Proposed Lead SIP

New Jersey State Implementation Plan for the Attainment and Maintenance of the National Ambient Air Quality Standards for Lead

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N.J. Department of Environmental Protection • Division of Environmental Quality

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SUMMARY

Extensive sampling in New Jersey shows that there have been significant decreases in the concentration of airborne lead in recent years. These reductions have been concurrent with a decrease in the use of leaded gasoline in motor vehicles. The federal regulations of fuels and fuel additives, along with the necessity for using unleaded gasoline in automobiles equipped with catalytic converters, have been effective in reducing exposure to atmospheric lead. The driving force for the use of catalytic converters is the control of pollutants other than lead. If alternative control methods are selected by the automobile manufacturers, use of unleaded gasoline will still be assured by the regulation of fuels and fuel additives. In addition, revision of the New Jersey motor vehicle inspection/maintenance program to include checking the emission control system for tampering is expected to increase the use of unleaded gasoline. However, anticipated growth in resource recovery facilities and emissions from some industrial sources will have a potential for producing unhealthful lead levels in localized areas unless emissions are properly controlled.

In 1978, about the time of promulgation of the National Ambient Air Quality Standard (NAAQS) for lead, three New Jersey urban areas, Newark, Jersey City and Trenton, showed violations, as did a site in a rural area in the immediate vicinity of a lead industry plant. An analysis has been conducted to show that with the control programs in this State Implementation Plan (SIP) the standard will be maintained in the three urban areas where the standards were violated in 1978. In addition the New Jersey Department of Environmental Protection (NJDEP) has reviewed lead emission rates from known industrial sources. Five industrial facilities were identified as possibly contributing to a violation of the standards on the basis of the magnitude of their emissions or nature of their operations.

Analysis has indicated that one of these industrial facilities, the gasoline lead additive manufacturing plant of E.I. du Pont de Nemours & Co. Inc., at Deepwater in Salem County, is not causing any violations of the ambient standards. Two others, the secondary lead smelter of National Smelting of New Jersey at Pedricktown, in Salem County, and the copper refinery of U.S. Metals Refining (AMAX) at Carteret, in Middlesex County, are undertaking mitigating measures designed to reduce emissions, particularly fugitive emissions, to be able to demonstrate attainment of the ambient standards. Ambient monitoring, in the vicinity of both plants, and already established at Pedricktown, will be used in the determination of the adequacy of the mitigating measures. Evaluation of the emissions of the last two industrial facilities, the battery manufacturing plant of the Delco Remy Division of General Motors Corporation at New Brunswick, in Middlesex County, and the secondary lead smelter of Federated Metals Corporation at Newark, in Essex County, has not been completed. However, ambient monitoring is being carried out in the vicinity of the Delco Remy plant. Schedules for resolving the problems at these and other industrial sources are incorporated into this SIP.

Except for the vicinity of one industrial plant, and possibly three others, of the five identified as possible contributors to violations of the NAAQS for lead, New Jersey is now meeting the NAAQS. The SIP describes how air pollution

control regulations have contributed, are contributing, and will continue to contribute to the reduction of lead emissions from industrial sources. Although lead emissions from incinerators and resource recovery of waste products are expected to grow substantially during the 1980's, the state of the art particulate emission controls that will be required will keep lead concentrations within the NAAQS. Schedules are provided for revisions to New Jersey Air Pollution Control regulations to insure that new sources of lead do not cause violations of the lead standard and that newly identified problems with existing sources can be resolved promptly. These revisions include a new regulation (N.J.A.C. 7:27-19, Fuel Standards) which is to be proposed to protect against excessive lead emissions from the use of waste crankcase oil as a fuel or fuel constituent. The proposed rule changes will also include the establishment of a State ambient air quality standard for lead comparable to the Federal standard (N.J.A.C. 7:27-13, Ambient Air Quality Standards) and a reduction of the threshold emission rate (N.J.A.C. 7:27-18, Emission Offsets) at which industry will be required, when building new facilities, to show that they will not cause a violation of the ambient air quality standards (N.J.A.C. 7:27-8, Permits and Certificates).

SECTION I. HEALTH EFFECTS AND SIP METHODOLOGY

This State Implementation Plan (SIP) for Lead, and lead's importance as an airborne pollutant can best be understood by reviewing the effects of lead on human health and the environment, by tracking the pathways leading to exposure, and by describing the various sources from which lead is emitted. This section briefly discusses this background information and reviews the federal requirements that this SIP has to meet.

