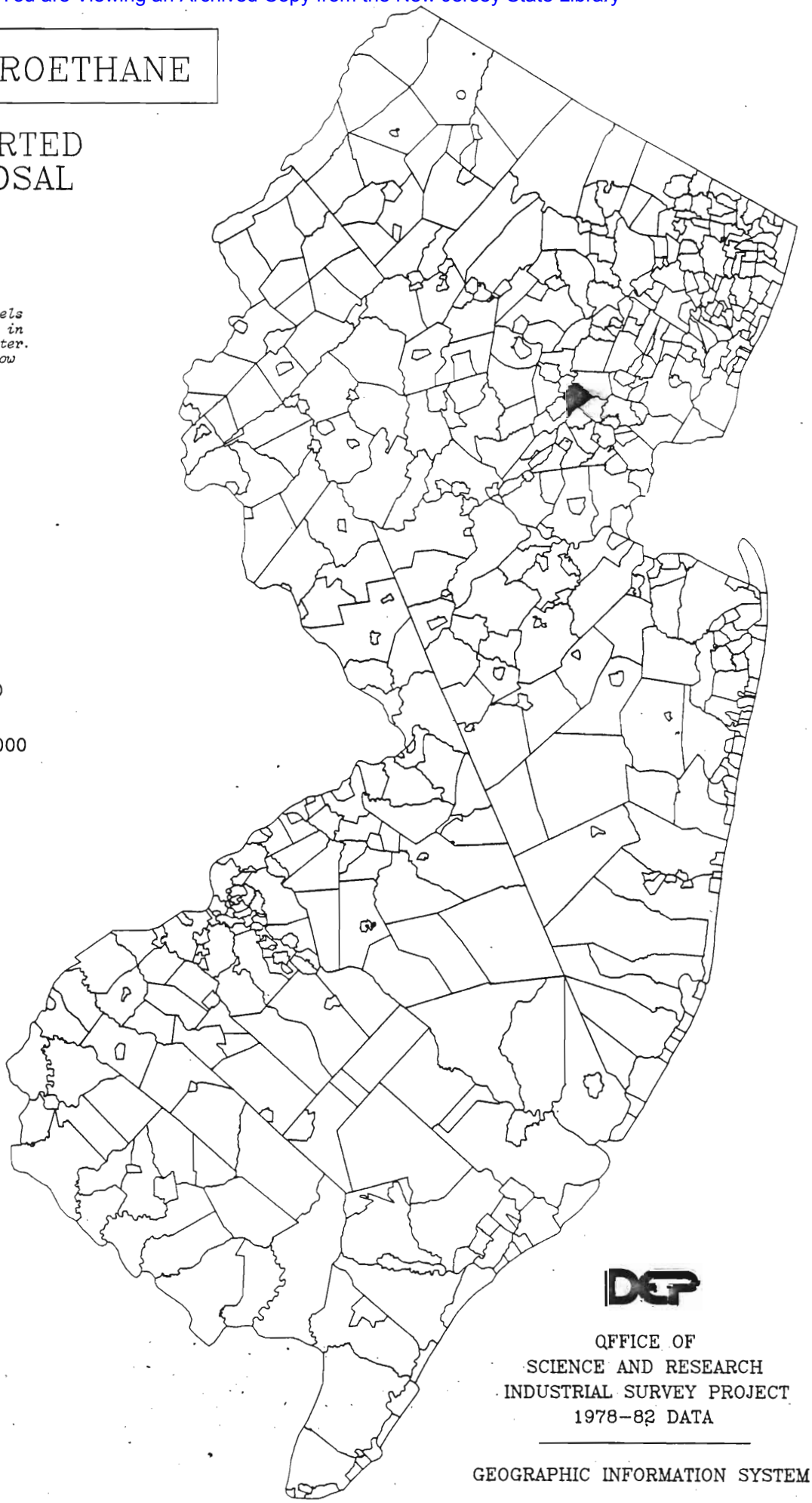
Including confidential data, total waste disposal levels of 1,2-Dichloroethane comprise 51.5 percent of the total environmental releases for this chemical. Non-confidential waste levels of 1,2-Dichloroethane were reported only in one municipality, summit in Union County.

1,2-DICHLOROETHANE

TOTAL REPORTED WASTE DISPOSAL

BY MUNICIPALITY

This map illustrates levels of the chemical reported in one environmental parameter. It is not intended to show exposure levels.

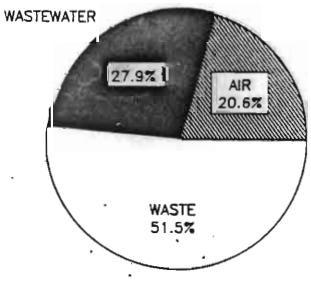


POUNDS

NONE REPORTED

10,000 TO 100,000

1,2-DICHLOROETHANE ENVIRONMENTAL RELEASES



TOTAL RELEASE = 1748000 POUNDS

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TRICHLOROFLUOROMETHANE

CAS Number: 75-69-4

Trichlororfluoromethane is a colorless, nearly odorless, volatile, non-combustible liquid. It is used in solvents, propellants, refrigerants, and as a chemical intermediate in fire extinguishers.

Trichlorofluoromethane was deleted from the EPA Priority List by USEPA on January 8, 1981. This action took place after research revealed that the substance was not a significant potential contaminant to the water supply, due to its low solubility, high volatility and low mammalian toxicity.

Trichlorofluoromethane, also know as Freon-11, is a member of a group of compounds known as Freons. The most important chemical property of the Freons from an environmental standpoint is that these chemicals may react in the upper atmosphere in such a manner to deplete the ozone layer. The ozone layer filters out cancer-causing ultraviolet rays from the sun. Because it was feared that chemical reactions between Freons and the ozone layer would lead to an increased incidence of skin cancer, the use of fluorocarbons in aerosol cans has been banned in the United States, although the substance still is used for the other applications discussed above.

There are a limited amount of reports addressing human health maladies related to Freon-11. Some studies show a higher incidence of coronary heart disease among hospital personnel and refrigerator mechanics who encounter higher doses of fluorocarbons. In high doses, the chemical is a depressant of the central nervous system, and deaths of over a hundred persons have been reported related to abuse of this material.

The OSHA time weighted average for Freon-11 is 1000 ppm (5600 mg/m3).

Production levels of Trichlorofluoromethane reported under the Industrial Survey were 10 to 50 million pounds. An additional 5 to 10 million pounds of the chemical are purchased annually. Most of the Trichlorofluoromethane used by New Jersey manufacturers, 50 to 100 million pounds annually, is shipped offsite and one to 5 million pounds are maintained as the statewide maximum inventory.

Air emissions are clearly the most significant route of environmental release of Trichlorofluoromethane. Approximately 1.1 million pounds are released as stack emissions and 180,000 pounds are released as fugitive emissions. Discharge of Trichlorofluoromethane to waterways was low compared to air emissions. Under the Industrial survey, 2,300 pounds of the substance were reportedly discharged to surface waters and no discharge to POTWS were reported. Industries reported that 600 pounds of Trichlorofluoromethane were disposed of as waste.

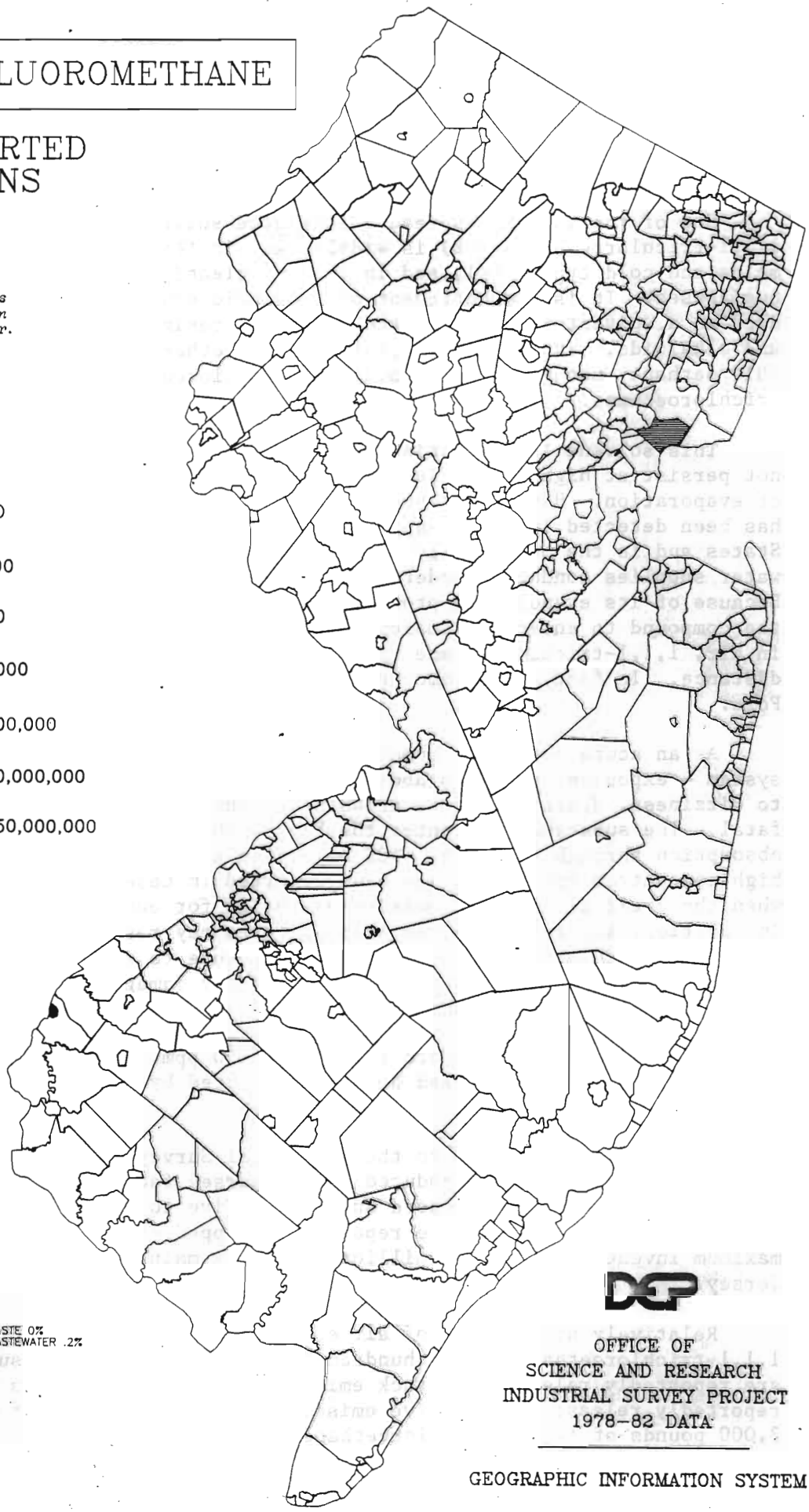
Including confidential data, total air emissions of Trichlorofluormethane comprise 99.7 percent of total environmental releases of this chemical. Non-confidential air emissions of Trichlorofluoromethane were reported only in two municipalities. In New Brunswick (Middlesex County) Trichlorofluoromethane air emissions were reported to be 500 pounds and in Mount Laurel Township (Burlington County) air emissions of Trichlorofluoromethane were reported to be 8,400 pounds.

TRICHLOROFLUOROMETHANE

TOTAL REPORTED AIR EMISSIONS

BY MUNICIPALITY

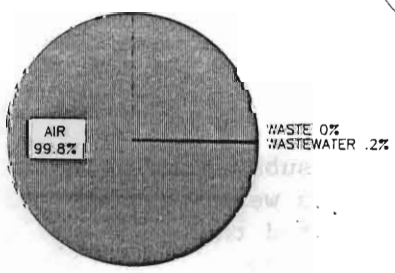
This map illustrates levels of the chemical reported in one environmental parameter. It is not intended to show exposure levels.



POUNDS

- NONE REPORTED
- LESS THAN 1,000
- 1,000 TO 10,000
- 10,000 TO 100,000
- 100,000 TO 1,000,000
- 1,000,000 TO 10,000,000
- 10,000,000 TO 50,000,000

TRICHLOROFLUOROMETHANE ENVIRONMENTAL RELEASES



TOTAL RELEASE = 1282900 POUNDS

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1,1,1-TRICHLOROETHANE

CAS Number: 71-55-6

One of the most widespread chlorinated solvents, 1,1,1-trichloroethane (TCE) is widely used in the cleaning of plastic molds and cold type metal, and in the dry cleaning and degreasing businesses. It is a constituent of household drain cleaners and is used as a solvent for natural and synthetic resins, oils, waxes, tar and alkaloids. Synonyms for 1,1,1-trichloroethane include chloroethane, methyl chloroform, alpha-trichloroethane and methyl trichloroethane.

This solvent is a sweetish smelling, colorless liquid. It will not persist at high levels in surface waters, because of a rapid rate of evaporation. Having a tendency to pass rapidly through soils, TCE has been detected in water supplies in various locations in the United States and is the most highly reported chemical in testing of public water supplies conducted under the N.J. Safe Drinking Water Act. Because of its evaporative properties, there is a high potential for the compound to enter the ambient air. Being a fairly stable compound in air, 1,1,1-trichloroethane may be transported for considerable distance. In fact, trace amounts have been observed in the South Pole.

As an acute hazard to humans, TCE is toxic to the central nervous system - exposure to levels above 900 ppm of the compound will lead to dizziness, disorientation, drowsiness, unconsciousness, and may be fatal. The substance may enter the body either by inhalation or absorption through the skin. TCE may cause cardiac arrest in very high concentrations. This has been reported in cases of drug abuse when the chemical has been massively inhaled for euphoric purposes. In addition, irritation to the skin and eyes may result from exposure to 450 ppm of TCE. Prolonged exposure to similar levels of the same chemical may lead to liver and kidney damage. TCE is not considered to be carcinogenic to humans.

The OSHA TLV-TWA standard for TCE is 350 ppm. The pollutant is an EPA Priority Pollutant and has been declared by NJDEP to be a Toxic Volatile Organic Substance.

Facilities responding to the Industrial Survey reported that no 1,1,1-trichloroethane is produced by New Jersey facilities while 10 to 50 million pounds are purchased annually. Five to 10 million pounds of 1,1,1-trichloroethane were reportedly sHipped off-site and a maximum inventory of 1 to 5 million pounds is maintained in New Jersey.

Relatively high levels of air emissions were reported for 1,1,1-trichloroethane. Four hundred thousand pounds of the substance are reportedly released as stack emissions and 700,000 pounds were reportedly released as fugitive emissions. Responders reported that 3,000 pounds of 1,1,1,-trichloroethane are discharged to surface

waters and an additional 23,000 pounds are discharged to POTWS. A significant portion of 1,1,1-trichloroethane, 550,000 pounds, was reportedly disposed of as waste.

Including confidential data, total air releases of 1,1,1-Trichloroethane comprise 65.6 percent of all environmental releases of this chemical.

The number of municipalities where non-confidential air emissions were reported and the names of municipalities in the highest reported inventory are listed below:

Inventory: Less than 1,000 pounds
Number of Municipalities: 15

Inventory: 1,000 to 10,000 pounds
Number of Municipalities: 51

Inventory: 10,000 to 100,000 pounds
Number of Municipalities: 25

Inventory: 100,000 to one million pounds
Number of municipalities: 4

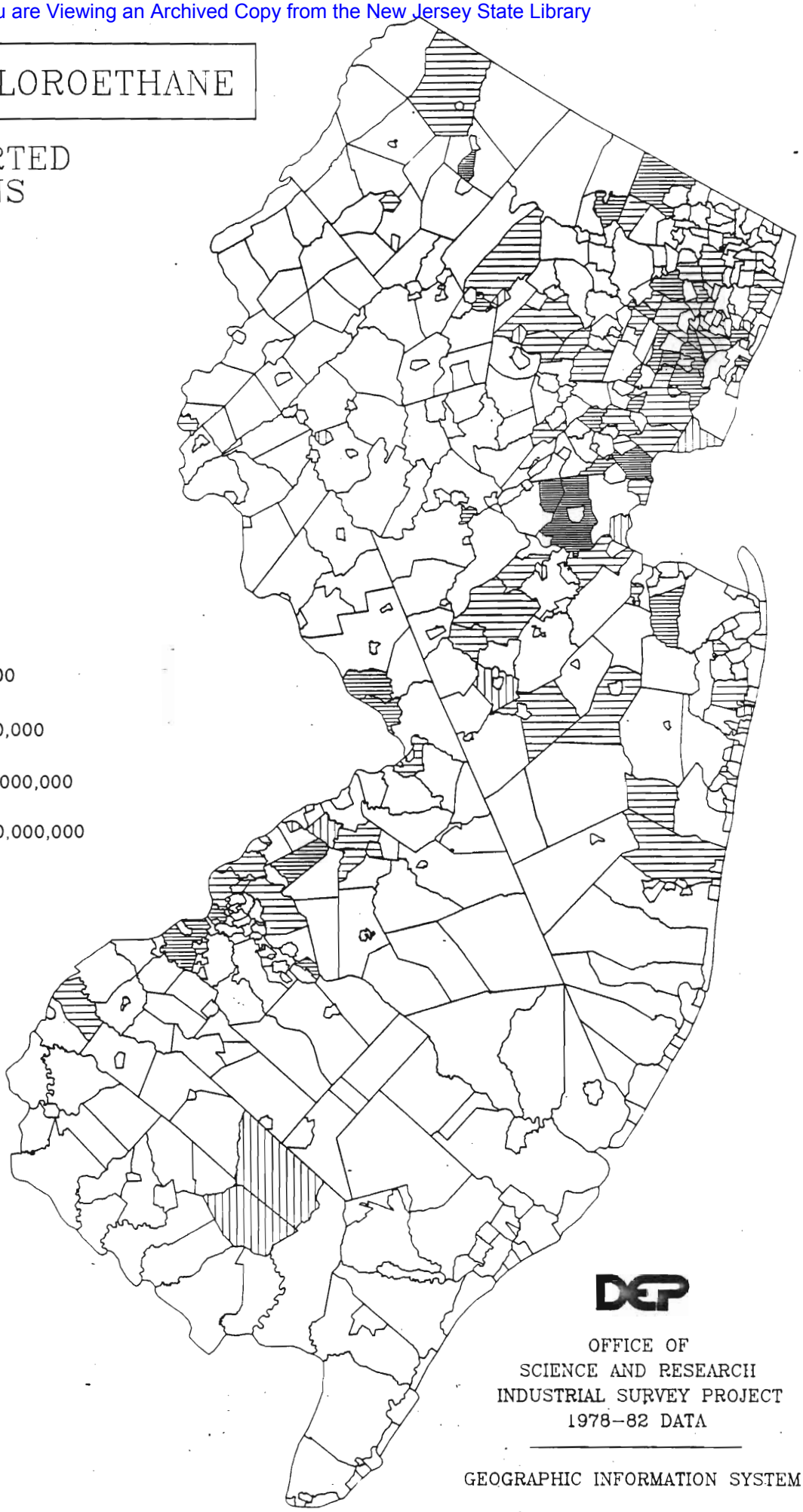
Edison (Middlesex County) - 120,000 pounds
South Plainfield (Middlesex County) - 105,000 pounds
Franklin (Sussex County) - 100,000 pounds
Linden (Union County) - 150,000 pounds

1,1,1–TRICHLOROETHANE

TOTAL REPORTED AIR EMISSIONS

BY MUNICIPALITY

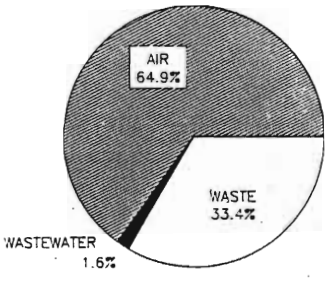
This map illustrates levels of the chemical reported in one environmental parameter. It is not intended to show exposure levels.



POUNDS

- NONE REPORTED
- LESS THAN 1,000
- 1,000 TO 10,000
- 10,000 TO 100,000
- 100,000 TO 1,000,000
- 1,000,000 TO 10,000,000
- 10,000,000 TO 50,000,000

1,1,1- TRICHLOROETHANE ENVIRONMENTAL RELEASES



TOTAL RELEASE = 1.6 MILLION POUNDS

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BUTYL BENZYL PHTHALATE

CAS Number: 85-68-7

Butyl Benzyl Phthalate is one of a group of six phthalate esters that, due to their use in the formaulation of many plastics, are widely distributed in the environment. The inclusion of Butyl Benzyl Phthalate in the Industrial Survey was more a result of its high useage in New Jersey than the level of hazard it poses to human health.

Butyl Benzyl Phthalate is a clear, oily liquid. It is commonly used as a plasticizer in the manufacture of polyvinyl chloride from which vinyl floor tiles are made. It is also used to produce PVC tubing, plastic labware items, and adhesives used in the packaging industry.

Butyl Benzyl Phthalate is one of the phthalate esters with a low solubility. As a result of its low solubility, hydrolysis of Butyl Benzyl Phthalate may not be environmentally significant under most conditions. Sediments of the substance have been identified in drinking water, surface water, and industrial effluents. Studies indicate that the phthalate esters are not highly volatile although their volatility may increase greatly at higher temperatures. Phthalate esters have been determined to undergo biodegradation and biotransformation and that these processes have influence on the ultimate fate of these substances in the environment.

When the list of substances to be included in the Industrial Survey was compiled in 1977, the scientific community expected that Butyl Benzyl Phthalate posed a considerable threat to human health. Today, the level of human health risk posed by Butyl Benzyl Phthalate is believed to be low. Bacteria tests have indicated that it is non-mutagenic and rat and mouse studies have indicated that Butyl Benzyl Phthalate is non-carcinogenic. It is for this reason that the chemical is not included on the Right to Know Environmental Hazardous Substance List (EHSL).

Butyl Benzyl Phthalate is considered a hazardous waste by EPA and is included on EPA's list of priority pollutants. Under these regulations, dischargers must report expected levels of Butyl Benzyl Phthalate discharged into the environment. However, in 1984, the Monsanto Company, petitioned EPA to remove Butyl Benzyl Phthalate from its priority pollutant list. However, as EPA is developing criteria for removing substances from this list, Monsanto's petition has not yet been reviewed.

According to the Industrial Survey, 50 to 100 million pounds of Butyl Benzyl Phthalate are produced by New Jersey facilities annually. An additional .5 to 1 million pounds are purchased by New Jersey facilities. A large proportion of Butyl Benzyl Phthalate, 50 to 100 million pounds, are shipped off-site and 100 to 500 thousand pounds are maintained as the maximum inventory.

Levels of stack and fugitive emissions of Butyl Benzyl Phthalate were some of the lowest reported of any of the compounds on the Selected Substance List. Facilities reported that 5,500 pounds of Butyl Benzyl Phthalate are released in stack emissions and 2,000 pounds are released through fugitive emissions. Relatively low levels of Butyl Benzyl Phthalate, 100 pounds, were reportedly discharged to surface waters and 1,250 pounds were reportedly discharged to POTWS. The most significant environmental release of Butyl Benzyl Phthalate was as waste with facilities reporting that 104,500 pounds of the substance were disposed of as waste.

Including confidential data, the total amount of Butyl Benzyl Phthalate disposed of as waste comprise 92.1 percent of total environmental releases of this chemical.

The number of municipalities where non-confidential Butyl Benzyl Phthalate waste was reported and the names of municipalities in the highest reported inventory are listed below:

Inventory: Less than 1,000 pounds
Number of municipalities: 2

Inventory: 1,000 to 10,000 pounds
Number of municipalities: 2

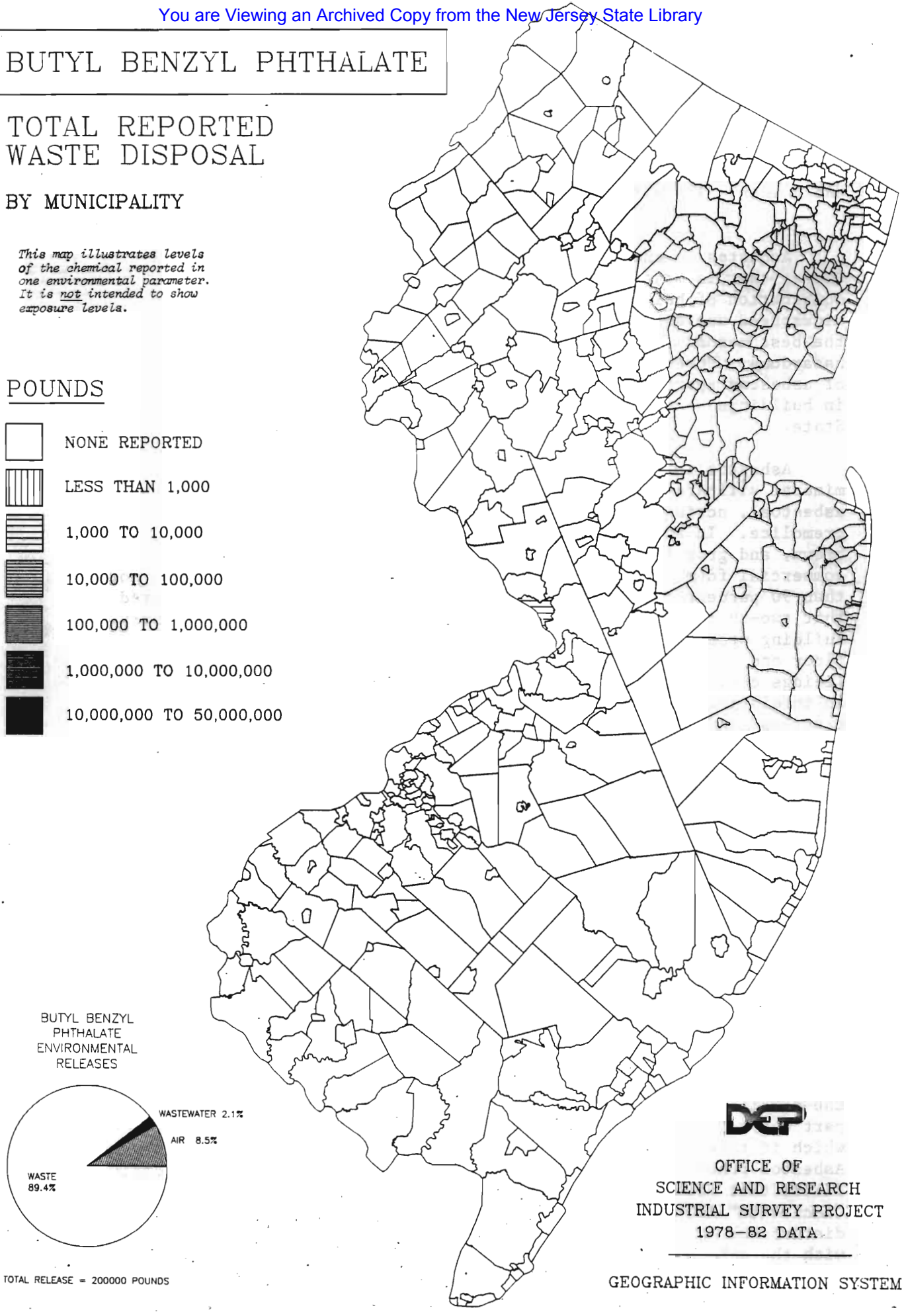
New Brunswick (Middlesex County) - 9,000 pounds
Trenton (Mercer County) - 1,485 pounds

BUTYL BENZYL PHTHALATE

TOTAL REPORTED WASTE DISPOSAL

BY MUNICIPALITY

This map illustrates levels of the chemical reported in one environmental parameter. It is not intended to show exposure levels.