Effects of Lead on Human Health and on the Environment

Lead, like many heavy metals, is a metabolic poison that impairs cellular activity. Once absorbed by the human body, either by inhalation or ingestion, lead is distributed by the blood to both soft tissues (primarily the liver and kidneys), and the bones. As lead will tend to accumulate in the bone tissue, levels there reflect the long term exposure of an individual. Levels in the blood and soft tissues reflect more recent exposure. The fraction of lead contained in the blood and soft tissues is mobile and appears to have greater significance with regard to human health than lead which has accumulated in the bone. Consequently, levels in the blood and urine are generally used as measures of exposure. Lead poisoning can affect the blood, kidneys, nervous and other systems and may also inhibit reproductive capacity.

Because lead can impair the body's ability to produce blood, anemia is commonly associated with high levels in humans (1). (See references at end of each section.) Effects on the kidneys range from acute cellular damage which is usually reversible to progressive irreversible kidney disease which can result in death. Lead also has a wide range of effects on the nervous system, from subtle behavorial changes to fatal brain disease. While the effects of low level lead exposure on the reproductive system are still being investigated, it has been shown that lead can be transferred from mother to child during pregnancy. Such exposure to lead may have serious implications for the development of the fetus (1).

Children appear much more susceptible to the adverse effects of lead poisoning than adults, and impaired nerve functioning, reduced mental capacity, and kidney damage can occur in children at low levels of exposure (4). As an example, hyperactivity in children has been shown to occur at blood lead levels just slightly above normal (5). Additional effects found in children include irritability, loss of cognitive, verbal and perceptual skills and some impairment of motor skills (6). There is a highly significant correlation between the level of lead exposure and the frequency of learning disabilities in urban children (2).

Finally, lead has been shown to induce cancer in laboratory animals (4) and may be a human carcinogen at high levels of exposure (7).

The Pathways of Lead

Unlike the gaseous pollutants carbon monoxide, ozone, and the oxides of nitrogen and sulfur, lead can remain inert if left undisturbed in the environment for long periods and thus accumulate to toxic levels. Airborne lead can be deposited on both land and water by direct settling of dry particles or by washing out by rainfall. Indirect deposition into aquatic systems can occur as a result of runoff from the land. Once deposited in the aquatic environment, lead can enter the food chain and result in human exposure from eating fish and shellfish contaminated with the pollutant. A similar scenario can be used for lead deposited on land. Human exposure can result from eating lead-contaminated crops and flesh from animals grown in areas subject to significant lead deposition. In many parts of the United States, ingestion of food contaminated with lead is the primary avenue of human exposure (3). Atmospheric deposition of lead on soil surfaces can also result in ground water contamination. This phenomenon is particularly important in the coastal plain, which is characterized by sandy soils. Thus lead emissions to the atmosphere can ultimately lead to human exposure via air, ground and surface waters, food, dust, and soil.

Many studies have revealed that lead water pipes, use of lead based paints, high concentrations of "residual lead" in soil and dust, and significant traffic density are closely associated in some residential areas. These conditions are typical of the high population density neighborhoods in New Jersey's older municipalities. These associations are especially critical with respect to children, because of their play habits and relatively higher metabolic rates. These factors make the control of lead in the urban environment a most important and difficult problem.

Sources of Lead in the Atmosphere

Atmospheric lead originates primarily as a product of fossil fuel combustion. Sources also include lead smelting, manufacturing of batteries and of tetramethyl and tetraethyl lead. These sources are usually located in industrial zones and are classified as point sources. Both direct emissions from stacks and "housekeeping" emissions (known as fugitive emissions) are considered in this SIP. The way these emissions are released to the atmosphere will determine the location and magnitude of the maximum concentration. For example, lead emissions from an elevated stack are likely to place a greater burden on locations farther downwind as opposed to fugitive emissions which are likely to produce maximum concentrations close to the plant. Thus the way emissions are released to the atmosphere is of concern to a neighboring community. A discussion of lead emissions sources and how they are modeled is contained in Section IV.

Area sources, on the other hand, are distributed more uniformly throughout the environment. Over the last fifteen years the major source of environmental lead exposure has been automotive emissions. With the current federal phase-down program for lead in gasoline, the importance of vehicular lead emissions is being reduced. A discussion of this program and its effects on New Jersey's air quality is contained in Section III. Other area sources of lead include paint, ceramics, pesticides, soil and dust.

Federal Requirements for Preparing the Lead SIP

After promulgation of a NAAQS, Section 110 of the Clean Air Act (9) requires states to adopt and submit a plan to USEPA, providing for the attainment and maintenance of the NAAQS in each air quality control region (or portion thereof) within such state. The federal regulations (8) for the development of the state implementation plan for lead require that the plan contain a schedule of commitment for the implementation and enforcement of the strategies contained therein. Specifically the SIP must contain:

- provisions for and a description of an air quality monitoring system and a summary and evaluation of all air quality data measured since January 1974. (Section II).

- an emission inventory for a base year with projections for future years and a description of the methodologies used to develop the inventories. (Section III).

- a presentation including the air quality monitoring and modeling used to evaluate the effects of significant sources (Section IV).

- a summary of the resultant emissions and air quality effects following the application of any control strategy; a modeling analysis to demonstrate that the standard will be attained and maintained in areas in the vicinity of significant point sources of lead and in any other area that has measured concentrations in excess of the standard since January 1, 1974; a description of each control strategy inclusive of the regulations, administrative procedures and enforcement methods necessary to implement the measures; a demonstration that measures in the plan are adequate to provide for attainment of the standard within the prescribed time period and maintenance of that standard for a reasonable period thereafter. (Section V).

The following sections and accompanying appendices form the New Jersey State Implementation Plan for the Attainment and Maintenance of the National Ambient Air Quality Standard for Lead.

REFERENCES

1. U.S. Environmental Protection Agency, Air Quality Criteria for Lead, EPA-600/8-77-017, 1977.

2. Stephens, R., Human Exposure to Lead from Motor Vehicle Emissions. International Journal of Environmental Studies, 17:73-83, 1981.

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5. David, O.J., Association between Lower Level Lead Concentrations and Hyperactivity in Children, Environmental Health Perspectives, 7:17-25, 1974.

6. Lin-Fu, J.S., Undue Lead Absorption and Lead Poisoning in Children - an Overview, Proceedings International Conference on Heavy Metals, Toronto, Ontario, Canada, pp. 29-52, October 27-31, 1975.

7. Davis, D., Cancer in the Workplace, Environment 23:25-37, 1981.

8. Code of Federal Regulation, Title 40, Part 51 (40 CFR 51), Sub Parts B and E.

9. The Clean Air Act as Amended 42 U.S.C. 7401 et seq., August 1977.

SECTION II. AMBIENT AIR QUALITY

The Method Of Lead Measurement

The national ambient air quality standard for lead was promulgated by USEPA on October 5, 1978 (43 FR 46246-63). The NAAQS (40 CFR 50.12) is defined as 1.5 micrograms per cubic meter (ug/m^3) averaged over a calendar quarter. In addition to the NAAQS, USEPA specified a reference method for the determination of lead in suspended particulate matter collected from ambient air (40 CFR 50-Appendix G). The procedures used by NJDEP in operating its lead sampling network conform to this methodology. The monitoring method basically involves collecting samples of the particulate matter suspended in the air by drawing air through a glass fiber filter and subsequently analyzing the samples for lead. A motor, an assembly for holding the filter, devices to measure and control the air flow, and a timing mechanism are housed in a metal shelter with a gabled roof which protects these parts from the elements and limits the size of the particles which can be collected. The entire unit is known as a High Volume Air Sampler (Hi-Vol).

Samples are collected over a continuous 24-hour period running from midnight to midnight once every six days. This procedure ensures that the sampling occurs on a different day each week and that the samples are statistically representative. Following sample collection, the filters are returned to the laboratory, cut into strips, and analyzed for lead by atomic absorption spectroscopy in order to determine the mass of lead per unit area of filter. The volume of air sampled is recorded on a flow chart during the sampling process, and is used to calculate the concentration of lead per unit volume of air, usually reported as micrograms of lead per standard cubic meter of air (ug/m^3).

A three-month arithmetic mean is determined for comparison with the NAAQS. For statistical significance, at least twelve valid samples must be obtained for any given calendar quarter. More detailed information on the sampling methodology and quality assurance procedures is available in the Department's Quality Assurance and Standard Operating Procedures Manuals (1, 2).

The New Jersey Lead Sampling Network

Beginning in 1978 and continuing through 1982, NJDEP routinely measured ambient concentrations of lead in the air at the locations depicted in Figure II-1(A). In most cases the samplers had been located primarily for the measurement of total suspended particulates (TSP) and the lead analysis was performed as a secondary consideration. The exceptions are the Pedricktown samplers which were expressly sited to measure lead levels near a major industrial source. Thus, for the most part, the data collected reflects general urban exposure levels rather than maximum concentrations.