POUNDS

- NONE REPORTED
- LESS THAN 1,000
- 1,000 TO 10,000
- 10,000 TO 100,000
- 100,000 TO 1,000,000
- 1,000,000 TO 10,000,000
- 10,000,000 TO 50,000,000

BUTYL BENZYL PHTHALATE ENVIRONMENTAL RELEASES

TOTAL RELEASE = 200000 POUNDS

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ASBESTOS

CAS Number: 1332-21-4

Asbestos is one of the substances included in the Industrial Survey that is most well-known by the general poulation. The combination of being identified as a carcinogen by OSHA and having widespread use as building insulation, has led to public debate over the best method of removing or treating asbestos when it becomes hazardous. However, the Industrial Survey intended to check an aspect of asbestos apart from the much-publicized issue of securing asbestos in buildings -- the production, use and emission of asbestos in the State.

Asbestos is the generic name for a group of naturally occurring mineral silicates. These minerals include Chrysotile (white asbestos), actinolite, amosite, anthophylite, crocidolite, and tremolite. In addition to white, asbestos forms are also green, blue, brown, and gray in color. Chrysotile is the most commonly-used commercial form of asbestos in the United States and accounts for more than 90 percent of all asbestos currently produced. It is estimated that two-thirds of all asbestos is used in the construction industry. Building products such as cement sheets and pipes, patching compounds, floor and ceiling tiles, paints, coatings, and sealants, and pipe linings can, and often do, contain asbestos. It is commonly used as an insulating material and also in the manufacture of certain textiles. As a friction product, it is used in clutch facings and brake linings of automobiles, railroad cars, airplanes, and industrial machinery. Although studies have shown toxicity, asbestos use continues primarily because of the scarcity of comparable substitutes.

Asbestos is mineralogically stable. In the air, asbestos is hardly volatile. It is easily transported by wind and quickly settles. There has been little study done of asbestos in aquatic environmental systems. However, it appears that asbestos is not prone to significant chemical or biological degradation in aquatic environments and may pose non-occupational hazards via groundwater contamination. Once introduced into aquatic environments, asbestos tends to be almost indestructable and has been shown to be only slowly soluable. Under certain environmental conditions, asbestos might be susceptible to settling.

Although detailed descriptions of asbestosis began appearing in the medical literature in the 1920's, it was not until the 1960's that the carcinogenicity of asbestos was generally recognized. This is in part due to the 10-30 year latency period of asbestos, the time in which it takes a cancer to become evident after exposrue to asbestos. Asbestos poses a hazard when the mineral breaks down into microscopic fibers that float in the air. Most commerical asbestos is used in a "locked-in" form that prevents this break down to fibers, but a disturbance of the asbestos or the deterioration of materials used with the asbestos, may allow fibers to break away and become airborne.

Clearly, most exposures to asbestos are occupational. However, the incidence and effects of exposure related to industrial emissions is not fully identified. Exposure related to industrial emissions comes mainly from mining, processing, or manufacturing sites of asbestos. The main route of exposure to asbestos is inhalation and ingestion of the fibers. In addition to preventing dissolution in aquatic systems, asbestos' insolubility causes most of the fibers retained in body tissue to remain unaltered. The length and diameter of the fibers present in the lungs greatly influence the potential for cancer and asbestosis, a chronic, inflammatory lung disease specific to asbestos exposure. Most fibers found in the lungs are less than 3mm in diameter and less than 100 mm in length. Larger fibers are either not inhaled or are quickly cleared form the respiratory tract. Once in the lungs, asbestos fibers irritate the tissues and cells creating friction and inflammation.

Asbestos has been shown to cause health hazards as a result of both acute (short-term, high level) and chronic (long-term, low-level) exposure. Short-term exposure to asbestos can cause irritation of the throat, nose, and eyes. Skin rashes have also been reported from direct contact with fibers. Asbestos is a known human carcinogen; it has been shown to cause lung cancer and mesothelioma (a cancer that develops in the lining of the body's cavities). Ovarian and uterine cervix cancers have a possible correlation with asbestos exposure and the development of gastro-intestinal cancers are possibly linked to ingestion of fibers through drinking water contamination. Chronic exposure to asbestos also increases the incidence of asbestosis. It has been demonstrated that cigarette smokers have a significantly higher risk of developing cancer due to the asbestos exposure.

For the workplace, OSHA has set a standard of two fibers of asbestos per cc of air of fibers longer than 5mm with a ceiling limit of 10 fibers per cc. EPA regulates asbestos under the Clean Air Act, the Clean Water Act, the Resource Conservation and Recovery Act, and the Toxic Substances Control Act. Asbestos emissions are regulated by the National Pollutant Discharge Elimination System Permits which require discharges to identify any asbestos that might be expected in the discharge. Effluent guidelines and standards have been developed for manufacturing processes at POTWs and asbestos is also regulated as a toxic pollutant under the general provisions of the effluent standards. Currently, there is no standard for drinking water, but EPA has issued an "Ambient Water Quality Criteria for Asbestos" which recommends that in order to insure maximum protection of human health, the ambient water concentration of asbestos should be zero. In New Jersey, asbestos is regulated by the NJPDES and is also regulated as a toxic air pollutant and prescribes control and prohibition of asbestos particles form manufacturing processes.

Under the Industrial Survey, responders reported that no asbestos is produced within the State and that 10 to 50 million pounds of asbestos are purchased by New Jersey facilities. Responders reportedly maintain a maximum inventory of 5 to 10 million pounds of asbestos. Ten to 50 million pounds of asbestos are reportedly shipped off-site.

Reported releases of asbestos were lower than expected. Responders reported that 140 pounds of asbestos were released through stack emissions annually and 800 pounds of asbestos were released through fugitive emissions. In addition, it was reported that no levels of asbestos are discharged to waterways. The largest portion of environmentally released asbestos, 1,100,000 pounds, was reportedly disposed of as waste.

Including confidential data, the total amount of Asbestos disposed of as waste comprises 99.9 percent of total environmental releases of asbestos.

The number of municipalities where non-confidential asbestos waste was reported and the names of municipalities in the highest reported inventory are listed below:

Inventory: Less than 1,000 pounds
Number of municipalities: 13

Inventory: 1,000 to 10,000 pounds
Number of municipalities: 3

Inventory: 10,000 to 100,000 pounds
Number of municipalities: 1

Inventory: 100,000 to one million pounds
Number of municipalities: 1

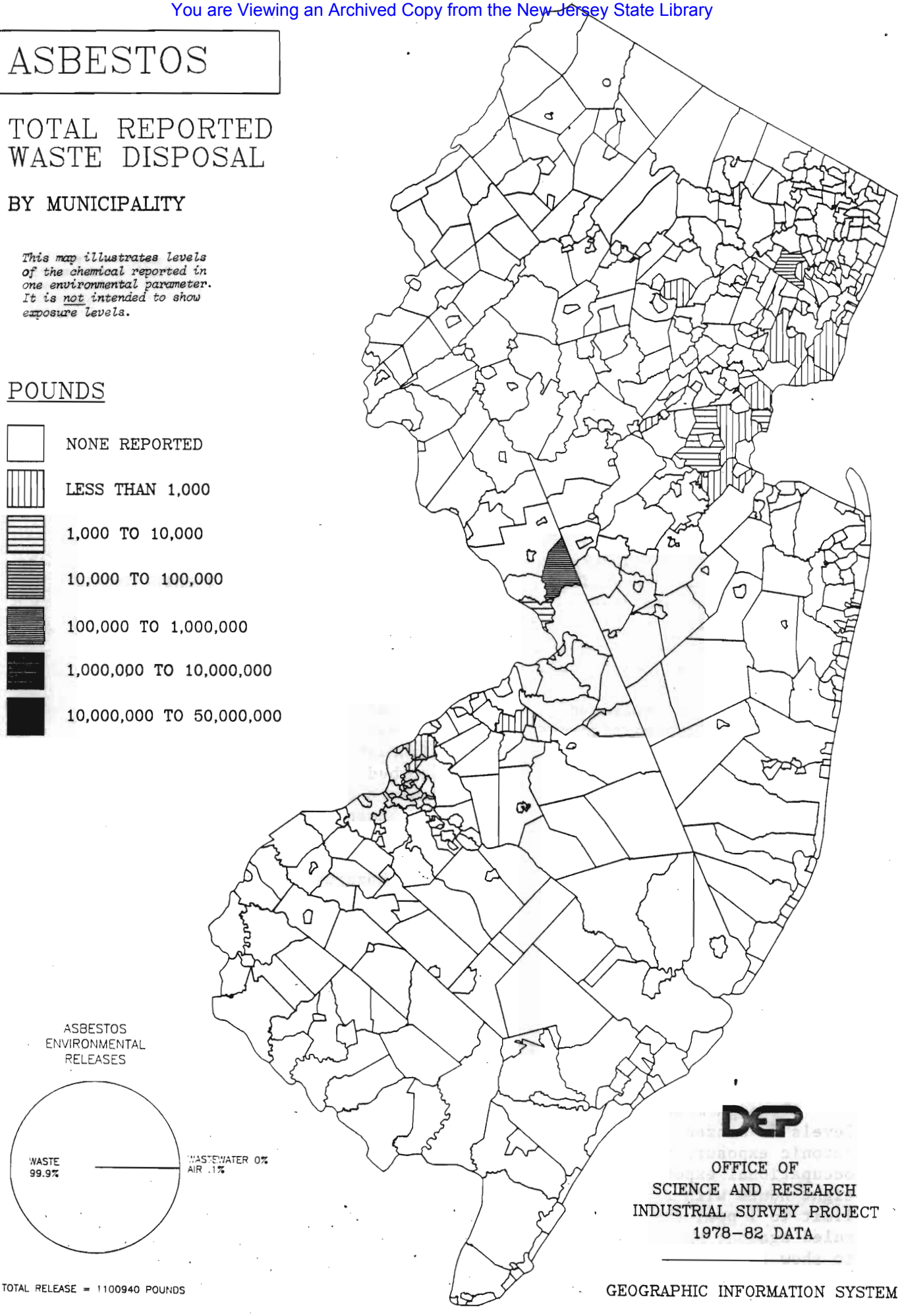
Lawrence Township (Mercer County) - 120,000 pounds

ASBESTOS

TOTAL REPORTED WASTE DISPOSAL

BY MUNICIPALITY

This map illustrates levels of the chemical reported in one environmental parameter. It is not intended to show exposure levels.



ASBESTOS ENVIRONMENTAL RELEASES

TOTAL RELEASE = 1100940 POUNDS

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BENZENE

CAS Number: 71-43-2

Benzene, one of the most highly produced chemcials in the United States, is an identified human carcinogen. It is a clear, colorless liquid with a strong, sweet odor. Benzene is used primarily in the manufacture of chemical intermediates that are, in turn, used to produce a variety of products including plastics, nylon, detergents, pharmaceuticals, and pesticides. Benzene, itself, is used as an octane-booster in lead-free gasoline. Since it is a naturally-occuring constituent of petroleum, benzene is also found as a low-level contaminant in many products, including paint thinner, lighter fluid, and leather stains.

Benzene is a fairly stable chemical in the environment. In its liquid state, benzene is only slightly soluble in water. Hence, if benzene enters an aquifer, an underground stream or lake, it may remain there indefinitely. Benzene is a very volatile compound, evaporating to a gas quickly at room temperature. In its gaseous state, benzene is three times more dense than air so if a benzene cloud enters the atmosphere, it will most likely hang there until dispersed by air currents. In the upper atmosphere, benzene has a half-life of two days. Half-life is the time required for the chemical to break down to half of its original quantity.

Environmental releases of benzene come mainly from petroleum and chemical industry emissions and automobile exhaust. The major route of human exposure to benzene is through inhalation of benzene vapors. Once in the lungs, benzene is quickly absorbed into the bloodstream. It is stored in the bone marrow, fat tissue, and the central nervous system. The only way to detect benzene in humans is through blood tests.

Benzene has been shown to cause health hazards as a result of both acute (short-term, high-level) and chronic (long-term, low-level) exposure. Benzene has been identified to be a health hazard for more than 75 years. It is included on OSHA's list of human carcinogens. Exposure to benzene has been linked to several forms of leukemia. Benzene has also been demonstrated to be a mutagen. In addition, chronic exposure to benzene has been shown to cause damage to bone marrow function, such as aplastic anemia, a disease of the marrow germ cells, and pancytopenia, a decrease in the number of white blood cells, red blood cells, and platelets.

Although most exposures to benzene are occupational, the high levels of benzene production and emissions increase the possibility of chronic exposure to the general public. The current OSHA standard for occupational exposure to benzene is 10 parts per million (PPM) over eight hours with 25 ppm as a ceiling limit. In 1977 OSHA lowered its limit to 1 ppm, the lowest detectable limit. However, the courts ruled against the 1 ppm level saying there was insufficient evidence to show that it would decrease the incidence of leukemia. As a

result, the 10 ppm level stands. The National Institute for Occupational Safety and Health (NIOSH) continues to recommend use of the 1 ppm standard. The EPA considers benzene a priority pollutant and a hazardous waste which means that companies msut report use, storage, production, discharges, and disposal of the chemical. In New Jersey, benzene is regulated as one of 11 Toxic Volatile Organic Compounds. Standards regarding these compounds include specifying height of physical stacks and emission velocity to encourage the flow of benzene vapors into the upper atmosphere.

The New Jersey Industrial Survey reports that between 100 and 500 million pounds of benzene are produced in New Jersey annually. Only four other substances had production figures greater than or equal to those of benzene. An additional 100 to 500 million pounds of benzene are also purchased each year by New Jersey manufacturers. Ten to 50 million pounds of benzene were reported as the statewide maximum inventory and 100 to 500 million pounds are shipped off-site.

Air emissions of benzene are the most significant environmental release of this chemical. Responders reported that 2,100,000 pounds of benzene are released annually through stack emissions and that another 200,000 pounds are released through fugitive emissions. These emissions levels seem considerably low compared to the high volume of benzene production and use. Levels of discharge to waterways is much lower than air releases. Three hundred pounds of benzene are reportedly discharged to surface waters and an additional 25,000 pounds are discharged to POTWS. Additionally, significant quantities of benzene, 1,800,000 pounds, were reportedly disposed of as waste.

Including confidential data, the total air emissions of Benzene comprise 55.7 percent of total environmental releases of Benzene.

The number of municipalities where non-confidential air emissions of Benzene were reported and the names of municipalities in the highest reported inventory are listed below:

Inventory: less than 1,000 pounds
Number of municipalities: 3

Inventory: 1,000 to 10,000 pounds
Number of municipalities: 4

Inventory: 10,000 to 100,000 pounds
Number of municipalities: 6

Inventory: 100,000 to one million pounds
Number of municipalities: 2

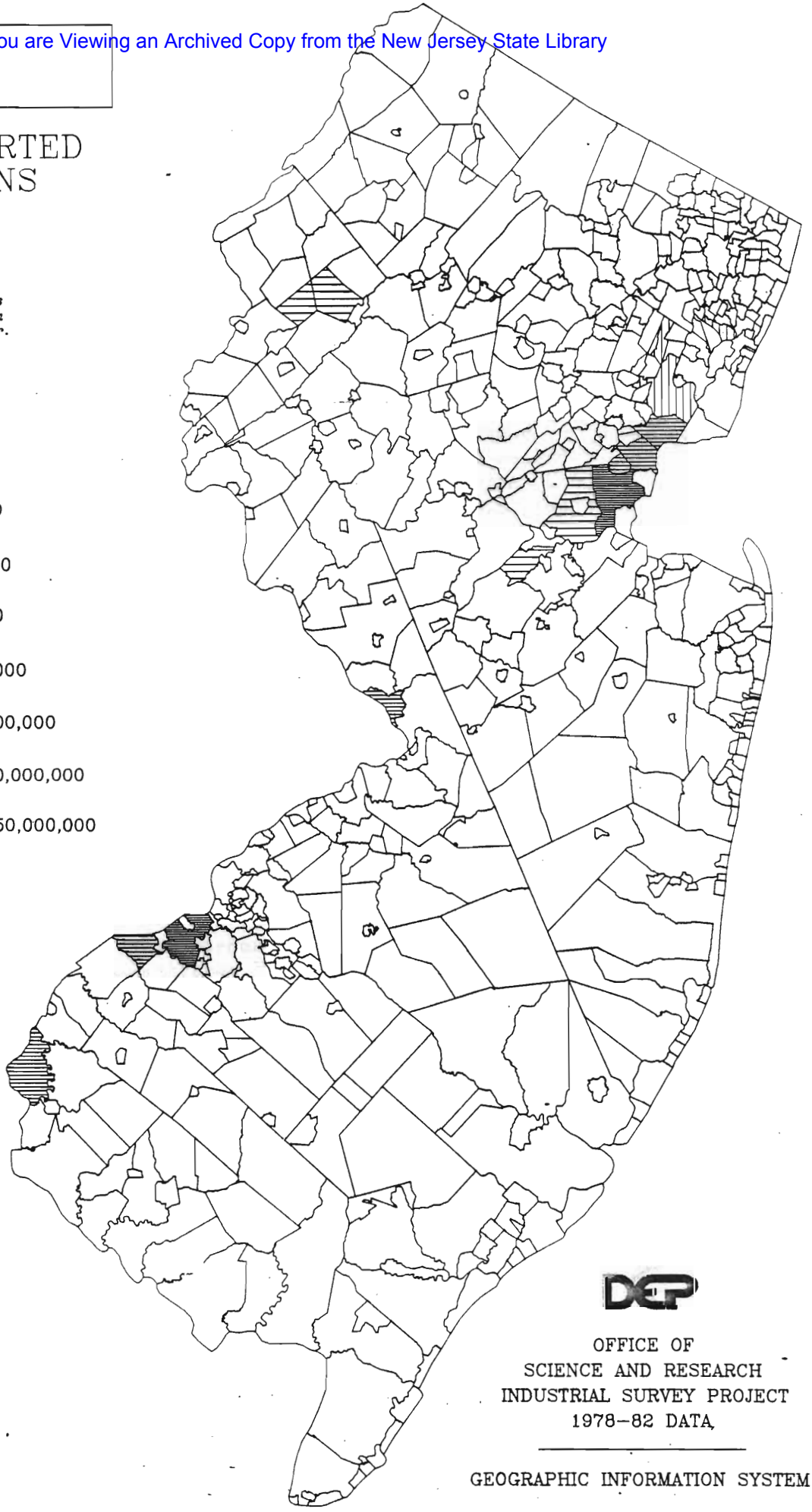
West Deptford (Gloucester County) - 120,000 pounds
Woodbridge (Middlesex County) - 900,000 pounds

BENZENE

TOTAL REPORTED AIR EMISSIONS

BY MUNICIPALITY

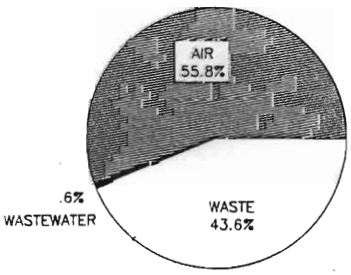
This map illustrates levels of the chemical reported in one environmental parameter. It is not intended to show exposure levels.



POUNDS

- NONE REPORTED
- LESS THAN 1,000
- 1,000 TO 10,000
- 10,000 TO 100,000
- 100,000 TO 1,000,000
- 1,000,000 TO 10,000,000
- 10,000,000 TO 50,000,000

BENZENE ENVIRONMENTAL RELEASES



TOTAL RELEASE = 4125300 POUNDS

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GEOGRAPHIC INFORMATION SYSTEM

CHROMIUM

CAS Number: 7440-47-3

Chromium is a metal found contained in the mineral chromite, which must be processed to produce the elemental form of chromium. It is a constituent of many commerically important molecules, including calcium chromate, chromic oxide, chromium dioxide and potasium dichromate. The chromium containing compounds are important to numerous industrial processes, most notably plating, pigment manufacturing and photography.

Air emissions containing chromium result form a myriad of industrial facilities: paper mills, organic and inorganic chemical manufacturing, foundries and glass and cement plants. Another source of atomospheric chromium is motor vehicle exhaust.

Evidence indicates that there is an increased incidence of lung cancer among workers exposed to chromium. Chromium is found in three forms or states: divalent, trivalent and hexavalent. All laboratory evidence shows that only the hexavalent form of chromium affects the genetic component of test organisms. Therefore, only this form of chromium is considered to be cancer-causing, and is included on OSHA's list of carcinogens.

The acute toxicity varies for each chrominated compound and is also dependent on the route the chemical uses to enter the body. The three major routes which chromium intrudes the body are respiratory, gastrointestinal and dermal. From an ecological viewpoint, hexavalent chromium has been demostrated to be highly toxic to invertebrates at relatively low doses (22 ug/l).

Chromium is present as an air pollutant in a particulate form. NIOSH recommends that concentrations of hexavalent chromium should not exceed 1 ug/m3 in the ambient air of the workplace. The USEPA ambient water quality criterion to protect freshwater biota form this metal is 0.9 ug/l for a 24 hour sampling period. For the marine environment, USEPA has esablished a 19 ug/l guideline for the same averaging time. To protect human health, the ambient water quality criterion set by the USEPA is 50 ug/l.

While the level of chromium reportedly produced in New Jersey is relatively low, 100 to 500 thousand pounds, the quantity of chromium purchased by New Jersey manufacturers is significantly high, 10 to 50 million pounds. Under the Industrial Survey, responders reported that 10 to 50 million pounds of chromium are shipped off-site and that a maximum inventory of 1 to 5 million pounds are maintained in the State.

While the overall reported air releases of chromium were low, stack emissions of chromium were the second-highest for any OSHA-identified carcinogen, 3,000 pounds. Reported fugitive emissions were 400 pounds. Water discharges of chromium were significantly

higher than air release. Responders reported that 8,000 pounds of chromium are discharged to surface waters and 380,000 pounds are discharged to POTWS. Similarly, a high level of chromium, 350,000 pounds is reportedly disposed of as waste.

Including confidential data, the total amount of chromium discharged to wastewater comprises 52.3 percent of the total environmental releases of this chemical.

The number of municipalities where non-confidential chromium wastewater discharges were reported and the names of municipalities in the highest inventory are listed below:

Inventory: Less than 1,000 pounds
Number of Municipalities: 17

Inventory: 1,000 to 10,000 pounds
Number of Municipalities: 3

Inventory: 100,000 to one million pounds
Number of Municipalities: 1

Newark (Essex County) - 179,937.5 pounds

CHROMIUM

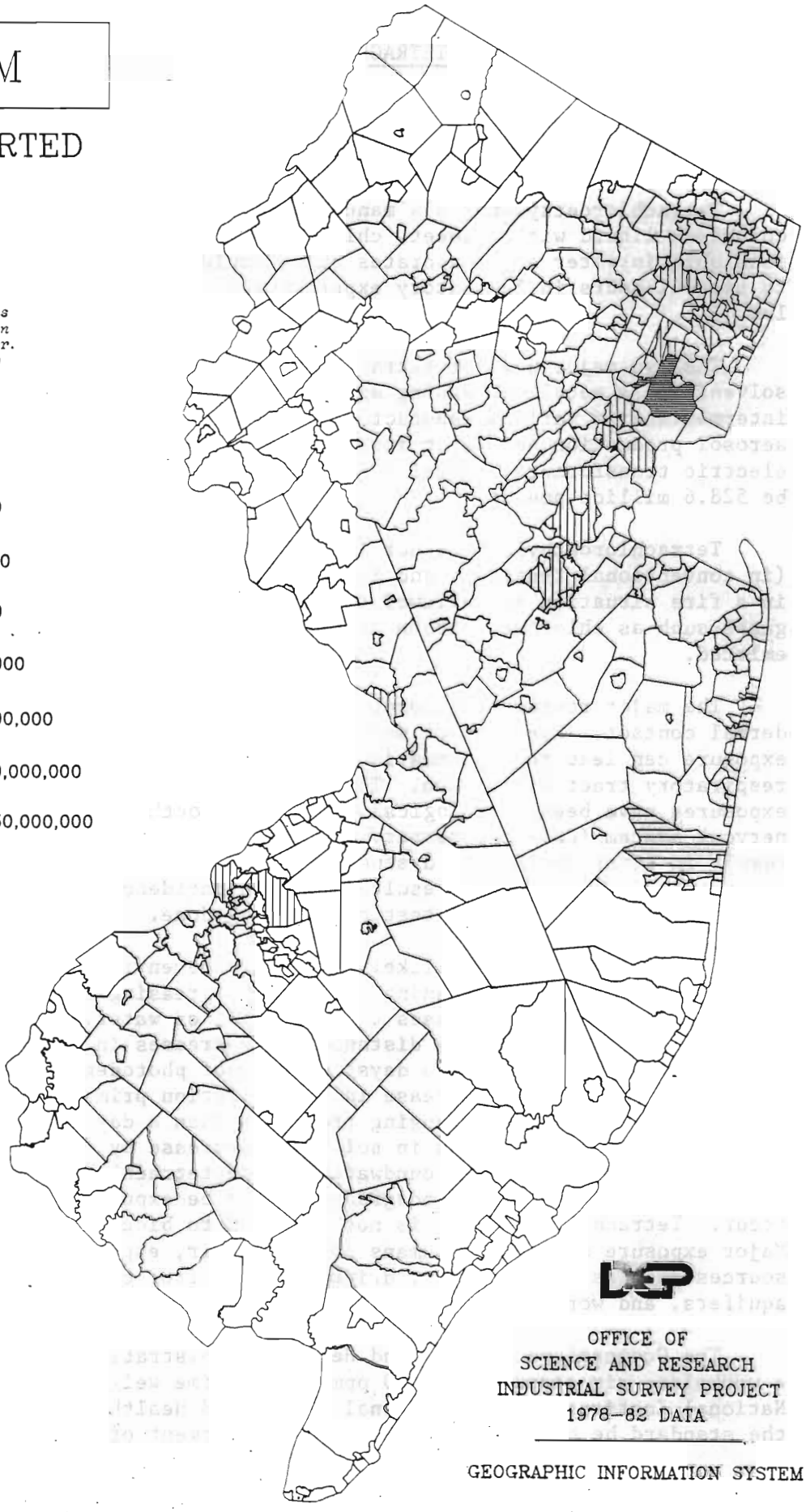
TOTAL REPORTED WASTEWATER DISCHARGES

BY MUNICIPALITY

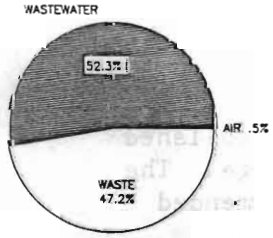
This map illustrates levels of the chemical reported in one environmental parameter. It is not intended to show exposure levels.

POUNDS

- NONE REPORTED
- LESS THAN 1,000
- 1,000 TO 10,000
- 10,000 TO 100,000
- 100,000 TO 1,000,000
- 1,000,000 TO 10,000,000
- 10,000,000 TO 50,000,000



CHROMIUM ENVIRONMENTAL RELEASES



TOTAL RELEASE = 741400 POUNDS

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TETRACHLOROETHYLENE

CAS Number: 127-18-4

Tetrachloroethylene is a manufactured substance. It is a colorless liquid with a sweet, chloroform-like odor. It is virtually insoluble in water and evaporates quite rapidly (fractions of an hour to several hours in laboratory experiments). Soil adsorptivity is low.

The two major uses of tetrachloroethylene are as a dry cleaning solvent and a metal degreasing agent. It is also used as a chemical intermediate in various manufacturing proceeses, such as textile and aerosol production and as an insulating fluid and cooling gas in electric transformers. Total U.S. production in 1983 was reported to be 528.6 million pounds.

Tetrachloroethylene is not flammable, does not have a flash point (in conventional testing), and it is nonexplosive. If the material is in a fire situation and allowed to heat to decomposition, poisonous gases such as chlorine, carbon monoxide, and phosgene might be emitted.

The major routes of exposure are inhalation, drinking water, and dermal contact. Eye contact may result in conjunctivitis, skin exposure can lead to inflammation, and inhalation has caused respiratory tract irritation. The major effects noted in occupational exposures have been neurological. Tetrachloroethylene is a central nervous system (CNS) depressant. The CNS effects, if prolonged, can result in liver and kidney dysfunctions. Laboratory tests on mice given tetrachloroethylene resulted in high incidences of liver cancer in both sexes. Additional testing is being done.

Tetrachlorethylene is likely to enter the environment by fugitive air emissions from dry cleaning and metal degreasing industries and by spills or accidential releases to air, soil, or water. Releases to air may be transported long distance and decreases in concentration will occur rapidly (hours to days) because of photodegradation. Releases to water will decrease in concentration primarily because of vaporization (half-lives ranging from less than a day to several weeks). The concentrations in soil will decrease by volatilization in air and percolation into groundwater. Once tetrachloroethylene has entered the groundwater, biodegradation can be expected to slowly occur. Tetrachloroethylene is not expected to bioconcentrate in fish. Major exposure sources to humans are urban air, especially point sources such as dry cleaners, drinking water from contaminated aquifers, and workplace environments.

The Occupational Safety and Health Administration has established a workplace air standard of 100 ppm as the time weighted average. The National Institute of Occupational Safety and Health has recommended the standard be halved to 50 ppm. The Department of Transportation

does not have any labeling requirements for tetrachloroethylene.

Usage and environmental release levels of tetrachloroethylene were relatively low compared to other chemicals in this substance's chemical group of Halogenated Alkanes and Alkenes. Industries reported producing no tetrachlorethylene during the reporting year of the Industrial Survey and the total amount purchased by New Jersey industries was reported to be 1 to 5 million pounds. Additionally, industries reported shipped 1 to 5 million pounds of the chemical off-site and maintaining .5 to 1 million pounds as the statewide maximum inventory.

Low levels, 14,000 pounds, of tetrachloroethylene were reportedly released as stack emissions and a somewhat higher level, 43,000 pounds, were reportedly released as fugitive emissions. Discharges of tetrachloroethylene to water were one of the lowest for any of the 15 chemicals included in this report. Industries reported that 400 pounds of the chemical are discharged to surface water and that an additional 3,100 pounds are discharged annually to POTWS. The most significant release of tetrachloroethylene were the 710,000 reported to be disposed of as waste.

Including confidential data, the total amount of tetrachloroethylene disposed of as waste comprises 92.1 percent of the total environmental releases of this chemical.

The number of municipalities where non-confidential tetrachloroethylene waste was reported and the names of municipalities in the highest inventory are listed below.

Inventory: Less than 1,000 pounds
Number of municipalities: 4

Inventory: 1,000 to 10,000 pounds
Number of municipalities: 6

Inventory: 10,000 to 100,000 pounds
Number of municipalities: 1

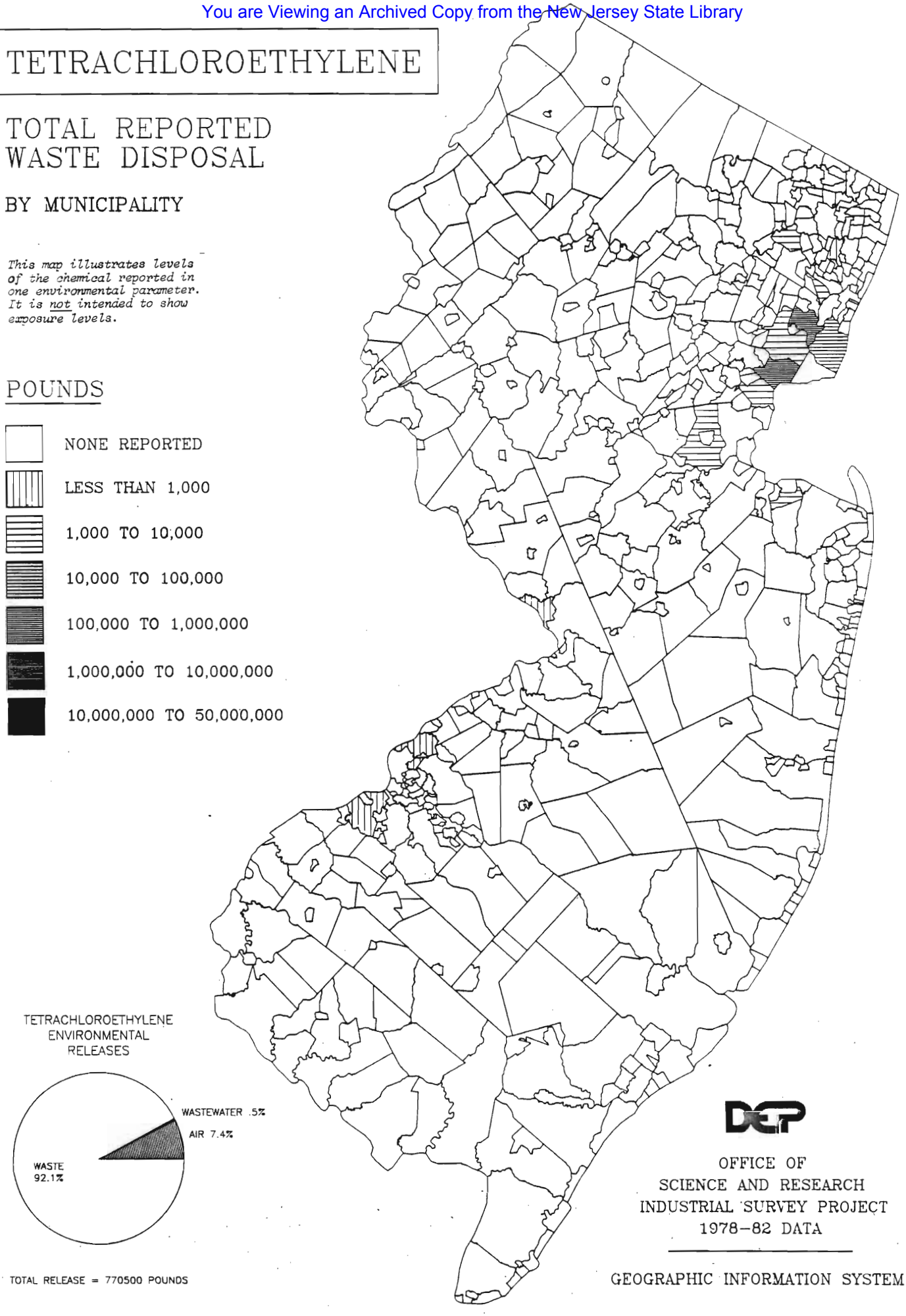
Inventory: 100,000 to one million pounds
Number of municipalities: 2

TETRACHLOROETHYLENE

TOTAL REPORTED WASTE DISPOSAL

BY MUNICIPALITY

This map illustrates levels of the chemical reported in one environmental parameter. It is not intended to show exposure levels.



TETRACHLOROETHYLENE ENVIRONMENTAL RELEASES

TOTAL RELEASE = 770500 POUNDS

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BIS (2-ETHYLHEXYL) PHTHALATE

CAS Number: 117-81-7

Bis (2-ethylhexyl) phthalate is manmade substance which is also commonly referred to as di(ethylhexyl) phthalate or DEHP. It is a colorless, oily liquid and has only a slight odor. It is virtually insoluble in water but is miscible with mineral oil and hexane. It adsorbs readily to soil and sediments. It is flammable but only following preheating which can cause ignition.

The major use of DEHP is as a plasticizer for polyvinyl chloride products and other polymers. A plasticizer facilitates plastics processing and increases the flexibility and toughness of the final product. It is also used in other vinyl resins and has a very small number of uses that are unrelated to plastics production. The U.S production of DEHP in 1982 was 251,067,000 pounds. Some of the final plastic products that DEHP can be found in are children's toys, baby bottles, food storage containers and wrappers, and blood transfusion storage packs.

Under controlled, regulated conditions, few adverse health effects have been observed in humans. DEHP has not been shown to be a skin irritant or sensitizer. Repeated occupational exposures within permissible levels have not produced a variety of symptoms including; conjunctivitis, keratitis, bronchial irritation, staggering, eczema, nausea, abdominal cramps, and diarrhea. In animal tests, transplacental migration was observed and newborns developed lipid metabolism abnormalities. The liver is often the site of adverse effects ranging form enlargement to enzyme irregularities to cancer. Embryolethal and teratongenic effects were also observed in test animals.

Bis(2-ethylhexyl) phthalate is likely to be released into the air and water during production and waste disposal of plastic products. DEHP in water will biodegrade in 2-3 weeks on the average, adsorb to sediments, and bioconcentrate in aquatic organisms. Atmospheric DEHP will be carried long distances and be remove by rain. Human exposure occurs most frequently in occupational settings, from air, from consumption of drinking water and food (especially fish where bioconcentration has occured), from consumption of foods in PVC wrappers, and from blood transfusions.

A draft reported issued by the Consumer Product Safety Commission (CPSC) in the fall of 1985 sparked a quickly growing controversy over the use of BEHP, particularly in baby products, such as rattles and teething rings. the CSPC report said that BEHP should be considered potentially carcinogenic and added that the chemical "belongs to a special class of carcinogens that share the property of inducing proliferation of peroxisomes and of proliferation of liver cells". However, the CSPC based its findings on mice and rat tests and not on epidemiological studies prompting the Chemical Manufacturers'

Association to be highly critical of the CSPC findings. The CMA points out that the level of BEHP fed to experimental rats was in excess of four million times of normal human exposure.

The Occupational Safety and Health Administration has set an exposure standard of 5 mg/m^3 as the time weighted average. DEHP has been designated a priority pollutant and is also regulated as a toxic waste by the Environmental Protection Agency.

Under the Industrial Survey Project, New Jersey industries reported producing 100 to 500 million pounds of Bis (2-ethylhexyl) Phthalate and purchasing and additional 10 to 50 million pouns. In addition, 100 to 500 million pounds of the chemical were reportedly shipped off-site and the reported statewide maximum inventory was 5 to 10 million pounds.

The levels of environmental releases of Bis (2-ethylhexyl) Phthalate were relatively low compared to the levels of production and purchase. Industries reported emission 63,300 pounds of the chemical through stack emissions and an additional 2,100 through fugitive emissions. Also, 230 pounds of Bis (2-ethylhexyl) Phthalate were reportedly discharged to surface waters and 15,100 pounds were reportedly discharged to POTWS. A significant portion of the chemical, 64,710 pounds were reportedly disposed of as waste.

The total amount of air emissions reported for Bis (2-ethylhexyl) phthalate comprises 44.9 percent of its total environmental releases. The number of municipalities where air emissions of Bis (2-ethyl hexyl) Phthalate were reported and the names of municipalaities in the highest reported inventory are listed below.

Inventory: Less than 1,000 pounds
Number of municipalities: 3

Inventory: 1,000 to 10,000 pounds
Number of municipalities: 4

Inventory: 10,000 to 100,000 pounds
Number of municipalities: 1

Piscataway (Middlesex County) - 60,000 pounds

BIS (2-ETHYLHEXYL) PHTHALATE

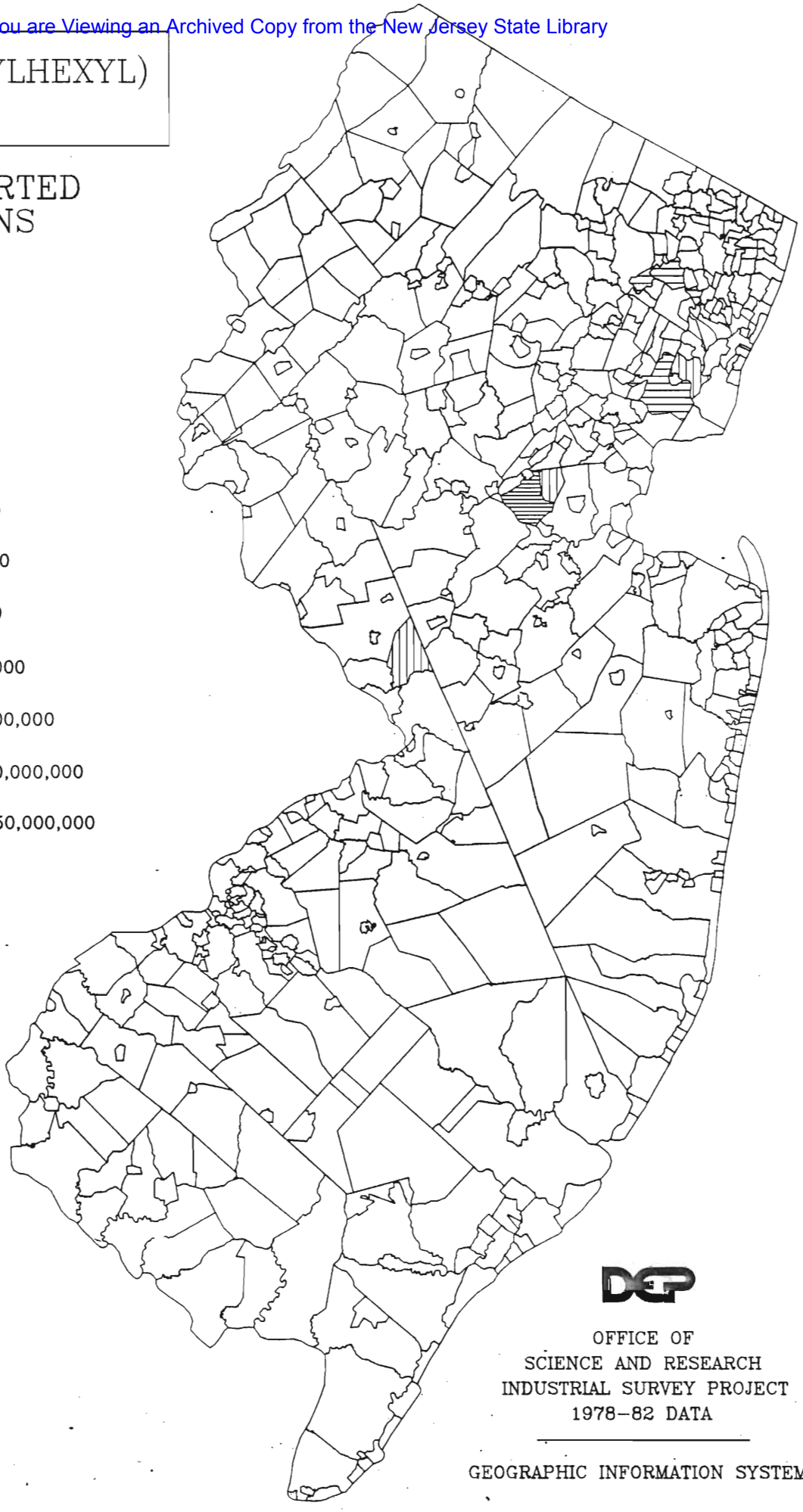
TOTAL REPORTED AIR EMISSIONS

BY MUNICIPALITY

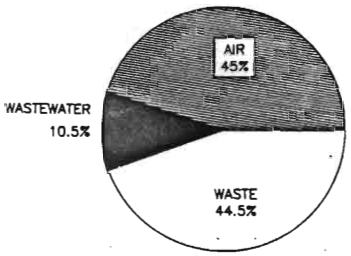
This map illustrates levels of the chemical reported in one environmental parameter. It is not intended to show exposure levels.

POUNDS

- NONE REPORTED
- LESS THAN 1,000
- 1,000 TO 10,000
- 10,000 TO 100,000
- 100,000 TO 1,000,000
- 1,000,000 TO 10,000,000
- 10,000,000 TO 50,000,000



BIS (2-ETHYL HEXYL) PHTHALATE ENVIRONMENTAL RELEASES



TOTAL RELEASE = 145440 POUNDS

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METHYLENE CHLORIDE (DICHLOROMETHANE)

CAS Number: 75-09-2

Methylene chloride is also known as dichloromethane, DCM, acrothene MM, and Freon 30. In addition to uses as a paint remover, methylene chloride is used as a blowing agent in foams, in the manufacture of insecticides and fumigants, as a plastics processing agent, and as a solvent for many applications including coating photographic films, aerosol formulations, for cellulose acetate, and degreasing operations. It is used as a solvent in the extraction of naturally occuring substances such as edible fats, cocoa, butter, the beer flavoring in hops and for decaffeinating coffee.

Most often chlorinated solvents are less water soluble than methylene chloride. Some studies have shown methylene chloride being formed during chlorination in water treatment plants. It is a colorless, volatile liquid having a penetrating ether-like odor. Methylene chloride reacts violently with lithium and some potassium compounds. When heated to decomposition, highly toxic fumes of phosgene may be emitted. It can be decomposed by contact with hot surfaces and open flame. This is an important concern in degreasing hot metals or operations in areas of open flame.

Any spills of methylene chloride will sink and dissolve slowly in water. Volatilization is the major mechanism for removal from aquatic systems. Once in the atmophere (troposphere), methylene chloride forms products of carbon dioxide, carbon monoxide and phosgene after attack by hydroxyl radicals. Any unreacted material diffusing upward to the stratosphere will undergo photodissocation.

Due to its high volatility, high concentrations of methylene chloride may be reached rapidly in areas of poor ventilation. Symptoms of excessive exposure may be dizziness, nausea, numbness of the extremities, sense of fullness in the head, sense of heat, stupor lethargy, and drunkeness. Exposure to very high concentrations may lead to rapid unconsciousness and death. Prompt removal from exposure prior to death usually results in complete recovery from the immediate, acute effects.

The 1976 OSHA air standard for methylene chloride is 500 ppm, 8 hour TWA, 1000 ppm acceptable ceiling and a 2000 ppm maximum (5 minutes in 2 hours). NIOSH has recommended an exposure limit of 75 ppm TWA, 500 ppm ceiling (15 minutes) and the TWA to be lowered in the presence of carbon monoxide. In 1980, the ACGIH recommended a reduction to a TLV of 100 ppm. Short Term Exposure Limit (STEL) was recommended at 500 ppm.

Methylene chloride has recently (7/85) been the subject to studies by the Consumer Product Safety Commission (CPSC). These studies have estimated the risks of getting cancer from using spray paints and paints strippers containing methylene chloride as among the

highest for a consumer product. EPA has taken action to determine if any or all uses of methylene chloride poses an unreasonable risk to health via a TSCA priority review.

The Resource Conservation and Recovery Act (RCRA) specifies the handling and report/record-keeping requirements for methylene chloride waste generators in excess of 220lbs/month. RCRA designates methylene chloride as a hazardous constituent of waste, and specifies that waste known to contain methylene chloride meet the same requirements as above.

Several labor unions have recently (8/85) petitioned OSHA to immediately publish a hazard alert and an Emergency Temporary Standard (ETS) while a new permanent standard is being developed.

Although industries reported that no methylene chloride was produced in New Jersey during the reporting years of the Industrial Survey Project, 10 - 50 million pounds of the chemical were reportedly purchased by New Jersey industries. Industries also reported that the same quantity of methylene chloride that is purchased annually, 10 to 50 million pounds, are also shipped off-site with 1 to 5 million pounds being maintained as the statewide maximum inventory.

Air releases of methylene chloride were significantly high with 1.1 million pounds being reportedly released as stack emissions and an additional 800,000 reported as fugitive emissions. Reported water discharges of methylene chloride, although high, were much lesser than air releases. Industries reported that 10,000 pounds were discharged annually to surface waters and 330,000 pounds of methylene chloride were discharged to POTWS. Reported levels of methylene chloride disposed of as waste were one of the highest for any chemical included in the Industrial Survey. Industries reported disposing 2,500,000 of methylene chloride as waste annually.

Including confidential data, the total amount of Dichloromethane that was reported disposed of as waste comprises 52.7 percent of the total environmental releases of this chemical.

The number of municipalities where non-confidential Dichloromethane waste was reported and the names of municipalities in the highest inventory are listed below:

Inventory: Less than 1,000 pounds
Number of municipalities: 13

Inventory: 1,000 to 10,000 rounds
Number of municipalities: 9

Inventory: 10,000 to 100,000 pounds
Number of municipalities: 6

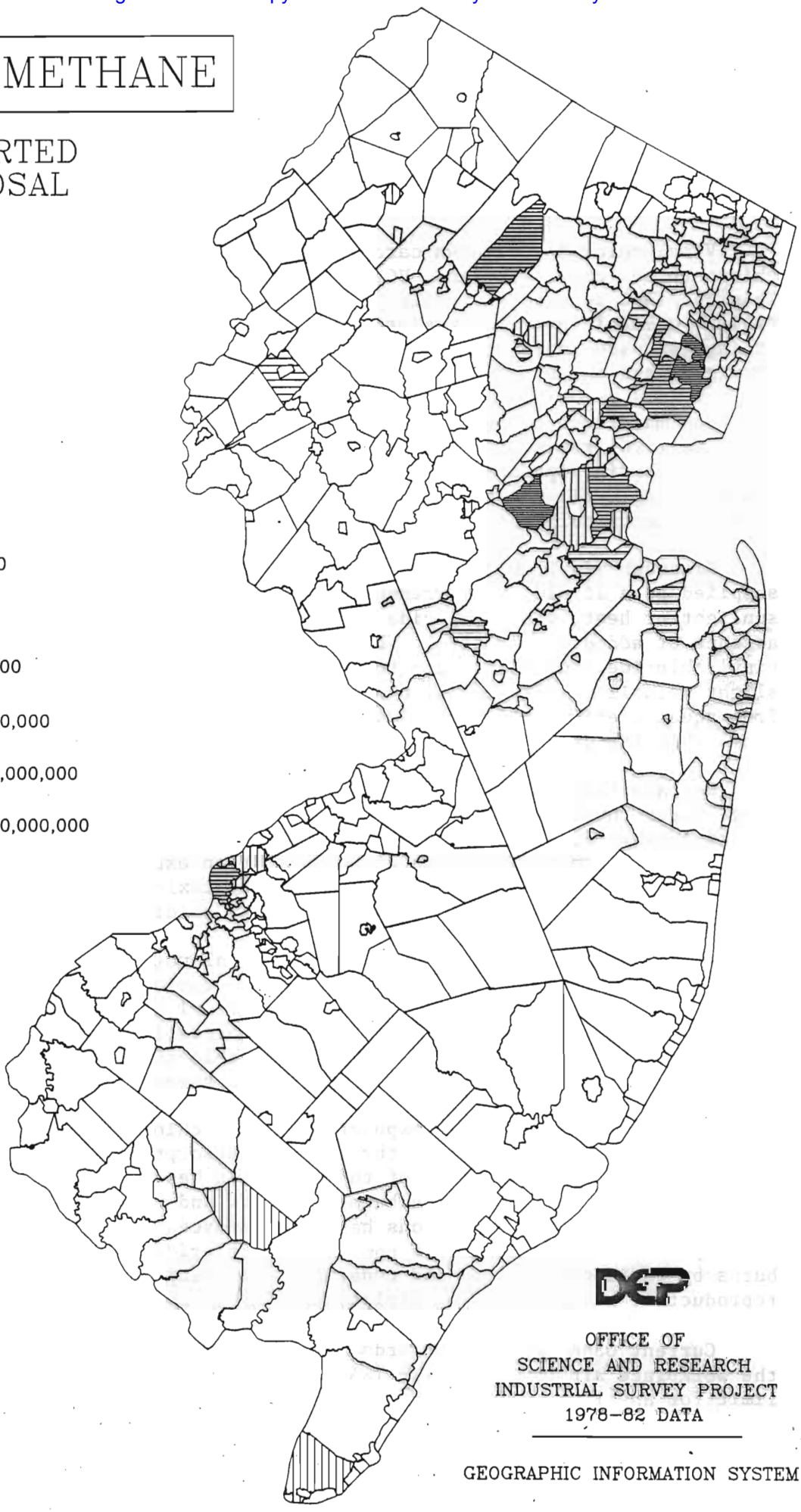
Inventory: 100,000 to one million pounds
Number of municipalities: 3

DICHLOROMETHANE

TOTAL REPORTED WASTE DISPOSAL

BY MUNICIPALITY

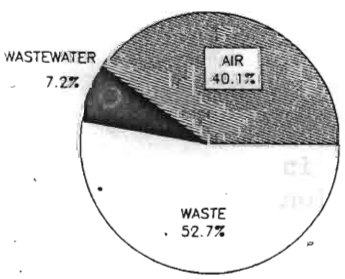
This map illustrates levels of the chemical reported in one environmental parameter. It is not intended to show exposure levels.