To obtain more information on maximum lead levels, samplers were installed near major roadways in Clifton and Union City. The Clifton site and others selected from the existing network of TSP samplers form New Jersey's State and Local Air Monitoring Station (SLAMS) lead network. SLAMS networks are required by Federal regulation (40 CFR 58.20) for all pollutants for which NAAQS have been established. Formal operation of the network began on January 1, 1983.

A number of SLAMS network sites are also designated to be part of the National Air Monitoring Station (NAMS) network. Extensive data from NAMS sites are kept on a nationwide data file maintained by USEPA. New Jersey's NAMS lead sites are Clifton and Jersey City. Sites must meet stringent criteria and obtain federal approval before they can become part of the NAMS or SLAMS networks.

Since the SLAMS network's initiation, an additional lead sampler has been installed in New Brunswick to measure levels near a major industrial source. The site for this sampler was selected using the results of air quality modeling studies conducted as part of this SIP. One additional site is also planned for the Camden City area to measure levels near major roadways. NJDEP is committed to having that site in operation by March 1, 1984. Sampling in the vicinity of the United States Metals Refining plant in Carteret is also under consideration. Figure II-1 (B) shows the locations of lead samplers currently being operated by NJDEP.

Identification Of Problem Areas

The SIP must contain a demonstration that the standard will be attained and maintained in any area that has had lead air concentrations in excess of the NAAQS for any calendar quarter in the last ten years. This section discusses those areas in New Jersey where monitoring programs have indicated the potential for contraventions of the lead standard since 1974.

A summary of the number of quarterly means exceeding the lead standard at the New Jersey monitoring sites since the state initated its monitoring program in 1978 is contained in Table II-2. The quarterly averages are shown in Table II-1. The standard was exceeded at at Jersey City (1978), Newark (1978, 1979), Trenton (1978, 1979) and Pedricktown (1978, 1979, 1980, 1981).

Except for the Pedricktown site, all contraventions of the standard at New Jersey monitoring sites occurred during the fourth quarter of the calendar year. The two contraventions in 1979 (Newark and Trenton) were roughly 18 percent less than the 1978 violations at the same sites. All post-1979 measured concentrations at these sites are below 1.0 ug/m^3.

The Jersey City, Newark and Trenton sites are primarily affected by traffic. The Newark sampler is located in Military Park in the central business district, the Trenton sampler is situated near entrance ramps to Route 29, a major freeway, and the Jersey City sampler is near an elevated section of the New Jersey Turnpike. The decline in ambient lead levels at these three monitors can be attributed to the decrease in use of tetraethyl lead (TEL) and tetramethyl lead (TML) in gasoline. A statistical analysis supporting this conclusion is presented in Appendix II-1.

At monitor S-57 in Pedricktown, measured quarterly averages of lead exceeded the standard eleven out of twelve quarters during 1978-1980, and in the first quarter of 1981. At sampler S-58, located about 0.75 miles to the northeast of

S-57, measured concentrations have always been within the standard. The S-57 high volume sampler is situated near a secondary lead smelter operated by National Smelting of New Jersey. Previously, the plant was owned by NL Industries, which terminated major lead processing operations at the site in May, 1982. After resumption of operations by the new owner, National Smelting of New Jersey, an ambient air violation was recorded in 1983. The ambient air violations can be attributed to this source.

Atmospheric dispersion modeling (see Section IV), corroborated by air monitoring data, indicates that high concentrations and contraventions of the NAAQS for lead did not directly result from stack emissions. For example, on three days in 1981 when 24 hour lead averages exceeded 5 ug/m^3, the facility's kilns were not in operation. Automobile traffic is also light in this area, thus high concentrations cannot be directly attributed to mobile sources. Most likely, elevated lead levels at the site result from reentrained dust from the surfaces of structures and soils in the plant and its vicinity. The local environment apparently contains a large quantity of residual lead, which may be disturbed and reentrained. Disturbances may result from windy conditions or from vehicular movement.

It is significant that the high readings at all four monitoring sites showing violations in 1978 and thereafter can be associated with emissions from sources classified as area sources. In three cases, contraventions resulted directly from mobile sources. In the other, the original source of lead is a smelting operation, but the immediate cause appears to be reentrained lead from soils and surfaces. Vehicular movement at the plant site plays a role by disturbing contaminated soil. A trend analysis of the Pedricktown (S-57) site vs. sites affected by the mobile sources is depicted in Figure II-2.