POUNDS

- NONE REPORTED
- LESS THAN 1,000
- 1,000 TO 10,000
- 10,000 TO 100,000
- 100,000 TO 1,000,000
- 1,000,000 TO 10,000,000
- 10,000,000 TO 50,000,000

DICHLOROMETHANE ENVIRONMENTAL RELEASES



TOTAL RELEASE = 4740000 POUNDS

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VINYL CHLORIDE

CAS Number: 75-01-4

Vinyl chloride, a known carcinogen, has alternate names of chloroethane, chloroethylene, VC, and VCM (vinyl chloride monomer). This chemical is used primarily for the production of polymer plastic resins, commonly polyvinyl chloride (PVC) or Saran and other plastics. It is also used in lesser quantities for the synthesis of other chemicals and as an additive in specialty coatings.

The major use of vinyl chloride is in the production of polyvinyl chloride (PVC) resins. These PVC resins are, in turn, mainly used to produce plastic pipe and conduit. Other uses include floor coverings, house siding, wall coverings, garden hoses, appliances, swimming pool liners, electrical applications, and in automobiles.

Although vinyl chloride is a colorless gas, it is usually supplied as a liquid under pressure. In the presence of air, oxygen, sunlight or heat, vinyl chloride will polymerize (particularly in the absence of added stabilizers). Due to the high vapor pressure of vinyl chloride, volatilization to the atmosphere is very rapid. The slight solubility in water also aids in the release of vinyl chloride from aquatic ecosystems to the atmosphere. Once in the troposphere, vinyl chloride reacts very rapidly with hydroxyl radicals.

Certain hazards are notable when dealing with vinyl chloride. Large fires involving this chemical may be practically inextinguishable. The vapors, when exposed to heat or flame, or on standing may form peroxides in air and can then explode. When heated to decomposition, vinyl chloride emits highly toxic fumes of phosgene. Vinyl chloride can also react vigorously with oxidizing materials.

Vinyl chloride has been found in municipal water supplies where the water is chlorinated. In addition, some studies have indicated that vinyl chloride migrates from rigid polyvinyl chloride water pipe depending on the level of residual vinyl chloride in the pipe itself. Laboratory studies have reported that vinyl chloride does not bioaccumulate or transfer to any great extent through food chains.

The main route of human exposure to vinyl chloride occurs through inhalation and less frequently through skin absorption. Vinyl chloride causes angiosarcomas of the liver and has also been linked to tumors of the brain, lung, the haematopaietic and lymphatic systems in humans. Chromosomal aberrations have been induced in workers exposed to vinyl chloride levels of 25 ppm. Vinyl chloride can cause skin burns by rapid evaporation and consequent freezing. It is a reproductive hazard in the workplace.

Current OSHA health standards for employee exposure are 1 ppm in the workplace air for an 8 hour TWA and a 5 ppm ceiling concentration limit for any 15 minute period. Medical surveillance, training for

workers, use of protective clothing and respirators, warning signs, product labeling and periodic monitoring are also required by OSHA.

Residual vinyl chloride in commerical products has been a subject of concern since a 1973 ban in the use of PVC for the packaging of alcoholic beverages. The Food and Drug Administration (FDA) reported finding significant levels of vinyl chloride in those alcoholic beverages prior to this ban. In 1974, the CPSC, EPA and the FDA each banned the use of vinyl chloride as an aerosol propellant. Studies have shown vinyl chloride concentrations from consumer products, such as new automobile interiors in the ppm range.

EPA has set a national emission standard for vinyl chloride production and manufacturing facilities at 5 ppm. In addition, the Clean Water Act has recommended a concentration of 2.0 ug/l to limit the estimated cancer risk to one in a million. The Resource Conservation and Recovery Act (RCRA) specifies handling and report/record keeping requirements for vinyl chloride waste products, off-specification batches and spill residues in excess of 2,200 lb. RCRA designates vinyl chloride as a hazardous constituent of waste, and specifies that waste known to contain vinyl chloride most meet the same requirements as vinyl chloride waste.

In 1982, the Health and Safety Executive of the United Kingdom published a guidance note concerning possible health risks associated with workplace exposure to PVC dust. Further studies in this area have not been completed to date.

As with several other Selected Substances in the chemical group Halogenated Alkanes and Alkenes, industries reported that no vinyl chloride was produced in New Jersey during the reporting years of the Industrial Survey Project. However, a significant amount of vinyl chloride, 100 to 500 million pounds, were reportedly purchased by New Jersey industries. Also, 50 to 100 million pounds were reportedly shipped off-site and the reported statewide maximum inventory for vinyl chloride was 1 to 5 million pounds.

Under the Industrial Survey project, New Jersey industries reported that no levels of vinyl chloride were discharged to either surface waters or POTWS. However, significant levels of vinyl chloride were released as air emissions, particularly in fugitive emissions. Industries reported emitting 150,000 pounds of vinyl chloride through stack emissions and fugitive emissions of vinyl chloride, the highest of any Selected Substance, were reported to be 1,310,000 pounds. Approximately 630,000 pounds of vinyl chloride were reportedly disposed of as waste.

Including confidential data, total air releases of vinyl chloride comprise 69.8 percent of the total environmental releases for this chemical.

The number of municipalities where non-confidential air emissions were reported in the following inventories are listed below. Names of municipalities with levels in the highest reported inventory are also listed:

Inventory: 1,000 to 10,000 pounds
Number of municipalities: 1

Inventory: 10,000 to 100,000 pounds
Number of municipalities: 2

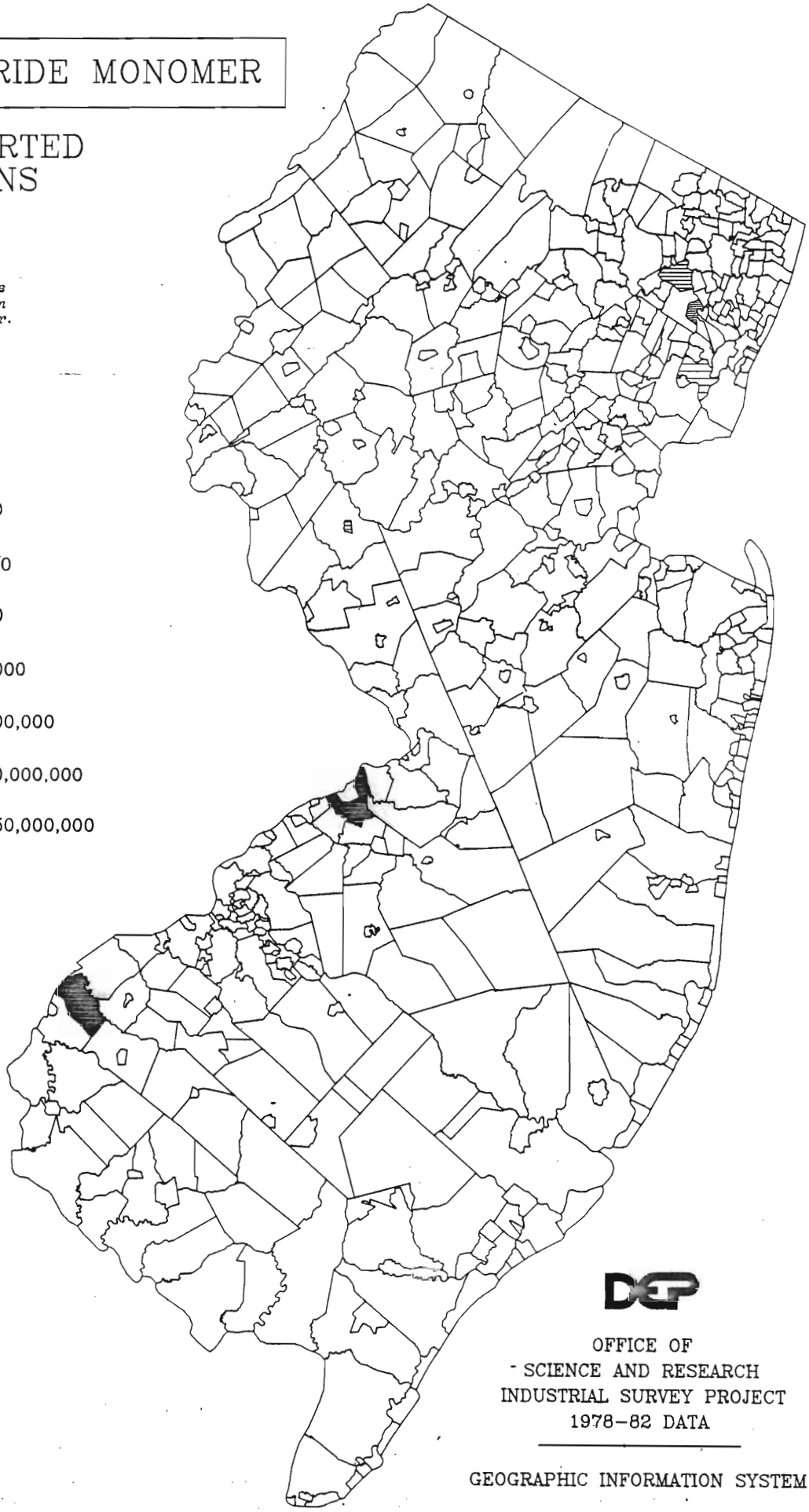
Paterson (Passaic County) - 15,000 pounds
Flemington Boro (Hunterdon County) - 56,000 pounds

VINYL CHLORIDE MONOMER

TOTAL REPORTED AIR EMISSIONS

BY MUNICIPALITY

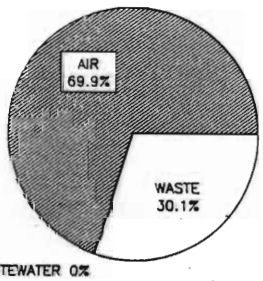
This map illustrates levels of the chemical reported in one environmental parameter. It is not intended to show exposure levels.



POUNDS

- NONE REPORTED
- LESS THAN 1,000
- 1,000 TO 10,000
- 10,000 TO 100,000
- 100,000 TO 1,000,000
- 1,000,000 TO 10,000,000
- 10,000,000 TO 50,000,000

VINYL CHLORIDE MONOMER ENVIRONMENTAL RELEASES



WASTEWATER 0%

TOTAL RELEASE = 2090000 POUNDS

OFFICE OF
SCIENCE AND RESEARCH
INDUSTRIAL SURVEY PROJECT
1978-82 DATA

GEOGRAPHIC INFORMATION SYSTEM

IX. CONCLUSIONS

IX. CONCLUSIONS

As mentioned earlier in the report, the New Jersey Industrial Survey Project had three specific objectives: establishment of a statewide toxics inventory; identification of geographic regions and population groups in the State that are subject to increased disease risk due to toxic contaminant exposure; and application of the toxic inventory to the study of methods aimed at reducing the release of toxic substances into the environment. Assessing the success of the Industrial Survey Project includes determining whether those objectives were achieved. However, this assessment must also consider that the Industrial Survey Project was a preliminary attempt to identify toxic substance use and distribution and that the project has been expanded and refined through implementation of the Worker and Community Right to Know Act. On the whole, the Industrial Survey Project did meet its stated objectives. A statewide toxics inventory has been established and data from this inventory has been applied to various enforcement and research projects intended to identify and reduce risks due to toxic exposure, as discussed previously in this report. However, if given greater resources, it is expected that significant applications of the Industrial Survey inventory would have been expanded to include studies to correlate the inventory with cancer statistics as well as studies to focus on areas where greater enforcement and stronger environmental regulations are needed.

This report discusses two aspects of the Industrial Survey Project: overall results of the survey and methodologies used to conduct the survey. It is hoped that by presenting the results of the Industrial Survey, NJDEP will aid in better educating the public about the existence and control of hazardous substances and it is hoped that by summarizing methodologies used in the Industrial Survey Project, NJDEP will encourage other states to conduct similar, valuable inventories of toxic substance use.

1. Survey Results:

Although most of the chemicals included in the Industrial Survey are regulated by state or federal programs, large quantities of hazardous substances are still released to New Jersey's air, land, and water. The Industrial Survey project proved invaluable in making this determination and has set directions for the state to follow in regulating hazardous substances. Information collected under the Industrial Survey Project, has been and is still used by several divisions in NJDEP to monitor and regulate releases of hazardous substances. Before conducting the Industrial Survey, NJDEP did not have access to any such inventory often making it impossible to trace the fate and effects of toxic substances.

Following completion of the Industrial Survey Project, it became evident that for NJDEP's purpose described previously, such an inventory of toxic substances in the State must be kept updated so that NJDEP would have access to the latest data for use in regulatory projects. The New Jersey Right to Know law addresses this need.

Covered employers are required to complete the Right to Know survey forms every two years and must report any significant changes in their hazardous substance inventory in between reporting periods.

One other important aspect of conducting a toxics inventory, such as the Right to Know, on a consistent basis is that it allows NJDEP to analyze the inventory results for the entire state and for specific sites over time. This will allow NJDEP to determine whether regulations have been effective in reducing releases of toxic substances to the environment, and to continue to target areas for site investigations of potential toxics contamination.

2. Methods:

NJDEP found that, overall, the approach used to conduct the Industrial Survey Project was effective and comprehensive. Additional funding and stronger enforcement provisions would have resulted in greater compliance and additional on-site investigations to verify information. Thus based on its experience in conducting the Industrial Survey Project, NJDEP concludes that the following are necessary components of an effective toxics inventory:

- Inclusion of enforcement provisions that provide for penalties and that enable state agencies to act easily to enforce the program's requirements.

- Sufficient funding, including an appropriation for initial planning and development, to enable the state agency to actively fulfill the mandate of the law.

- Statutory authority to ensure compliance on the part of industry. Voluntary programs would not be effective in gathering data from a significant number of companies to form a comprehensive and reliable database.

- A surveying process that collects accurate, comprehensive information while minimizing the burden on employers completing the survey.

- A surveying process that collects information regarding inventory ranges, emissions, discharges, and disposal practices.

- Coverage of manufacturers and other companies with the potential to handle hazardous substances.

- Confidential Business provisions that ensure the lead government agency receives the information. It is also important for confidential business provisions to place the burden of proof for substantiating claims on employers and give government the responsibility for ruling on the adequacy of the company's claim.

- Development of a computerized database that allows the lead government agency to monitor compliance and summarize submitted data.

By incorporating these components into a toxics inventory, state agencies can lay the groundwork for understanding the nature of hazardous substances in their state. Without a toxics inventory, such as the Industrial Survey, NJDEP had only scattered information about hazardous substance use throughout the state. There was no comprehensive information source on which NJDEP could base projects aimed at reducing threats posed by toxic substances. The Industrial Survey Project proved to be the essential link between identifying hazards presented by toxic substances in New Jersey and mitigating or lessening those hazards. The Industrial Survey Project proved invaluable in protecting New Jersey's environment and the health and welfare of its citizens.

Appendix A:

Selected Substance List and Chemical Groups

Form COM-021 C
Rev. 2/80

TABLE 1
SELECTED SUBSTANCES

New Jersey Department of Environmental Protection

Let's protect our earth

All chemical compounds and/or complexes containing a selected substance (including organic, inorganic and organo-metallics) are to be reported under the given CAS code Number and identified on the survey form.

CAS NO.	HALOGENATED ALKANES AND ALKENES
107-05-1	Allyl chloride (1-Chloro-2-propene)
75-25-2	Bromoform (Tribromomethane)
56-23-5	Carbon tetrachloride
67-66-3	Chloroform
126-99-8	Chloroprene (2-Chloro-1, 3-butadiene)
106-93-4	1,2-Dibromoethane (Ethylene dibromide)
75-27-4	Dichlorobromomethane
107-06-2	1,2-Dichloroethane (Ethylene dichloride)
540-59-0	1,2-Dichloroethylene
78-87-5	1,2-Dichloropropane
542-75-6	1,3-Dichloropropylene
87-68-3	Hexachlorobutadiene
77-47-4	Hexachlorocyclopentadiene
67-72-1	Hexachloroethane
74-83-9	Methyl bromide
74-87-3	Methyl chloride
75-09-2	Methylene chloride (Dichloromethane)
79-34-5	1,1,2,2-Tetrachloroethane
127-18-4	Tetrachloroethylene (Perchloroethylene)
71-55-6	1,1,1-Trichloroethane (Methyl chloroform)
79-00-5	1,1,2-Trichloroethane
79-01-6	Trichloroethylene
75-69-4	Trichlorfluoromethane
593-60-2	Vinyl Bromide
75-01-4	Vinyl chloride
75-35-4	Vinylidene chloride (1,1-Dichloroethylene)

CAS NO.	PHENOLS
95-57-8	2-Chlorophenol
120-83-2	2,4-Dichlorophenol (DCP)
105-67-9	2,4-Dimethylphenol (m-xylenol)
534-52-1	4,6-Dinitro-o-cresol
51-28-5	2,4-dinitrophenol
88-75-5	2-Nitrophenol
100-02-7	4-Nitrophenol
87-86-5 +	Pentachlorophenol (PCP)
108-95-2	Phenol
*95-95-4	2,4,5-Trichlorophenol
88-06-2	2,4,6-Trichlorophenol

CAS NO.	HALOGENATED AROMATICS
108-90-7	Chlorobenzene
91-58-7	2-Chloronaphthalene
*1163-19-5	Decabromodiphenyl oxide
95-50-1	1,2-Dichlorobenzene
541-73-1	1,3-Dichlorobenzene
106-46-7	1,4-Dichlorobenzene
118-74-1	Hexachlorobenzene
13654-09-6	Polybrominated biphenyls (PBBs)
11097-69-1	Polychlorinated biphenyls (PCBs)
*1264-23-8	Polychlorinated Triphenyls (PCTs)
120-82-1	1,2,4-Trichlorobenzene

CAS NO.	PHTHALATES
117-81-7	Bis (2-ethylhexyl) phthalate
85-68-7	Butyl benzyl phthalate
84-74-2	Di-n-butyl phthalate
84-66-2	Diethyl phthalate
117-84-0	Di-n-octyl phthalate
131-11-3	Dimethyl phthalate

CAS NO.	ETHERS, EPOXIDES, ALDEHYDES AND ANHYDRIDES
107-02-8	Acrolein
111-44-4	Bis (2-chloroethyl) ether
542-88-1	Bis (2-chloromethyl) ether
1462-53-5	Diepoxybutane
123-91-1	Dioxane
106-89-8	Epichlorohydrin (1-chloro-2,3-epoxypropane)
50-00-0	Formaldehyde
108-31-6	Maleic anhydride
57-57-8	β-Propiolactone
75-56-9	Propylene oxide

CAS NO.	IMINES, NITRILES AND HYDRAZINES
107-13-1	Acrylonitrile
57-14-7	1,1-Dimethyl hydrazine
151-56-4	Ethyleneimine (Aziridine)
302-01-2	Hydrazine
75-55-8	Propyleneimine

CAS NO.	NITROSO COMPOUNDS
55-18-5	N-Nitrosodiethylamine
62-75-9	N-Nitrosodimethylamine
138-89-6	p-Nitrosodimethylaniline
86-30-6	N-Nitrosodiphenylamine
156-10-5	p-Nitrosodiphenylamine

CAS NO.	AMIDES AND AMINO COMPOUNDS
60-35-5	Acetamide
62-53-3	Aniline (and salts)
117-79-3	2-Aminoanthraquinone
60-09-3	p-Aminoazobenzene
*55-21-0	Benzamide
92-87-5	Benzidine
95-80-7	2,4-Diaminotoluene
91-94-1	3,3'-Dichlorobenzidine
101-14-4	4,4'-Methylene bis (2-chloroaniline) (MOCA)
134-32-7	α-Napthylamine
91-59-8	β-Napthylamine

CAS NO.	PESTICIDES
309-00-2	Aldrin
58-89-9	BHCs &Lindane
133-06-2	Captan
63-25-2	Carbaryl (1-Naphthalenol Methyl Carbamate)
133-90-4	Cloramben
57-74-9	Chlordane
510-15-6	Chlorobenzilate
74-75-7	2,4-D
50-29-3	DDT
96-12-8	1,2-Dibromo-3-chloropropane (DBCP)
60-57-1	Dieldrin
115-29-7	Endosulfan
72-20-8	Endrin
76-44-8	Heptachlor
115-32-2	Kelthane (Dicofol)
143-50-0	Kepone
*72-43-5	Methoxychlor
2385-85-5	Mirex
56-38-2	Parathion
87-86-5	Pentachlorophenol
82-68-8	Quintozene (PCNB) (Pentachloronitrobenzene)
61789-48-2	Strobane (Terpene polychlorinates)
93-76-5	2,4,5-T (2,4,5-(Trichlorophenoxy) acetic acid)
8001-35-2	Toxaphene

CAS NO.	AROMATIC HYDROCARBONS
120-12-7	Anthracene
71-43-2	Benzene
92-52-4	Biphenyl
100-41-4	Ethyl benzene
91-20-3	Napthalene
108-88-3	Toluene

CAS NO.	INORGANICS (Include Salts of these Elements)
7440-36-0	Antimony
7440-38-2	Arsenic
7440-41-7	Beryllium
7440-43-9	Cadmium
156-62-7	Calcium cyanamide
7440-47-3	Chromium
7440-50-8	Copper
57-12-5	Cyanide
7439-92-1	Lead
7439-97-6	Mercury
7440-02-0	Nickel
7782-49-2	Selenium
7440-22-4	Silver
7440-28-0	Thallium
7440-66-6	Zinc

CAS NO.	NITRO COMPOUNDS
121-14-2	2,4-Dinitrotoluene
606-20-2	2,6-Dinitrotoluene
98-95-3	Nitrobenzene
79-46-9	2-Nitropropane

CAS NO.	DYES
2650-18-2	Brilliant Blue FCF salts
129-17-9	(Sodium) Blue VRS
60-11-7	C.I. Solvent Yellow 2
6358-53-8	Citrus Red No. 2
128-66-5	C.I.Vat Yellow 4
1937-37-7	Direct Black 38
2602-46-2	Direct Blue 6
10300-74-0	Direct Brown 95
2832-40-8	C.I. Disperse Yellow 3
569-64-2	Fast Green O
4680-78-8	Guinea Green B
5141-20-8	Light Green SF
2646-17-5	Oil Orange SS
3761-53-3	Ponceau MX
3564-09-8	Ponceau 3R
81-88-9	Rhodamine B
989-38-8	Rhodamine 6G
842-07-6	Sudan I
3118-97-6	Sudan II

CAS NO.	MISC.
1332-21-4	Asbestos
62-56-6	Thiourea
*75-44-5	Phosgene

Selected Substances Chemical Group Names and Numbers

1 - Halogenated Alkanes and Alkenes

2 - Phenols

3 - Halogenated Aromatics

4 - Phthalates

5 - Ethers, Expoides, Aldehydes and Anhydrides

6 - Imines, Nitriles, and Hydrazines

7 - Nitroso Compounds

8 - Amides and Amino Compounds

9 - Pesticides

10 - Aromatic Hydrocarbons

11 - Inorganics

12 - Nitro Compounds

13 - Dyes

14 - Miscellaneous

Appendix B:

Selected Substance Report and Instructions

Form COM-021 A
Rev. 2/80

ID ☐☐☐☐☐
CM ☐☐☐☐

State of New Jersey
Department of Environmental Protection

OFFICE OF THE COMMISSIONER

Return forms to:
INDUSTRIAL SURVEY PROJECT
P.O. BOX 251
TRENTON, NEW JERSEY 08602

SELECTED SUBSTANCE REPORT

PART I – General Plant Information

COMPLETE ONE REPORT FOR EACH PLANT SITE OR FACILITY LOCATION

1. Company Name _____

2. Division or Plant Name _____

3. Mailing Address (Street) _____

(City/Town) _____ County _____ State _____ Zip Code _____

4. Plant Location Address (Street) _____
(If not as above)
(City/Town) _____ County _____ State _____ Zip Code _____

5. Date Plant Began Operations At This Location _____

6. Person to Contact Regarding this Report _____ Title _____

7. Phone Number (Area Code) _____

8. SIC Code (Four Digit) _____ Standard Industrial Classification (if available)

9. Nature of Business _____

10. Number of Production Employees at this Plant Site _____

11. Does this plant manufacture, process, form, repackage, release, use, dispose of or store any of the selected substances shown on Table I of the enclosed instructions? (Check One) YES ☐ NO ☐

If your answer to number 11 is "YES", complete the Entire Report for your facility, sign and return.