Other Lead Monitoring Programs

Data on ambient lead concentrations are available from a number of sources in addition to the New Jersey lead sampling network. These other sources include (in chronological order) the USEPA sponsored National Aerometric Sampling Network (1974 to 1980), an Interstate Sanitation Commission study (Nov. 1974 to March 1975) (4), several New Jersey Office of Science and Research (formerly called the Office of Cancer and Toxic Substance Research (OCTSR)) studies (1978 to 1980) (5,6) including the Airborne Toxic Elements and Organic Substance (ATEOS) study (1981 to present) (7). Table II-3 shows the duration of these monitoring programs and indicates the time periods during which the data suggest that the standard was probably exceeded. Some caution should be used in interpreting data from these programs, as averaging times are generally not the same as for the New Jersey network, and in some instances sampling procedures deviated from the federally approved methods.

Starting in 1974 samples from sites which were part of EPA's National Aerometric Sampling Network (NASN) were analyzed for lead. Because these samplers were operated on a twelve day rather than a six day schedule, there are insufficient data to calculate quarterly averages for comparison with the NAAQS (3). However, when the average of data for a full year exceeds the NAAQS there is a probability that at least one quarterly average would also have exceeded the standard. The data indicate the standard was probably exceeded at the Paterson (1974 through 1978) and Elizabeth (1977) sites.

The probable contravention in Elizabeth is based on an annual average calculated from only seven observations. Similarly, annual averages were calculated for Paterson in 1974 from only three data points, in 1975 from only nine, and in 1976 from only seven. Federal regulations require twelve measurements each quarter to obtain a valid quarterly mean. From 1977 onward, Paterson's annual averages were calculated from 13 or more observations. Although the data were still insufficient to meet the USEPA criterion for valid quarterly means, the trend of annual averages over the four years from 1977 to 1980 resembles that of the three sites affected by mobile sources as discussed earlier in this section.

Some contraventions have also been detected by the other independent monitoring studies. One quarterly average of 5.09 ug/m^3 was measured as part of the Interstate Sanitation Commission Particulate Study (4). This value is calculated from measurements of a traffic-affected monitor operated in Newark from November 1974 to March 1975. In another independent study, the OCTSR lead and toxic metals study (5), a mean of 6.46 ug/m^3 was obtained at a site in Clifton. However, the mean was based on only three measurements in the period April - September, 1978. These values indicate that ambient lead concentrations resulting from vehicular lead emissions were elevated and pervasive before the lead phase-down program began to take effect.

High lead concentrations measured during another OCTSR study (6) conducted in 1979 are consistent with ambient lead measurements made by state monitors sited in traffic-affected areas for that particular year. Concentrations in excess of the NAAQS for lead occurred in Rutherford in the second quarter of 1979 and in Newark in the fourth quarter.

Lead analyses were also performed on TSP samples collected in the vicinity of E. I. du Pont de Nemours & Co., Inc. in Deepwater. The samples for these analyses were obtained from a TSP sampling program for another plant in that area. The sampler was 1.4 km to the northeast of the Deepwater plant. Meteorological data were reviewed by NJDEP to select sampling dates when lead levels could be expected to be high. The results do not indicate a violation of the lead standard, the highest measured concentration being 0.9 ug/m^3. Data from this and all other monitoring mentioned above are found in Appendix II-2.

Ambient Air Monitoring Summary

With the exception of the Pedricktown industrial site, pre-1980 concentrations over the lead standard resulted from mobile sources. The federal program to reduce use of leaded gasoline has been effective in reducing air quality problems related to lead.

It is often difficult to identify localized lead violations from industrial or commercial sources through monitoring techniques alone. The use of emission inventories and modeling estimates is also necessary in order to obtain a comprehensive picture of lead levels in New Jersey.

TABLE II-1

QUARTERLY AVERAGE LEAD CONCENTRATIONS [1]
AT NEW JERSEY SAMPLING SITES

SITE (N.J.#)	1978 QUARTER 1	1978 QUARTER 2	1978 QUARTER 3	1978 QUARTER 4	1979 QUARTER 1	1979 QUARTER 2	1979 QUARTER 3	1979 QUARTER 4	1980 QUARTER 1	1980 QUARTER 2	1980 QUARTER 3	1980 QUARTER 4	1981 QUARTER 1	1981 QUARTER 2	1981 QUARTER 3	1981 QUARTER 4	1982 QUARTER 1	1982 QUARTER 2	1982 QUARTER 3	1982 QUARTER 4
Bridgeton (S-55)	.15	.05	.17	.56	.18	.17	.14	.35	.17	.11	.18	.30	.30	.17	.28	.30	.14	.03	.21	.12
Camden (N-02)	.52*	.62	.72	1.45	.55	.71	.64*	.87	.54	.32	.26	.42	.34	.35	.44	.43	.33	.27	.73	.53
Fairlawn (S-08)					.88	.95	.84*	1.43	.60	.43	.61	.52	.49	.42	.32	.35	.47	.31	.45	.28
Hammonton (S-28)	.18*	.17*	.56	.95	.58*	.42	.15*	.57*	.33*	.22*	.37*	.49*	.35*	.17*	.21*	.15*	.24*	.21*	.32*	
Jersey City (014)	.79	.81	1.03	2.13*	1.00	1.14	1.03*	1.40	.79	.64	.70	.66	.52	.63	.50	.45	.44	.46	.71	.50
Newark (S-41)	1.18	.97	1.49	2.10	1.34	1.39	1.32	1.70	.77	.61	.83	.65	.61	.64	.42	.44	.52	.51	.76	.91
Pedricktown (S-57)	4.34	5.26	3.14	4.35	4.14	2.49	3.14	6.66	7.11	2.15	.95	3.30	1.76	.41	.60	1.05	1.24	1.04	.36	.24
Pedricktown (S-58)	.49	.46	.75	1.11	.28	.82	.48	.93	.19	.34	.03	.13	.29	.17	.18	.08	.25	.11	.23	.16
Phillipsburg (S-12)	.23	.31	.44	.78	.58	.27	.36	.61	.40	.36	.31	.34	.27	.23	.25	.30	.12*	.15*	.28	
Salem (S-54)	.23	.14	.36	.66	.15	.18	.26*	.45	.28*	.14*	.02*	.04*	.24*	.12*	.19*	.25*			.26*	
Sayreville (028)	.43	.24	.67	1.40	.35	.49	.48*	.12*		----				----				----		
Trenton (S-45)	.75	.83	1.11	1.85	.94	1.02	1.00	1.53	.86*	.54*	.81	.71	.59	.42	.48	.35	.42	.35	.51	.51

*Average Based on Less than 12 Samples
[1] In Micrograms Per Cubic Meter (ug/m^3)

TABLE II-2

NUMBER OF CONTRAVENTIONS OF THE LEAD QUARTERLY AVERAGE
AT NEW JERSEY MONITORING SITES, 1978-1982

SITE	1978	1979	1980	1981	1982
Jersey City (014)	1	0	0	0	0
Newark (S-41)	1	1	0	0	0
Pedricktown (S-57)	4	4	3	1	0
Trenton (S-45)	1	1	0	0	0
TOTAL	7	6	3	1	0

Number of contraventions of the lead NAAQS, 1.5 ug/m^3, on a quarterly average, are shown for each site and year.