If your answer to number 11 is "NO", complete Question 15, sign and return.

I, HEREBY, CERTIFY THAT ALL STATEMENTS MADE BY ME IN THIS REPORT ARE TRUE, COMPLETE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND THAT ESTIMATES WHERE USED HAVE BEEN MADE IN GOOD FAITH.

NAME (Print) _____ Signature _____

Title _____ Date _____

12A. Sketch (On the reverse side of this page) or attach a copy of a map indicating the exact location of the plant site.

12B. Supply your Dun & Bradstreet number if available. _____

FOR OFFICIAL USE ONLY

E ☐☐☐☐ S ☐☐☐☐ N ☐☐☐☐☐
B ☐☐☐ O ☐ A ☐
C ☐ _____ X ☐☐☐☐☐☐☐☐☐
V ☐ _____ D & B ☐☐☐☐☐☐☐☐☐

FOR DEP USE ONLY

PART I – General Information (continued)

13. List all of the selected substances included in this report along with their CAS Numbers (From Table I of the instructions) which are manufactured, processed, formed, repackaged, released, used, disposed of or stored at the plant site:

14. Wastewater Discharges – Complete the following information:

A. Discharge to publicly owned treatment works (POTW):

1. Name of Utility (POTW) _____

Address/Location _____

2. Estimated Average Volume of Wastewater Discharged to POTW in a day

_____ gallons.

3. Briefly describe any pretreatment methods _____

4. Wastewater consists of: ( ) Process Water, ( ) Contact Cooling, ( ) Non-Contact Cooling, ( ) Domestic Sewage, ( ) Contaminated Storm Water, ( ) Washdown Water, ( ) Scrubber Water, ( ) Other: _____

B. Discharge to Navigable Waterway or Tributary Stream:

1. Name of Receiving Stream _____

2. NPDES Permit Number _____

3. Estimated average volume of wastewater discharged to receiving stream in a day

_____ gallons.

4. Briefly describe any treatment methods _____

5. Wastewater consists of: ( ) Process Water, ( ) Contact Cooling, ( ) Non-Contact Cooling, ( ) Domestic Sewage, ( ) Contaminated Storm Water, ( ) Washdown Water, ( ) Scrubber Water, ( ) Other: _____

15. Previous disposal practices (1930–1977). Has this plant previously disposed of wastes containing any of the selected substances at any land disposal site (i.e. by land spreading or burial, landfilling, lagoon or seepage pit) either on or off site?

YES ☐ NO ☐

If available provide the following information for each disposal site. Use additional pages if necessary.

Name and Location of Site _____

Time period site was used _____

Name of selected substances disposed of at this site	Physical State	Amount of selected substance disposed at site (pounds)

Form COM-021 B
Rev. 2/80

page _____ of _____

State of New Jersey
Department of Environmental Protection

ART. II

SELECTED SUBSTANCE REPORT

COMPLETE ONE FORM FOR EACH SELECTED SUBSTANCE

FOR DEP USE

1. Name and Location of Plant | I.D.

2. Selected Substance Name | CAS #

3. Briefly Describe Its Use On The Site:

COMPLETE THE FOLLOWING INFORMATION FOR THE PLANT BASED ON 1978 USAGE		ENTER THE ACTUAL OR ESTIMATED AMOUNTS	USE THE REQUESTED UNITS	CHECK ONE: ACTUAL	CHECK ONE: ESTIMATED
QUANTITIES	4.	QUANTITY PRODUCED ON SITE		lbs/yr.		
	5.	QUANTITY BROUGHT ONTO SITE		lbs/yr.		
	6.	QUANTITY CONSUMED ON SITE		lbs/yr.		
	7.	QUANTITY SHIPPED OFF SITE AS (OR IN) PRODUCT		lbs/yr.		
	8.	MAXIMUM INVENTORY		lbs		
EMISSIONS	9.	TOTAL STACK EMISSIONS OF SELECTED SUBSTANCE		lbs/yr.		
				max lbs/day		
	10.	TOTAL FUGITIVE EMISSIONS OF SELECTED SUBSTANCE		lbs/yr.		
				max lbs/day		
DISCHARGE	11.	TOTAL DISCHARGE OF SELECTED SUBSTANCE INTO SURFACE WATER		lbs/yr.		
				max lbs/day		
	12.	TOTAL DISCHARGE OF SELECTED SUBSTANCE INTO PUBLICLY OWNED TREATMENT WORKS		lbs/yr.		
				max lbs/day		

13. DISPOSAL OF WASTE CONTAINING THE SELECTED SUBSTANCE

LOCATION OF FINAL DISPOSAL SITE NAME AND ADDRESS	PHYSICAL STATE TABLE A	DISPOSAL METHOD TABLE B	QUANTITY OF SELECTED SUBSTANCE DISPOSED (lbs)	FOR DEP USE

TABLE A
PHYSICAL STATE

M-01 Solid
M-02 Liquid
M-03 Slurry
M-04 Sludge
M-99 Other (specify)

TABLE B
DISPOSAL METHODS

M-01 Composting
M-02 Evaporation
M-03 Holding Tank
M-04 Incineration
M-05 Injection Well
M-06 Lagoon
M-07 Land Burial
M-08 Land Spreading
M-09 Neutralization
M-10 Ocean
M-11 Recycling
M-12 Sanitary Landfill
M-13 Surface Water
M-14 Subsurface System
M-15 Pyrolysis
M-16 Spray Irrigation
M-17 Stored On Site
M-99 Other (specify)

State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF CANCER AND
TOXIC SUBSTANCES RESEARCH
CN-402, TRENTON, N.J. 08625

THOMAS BURKE, M.P.H.
DIRECTOR

INDUSTRIAL SURVEY PROJECT
INSTRUCTIONS

I. GENERAL INFORMATION

The Industrial Survey Project is part of an effort by the Department of Environmental Protection (DEP) to assemble a computerized data base on the uses and release into the environment of about 155 carcinogenic and toxic chemicals. The enclosed questionnaire forms, entitled "Selected Substance Report", will be mailed to approximately fifteen thousand industrial establishments in the State of New Jersey over a year's time. When returned to the Department, the information contained on them will be coded for entry and stored in a computer system. The data will then be correlated with other information, such as death and disease statistics, to try to identify areas of the state and population groups who may be subjected to an increased risk of disease due to chemical exposure.

The Industrial Survey Project is being conducted by DEP's Toxic Substances Program. If you have questions about the survey or the questionnaire forms, or if you need additional information, you may contact:

Industrial Survey Project
1474 Prospect Street
CN 405
Trenton, New Jersey 08625

Tel. (609) 292-1520

Participation in the Industrial Survey is mandatory. Willful failure to return a completed Selected Substance Report may result in legal action against your firm. You will be notified by letter before any legal action is brought, however, and given adequate time to submit the report if it has been lost or delayed for any legitimate reason.

Regulations governing the Industrial Survey Project have been adopted and codified as Chapter 1F of Title 7 of the New Jersey Administrative Code (N.J.A.C. 7:1F-1.1 et. seq.). These regulations describe the project in somewhat greater detail, provide for the protection of confidential information submitted by survey respondents, and set penalties for persons who fail to return questionnaires or who make unauthorized disclosures of confidential information. You may obtain copies of the regulations by contacting the Industrial Survey Project at the above address.

II. CONFIDENTIAL BUSINESS INFORMTION

If any question on the Selected Substance Report requires you to submit information which is (or would lead a knowledgeable reader to deduce from it) a trade secret, proprietary business information or information related to national security, you may make a confidentiality claim. DEP will then treat that information as confidential and not disclose it in any form that would reveal the secret or proprietary information, unless the Department makes a formal finding that the material is not entitled to confidential treatment under the regulations. Unless an emergency (such as a fire in your plant which threatens to exposre nearby residents to toxic materials) calls for the immediate release of information, you will be notified in advance if the Department intends to disclose information that you have claimed as confidential. You will be given an opportunity to challenge the Department's decision through administrative processes, and if not satisfied with the outcome, you will be given time (except in an emergency situation) to obtain a restraining order from a court, if you wish to pursue an appeal.

<u>To make a confidentiality claim for information contained in the Selected Substance Report you must do the following:</u>

1. Submit two copies of the report. The first must contain all the information requested. The second contain <u>no</u> information which you believe entitled to confidential treatment. (The second copy can be a photocopy of the first with the confidential material blaced or whited out).

2. Mark the top of each page containing confidential information with the heading "CONFIDENTIAL" in bold type, stamp or hand lettering. <u>Do not</u> mark every page - only the ones that contain confidential information.

3. Identify all information which you claim to be confidential by underlinging or highligthing it in a clear manner. Translucent in markers are accetable for this purpose.

Example: Question 6. Quantity Consumed On Site - <u>140,500</u> lbs/yr.

4. Seal the copy of the report which contains confidential information into an envelope, and mark the envelope on both sides with the work "CONFIDENTIAL" in bold type, stamp or hand lettering. Place this envelope, together with the second (non-confidential) copy of the report, inside another envelope for transmittal to the Industrial Survey Project.

5. Send the complete package to the Industrial Survey Project at the address listed in Part III, Instruction C, below. For your own protection, we recommend the use of certified mail, return receipt requested, a messenger service, personal delivery, or some other means that will give you verification that the Project has received your material. You may use ordinary mail, but the Project assumes no responsiblity for materials not signed for until they are actually received in the project office.

Please give careful consideration to what material you claim as confidential. Be sure it really is proprietary or a trade secret. Do not mark a report "Entire Contents Confidential" or in some similar fashion. Doing so will result in the Project refusing to recognize any confidentiality claim, or in our sending it back to you to be revised. You should also be aware that under State and federal laws, emissions of toxic materials into the environment are not entitled to be kept confidential.

III. INSTRUCTIONS FOR COMPLETING THE SELECTED SUBSTANCE REPORT

General Instructions

A. The data requested are to be supplied as they pertain to the selected substances of concern to the Department of Environmental Protection listed in Table 1 (attached). If your plant does not manufacture, process, form, repackage, release, use, dispose of or store any of the selected substances, either as a pure substance or as part of a mixture; and has not disposed of selected substances by landfilling, lagooning, underground injection or other subsurface methods in past years since 1930, only Items 1 through 10 of Part I need be completed.

B. If you have more than one plant location, a separate complete report must be filed for each location. However, you will receive a separate survey package for each plant location on file with the State.

C. The report forms are to be completed and returned within 90 days addressed to:

INDUSTRIAL SURVEY PROJECT
CN 405
TRENTON, NEW JERSEY 08625

Be sure to address the envelope exactly as shown in the box above. Do not add references to "Department of Environmental Protection" or "State of New Jersey" as this may cause misrouting of mail.

If you use a messenger service or deliver the forms in person, return them to:

1474 Prospect Street
Trenton, New Jersey
ATTN: Edward Stevenson or Cindie Scott

NOTE: The 90 day deadline may be extended by the Project for additional periods, not to exceed 90 days each, for good cause shown by the respondent.

D. All information is to be based on calendar year 1981, if possible. If information of 1981 is not readily available, contact the Industrial Survey Project (609-292-1520) for further instructions.

E. Please give your answer in terms of the units specified in the forms (i.e., pounds per year, maximum pounds per day, gallons per day, etc.). Leave boxes marked "DEP use only" blank.

F. Complete all sections of the report that pertain to your firm or plant site. If a section does not apply to your operations, write in "NA" for "not applicable".

G. Please attach process descriptions, explanatory notes, flow charts, lists, etc., that will assist in clarifying entries made on the report if you feel the answers require further explanation. If information needed to complete a section is not readily available, provide a written explanation describing the nature of the operations involved and the reasons for not supplying the data.

H. It is intended that you use existing or readily ascertainable data to complete the Selected Substance Report. Where quantities can be determined from existing records (e.g. inventory or production figures) or the cost of testing is nominal, actual figures are to be supplied. Otherwise, estimates may be given. You may use engineering estimates and computations; process material balance studies; field tests or measurements made by the plant, equipment manufacturers or government agencies, or other technically sound bases.

I. If you do not know the formulation of trade name chemicals you use in your plant operations, you should make reasonable inquiries of your supplier or the manufacturer to ascertain whether the material contains any selected substances. (For example, Tri-Clene a solvent, is a trade name for trichloroethylene, a selected substance).

J. Exempt from this report are quantities of selected substances which are manufactured, used, formed or processed for purposes of scientific experimentation, analysis or chemical research (including research or analysis for product development), provided such quantities of each substance are less than 1,000 pounds in a one-year period.

Also exempted are quantities of selected substances which are present as impurities, without regard to the purpose for which the material in which such impurities are contained is produced, provided the concentration of selected substance present as impurity is less than 1% and the total amount of selected substance present as impurity is less than 1,000 pounds in a one-year period.

Example: You produce 100,000 pounds per year of xylene in which benzene is present as an impurity at a concentration of .65 percent. You do not have to report the presence of benzene since it is present in a concentration less than 1% and annual production is only 650 pounds.

Example: You produce 50,000 pounds per year of xylene in which benzene is present as an impurity at a concentration of 1.3 percent. You must report the presence of benzene because the concentration is greater than 1%, even though annual production is only 650 pounds.

Example: You produce 1,000,000 pounds per year of xylene in which benzene is present as an impurity at a concentration of .5 percent. You must report the presence of benzene, even though its concentration is less than 1%, because annual production is 5,000 pounds.

In the case of the third example (involving a concentration less than 1%) you would not be required to report the presence of the impurity unless you know or have reason to know of its presence. See paragraph H.

Specific Instructions

The Selected Substance Report is divided into two parts. Part I consists of 15 questions about the plant site, its operations and its use of selected substances. Part II consists of separate sheets, each of which is to be filled out with information about only one selected substance. Three copies of the form for Part II have been sent to you; if you need extra ones, you may make photocopies or request additional forms from the Project.

The questions in Part I should be self-explantory. Refer to the following for guidance in completing Part II.

QUESTION 1 - enter the plant name and location

QUESTION 2 - enter the name of the selected substance and the corresponding CAS number, as listed in Table 1.

QUESTION 3 - "use" refers to any use made of the selected substance at your plant site. It includes synthesis, whether the substance is incorporated into a finished product or produced only as an intermediate; use as raw material, where the substance is chemically changed or incorporated into another; mixing, blending, repackaging or transshipment; use as supplementary fuel or for cleaning, and anything else. If the substance is used for more than one purpose at your plant site, list all uses.

Example: vinyl chloride (monomer) is used in the production of polyvinyl chloride resin.

Example: 1,1,1 trichloroethane is used as a parts degreaser.

THROUGH-PUT QUANTITIES (Questions 4-8): These questions seek specific information about the quantities of selected substances used in your production or processing operations. The figures you supply in your answers to the questions will not necessarily give rise to a material balance. Some substances may be counted in more than one category. The Project is aware of this, and it has been taken into account in the design of the computer programs that will analyze the survey responses.

QUESTION 4 - Quantity Producted on Site: this refers to quantities of the substance synthesized in your plant production processes. It includes isolated intermediates (those drawn off and stored for later use in the production process), but not transient intermediates (i.e., substances formed in the production process as intermediates (i.e., substances formed in the production process as an intermediate step but immediately transformed into something else). Also included are by products and quantities generated as impurities or waste.

QUESTION 5 - Quantity Brought onto Site: This refers to quantities of the substance brought into your plant from suppliers off-site, including other plants or divisions of your own firm. Include all quantities shipped onto the site, whether they are to be used as raw materials, cleaning materials, or simply repackaged for reshipment.

QUESTION 6 - Quantity Consumed on Site: In some cases a selected substance is consumed in a chemical reaction either through incorporation into the molecular structure of the product or by combining with a reactant or solvent to alter its structure and thus lose its identity.

Example: You make nitrobenzene by reacting benzene and nitric acid. Benzene is "consumed" in the production process because it undergoes chemical change and ceases to exist as benzene.

On the other hand, quantities of selected substance which are used in plant processes but not chemically transformed should not be listed as "consumed".

Example: You use trichloroethylene (TCE) as a degreasing agent for cleaning metal. Some of the chemical evaporates in the process, and the rest becomes too contaminated for reuse. The quantities should be recorded under "Air Emissions" and "Waste Disposal", not under "Quantity Consumed".

QUESTION 7 - Quantity Shipped Off-site As (or In) Product: The information sought here is the amount of selected substance that leaves your plant site in product form - that is, in a form suitable for final use or for further processing leading to eventual final use. This includes materials shipped to other plants or divisions of your own firm. It does not, however, include wastes; these should be recorded in the "Waste Disposal" section. Enter only the quantity of selected substance shipped off-site, not the quantity of product in which it is contained.

Example: You ship to customers 100,000 pounds per year of a mixture containing 10% by weight of isophorene, that is, 10,000 pounds of isophorene. Your answer to Question 7 should be 10,000 pounds, not 100,000.

QUESTION 8 - Maximum Inventory: In this question we are attempting to gain an idea of the quantities of selected substance stored on your site at a given moment in time. Since computing an average daily storage quantity would require averaging your daily inventory records over an entire year, to simplify your response we have requested only the maximum quantity stored. Enter the largest amount of selected substance you had in storage on-site at any time during 1981. Again, enter the quantity of substance only, not the amount of material in which it is contained.

AIR EMISSIONS (Question 9 and 10): These questions seek to learn the amounts of selected substances your plant releases into the atmosphere from all sources. Please attach explanatory notes, itemized sources of emissions, calculations, etc., that will assist in clarifying your responses.

QUESTION 9 - Stack Emissions: These are emissions which are released into the atmosphere from a readily-identifiable point source, such as a chimney or exhaust vent.

QUESTION 10 - Fugitive Emissions: These are emissions other than stack emissions. Included should be such items as evaporation from tanks, vapor or dust emissions during blending, transfer discharging reaction vessels, etc.

WASTEWATER DISCHARGES (Questions 11 and 12): These questions are concerned only with discharges into surface waters and publicly owned treatment works (POTW's). Discharges into subsurface waters or onto land (e.q. lagooning, spray irrigation) should be recorded under the section on Waste Disposal. Here again, the questions are concerned only with the quantity of selected substance discharged, not with the volume of effluent in which it is contained. Thus, if you discharge a million gallons of effluent containing 500 pounds of selected substance, you enter 500 pounds for Question 11 or 12.

QUESTION 11 - Surface Water Discharges: Enter the total quantity of selected substance you discharged into surface water, other than quantities which went to surface waters via a POTW (Question 12).

QUESTION 12 - Discharge into Publicly Owned Treatment Works: Enter the total quantity of selected substance you discharged into a municipal sewer system or one owned by an MUA, SA or regional utilities authority.

WASTE DISPOSAL (Question 13): This question asks you to describe how you dispose of wastes containing selected substances which are not emitted into the atmosphere or discharged into surface waters or sewerage systems.

QUESTION 13 - Disposal of Waste Containing the Selected Substance. This question is organized in tabular form. In the first column, list the name and location of each final disposal site to which you send waste containing the selected substance. This includes disposal facilities located on your own plant site, e.g., a chemical landfill or lagoon. In general, "final disposal site" means final with respect to you. If the operator of the disposal site makes further economic use of the waste (for example, he recovers solvents from it) you do not have to report this further use. (Note: do not list a transfer station as a final disposal site.)

In the second column, you are to characterize the physical state of the waste you sent to the disposal sites listed in column one. Consult Table A and enter the appropriate physical state code or codes. If selected substance is contained in more than one type of waste, enter all appropriate code numbers.

For the third column, consult Table B and enter the appropriate code or codes. Your entries should reflect the disposal method employed at the site you listed in the corresponding row.

In the fourth column enter the quantity of selected substance contained in the waste disposed at the site you listed in the corresponding row. Once again, enter only the quantity of selected substance, not the total quantity of waste in which it is contained.

The fifth column is for DEP use only. Leave it blank.

Appendix C:

Industrial Survey Regulations

State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION

JOHN FITCH PLAZA, P. O. BOX 1390, TRENTON, N. J. 08625

REGULATIONS GOVERNING THE INDUSTRIAL SURVEY PROJECT

Chapter 1F. Industrial Survey Project

N.J.A.C. 7:1F-1.1 et seq.

SUBCHAPTER 1. THE INDUSTRIAL SURVEY

7:1F-1.1 Description of the Industrial Survey

(a) The Department of Environmental Protection will implement a comprehensive survey of industrial establishments in order to obtain data concerning the use, manufacture, packaging, repackaging, disposal and release into the environment of certain carcinogenic and toxic chemicals. The information obtained will be used to make a preliminary assessment as to the role which the industrial use and release of these substances may play in the development of cancer and other diseases in New Jersey.

(b) The general objectives of the survey project are:

1. To establish a data base concerning the manufacture, use, storage, processing, formation, release, disposal and repackaging in New Jersey of a group of chemical substances selected on the basis of their carcinogenicity or toxicity, especially those produced or used in large quantities in the state;

2. To identify the areas of the state and population groups that are subject to an increased disease risk due to exposure to cancer-causing substances and other toxic agents in the environment; and

3. To establish a data base for the study of methods of reducing or eliminating the release of carcinogens and other toxic substances into the environment.

(c) The survey will be conducted primarily by printed questionnaire. Respondents will be required to supply information describing:

1. Plant location, number of employees and general use of selected substances;

2. Operations at the plant involving selected substances, the raw materials used and the products manufactured;

3. Selected substances released into the atmosphere and the quantities released;

4. Selected substances entering solid waste disposal streams, disposal methods and sites, waste disposal technology employed, and previous disposal practices;

5. Selected substances in the liquid waste streams, treatment prior to discharge, and discharge points; and

6. Information on points of release of the selected substances.

(d) The information described above will be sought in regard to the selected substances set forth in the instructions for the questionnaire included in this chapter as Appendix A.

(e) Mail questionnaires may be followed by in-person plant inspections or by interviews of company officials by Department representatives.

(f) The Industrial Survey will be conducted under the supervision of the Director of the Toxic Substances Program.

(g) Further information about the Industrial Survey, including copies of questionnaires and instructions for completing them, and examination of proposal documents which describe in greater detail the purposes of the survey, may be obtained by contacting:

Industrial Survey Project
P. O. Box 251
Trenton, New Jersey 08602
Tel. (609) 292-0647

7:1F-1.2 Authority

These regulations are promulgated pursuant to authorities granted the Department of Environmental Protection under N.J.S.A. 13:1D-9 (a) and (c), and N.J.S.A. 58:10A-1 et seq.

N.J.S.A. 13:1D-9(a) authorizes the Department to conduct and supervise research programs for the purpose of determining the causes and effect of hazards to the environment. N.J.S.A. 13:1D-9(c) authorizes the Department, in accordance with regulations established by it, to require the filing of reports by persons engaged in operations which may result in pollution of the environment.

Information obtained through the Industrial Survey will be used as a basis for the development of new regulatory proposals aimed at preventing, controlling and abating pollution. The survey will also constitute an important part of the Department's efforts to carry out the intent of the Water Pollution Control Act and the other statutes it administers.

The sections on preservation of trade secrets and other proprietary business information are adopted pursuant to the authorities of N.J.S.A 13:1D-9 and 1963 N.J. Laws 1153 (Executive Order No. 9 of Governor Richard J. Hughes), and are in accordance with N.J.S.A. 47:1A-2.

7:1F-1.3 Scope

These regulations describe the organization of the Industrial Survey and the procedures to be followed by the Department in conducting it. They establish the responsibilities of respondents for replying to questionnaires and other inquiries from the Department, and set forth penalties for non-compliance. They describe the procedures to be followed by the Department to protect from public disclosure any information entitled to confidential treatment obtained from any respondent as a result of the Survey, and set forth penalties for Department personnel or contractors who violate security restrictions.

7:1F-1.4 Severability

If any section, subsection, provision, clause or portion of these regulations is adjudged invalid or unconstitutional by a court of competent jurisdiction, the remainder of these regulations shall not be affected thereby.

7:1F-1.5 Definitions

The following words and terms, when used in this chapter, shall have the following meanings unless the context clearly indicates otherwise.

"Commissioner" means the Commissioner of Environmental Protection or his or her authorized representative.

"Confidential Information" means any information which has been determined to be entitled to confidential treatment, or any information for which a confidentiality claim has been made but upon which no determination has been made.

"Confidentiality Claim" means a claim or assertion that information is entitled to confidential treatment because such information constitutes trade secrets, proprietary information or information related to national security.

"Contractor" means any person who is under contract to the Department to perform work in connection with the conduct of the Department's business.

"Department" means the Department of Environmental Protection.

"Director" means the Director of the Toxic Substances Program or the person authorized in writing by the Commissioner to serve in place of the Director for the purposes of these regulations.

"Industrial establishment" means any place of business engaged in operations which, in the Department's opinion, suggest the possibility that those operations involve the manufacture, use, storage, handling, release or disposal of a selected substance. Industrial establishments include, but are not limited to, places of business having Standard Industrial Classifications (SIC codes), as designated in the SIC Manual prepared by the Federal Office of Management and Budget, within major group nos. 22 through 39, inclusive (manufacturing industries), nos. 46 through 49, inclusive (pipelines, transportation services, communication, and electric, gas and sanitary services), no. 51 (wholesale trade, nondurable goods) and no. 76 (miscellaneous repair services).

"Person" means public or private corporations, companies, associations, societies, firms, partnerships, joint stock companies, individuals, the United States Government, the State of New Jersey and any of its political subdivisions or agents.

"Proprietary information" means technical, commercial or financial information which is used in one's business and is of a type customarily held in strict confidence or regarded as privileged and not disclosed to any member of the public by the person to whom it belongs.

"Respondent" means any person requested to supply information to the Department in response to a questionnaire or other form of inquiry authorized under these regulations.

"Record" means any information fixed, registered, or preserved in any physical medium, including but not limited to writings, drawings, photographs, videotape, sound recordings, holograms, punched cards, and computer tape or disk.

"Selected substance" means any of the elements or compounds on the list of selected substances set forth in Table I of the instructions for the questionnaire included in this chapter as Appendix A.

"Trade secrets" include, but are not limited to, any formula, plan, pattern, method, process, tool, mechanism, compound, procedure, production data, or compilation of information which is not patented, which is known only to certain individuals within an industrial establishment who are using it to fabricate, produce or compound an article of trade or service having commercial value and which gives its user an opportunity to obtain a business advantage over competitors who do not know or use it.

7:1F-1.6 Response to Questionnaires

(a) Questionnaires will be sent to respondents via regular mail or by certified mail, return receipt requested.

(b) Respondents shall fill out the questionnaires, answering all questions in accordance with the instructions supplied with the questionnaire and supplying all additional information requested by those instructions.

(c) Completed questionnaires shall be signed by a responsible official of the respondent. "Responsible official" includes a plant manager, environmental officer or similar individual authorized to act on behalf of the respondent, who shall certify that to the best of his knowledge the information supplied is complete and correct, and that estimates, where used, have been made in good faith.

(d) Respondents shall return completed questionnaires within 90 days after receiving them in the mail. This deadline shall be extended for additional periods, not to exceed 90 days each, at the discretion of the Department for good cause shown by the respondent. Completed questionnaires shall be sent to:

Industrial Survey Project
P. O. Box 251
Trenton, New Jersey 08602

(e) The Department may require respondents to supplement incompletely answered questionnaires, or to amplify or explain replies to the questionnaire. Requests for additional information may be made orally or in writing; requests shall be made in or reduced to writing if the respondent so requests. Respondents shall supply additional information within 30 days after receipt of a request. The Department may extend the deadline for good cause shown by the respondent.

(f) Questionnaires and instructions for completing them have been filed with the Director of the Office of Administrative Law and are included at the end of this chapter as Appendix A. The content of those documents is deemed incorporated into these regulations. The Department may, without notice, adopt nonsubstantive changes in the forms by filing copies of the amended forms with the Director of the Office of Administrative Law. The types of changes allowable under this paragraph are procedural ones not affecting the substantive rights and duties of respondents; e.g., changes in the organization of the form, type faces, coding methods, units of measurement, and so forth.

7:1F-1.7 Failure to Respond; Penalties

(a) Whenever the Director or his designee authorized in writing finds that any respondent has failed to properly submit a completed industrial survey questionnaire, or to supply additional information requested by the Department within the time limits specified in N.J.A.C. 7:1F-1.6, he may enforce these regulations by selecting one or more of the following options as he determines in each case to to be appropriate and consistent with statutory authority:

1. Offer the respondant an opportunity to resolve the alleged noncompliance at an informal meeting or by other informal means of communication. As a matter of general policy, the Director will attempt in most cases to resolve the matter by informal means before exercising the other options available to him; or

2. Issue a letter to the respondent calling on him to comply with these regulations. The letter shall specify the particular provisions of these regulations with which the respondent has not complied, describe the action or omission which constitutes non-compliance demand compliance with the provisions, and give notice of the Department's intent to enforce its demand by commencing an action in Superior Court should the respondent not comply; or

3. Issue an order requiring the respondent to comply with these regulations. Such an order shall specify the particular provisions of these regulations with which the respondent is alleged to be in non-compliance, describe the action or omission which constitutes non-compliance, and direct compliance with the provisions; or

4. Commence a civil action in Superior Court to require the respondent to comply with these regulations or to submit requested information.

5. Bring an action in court for a civil penalty of up to $10,000.

(b) Use of any of the remedies specified under this section shall not preclude the use of any other remedy available to the Department.

SUBCHAPTER 2. PROTECTION OF CONFIDENTIAL INFORMATION

7:1F-2.1 Confidentiality Claims

(a) Any respondent required to submit any information in response to the Industrial Survey which in respondent's opinion constitutes trade secrets, proprietary information or information related to national security, may assert a confidentiality claim by following the procedures set forth in this section.

(b) Any respondent submitting a questionnaire or other report to the Department and asserting a confidentiality claim covering any information contained therein shall submit two reports to the Department. The first report shall contain all the information requested by the Department, including any information which the respondent alleges to be entitled to confidential treatment. The second report shall be identical to the first report except that it shall contain no information which the respondent alleges to be entitled to confidential treatment. The second report can be a photocopy of the first with the allegedly confidential material blacked out.

(c) The top of each page of the first report containing the information which the respondent alleges to be entitled to confidential treatment shall display the heading "CONFIDENTIAL" in bold type, or stamp.

(d) All parts of the text of the first report which the respondent alleges to be entitled to confidential treatment shall be underscored or highlighted in a clearly identifiable manner. This manner of marking confidential information shall be one which is reproducible on photocopying machines.

(e) The first report, containing the information which the person alleges to be entitled to confidential treatment, shall be sealed in an envelope which shall display the word "CONFIDENTIAL" in bold type or stamp on both sides. This envelope, together with the second, non-confidential report (which may or may not be enclosed in a separate envelope, at the respondent's option), shall be enclosed in another envelope for transmittal to the Department. The outer envelope shall bear no markings indicating the confidential nature of the contents.

(f) To ensure proper delivery, the complete package should be sent by certified mail, return receipt requested, or by other means which will allow verification of receipt. Ordinary mail may be used, but the Department will assume no responsibility for packages until they are actually received at the Industrial Survey Project Office.

(g) Packages shall be sent to:

Industrial Survey Project
P. O. Box 251
Trenton, New Jersey 08602

7:1F-2.2 Access to Information; Non-disclosure

Except as otherwise provided in these regulations, only persons authorized in writing by the Director shall be permitted to have access to any information for which a confidentiality claim has been made. Except as otherwise provided in these regulations, access will be limited to Department employees, contractors and their employees whose duties in the conduct of the Industrial Survey project necessitate such access. No disclosure of information for which a confidentiality claim has been asserted shall be made to any other persons except as specifically allowed by some provision of these regulations. Nothing in this section shall be construed as prohibiting the incorporation of confidential information into cumulations of data subject to disclosure as public records, provided that such disclosure is not in a form that would foreseeably allow persons outside the Department, not otherwise having knowledge of such confidential information, to deduce from it the confidential information, or the identity of the respondent who supplied it to the Department.

7:1F-2.3 Confidentiality Determinations

(a) Information for which a confidentiality claim has been asserted will be treated by the Department as entitled to confidential treatment, unless the Department determines that the information is not entitled to confidential treatment as provided in this section.

(b) The Department shall act upon a confidentiality claim and determine whether information is or is not entitled to confidential treatment whenever the Department:

1. Receives a request under N.J.S.A. 47:1A-1 et seq., (The "Right to Know" Law) to inspect or copy such information; or

2. Desires to determine whether information in its possession is entitled to confidential treatment; or

3. Desires for any reason in the public interest to disclose the information to persons not authorized by these rules to have access to confidential information.

(c) The Director, or his designee authorized in writing, shall make the initial determination whether information is or is not entitled to confidential treatment.

1. If the determination is being made in response to a request under the "Right to Know" Law, N.J.S.A. 47:1A-1 et seq., the Director shall notify the respondent who submitted the information that such a request has been made, and of the Director's determination. The notice shall state the identity of the person who made the disclosure request.

2. In all other cases, if the Director determines that information is not entitled to confidential treatment he shall so notify the respondent who submitted the information. Such notice shall state the identity of the person or persons, if any, to whom the Director intends to disclose the information.

3. Any notice required under this subsection shall be sent by certified mail, return receipt requested. The notice shall state the reasons for the Director's determination, and the time allowed for comments or exceptions. The notice shall further state that failure of a respondent to furnish timely comments will be construed as a waiver of the respondent's confidentiality claim.

4. The notice required under this subsection shall be directed to the person named as "Person to Contact Regarding This Report" in Section 1 of respondent's completed questionnaire, unless respondent has in writing directed that communications with regard to confidentiality claims be addressed to some other individual, in which event the notice will be directed to that individual.

(d) A respondent who wishes to contest a determination by the Director shall, within thirty days of notification of the determination, submit evidence to support the respondent's contention that the Director's determination was incorrect. The evidence may include, but need not be limited to, a statement indicating:

1. The period of time for which confidential treatment is desired by the respondent (for example, until a certain date, until the occurrence of a specified event, or permanently);

2. The measures taken by the person to guard against undesired disclosure of the information to others;

3. The extent to which the information has been disclosed to others, and the precautions taken in connection therewith; and

4. Whether the person asserts that disclosure of the information would be likely to result in substantial harmful effects to the person's competitive position, and if so, what those harmful effects would be, why they should be viewed as substantial, and an explanation of the causal relationship between disclosure and such harmful effects.

Any information submitted to the Department by a respondent as part of its comments under this subsection, if not otherwise a public record, and if marked as "CONFIDENTIAL", shall be regarded by the Department as entitled to confidential treatment and will not be disclosed as a public record unless disclosure is ordered by a state or federal court.

(e) The Department shall extend the time limit for submitting comments under subsection (d) for good cause shown by the respondent and upon receipt of a request in writing.

(f) After receiving the evidence, a review shall be conducted of the Director's initial determination. This review may be conducted by the Director or the Commissioner.

1. If, after review, the determination is made that the information is not entitled to confidential treatment, the Department shall so notify by certified mail, return receipt requested, the respondent and any person who requested disclosure of the information. Such determination shall be made after consideration of the applicable criteria in N.J.A.C. 7:1F-2.4. The notice shall state the basis for the determination, that it constitutes final agency action concerning the confidentiality claim, and that the Department shall make the information available to the public on the tenth working day following receipt by the respondent of the written notice.

2. If, after review, the determination is made that information is entitled to confidential treatment, the information shall not be disclosed, except as otherwise provided by these regulations. Both the respondent and any person who requested disclosure of the information shall be notified of the Department's determination by certified mail, return receipt requested. The notice shall state the basis for the determination and that it constitutes final agency action.

7:1F-2.4 Substantive Criteria for Use in Confidentiality Determinations

Determinations made under N.J.A.C. 7:1F-2.3 shall hold that information is entitled to confidential treatment if:

(a) The respondent has asserted a confidentiality claim which has not expired by its terms, been waived or withdrawn; and

(b) The respondent has shown that it has taken reasonable measures to protect the confidentiality of the information, and that it intends to continue to take such measures; and

(c) The information is not, and has not been, otherwise available to other persons without the respondent's consent (other than by discovery based on a showing of special need in a judicial or quasi-judicial proceeding, as long as the information has not become available to persons not involved in the proceeding); and

(d) No statute specifically requires disclosure of the information; and

(e) The respondent has shown that disclosure of the information would be likely to cause substantial harm to its competitive position.

7:1F-2.5 Disclosure of Confidential Information to Other Agencies

(a) The Director, or his designee authorized in writing may, disclose confidential information to persons other than Department employees, contractors or agents directly involved in conducting the Industrial Survey, only as provided in this section or Section 7:1F-2.7.

(b) The Director, or his designee authorized in writing, may disclose confidential information obtained through the Industrial Survey to other officers, employees or agencies of the Department of Environmental Protection or the Department of Health if:

1. Such officer, employee or agency has an official need to know the information; and

2. The purpose for which the other officer, employee or agency needs to know the information cannot be carried out without disclosure of the information; and

3. No further disclosure of the confidential information will be made by the person to whom it is disclosed without the consent of the Director.

(c) The Director, or his designee authorized in writing, may disclose confidential information to any other State agency or to a federal agency if:

1. The Director, or his designee authorized in writing, receives a written request for disclosure of the information from a duly authorized officer or employee of the other agency; and

2. The request sets forth the official purpose for which the information is needed; and

3. The Director, or his designee authorized in writing, notifies the other agency of his determination that the information is entitled to confidential treatment, or of any unresolved confidentiality claim covering the information; and

4. The other agency has first furnished to the Director, or his designee authorized in writing, a written opinion from the agency's chief legal officer or counsel stating that under applicable law the agency has the authority to compel the person who submitted the information to the Department to disclose such information to the other agency; and

5. The other agency agrees not to disclose the information further unless:

A. The other agency has statutory authority both to compel production of the information and to make the proposed disclosure; or

B. The other agency has obtained the consent of the affected respondent to the proposed disclosure;

and

6. The Director, or his designee authorized in writing, is satisfied that the other agency has adopted regulations or operates under statutory authority that will allow it to preserve confidential information from unauthorized disclosure.

(d) The Director, or his designee authorized in writing, may disclose any confidential information to any person if he has obtained the written consent of the respondent to such disclosure. The giving of consent by a respondent to a disclosure shall not be deemed to waive a confidentiality claim with regard to further disclosures unless the authorized disclosure is of such a nature as to make the disclosed information accessible to the general public.

(e) 1. Except as otherwise provided in the section on emergency disclosure (N.J.A.C. 7:1F-2.7), the Director shall notify in writing the respondent who supplied the confidential information of his intention to disclose it to any agency, other than an agency of the Department of Environmental Protection or the Department of Health, at least 10 working days in advance of the disclosure.

2. The Director shall notify in writing the respondent who supplied the confidential information of any disclosure made to any agency of the Department of Environmental Protection or the Department of Health other than those employees, contractors or agents of the Director participating in the conduct of the Industrial Survey.

3. Notices required by this subsection shall state the date on which disclosure was made or is proposed to be made, the name of the person or body to whom disclosed, and a description of the information disclosed or to be disclosed.

7:1F-2.6 Disclosure of Confidential Information to Contractors

(a) The Director, or his designee authorized in writing, may disclose confidential information to a contractor of the Department if he determines that such disclosure is necessary in order for the contractor to carry out work related to the Industrial Survey.

(b) No information shall be disclosed to a contractor unless the contract in question provides that the contractor and the contractor's employees, agents and representatives shall use the information only for the purpose of carrying out the work required by the contract, shall refrain from disclosing the information to anyone not authorized by the Director, and shall return to the Director all copies of the information, and any abstracts or extracts therefrom, upon request by the Director or whenever the information is no longer required by the contractor for the performance of the work required by the contract.

(c) Violation of these regulations shall constitute grounds for debarment or suspension of the contractor or contractor's employee in question, as provided in N.J.A.C. 7:1-5.1 et seq.

7:1F-2.7 Emergency Disclosure

(a) If the Director, or his designee authorized in writing, finds that disclosure of confidential information would serve to alleviate an imminent and substantial danger to public health or safety he may:

1. Prescribe and make known to the respondent such shorter comment period (N.J.A.C. 7:1F-2.3(d)), post-determination waiting period (N.J.A.C. 7:1F-2.3(f)), or both, as he finds necessary under the circumstances; or

2. Disclose confidential information to any person whose role in alleviating the danger to public health or safety necessitates that person's knowing the information. Any such disclosure shall be limited to the minimum information necessary to enable the person to whom it is disclosed to carry out his role in alleviating the dangerous situation.

(b) Any disclosure made pursuant to this Section shall not be deemed a waiver of a confidentiality claim, nor shall it of itself be grounds for any determination that information is no longer entitled to confidential treatment.

7:1F-2.8 Security Procedures for the Industrial Survey

(a) Questionnaires returned to the Industrial Survey Project by respondents will be opened only by persons authorized by the Director engaged in conducting the Industrial Survey.

(b) No person, other than a person authorized by the Director, shall open any envelope addressed to the Industrial Survey Project which is marked "CONFIDENTIAL".

(c) Questionnaires and copies thereof shall be stored by the Industrial Survey Project or its contractors only in locked cabinets in secure rooms.

(d) Any record made or maintained by the Department, its authorized agents or contractors which contains confidential information shall contain appropriate indicators identifying the confidential information.

7:1F-2.9 Wrongful Access or Disclosure; Penalties

(a) No person shall disclose, seek access to, obtain or have possession of any confidential information obtained as a result of the Industrial Survey except as authorized by this subchapter.

(b) Every Department officer, employee, and authorized agent who has custody or possession of confidential information shall take appropriate measures to safeguard such information and to protect against its improper disclosure.

(c) If the Director, or his representative authorized in writing, finds that any person has violated the regulations of this subchapter, he may:

1. Commence a civil action in Superior Court for a restraining order and an injunction barring that person from further disclosing confidential information.

2. Pursue any other remedy available to him by law.

(d) In addition to any other penalty that may be sought by the Director, violation of the regulations of this subchapter by a Department employee, thereby exceeding the scope of his or her authority, shall constitute grounds for dismissal, suspension, fine or other adverse personnel action.

(e) Use of any of the remedies specified under this section shall not preclude use of any other remedy.

Appendix D:

Statewide Summary Data for Selected Substances

Appendix D

Two sets of tables are included in Appendix D. The first set illustrates the reported quantities of all 155 Selected Substances via four throughput parameters: amount produced; amount purchased; shipped off-site; and maximum inventory. The second set of tables illustrates the reported quantities of all 155 Selected Substances released to the environment via five environmental parameters: stack emissions; fugitive emissions; surface water discharges; POTWS discharges; and waste disposal. Levels reported on all these tables include confidential data.

The Selected Substances are included in these tables according to chemical group. The 14 chemical groups are:

1 - Halogenated Alkanes and Alkenes
2 - Phenols
3 - Halogenated Aromatics
4 - Phthalates
5 - Ethers, Epoxides, Aldehydes and Anydrides
6 - Imines, Nitriles, and Hydrazines
7 - Nitroso compounds
8 - Amides and Amino Compounds
9 - Pesticides
10 - Aromatic Hydrocarbons
11 - Inorganics
12 - Nitro Compounds
13 - Dyes
14 - Miscellaneous

CAS numbers are also included for each Selected Substance and all quantities are reported in pounds.

All figures are reported in pounds per year

HALOGENATED ALKANES AND ALKENES (GROUP NO. 1)

SELECTED SUBSTANCE	CAS NO.	PRODUCED	PURCHASED	OFF-SITE	INVENTORY
1,1,1-Trichloroethane	71-55-6	0	10 - 50 M	5 - 10 M	1 - 5 M
1,1,2-Trichloroethane	79-00-5	0	100 - 500 T	100 - 500 T	10 - 50 T
1,1,2,2-Tetrachloroethane	79-34-5	1 - 5 T	50 - 100 T	1 - 5 T	10 - 50 T
1,2-Dibromoethane	106-93-4	100 - 500 T	10 - 50 M	10 - 50 M	1 - 5 M
1,2-Dichloroethane	107-06-2	100 - 500 T	10 - 50 M	10 - 50 M	5 - 10 M
Allyl Chloride	107-05-1	0	100 - 500 T	0	50 - 100 T
Bromoform	75-25-2	0	1 - 5 T	1 T	1 T
Carbon Tetrachloride	56-23-5	100 - 500 T	100 - 500 M	100 - 500 T	10 - 50 M
Chloroform	67-66-3	1 T	10 - 50 M	1 - 5 M	1 - 5 M
Chloroprene	126-99-8	0	50 - 100 T	50 - 100 T	5 - 10 T
Dichloromethane	75-09-2	0	10 - 50 M	10 - 50 M	1 - 5 M
Hexachloroethane	67-72-1	0	50 - 100 T	50 - 100 T	10 - 50 T
Methyl Bromide	74-83-9	0	.5 - 1 M	1 T	50 - 100 T
Methyl Chloride	74-87-3	10 - 50 M	1 - 5 M	5 - 10 M	1 - 5 M
Tetrachloroethylene	127-18-4	0	1 - 5 M	1 - 5 M	.5 - 1 M
Trichloroethylene	79-01-6	0	5 - 10 M	1 - 5 M	1 - 5 M
Trichlorofluoromethane	75-69-4	10 - 50 M	5 - 10 M	50 - 100 M	1 - 5 M
Vinyl Bromide	593-60-2	0	1 T	1 T	1 T
Vinyl Chloride	75-01-4	0	100 - 500 M	50 - 100 M	1 - 5 M

PHENOLS (GROUP NO. 2)

SELECTED SUBSTANCE	CAS NO.	PRODUCED	PURCHASED	OFF-SITE	INVENTORY
2,4,5-Trichlorophenol	95-95-4	0	10 - 50 T	10 - 50 T	1 - 5 T
2,4-Dichlorophenol (DCP)	120-83-2	0	1 - 5 T	0	1 T
2,4-Dimethylphenol	105-67-9	.5 - 1 M	10 - 50 M	.5 - 1 M	100 - 500 T
2,4-Dinitrophenol	51-28-5	0	0	100	1 - 5 T
2-Chlorophenol	95-57-8	0	1 - 5 T	0	1 - 5 T
2-Nitrophenol	88-75-5	0	0	0	10 - 50 T
4-Nitrophenol	100-02-7	0	1 - 5 M	100 - 500 T	.5 - 1 M
Phentachlorophenol (PCP)	87-86-5	0	50 - 100 T	10 - 50 T	10 - 50 T
Phenol	108-95-2	100 - 500 T	100 - 500 M	100 - 500 M	10 - 50 M

HALOGENATED AROMATICS (GROUP NO. 3)

SELECTED SUBSTANCE	CAS NO.	PRODUCED	PURCHASED	OFF-SITE	INVENTORY
1,4-Dichlorobenzene	106-46-7	0	1 - 5 M	1 - 5 M	100 - 500 T
1,2-Dichlorobenzene	95-50-1	0	10 - 50 M	100 - 500 T	1 - 5 M
1,2,4-Trichlorobenzene	120-82-1	0	1 - 5 M	.5 - 1 M	100 - 500 T
1,3-Dichlorobenzene	541-73-1	0	1 - 5 T	1 - 5 T	1 T
Chlorobenzene	108-90-7	10 - 50 T	50 - 100 M	100 - 500 T	1 - 5 M
Decabromodiphenyl Oxide	1163-19-5	1 - 5 M	100 - 500 T	1 - 5 M	100 - 500 T
Hexachlorobenzene	118-74-1	10 - 50 T	0	10 - 50 T	0
PCBs	11097-69-1	0	10 - 50 T	5 - 10 T	100 - 500 T

PHTHALATES (GROUP NO. 4)

SELECTED SUBSTANCE	CAS NO.	PRODUCED	PURCHASED	OFF-SITE	INVENTORY
Bis(2-ethylhexyl) Phthalate	117-81-7	100 - 500 M	10 - 50 M	100 - 500 M	5 - 10 M
Butyl Benzyl Phthalate	85-68-7	50 - 100 M	.5 - 1 M	50 - 100 M	100 - 500 T
Di-N-Butyl Phthalate	84-74-2	5 - 10 M	1 - 5 M	5 - 10 M	.5 - 1 M
Di-N-Octyl Phthalate	117-84-0	0	5 - 10 M	10 - 50 M	100 - 500 T
Diethyl Phthalate	84-66-2	0	1 - 5 M	1 - 5 M	100 - 500 T
Dimethyl Phthalate	131-11-3	0	100 - 500 T	100 - 500 T	50 - 100 T

ETHERS, EPOXIDES, ALDEHYDES, AND ANHYDRIDES (GROUP NO. 5)

SELECTED SUBSTANCE	CAS NO.	PRODUCED	PURCHASED	OFF-SITE	INVENTORY
Acrolein	107-02-8	0	100 - 500 T	1 - 5 T	10 - 50 T
Bis(2-chloroethyl)Ether	111-44-4	0	1 T	100	1 - 5 T
Dioxane	123-91-1	50 - 100 T	100 - 500 T	100 - 500 T	50 - 100 T
Epichlorhydrin	106-89-8	0	10 - 50 M	1 - 5 M	1 - 5 M
Formaldehyde	50-00-0	100 - 500 M	10 - 50 M	100 - 500 M	1 - 5 M
Maleic Anhydride	108-31-6	10 - 50 M	10 - 50 M	10 - 50 M	1 - 5 M
Propylene Oxide	75-56-9	0	50 - 100 M	5 - 10 M	.5 - 1 M

IMINES, NITRILES, AND HYDRAZINES (GROUP NO. 6)

SELECTED SUBSTANCE	CAS NO.	PRODUCED	PURCHASED	OFF-SITE	INVENTORY
Acrylonitrile	107-13-1	0	1 - 5 M	50 - 100 T	100 - 500 T
Ethyleneimine	151-56-4	0	0	0	1 T
Hydrazine	302-01-2	100	100 - 500 T	10 - 50 T	100 - 500 T

NITROSO COMPOUNDS (GROUP NO. 7)

SELECTED SUBSTANCE	CAS NO.	PRODUCED	PURCHASED	OFF-SITE	INVENTORY
N-Nitrosodiphenylamine	86-30-6	50 - 100 T	0	10 - 50 T	50 - 100 T

AMIDES AND AMINO COMPOUNDS (GROUP NO. 8)

SELECTED SUBSTANCE	CAS NO.	PRODUCED	PURCHASED	OFF-SITE	INVENTORY
2,4-Diaminotoluene	95-80-7	0	100 - 500 T	0	10 - 50 T
2-Aminoanthraquinone	117-79-3	0	0	10 - 50 T	10 - 50 T
3,3-Dichlorobenzidine	91-94-1	0	.5 - 1 M	1 - 5 T	50 - 100 T
4,4-MethyleneBis(2-chloroaniline)	101-14-4	1 - 5 M	100 - 500 T	1 - 5 M	.5 - 1 M
Aniline	62-53-3	1 - 5 M	5 - 10 M	.5 - 1 M	1 - 5 M
Beta-Napthylamine	91-59-8	1 - 5 T	0	1 T	1 T
Alpha-Napthylamine	134-32-7	1 - 5 M	0	1 - 5 M	.5 - 1 M
p-Aminoazobenzene	60-09-3	10 - 50 T	50 - 100 T	0	10 - 50 T

PESTICIDES (GROUP NO. 9)

SELECTED SUBSTANCE	CAS NO.	PRODUCED	PURCHASED	OFF-SITE	INVENTORY
2,4,5-T	93-76-5	0	1 T	1 T	1 T
2,4-D	74-75-7	0	1 - 5 T	1 - 5 T	1 T
BHCs and Lindane	58-89-9	0	50 - 100 T	50 - 100 T	50 - 100 T
Captan	133-06-2	0	5 - 10 M	5 - 10 M	1 - 5 M
Carbaryl	63-25-2	0	100 - 500 T	100 - 500 T	100 - 500 T
Chlordane	57-74-9	0	.5 - 1 M	.5 - 1 M	100 - 500 T
Endosulfan	115-29-7	0	100 - 500 T	100 - 500 T	100 - 500 T
Kelthane (Dicofol)	115-32-2	0	10 - 50 T	0 - 50 T	10 - 50 T
Kepone	143-50-0	0	0	0	1 - 5 T
Methoxychlor	72-43-5	0	10 - 50 T	10 - 50 T	10 - 50 T
Parathion	56-38-2	0	100 - 500 T	100 - 500 T	100 - 500 T
Toxaphene	8001-35-2	5 - 10 M	.5 - 1 M	5 - 10 M	1 - 5 M

AROMATIC HYDROCARBONS (GROUP NO. 10)

SELECTED SUBSTANCE	CAS NO.	PRODUCED	PURCHASED	OFF-SITE	INVENTORY
Anthracene	120-12-7	0	1 - 5 M	100 - 500 T	.5 - 1 M
Benzene	71-43-2	100 - 500 M	100 - 500 M	100 - 500 M	10 - 50 M
Biphenyl	92-52-4	0	.5 - 1 M	.5 - 1 M	50 - 100 T
Ethyl Benzene	100-41-4	100 - 500 M	100 - 500 M	100 - 500 M	10 - 50 M
Napthalene	91-20-3	10 - 50 M	50 - 100 M	10 - 50 M	10 - 50 M
Toluene	108-88-3	.5 - 1 B	.5 - 1 B	1 B	50 - 100 M

INORGANICS (GROUP NO. 11)

SELECTED SUBSTANCE	CAS NO.	PRODUCED	PURCHASED	OFF-SITE	INVENTORY
Antimony	7440-36-0	0	5 - 10 M	5 - 10 M	1 - 5 M
Arsenic	7440-38-2	0	1 - 5 M	1 - 5 M	.5 - 1 M
Beryllium	7440-41-7	0	10 - 50 T	10 - 50 T	1 - 5 T
Cadmium	7440-43-9	10 - 50 T	100 - 500 T	100 - 500 T	50 - 100 T
Chromium	7440-47-3	100 - 500 T	10 - 50 M	10 - 50 M	1 - 5 M
Copper	7440-50-8	100 - 500 T	100 - 500 M	100 - 500 M	10 - 50 M
Cyanide	57-12-5	0	1 - 5 M	100 - 500 T	100 - 500 T
Lead	7439-92-1	1 - 5 M	100 - 500 M	100 - 500 M	10 - 50 M
Mercury	7439-97-6	0	100 - 500 T	100 - 500 T	100 - 500 T
Nickel	7440-02-0	.5 - 1 M	1 - 5 M	100 - 500 M	1 - 5 M
Selenium	7782-49-2	0	1 - 5 T	1 - 5 T	1 - 5 T
Silver	7740-22-4	10 - 50 T	5 - 10 M	5 - 10 M	100 - 500 T
Zinc	7740-66-6	1 - 5 T	10 - 50 T	10 - 50 T	1 - 5 T

NITRO COMPOUNDS (GROUP NO. 12)

SELECTED SUBSTANCE	CAS NO.	PRODUCED	PURCHASED	OFF-SITE	INVENTORY
2,4-Dinitrotoluene	121-14-2	50 - 100 M	0	10 - 50 M	1 - 5 M
2,6-Dinitrotoluene	606-20-2	10 - 50 M	0	5 - 10 M	.5 - 1 M
Nitrobenzene	98-95-3	100 - 500 T	1 - 5 M	100 - 500 T	.5 - 1 M

DYES (GROUP NO. 13)

SELECTED SUBSTANCE	CAS NO.	PRODUCED	PURCHASED	OFF-SITE	INVENTORY
(Sodium) Blue VRS	129-17-9	0	0	0	100
Brilliant Blue FCF Salts	2650-18-2	0	10 - 50 T	10 - 50 T	1 - 5 T
C.I. Disperse Yellow 3	2832-40-8	1 - 5 T	100 - 500 T	100 - 500 T	100 - 500 T
C.I. Vat Yellow 4	128-66-5	10 - 50 T	1 - 5 T	10 - 50 T	10 - 50 T
Direct Black 38	1937-77-7	100 - 500 T	1 - 5 T	1 - 5 T	100
Fast Green O	569-64-2	0	10 - 50 T	10 - 50 T	1 - 5 T
Guinea Green B	4680-78-8	0	10 - 50 T	10 - 50 T	5 - 10 T
Light Green SF	5141-20-8	100	1 - 5 T	1 - 5 T	1 - 5 T
Oil Orange SS	2646-17-5	0	100	100	100
Ponceau MX	3761-53-3	0	0	1 - 5 T	5 - 10 T
Rhodamine 6G	989-38-8	0	5 - 10 T	5 - 10 T	1 - 5 T
Rhodamine B	81-88-9	10 - 50 T	50 - 100 T	50 - 100 T	50 - 100 T
Sudan I	842-07-6	100 - 500 T	1 T	100 - 500 T	50 - 100 T
Sudan II	3118-97-6	10 - 50 T	0	10 - 50 T	10 - 50 T

MISCELLANEOUS (GROUP NO. 14)

SELECTED SUBSTANCE	CAS NO.	PRODUCED	PURCHASED	OFF-SITE	INVENTORY
Asbestos	1332-21-4	0	10 - 50 M	10 - 50 M	5 - 10 M
Phosgene	75-44-5	10 - 50 M	100 - 500 T	5 - 10 T	50 - 100 T
Thiourea	62-56-6	0	100 - 500 T	50 - 100 T	50 - 100 T

All figures are reported in pounds per year

HALOGENATED ALKANES AND ALKENES (GROUP NO. 1)

SELECTED SUBSTANCE	CAS NO.	STACK EMISSIONS	FUGITIVE EMISSIONS	SURFACE WATERS	POTWS	WASTE DISPOSAL
1,1,1-Trichloroethane	71-55-6	400,000	700,000	3,000	23,000	550,000
1,1,2-Trichloroethane	79-00-5	5,500	17,400	0	10	17,000
1,1,2,2,-Tetrachloroethane	79-34-5	2,000	50	0	0	8,000
1,2-Dibromoethane	106-93-4	4,000	350	30	0	105,000
1,2-Dichloroethane	107-06-2	300,000	60,000	8,000	480,000	900,000
Allyl Chloride	107-05-1	0	1	0	0	0
Bromoform	75-25-2	0	0	1,500	0	0
Carbon Tetrachloride	56-23-5	7,300	100	2,200	800	5,000
Chloroform	67-66-3	120,000	80,000	1,500	45,000	180,000
Chloroprene	126-99-8	50	1,600	0	0	0
Dichloromethane	75-09-2	1,100,000	800,000	10,000	330,000	2,500,000
Hexachloroethane	67-72-1	0	0	0	0	0
Methyl Bromide	74-83-9	700	200	0	0	0
Methyl Chloride	74-87-3	3,200,000	200,000	0	0	0
Tetrachloroethylene	127-18-4	140,000	43,000	400	3,100	710,000
Trichloroethylene	79-01-6	530,000	400,000	3,000	92,000	440,000
Trichlorofluoromethane	75-69-4	1,100,000	180,000	2,300	0	600
Vinyl Bromide	593-60-2	0	0	0	0	0
Vinyl Chloride	75-01-4	150,000	1,310,000	0	0	630,000

PHENOLS (GROUP NO. 2)

SELECTED SUBSTANCE	CAS NO.	STACK EMISSIONS	FUGITIVE EMISSIONS	SURFACE WATERS	POTWS	WASTE DISPOSAL
2,4,5-Trichlorophenol	95-95-4	0	300	0	0	0
2,4-Dichlorophenol (DCP)	120-83-2	0	0	80	0	0
2,4-Dimethylphenol	105-67-9	0	800	80	25,500	0
2,4-Dinitrophenol	51-28-5	0	0	0	0	0
2-Chlorophenol	95-57-8	0	0	100	0	0
2-Nitrophenol	88-75-5	0	0	1,500	0	0
4-Nitrophenol	100-02-7	0	0	1,800	0	0
Pentachlorophenol (PCP)	87-86-5	150	0	0	10	300
Phenol	108-95-2	97,500	50,000	13,150	1,045,000	1,750,000

HALOGENATED AROMATICS (GROUP NO. 3)

SELECTED SUBSTANCE	CAS NO.	STACK EMISSIONS	FUGITIVE EMISSIONS	SURFACE WATERS	POTWS	WASTE DISPOSAL
1,4-Dichlorobenzene	106-46-7	10,000	300	12,000	3,000	300,000
1,2-Dichlorobenzene	95-50-1	60,000	600	9,000	230,200	530,000
1,2,4-Trichlorobenzene	120-82-1	10,000	100	3,100	200	2,200
1,3-Dichlorobenzene	541-73-1	0	10	0	0	0
Chlorobenzene	108-90-7	130,000	300	2,200	800	730,000
Decabromodiphenyl Oxide	1163-19-5	5,000	0	0	8,000	55,000
Hexachlorobenzene	118-74-1	1	0	0	0	5,300
PCBs	11097-69-1	10	0	0	0	34,000

PHTHALATES (GROUP NO. 4)

SELECTED SUBSTANCE	CAS NO.	STACK EMISSIONS	FUGITIVE EMISSIONS	SURFACE WATERS	POTWS	WASTE DISPOSAL
Bis(2-ethylhexyl)Phthalate	117-81-7	63,300	2,100	230	15,100	64,710
Butyl Benzyl Phthalate	85-68-7	5,500	2,000	100	1,250	104,500
Di-N-Butyl Phthalate	84-74-2	630	960	2,800	3,250	26,850
Di-N-Octyl Phthalate	117-84-0	3,020	200	0	70	10,650
Diethyl Phthalate	84-66-2	60,000	240	1,700	1,100	7,000
Dimethyl Phthalate	131-11-3	420	10	400	0	1,640

ETHERS, EPOXIDES, ALDEHYDES AND ANHYDRIDES (GROUP NO. 5)

SELECTED SUBSTANCE	CAS NO.	STACK EMISSIONS	FUGITIVE EMISSIONS	SURFACE WATERS	POTWS	WASTE DISPOSAL
Acrolein	107-02-8	100	100	0	0	0
Bis(2-chloroethyl)Ether	111-44-4	0	0	0	0	0
Dioxane	123-91-1	20,000	1,000	0	100	5,000
Epichlorohydrin	106-89-8	30,000	4,000	0	100	1,000
Formaldehyde	50-00-0	200,000	90,000	50,000	900,000	500,000
Maleic Anhydride	108-31-6	300,000	2,000	100	70,000	9,000,000
Propylene Oxide	75-56-9	10,000	1,000	100	100,300	50,000

IMINES, NITRILES, AND HYDRAZINES (GROUP NO. 6)

SELECTED SUBSTANCE	CAS NO.	STACK EMISSIONS	FUGITIVE EMISSIONS	SURFACE WATERS	POTWS	WASTE DISPOSAL
Acrylonitrile	107-13-1	2,000	610	10	50	55,000
Ethyleneimine	151-56-4	0	0	0	0	0
Hydrazine	302-01-2	100	50	0	350,000	1

NITROSO COMPOUNDS (GROUP NO. 7)

SELECTED SUBSTANCE	CAS NO.	STACK EMISSIONS	FUGITIVE EMISSIONS	SURFACE WATERS	POTWS	WASTE DISPOSAL
N-Nitrosodiphenylamine	86-30-6	0	0	300	0	0

AMIDES AND AMINO COMPOUNDS (GROUP NO. 8)

SELECTED SUBSTANCE	CAS NO.	STACK EMISSIONS	FUGITIVE EMISSIONS	SURFACE WATERS	POTWS	WASTE DISPOSAL
2,4-Diaminotoluene	95-80-7	0	0	0	0	3,000
2-Aminoanthraquinone	117-79-3	0	0	0	0	0
3,3-Dichlorobenzidine	91-94-1	0	20	0	10	0
4,4-MethyleneBis(2-chloroaniline)	101-14-4	0	0	0	0	3,000
Aniline	62-53-3	1,000	1,000	1,000	7,000	900,000
Beta-Napthylamine	91-59-8	0	0	0	0	0
Alpha-Napthylamine	134-32-7	5,000	0	0	0	7,000
p-Aminoazobenzene	60-09-3	20	10	0	200	0

PESTICIDES (GROUP NO. 9)

SELECTED SUBSTANCE	CAS NO.	STACK EMISSIONS	FUGITIVE EMISSIONS	SURFACE WATERS	POTWS	WASTE DISPOSAL
2,4,5-T	93-76-5	0	10	0	0	0
2,4-D	74-75-7	0	10	0	0	20
BHC's and Lindane	58-89-9	110	100	0	1	200
Captan	133-06-2	10	700	0	10	13,300
Carbaryl	63-25-2	1,100	1,200	0	2	350
Chlordane	57-74-9	0	130	0	0	640
Endosulfan	115-29-7	10	10	0	0	40
Kelthane (Dicofol)	115-32-2	20	20	0	0	80
Kepone	143-50-0	0	0	0	0	1,400
Methoxychlor	72-43-5	10	1	0	0	170
Parathion	56-38-2	10	10	0	0	250
Toxaphene	8001-35-2	0	0	0	0	600

AROMATIC HYDROCARBONS (GROUP NO. 10)

SELECTED SUBSTANCE	CAS NO.	STACK EMISSIONS	FUGITIVE EMISSIONS	SURFACE WATERS	POTWS	WASTE DISPOSAL
Anthracene	120-12-7	1,300	300	5,000	0	5,000
Benzene	71-43-2	2,100,000	200,000	300	25,000	1,800,000
Biphenyl	92-52-4	20	300	50	1,200	1,300
Ethyl Benzene	100-41-4	75,000	30,500	300	80,700	20,400
Napthalene	91-20-3	50,000	50,000	10,000	0	50,000
Toluene	108-88-3	30,000,000	900,000	3,000	800,000	5,000,000

INORGANICS (GROUP NO. 11)

SELECTED SUBSTANCE	CAS NO.	STACK EMISSIONS	FUGITIVE EMISSIONS	SURFACE WATERS	POTWS	WASTE DISPOSAL
Antimony	7440-36-0	130,000	1,400	4,000	4,000	200,000
Arsenic	7440-38-2	800	10	29,000	0	300
Beryllium	7440-41-7	1	0	0	0	1,010
Cadmium	7440-43-9	300	120	10	2,600	630
Chromium	7440-47-3	3,000	400	8,000	380,000	350,000
Copper	7440-50-8	1,100	400	10,000	55,000	1,430,000
Cyanide	57-12-5	320	330	9,000	230,000	8,000
Lead	7439-92-1	150,000	10,000	11,000	550,000	550,000
Mercury	7439-97-6	170	1,000	100	140	49,000
Nickel	7440-02-0	9,000	50	1,000	43,000	22,000
Selenium	7782-49-2	1	100	1,800	30	140
Silver	7440-22-4	100	200	500	2,000	90,000
Zinc	7440-66-6	30,000	7,000	35,000	950,000	1,005,000

NITRO COMPOUNDS (GROUP NO. 12)

SELECTED SUBSTANCE	CAS NO.	STACK EMISSIONS	FUGITIVE EMISSIONS	SURFACE WATERS	POTWS	WASTE DISPOSAL
2,4-Dinitrotoluene	121-14-2	11,400	0	16,000	0	207,300
2,6-Dinitrotoluene	606-20-2	180	0	19,000	0	135,800
Nitrobenzene	98-95-3	16,100	130	1,410	30	900,100

DYES (GROUP NO. 13)

SELECTED SUBSTANCE	CAS NO.	STACK EMISSIONS	FUGITIVE EMISSIONS	SURFACE WATERS	POTWS	WASTE DISPOSAL
(Sodium) Blue VRS	129-17-9	0	0	0	0	0
Brilliant Blue FCF Salts	2650-18-2	10	10	0	10	0
C.I. Disperse Yellow 3	2832-40-8	10	20	0	100	1,000
C.I. Vat Yellow 4	128-66-5	20	10	0	10	0
Direct Black 38	1937-37-7	0	1	0	700	0
Fast Green O	569-64-2	10	10	0	100	0
Guinea Green B	4680-78-8	10	10	10	10	100
Light Green SF	5141-20-8	0	0	0	90	10
Oil Orange SS	2646-17-5	0	1	0	1	0
Ponceau MX	3761-53-3	1	1	0	1	0
Rhodamine 6G	989-38-8	0	10	0	10	20
Rhodamine B	81-88-9	20	10	0	800	1,500
Sudan I	842-07-6	10	10	0	40	10
Sudan II	3118-97-6	10	10	0	100	0

MISCELLANEOUS (GROUP NO. 14)

SELECTED SUBSTANCE	CAS NO.	STACK EMISSIONS	FUGITIVE EMISSIONS	SURFACE WATERS	POTWS	WASTE DISPOSAL
Asbestos	1332-21-4	140	800	0	0	1,100,000
Phosgene	75-44-5	49,000	0	600	0	0
Thiourea	62-56-6	700	250	0	400	170

Appendix E:

Summary Totals by POTW

Appendix E

The table included in Appendix E pertains to non-confidential discharges of Selected Substances to POTW's. Fourteen POTW's are listed to which industries responding to the Industrial Survey reported discharging more than 1,000 pounds of Selected Substances. The second column of the table lists the number of companies which reported discharging any Selected Substance to each POTW. The third column lists the total quantities of selected substance which companies reported discharing to the POTW's. The fourth column lists specific selected substances and respective quantities which each POTW was reported to receive in quantities greater than 1,000 pounds.

It is important to shtress that the Industrial Survey data, especially site-specific data such as the POTW table, is up to five years old. Current data may be significantly different as a result of various courses, including more strict environmental regulations and improved operations on the part of industry.

APPENDIX E

SUMMARY INDUSTRIAL SURVEY DATA ON DISCHARGES TO POTW'S

POTW Reported to Receive	No. of Reporting Companies*	Total Selected Substances Received (pounds)**	Selected Substances Received in Quantities Greater than 1,000 lbs.***	
1. Bayonne	2	5,430	Formaldehyde	1,600
			Phenol	3,100
2. Bergen County S.A.	16	9,478	Cyanide	2,003
			Methylene Chloride	4,000
3. Camden	11	5,336	Aniline	5,000
4. Carteret	7	191,281	Dibutyl Phthalate	1,902
			Formaldehyde	1,000
			Phenol	87,500
			Propylene Oxide	100,000
5. Hammonton	1	9,041	Chloroform	9,041
6. Rutherford - Carlstadt - East Rutherford	13	1,282	NA	
7. Union & Essex Counties	18	135,756	Copper	35,888
			Hydrazine	34,000
			Maleic Anhydride	60,008
			Methylene Chloride	1,108
			Toluene	1,800
8. Linden - Roselle	9	56,546	Trichloroethylene	55,000
9. Middlesex County	28	1,733,039	Formaldehyde	401,071
			Methylene Chloride	240,975
			Phenol	270,041
			Tetrachlorethylene	1,000
			Toluene	791,251
			Zinc	1,314
			1,1,1-Trichloroethane	16,461
10. Parsippany - Troy Hills	3	2,991	Formaldehyde	2,971

APPENDIX E

SUMMARY INDUSTRIAL SURVEY DATA ON DISCHARGES TO POTW'S

POTW Reported to Receive	No. of Reporting Companies*	Total Selected Substances Received (pounds)**	Selected Substances Received in Quantities Greater than 1,000 lbs.***	
11. Passaic Valley	48	1,871,580	Antimony	1,900
			Arsenic	1,459
			Biphenyl	1,200
			Chromium	194,929
			Copper	7,191
			Cyanide	9,635
			Dibutyl Phthalate	1,000
			Ethylbenzene	71,230
			Formaldehyde	121,925
			Lead	305,396
			Maleic Anhydride	1,421
			Methylene Chloride	57,454
			Nickel	14,675
			Nitrobenzene	9,800
			Phenol	706,001
			Toluene	248,790
			Trichloroethylene	6,000
			Zinc	80,489
			1,1,1-Trichlorethane	4,250
			1,2-Dichloroethane	70,371
12. Perth Amboy	1	22,873	Zinc	22,873
13. Rahway Valley	9	12,357	Phenol	6,821
			Zinc	4,130
14. White Horse Section	4	3,021	Zinc	2,460

* Total number of companies reporting discharge of any selected substance to the POTW.

** Total selected substances reportedly discharged to that POTW by companies on the Industrial Survey.

*** Names and respective quantities of selected substances reported to be discharged to the POTW in quantities greater than 1,000 pounds.

Appendix F:

Summary Totals by Final Disposal Site

Appendix F

Two tables are included in Appendix F; each pertains to quantities of selected substances that were reported to be disposed of as waste by responders to the Industrial Survey. The first table, Table A, lists the names and addresses of landfill and land burial facilities where companies reported sending an aggregate total of 1,000 pounds of selected substance waste for final disposal. The table also lists the total amount of selected substance waste that companies reported sending to each final disposal site as well as the names and quantities of any selected substances reportedly disposed of at the final disposal site in quantities greater than 1,000 pounds. In the "Current Status of Site" column, Table A notes whether the site is currently covered by one of three regulatory programs: the federal Spill Fund National Priorities List; the New Jersey Spill Fund; or as a New Jersey authorized hazardous waste facility. Lastly, in the final column, the table lists the type of operation performed at the final disposal site and whether the final disposal site is currently operating.

The second table, Table B, lists the same information as included in Table A except that the information is with regard to final disposal sites where recycling recovery or processing of selected substance waste reportedly takes place.

MAJOR NJ HAZARDOUS WASTE FINAL DISPOSAL SITES REPORTED ON INDUSTRIAL SURVEY

(Landfill and Land Burial)

Final Disposal Site	Total Selected Substances Received (pounds)	Selected Substances Received in Quantities Greater than 1,000 lbs.		Current Status of Site	Type of Operation
1. Avon Landfill Corp. Lyndhurst	20,674	Tetrachlorethylene	19,400	RSWF	SWL - Not Operating
2. BFI - TS Elizabeth	4,000	Zinc	4,000	RSWF	TS - Operating
3. Cinnaminson Township	7,587	Methylene Chloride	2,000	SF/NJ/RSWF	SWL - Not Operating
	9,747	Chloroform	1,542		
	186	Benzene	3,000		
4. Combe-SLF Chester Township	9,747	Bis (2-ethyl hexyl) Phthalate	3,345	SF/NJ/RSWF	SWL - Not Operating
	186	Zinc	5,542		
5. Edgeboro Disposal, Inc. Edison	401,219	Maleic Anhydride	301,377	NJ/RSWF	SWL - Operating
		Asbestos	6,171		
		Formaldehyde	33,700		
		Toluene	5,000		
		Bis (2-ethyl hexyl) Phthalate	2,990		
		1,1,1-Trichloroethane	8,000		
		Dibutylphthalate	22,800		
		Trichloroethylene	2,863		
		Phenol	16,500		
6. Edison Disposal Area Edison Township	14,182	1,1,1-Trichlorethane	8,000	RSWF	SWL - Operating

APPENDIX F: TABLE A

MAJOR NJ HAZARDOUS WASTE FINAL DISPOSAL SITES REPORTED ON INDUSTRIAL SURVEY

(Landfill and Land Burial)

Final Disposal Site	Total Selected Substances Received (pounds)	Selected Substances Received in Quantities Greater than 1,000 lbs.		Current Status of Site	Type of Operation
7. Hillsborough Twp. SLF Hillsborough	8,637	Lead Chromium	6,750 1,512	NJ/RSWF	SWL - Operating
8. HMDC Baler North Arlington	5,261	Copper	2,650	RSWF	B - Operating
9. Hoeganeas-Riverfront Prop. Cinnaminson	211,700	Chromium Copper Lead Nickel Zinc	12,800 2,700 17,000 8,200 171,000	RSWF	SWL - Operating
10. Kearny MSLA Kearny	342,682	Lead Zinc Chromium Nickel Antimony Maleic Anhydride Bis (2-ethyl hexyl) Phthalate	4,891 7,773 1,974 5,960 1,460 300,045 20,000	RSWF	SWL - Not Operating
11. Kinsley's Landfill, Inc. Deptford Township	20,910	Antimony	4,250	RSWF	SWL - Operating
12. Lone Pine Corp. Freehold	50,300	Lead	49,000	SF/NJ/RSWF	SWL - Not Operating

MAJOR NJ HAZARDOUS WASTE FINAL DISPOSAL SITES REPORTED ON INDUSTRIAL SURVEY

(Landfill and Land Burial)

Final Disposal Site	Total Selected Substances Received (pounds)	Selected Substances Received in Quantities Greater than 1,000 lbs.		Current Status of Site	Type of Operation
13. Parklands Reclamation Project Bordentown	127,750	Asbestos Zinc	124,00 3,750	RSWF	SWL - Operating
14. Price Landfill Egg Harbor Township	6,000	Trichloroethylene	6,000	SF/NJ/RSWF	SWL - Not Operating
15. Price Trucking Pleasantville	23,000	Lead	23,000	RSWF	SWL - Terminated
16. Toms River Chemical Co. SWDA Dover Township	26,346	1,2,4-Trichlorobenzene Napthalene Chromium Copper Zinc	2,125 1,000 12,460 6,036 3,830	SF/NJ/RSWF	SWL - Operating
17. Washington Borough Landfill Washington Township (Warren County)	17,301	DBDPO* Antimony Lead Zinc	1,200 5,600 2,500 8,000	RSWF	CF - Operating

* DBDPO - decabromodiphenyloxide

APPENDIX F: TABLE A

MAJOR NJ HAZARDOUS WASTE FINAL DISPOSAL SITES REPORTED ON INDUSTRIAL SURVEY

(Landfill and Land Burial)

Final Disposal Site	Total Selected Substances Received (pounds)	Selected Substances Received in Quantities Greater than 1,000 lbs.		Current Status of Site	Type of Operation
18. Wenczel Tile Co. Lawrence Township	9,958	Lead	1,812	RSWF	SWL - Operating
		Zinc	8,146		

STATUS ABBREVIATIONS:

SF - Included on Superfund National Priorities List.

NJ - Included in New Jersey State Hazardous Waste Cleanup Program.

A - Authorized commercial hazardous waste facility.

RSWF - Registered solid waste facility.

OPERATION TYPE ABBREVIATIONS:

CP+T - Chemical Processing & Treatment

RR - Resource Recovery

SWL - Solid Waste Landfill (Listed in 1980 as Sanitary Landfill)

CF - Compost Facility

TS - Transfer Station

B - Baler

MAJOR NJ HAZARDOUS WASTE FINAL DISPOSAL SITES REPORTED ON INDUSTRIAL SURVEY

(Recycling, Recovery, Processing or Treatment)

Final Disposal Site	Total Selected Substances Received (pounds)	Selected Substances Received in Quantities Greater than 1,000 lbs.		Current Status of Site	Type of Operation
1. Arthur Ames Scrap Metal Irvington	15,000	Zinc	15,000		MR - Operating
2. Chemical Control Elizabeth	unknown	Ethylbenzene Toluene Mercury Trichloroethylene	unknown	RSWF	CP+T - Terminated
3. D&J Trucking & Waste Co. Newark	37,000	Toluene	37,000	RSWF	SWL - Terminated
4. Gold Shield Solvents (Dettrex) Cinnaminson	31,250	Trichloroethylene 1,1,1-Trichloroethane	3,672 27,578	A	SR - Operating
5. Earthline (SCA) Newark	28,440	Formaldehyde Zinc Lead Phenol Naphthalene Anthracene	13,000 1,500 2,000 1,000 6,100 4,800	A/RSWF	CP+T - Operating
6. Ind. & Com. Refuse Removal - TS Newark	42,743	Chromium Copper	8,412 31,858	RSWF	TS - Operating

MAJOR NJ HAZARDOUS WASTE FINAL DISPOSAL SITES REPORTED ON INDUSTRIAL SURVEY

(Recycling, Recovery, Processing or Treatment)

Final Disposal Site	Total Selected Substances Received (pounds)	Selected Substances Received in Quantities Greater than 1,000 lbs.		Current Status of Site	Type of Operation
7. Industrial Chemical Passaic	1,600	Trichloroethylene	1,600	--	SR - Not Operating
8. Klein Scrap Metals Edison	15,000	Copper	15,000	--	MR - Operating
9. Leon Bickoff & Co. Newark	8,900	Copper	8,900	--	MR - Operating
10. Marisol, Inc. Middlesex	814,667	Toluene	95,115	A/RSWF	CP+T - Operating
		1,1,1-Trichloroethane	141,924		
		Methylene Chloride	511,600		
		Trichloroethylene	27,300		
		Chloroform	9,586		
11. Modern Transportation-TS (Now Spectraserve) Kearny	81,196	Asbestos	8,000		
		Trichloroethylene	1,320	A/RSWF	CP+T - Operating
		Methylene Chloride	1,280		
		Phenol	26,846		
		Zinc	43,750		
12. Perk Chemical Co. Inc. Elizabeth	172,522	Methylene Chloride	18,085	A/RSWF	CP+T - Operating
		Trichloroethylene	70,680		
		1,1,1-Trichloroethane	106,667		
		Tetrachloethylene	2,100		

MAJOR NJ HAZARDOUS WASTE FINAL DISPOSAL SITES REPORTED ON INDUSTRIAL SURVEY

(Recycling, Recovery, Processing or Treatment)

Final Disposal Site	Total Selected Substances Received (pounds)	Selected Substances Received in Quantities Greater than 1,000 lbs.		Current Status of Site	Type of Operation
13. Pittsburgh Metals Jersey City	3,429	Lead	3,429	--	MR - Operating
14. Presto, Inc. Newark	101,000	Lead	101,000	--	MR - Terminated
15. Schiavone Bonomo Scrap Inc. Jersey City	9,160	Copper	9,000	--	MR - Operating
16. Scientific Chemical Processing Newark	54,300	1,2-Dichloroethane	17,300	NJ	CP+T - Not Operating
		Toluene	37,000		
17. Scientific, Inc. (Division of Kin-Buc) Edison	3,000	Toluene	3,000	NJ	CP+T - Operating
18. Solvents Recovery Service Linden	116,811	Methylene Chloride	8,477	A/RSWF	RR - Operating
		Toluene	100,608		
		1,1,1-Trichloroethane	41,635		
		Tetrachlorethylene	3,450		
		Ethylbenzene	2,040		

MAJOR NJ HAZARDOUS WASTE FINAL DISPOSAL SITES REPORTED ON INDUSTRIAL SURVEY

(Recycling, Recovery, Processing or Treatment)

Final Disposal Site	Total Selected Substances Received (pounds)	Selected Substances Received in Quantities Greater than 1,000 lbs.		Current Status of Site	Type of Operation
19. S&W Waste Jersey City (Relocated to Kearny)	18,564	Butyl Benzyl Phthalate Toluene Trichloroethylene Ethylbenzene Lead	9,000 3,455 200 2,040 1,570	A/RSWF	CP+T - Operating
20. T&J Landfill Corp. Newark	1,880	Copper	1,880	RSWF	SWL - Terminated
21. Plainfield Iron & Metal Plainfield	9,000	Nickel	9,000	--	MR - Operating
22. Gales Industrial Scrap Metal Roosevelt (Monmouth County)	8,000	Copper	8,000	--	MR - Operating
23. Baron Blakeslee (Purex) (Now TP Industrial) South Kearny	66,775	1,1,1-Trichloroethane Methylene Chloride	18,175 48,600	A	SR - Operating
24. Madison Industries (CPS) Old Bridge	500,000	Zinc	500,000	NJ	MR - Operating

MAJOR NJ HAZARDOUS WASTE FINAL DISPOSAL SITES REPORTED ON INDUSTRIAL SURVEY

(Recycling, Recovery, Processing or Treatment)

Final Disposal Site	Total Selected Substances Received (pounds)	Selected Substances Received in Quantities Greater than 1,000 lbs.		Current Status of Site	Type of Operation
25. A.M. Environmental Service Old Bridge	8,100	Asbestos	8,100	--	CP+T - Not Operating

STATUS ABBREVIATIONS:

SF - Included on Superfund National Priorities List.

NJ - Included in New Jersey State Hazardous Waste Cleanup Program.

A - Authorized commercial hazardous waste facility.

RSWF - Registered solid waste facility.

OPERATION TYPE ABBREVIATIONS:

CP+T - Chemical Processing & Treatment

RR - Resource Recovery

SWL - Solid Waste Landfill (Listed in 1980 as Sanitary Landfill)

CF - Compost Facility

TS - Transfer Station

B - Baler

MR - Metal Recycling
(Scrap metal recyclers are generally not required to comply with New Jersey Solid Waste Registration programs.)

SR - Solvent Reclamation

APPENDIX G:

SIC Code Directory

APPENDIX G

Key to Standard Industrial Classification Major Groups and Codes Used in Table 7*

Major Group 20 - Food and Kindred Products

Includes:
- 2032 Canned Specialties
- 2047 Dog, Cat, and Other Pet Food
- 2076 Vegetable Oil Mills, Not Elsewhere Classified
- 2079 (Previously 2096) Shortening and Cooking Oils
- 2082 Malt Beverages
- 2087 Flavoring Extracts and Syrups, Not Elsewhere Classified

Major Group 22 - Textile Mill Products

Includes:
- 2261 Finishing Plants, Cotton
- 2269 Finishing Plants, Not Elsewhere Classified
- 2297 Nonwoven Fabrics

Major Group 23 - Apparel and Other Finished Products Made from Fabrics and Similar Materials

Includes:
- 2386 Leather and Sheep Lined Clothing

Major Group 24 - Lumber and Wood Products, Except Furniture

Includes:
- 2426 Hardwood Dimension and Flooring
- 2499 Wood Products, Not Elsewhere Classified

Major Group 25 - Furniture and Fixtures

Includes:
- 2511 Wood Household Furniture
- 2522 Metal Office Furniture
- 2541 Wood Partitions and Fixtures

* The total quantities reported for SIC major groups in Table 7 include data reported by businesses in the SIC codes specified herein when SIC codes are not listed in Table 7.

Major Group 26 - Paper and Allied Products

Includes:
- 2621 Paper Mills, Except Building Paper
- 2631 Paperboard Mills
- 2641 Paper Coating and Glazing
- 2642 Envelopes
- 2643 Bags, Except Textile Bags
- 2647 Sanitary Paper Products
- 2649 Pressed Paper Products, Not Elsewhere Classified
- 2651 Folding Paperboard Boxes
- 2653 Corrugated and Solid Fiber Boxes
- 2654 Sanitary Food Containers
- 2655 Fiber Cans, Drums and Similar Products

Major Group 27 - Printing, Publishing, and Allied Industries

Includes:
- 2711 Newspapers
- 2732 Book Printing
- 2751 Commercial Printing, Letterpress
- 2754 Commercial Printing and Gravure
- 2761 Manifold Business Forms
- 2782 Blank Books and Bookbinding
- 2791 Typesetting

Major Group 28 - Chemicals and Allied Products

Includes:
- 2811 Industrial Inorganic Chemicals
- 2813 Industrial Gases
- 2816 Inorganic Pigments
- 2819 Industrial Inorganic Chemicals, Not Elsewhere Classified
- 2821 Plastics Materials, Synthetic Resins, and Nonvulcanizable Elastomers
- 2833 Medicinal Chemicals and Botanical Products
- 2834 Phamaceutical Preparations
- 2841 Soap and Other Detergents, Except Specialty Cleaners
- 2842 Specialty Cleaning, Polishing, and Sanitation Preparations
- 2843 Surface Active Agents, Finishing Agents, Sulfonated Oils and Assistants
- 2844 Perfumes, Cosmetics, and Other Toilet Preparations
- 2850 Paints, Varnishes, Lacquers, Enamels, and Allied Products
- 2851 Paints, Varnishes, Lacquers, Enamels, and Allied Products
- 2865 (Previously 2815) Coal Tar Crudes, Cyclic Intermediates, Dyes, Organic Pigments

2869 (Previously 2818) Industrial Organic Chemicals, Not Elsewhere Classified
2874 Phosphatic Fertilizers
2879 Pesticides and Agricultural Chemicals, Not Elsewhere Classified
2891 Adhesives and Sealants
2892 Explosives
2893 Printing Ink
2899 Chemicals and Chemical Preparations, Not Elsewhere Classified

Major Group 29 - Petroleum Refining and Related Industries

Includes:
2911 Petroleum Refining
2952 Asphalt Felts and Coatings
2992 Lubricating Oils and Greases

Major Group 30 - Rubber and Miscellaneous Plastics Products

Includes:
3069 Fabricated Rubber Products, Not Elsewhere Classified
3079 Miscellaneous Plastics Products

Major Group 31 - Leather and Leather Products

Includes:
3111 Leather Tanning and Finishing
3199 Leather Goods, Not Elsewhere Classified

Major Group 32 - Stone, Clay, Glass, and Concrete Products

Includes:
3211 Flat Glass
3221 Glass Containers
3231 Glass Products, Made of Purchased Glass
3253 Ceramic Wall and Floor Tile
3262 Vitreous China Table and Kitchen Articles
3264 Porcelain Electrical Supplies
3269 Pottery Products, Not Elsewhere Classified
3292 Asbestos Products
3293 Gaskets, Packing and Sealing Devices
3297 Nonclay Refractories
3299 Nonmetallic Mineral Products, Not Elsewhere Classified

Major Group 33 - Primary Metal Industries

Includes:
- 3315 Steel Wire Drawing and Steel Nails and Spikes
- 3316 Cold Rolled Steel Sheet, Strip, and Bars
- 3317 Steel Pipe and Tubes
- 3321 Gray Iron Foundries
- 3330 Primary Smelting and Refining of Nonferrous Metals
- 3339 Primary Smelting and Refining of Nonferrous Metals, Not Elsewhere Classified
- 3341 Secondary Smelting and Refining of Nonferrous Metals
- 3351 Rolling, Drawing, and Extruding of Copper
- 3354 (Previously 3352) Aluminum Extruded Products
- 3356 Rolling, Drawing, and Extruding of Nonferrous Metals, Except Copper and Aluminum
- 3357 Drawing and Insulating of Nonferrous Wire
- 3361 Aluminum Foundries (Castings)
- 3369 Nonferrous Foundries (Castings), Not Elsewhere Classified
- 3398 Metal Heat Treating
- 3399 Primary Metal Products, Not Elsewhere Classified

Major Group 34 - Fabricated Metal Products, Except Machinery and Transportation Equipment

Includes:
- 3410 Metal Cans and Shipping Containers
- 3411 Metal Cans
- 3412 (Previously 3491) Metal Shipping Barrels, Drums, Kegs, and Pails
- 3423 Hand and Edge Tools, Except Machine Tools and Hand Saws
- 3442 Metal Doors, Sash, Frames, Molding, and Trim
- 3443 Fabricated Plate Work (Boiler Shops)
- 3444 Sheet Metal Work
- 3446 Architechtural and Ornamental Metal Work
- 3448 Prefabricated Metal Buildings and Components
- 3451 Screw Machine Products
- 3452 Bolts, Nuts, Screws, Rivets, and Washers
- 3469 Metal Stampings, Not Elsewhere Classified
- 3471 Electroplating, Plating, Polishing, Anodizing, and Coloring
- 3479 Coating, Engraving, and Allied Services, Not Elsewhere Classified
- 3493 Steel Springs, Except Wire
- 3494 Valves and Pipe Fittings, Except Plumbers' Brass Goods
- 3496 Miscellaneous Fabricated Wire Products
- 3498 Fabricated Pipe and Fabricated Pipe Fittings
- 3499 Fabricated Metal Products, Not Elsewhere Classified

Major Group 35 - Machinery, Except Electrical

Includes:
- 3541 Machine Tools, Metal Cutting Types
- 3544 Special Dies and Tools, Die Sets, Jigs and Fixtures, and Industrial Molds
- 3545 Machine Tool Accessories and Measuring Devices
- 3551 Food Products Machinery
- 3552 Textile Machinery
- 3559 Special Industry Machinery, Not Elsewhere Classified
- 3560 General Industrial Machinery and Equipment
- 3561 Pumps and Pumping Equipment
- 3562 Ball and Roller Bearings
- 3564 Blowers and Exhaust and Ventilation Fans
- 3566 Speed Changers, Industrial High Speed Drives, and Gears
- 3567 Industrial Process Furnaces and Ovens
- 3569 General Industrial Machinery and Equipment, Not Elsewhere Classified
- 3573 Electronic Computing Equipment
- 3579 Office Machines, Except Laboratory
- 3585 Air Conditioning and Warm Air Heating Equipment and Commercial and Industrial Refrigeration Equipment
- 3599 Machinery, Except Electrical, Not Elsewhere Classified

Major Group 36 - Electrical and Electronic Machinery, Equipment, and Supplies

Includes:
- 3612 Power, Distribution, and Specialty Transformers
- 3613 Switchgear and Switchboard Apparatus
- 3620 Electrical Industrial Apparatus
- 3621 Motors and Generators
- 3622 Industrial Controls
- 3636 Sewing Machines
- 3641 Electric Lamps
- 3643 Current-Carrying Wiring Devices
- 3644 Noncurrent-Carrying Wiring Devices
- 3645 Residential Electric Lighting Fixtures
- 3646 Commercial, Industrial, and Institutional Electric Lighting Fixtures
- 3648 Lighting Equipment, Not Elsewhere Classified
- 3661 Telephone and Telegraph Apparatus
- 3662 Radio and Television Transmitting, Signaling, and Detection Equipment and Apparatus
- 3670 Electronic Components and Accessories
- 3671 Radio and Television Receiving Type Electron Tubes, Except Cathode Ray
- 3674 Semiconductors and Related Devices
- 3675 Electronic Capacitors

3677 Electronic Coils, Transformers and Other Inductors
3679 Electronic Components, Not Elsewhere Classified
3699 Electrical Machinery, Equipment, and Supplies, Not Elsewhere Classified

Major Group 37 - Transportation Equipment

Includes:
3711 Motor Vehicles and Passenger Car Bodies
3713 Truck and Bus Bodies
3714 Motor Vehicle Parts and Accessories
3715 Truck Trailers
3724 Aircraft Engines and Engine Parts
3731 Ship Building and Repairing

Major Group 38 - Measuring, Analyzing, and Controlling Instruments; Photographic, Medical, and Optical Goods; Watches and Clocks

Includes:
3811 Engineering, Laboratory, Scientific, and Research Instruments and Associated Equipment
3822 Automatic Controls for Regulating Residential and Commercial Environments and Appliances
3823 Industrial Instruments for Measurement, Display, and Control of Process Variables; and Related Products
3825 Instruments for Measuring and Testing of Electricity and Electrical Signals
3829 Measuring and Controlling Devices, Not Elsewhere Classified
3832 Optical Instruments and Lenses
3840 Surgical, Medical, and Dental Instruments and Supplies
3841 Surgical and Medical Instruments and Apparatus
3842 Orthopedic, Prosthetic, and Surgical Appliances and Supplies
3843 Dental Equipment and Supplies
3861 Photographic Equipment and Supplies

Major Group 39 - Miscellaneous Manufacturing Industries

Includes:
3944 Games, Toys, and Children's Vehicles; Except Dolls and Bicycles
3949 Sporting and Athletic Goods, Not Elsewhere Classified
3951 Pens, Mechanical Pencils, and Parts
3952 Lead Pencils, Crayons, and Artists' Materials
3953 Marking Devices

3955 Carbon Paper and Inked Ribbons
3964 Needles, Pins, Hooks and Eyes, and Similar Notions
3993 Signs and Advertising Displays
3999 Manufacturing Industries, Not Elsewhere Classified

Major Group 42 - Motor Freight Transportation and Warehousing

Includes: 4225 General Warehousing and Storage
4226 Special Warehousing and Storage, Not Elsewhere Classified

7699: Repair Shops and Related Services, Not Elsewhere Classified

Appendix H:

COMPANIES REPORTING CONFIDENTIAL BUSINESS INFORMATION

APPENDIX H

FACILITIES CLAIMING CONFIDENTIAL BUSINESS INFORMATION

FACILITY	SIC CODE	MUNICIPALITY/COUNTY
1. Air Products and Chemicals, Inc.	2819	Paulsboro/Gloucester
2. Air Products and Chemicals, Inc.	2813, 3079	South Brunswick/Middlesex
3. Allied Chemical Corporation	2819	Elizabeth/Union
4. American Cyanamid	2865, 2851, 2869	Bound Brook/Somerset
5. Atlantic Resources Corporation	3161	Sayreville/Middlesex
6. BASF Wyandotte Corporation	2879	Fairfield/Essex
7. BASF Wyandotte Corporation	3111, 3479	Carlstadt/Bergen
8. BASF Wyandotte Corporation	2865, 2869	Kearny/Hudson
9. BASF Wyandotte Corporation	3079	Jamesburg/Middlesex
10. BASF Wyandotte Corporation	2821	Washington/Warren
11. B.F. Goodrich	2821	Pedricktown/Salem
12. Biocraft Laboratories, Inc.	2834	Waldwick/Bergen
13. Biocraft Laboratories, Inc.	2834	Elmwood Park/Bergen
14. The Celotex Corporation	3292	Linden/Union
15. Certain-Teed Corporation	3296	Berlin/Camden
16. Cosan Chemical Corporation	2831, 2879, 2899	Carlstadt/Bergen
17. The Dow Chemical Company	2079	Carteret/Middlesex
18. Economics Laboratory Inc.	2841, 2842	Avenel/Middlesex

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FACILITIES CLAIMING CONFIDENTIAL BUSINESS INFORMATION

FACILITY	SIC CODE	MUNICIPALITY/COUNTY
19. Economics Laboratory Inc.	2841, 2842, 2899	Palisades Park/Bergen
20. E.I. DuPont de Nemours and Company Inc.	2892	Deepwater/Salem
21. E.I. DuPont de Nemours and Company Inc.	2816	Newark/Essex
22. E.I. DuPont de Nemours and Company Inc.	2899	Linden/Union
23. E.I. DuPont de Nemours and Company Inc.	2851	Sayreville/Middlesex
24. Englehard Minerals and Chemicals Inc.	2819	Newark/Essex
25. Englehard Minerals and Chemicals Inc.	2819	East Newark/Essex
26. Englehard Minerals and Chemicals Inc.	2559, 2819, 3471	Union/Union
27. Essex Chemical Corporation	2819	Newark/Essex
28. Fluid Packaging Company Inc.	2844	Lakewood/Ocean
29. General Food Corporation	2095	Hoboken/Hudson
30. Halcon Research and Development Corporation	2819	Little Ferry/Bergen
31. Henkel Corporation	2891	Hoboken/Hudson
32. Hercules Inc.	2869	Gibbstown/Gloucester
33. Hoffman-LaRoche Inc.	2834, 2899	Nutley/Essex
34. Ingersoll-Rand Company	3532, 3561, 3563	Phillipsburg/Warren
35. Ingersoll-Rand Company	3566	North Bergen/Hudson

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FACILITIES CLAIMING CONFIDENTIAL BUSINESS INFORMATION

FACILITY	SIC CODE	MUNICIPALITY/COUNTY
36. International Flavors and Fragrances, Inc.	2844	Union Beach/Monmouth
37. Johnson and Johnson Dental Products Company	3843	East Windsor/Mercer
38. J.T. Baker Chemical Company	2819, 2869	Phillipsburg/Warren
39. Kronenberg Industries Inc. (Image Boat Company)	3732	Flanders/Passaic
40. LDL Technology, Inc.	3341, 3399	Paterson/Passaic
41. 3M Company	2899, 3079, 2821	Newark/Essex
42. Matheson Division of Searle Medical Products USA Inc.	2813	Bridgeport/Gloucester
43. Matheson Division of Searle Medical Products USA Inc.	2813	East Rutherford/Bergen
44. Meadox Medicals, Inc.	3842	Oakland/Bergen
45. Micro-Tek Corporation	3357	Cinnaminson/Burlington
46. Miranol Chemical Company, Inc.	3085	Irvington/Essex
47. Mobil Oil Corporation	2851	Edison/Middlesex
48. Monsanto Company	2821	Bridgeport/Gloucester
49. Monsanto Company	2841	Kearny/Hudson
50. Morton-Norwick Products Inc.	2842	Piscataway/Middlesex

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FACILITIES CLAIMING CONFIDENTIAL BUSINESS INFORMATION

FACILITY	SIC CODE	MUNICIPALITY/COUNTY
51. Nassau Chemical Corporation	2869	Trenton/Mercer
52. National Beryllia Corporation	3674, 3279	Wanaque/Passaic
53. National Starch and Chemical Corporation	2891	Bloomfield/Essex
54. National Starch and Chemical Corporation	2891, 2046	Bridgewater/Somerset
55. National Starch and Chemical Corporation	2891	Paterson/Passaic
56. National Starch and Chemical Corporation	2046, 2891, 2821	Plainsfield/Union
57. Organon Inc.	2834	West Orange/Essex
58. Passaic Color and Chemical Company	2865	Paterson/Passaic
59. Permacel	2641	North Brunswick/Middlesex
60. Pitt-Consol Chemical Company	2821	Newark/Essex
61. Purex Industries, Inc. Baron-Blakeslee Division	2869	South Kearny/Hudson
62. Purex Industries, Inc. Baron-Blakeslee Division	5161, 2843	Thorofare/Gloucester
63. Royce Chemical Company	2819	East Rutherford/Bergen
64. Sandoz, Inc.	2843, 2899	Fair Lawn/Bergen
65. Sandoz, Inc.	2830, 2865	East Hanover/Morris
66. Sandoz, Inc.	2816	Paterson/Passaic
67. Saytech Inc.	2899	Sayreville/Middlesex

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FACILITIES CLAIMING CONFIDENTIAL BUSINESS INFORMATION

FACILITY	SIC CODE	MUNICIPALITY/COUNTY
68. Sika Corporation	2899, 2891, 2851	Lyndhurst/Bergen
69. Spencer Kellogg Division of Textron Inc.	9820	Newark/Essex
70. Spencer Kellogg Division of Textron Inc.	2076, 2079	Edgewater/Bergen
71. Standard Chlorine Chemical Company Inc.	2869	Kearny/Hudson
72. Stauffer Chemical Company	2833, 2834	Edison/Middlesex
73. Sterling Drug Inc.	2834, 2399	Trenton/Mercer
74. Teledyne Industries Inc.	3356, 3545	Clifton/Passaic
75. Tenneco Chemicals Inc.	2899	Fords/Middlesex
76. Texaco Inc.	2911	West Deptford/Gloucester
77. Union Carbide Corporation	3541, 2813	Piscataway/Middlesex
78. Vineland Chemical Company Inc.	2879, 2819, 2899	Vineland/Cumberland
79. W.R. Grace and Company	2891	Woodbury/Gloucester
80. Yates Industries Inc.	3497	Bordentown/Burlington

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