TABLE II-3

EARLY LEAD SAMPLING PROGRAMS
POTENTIAL PROBLEM AREAS

```
COUNTY       MUNICIPALITY    1974  1975  1976  1977  1978  1979  1980  1981  1982
BERGEN       Carlstadt                               !--!
             Rutherford                              !--!  !--!

CAMDEN       Camden          !--------!        !--------------------!  !--!  !--!
             Cherry Hill           !--!        !--------------------!

ESSEX        Kearny                                  !--!
             Newark          !---X----!        !-------------X------!  !--!  !--!
             Maplewood                               !--!

GLOUCESTER   Glassboro       !--------!        !--------------------!

HUDSON       Bayonne         !--------!        !--------------------!
             Jersey          !--------!        !--------------------!

MERCER       Trenton         !--------!        !--------------------!

MIDDLESEX    Carteret          !     !
             Perth Amboy     !--------!        !--------------!
             Sayreville        !-----!

MONMOUTH     Asbury Park       !-----!

PASSAIC      Clifton                                 !-X!
             Paterson        !-------X-----X-----X----X-------------!
             Ringwood                                                  !--!  !--!

SOMERSET     Somerville                              !--!

UNION        Elizabeth       !--------!        !-X------------------!  !--!  !--!
             Linden            !-----!                     !--!
             Roselle           !-----!
             Westfield                               !--!
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!---------! Sampling Period

X Potential to exceed lead standard

NEW JERSEY LEAD MONITORING NETWORK

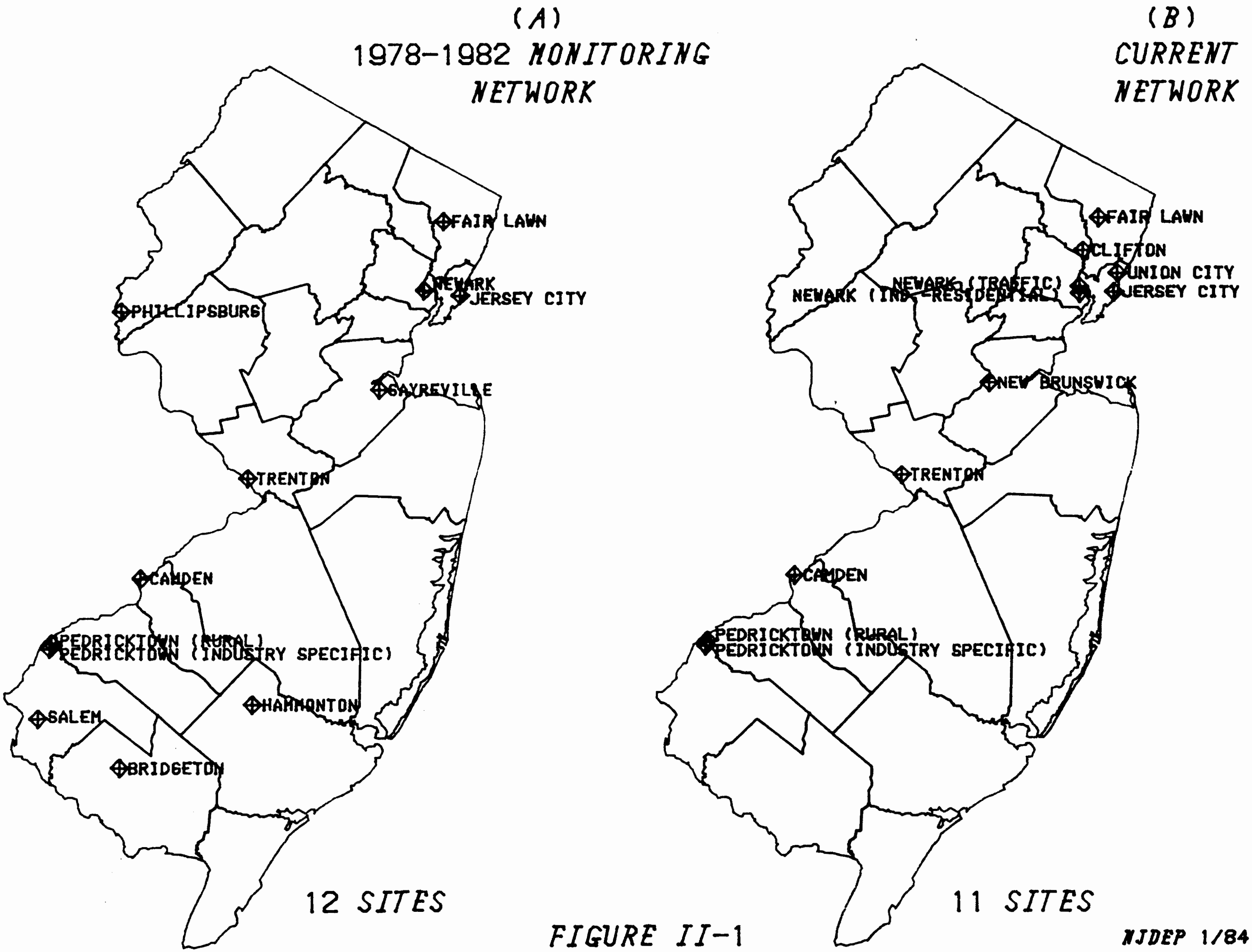

FIGURE II-1

QUARTERLY AVERAGE LEAD CONCENTRATIONS
1978-1982

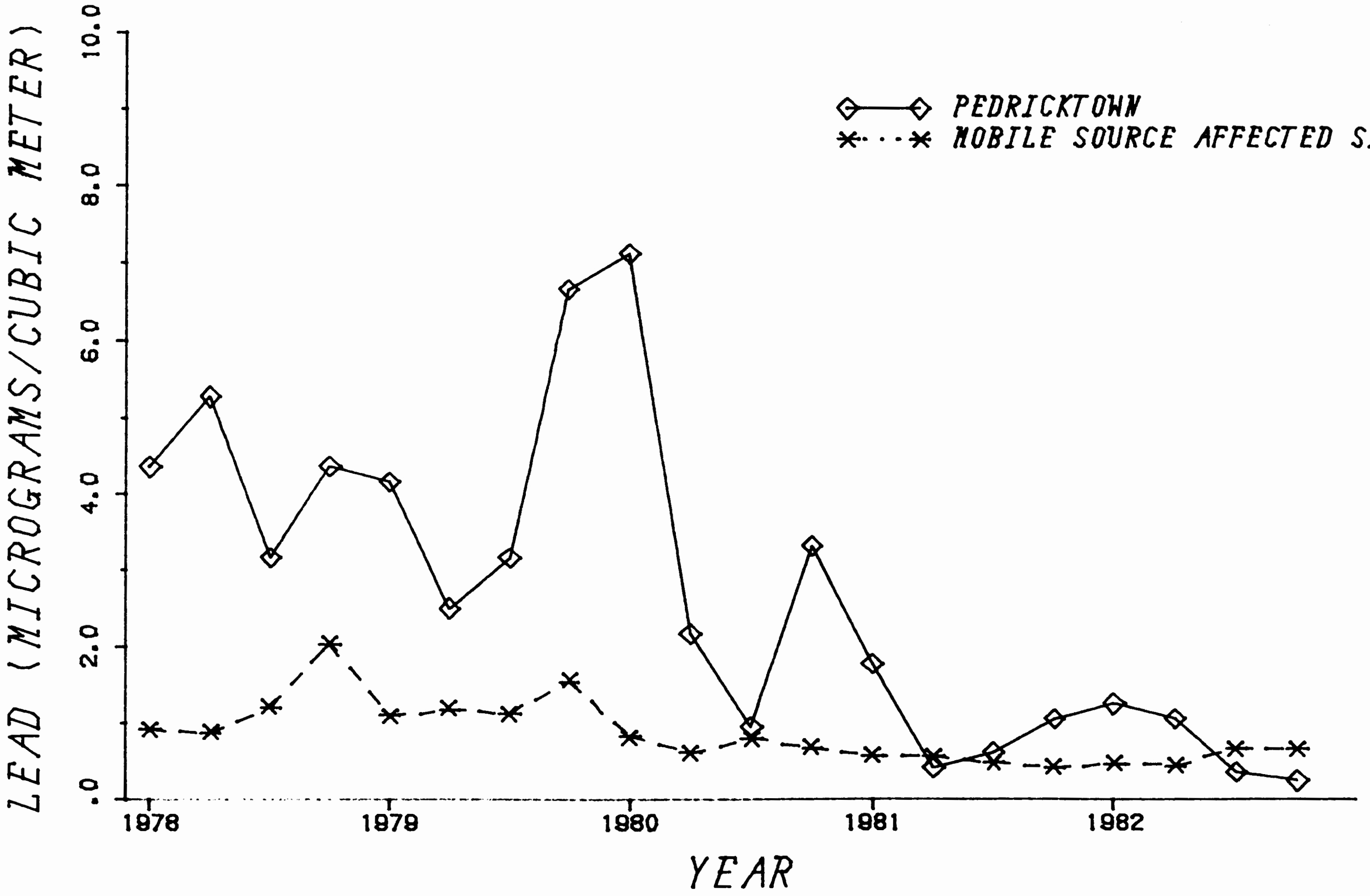

FIGURE II-2

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1. N.J. Department of Environmental Protection, Quality Assurance Plan for the New Jersey Ambient Air Monitoring Network, January, 1981.

2. N.J. Department of Environmental Protection, Standard Operating Procedures Manual for the New Jersey Ambient Air Monitoring Network, March, 1981.

3. Correspondence from Richard G. Rhoads to Director, Air and Hazardous Materials Division, Regions I - X; Minimum Number of Samples for Determining Quarterly Average Lead Concentration, November, 1979.

4. Interstate Sanitation Commission, Final Report on the Control of Suspended Particulates Study in the New York Metropolitan Areas, Report #S802496-01-G, 1976.

5. N.J. Department of Environmental Protection, Lead and Toxic Metals in Airborne Particulates, October, 1979,

6. N.J. Department of Environmental Protection, Analysis of Selected Toxic and Carcinogenic Substances in Ambient Air in New Jersey, May, 1980.

7. Institute of Environmental Medicine Second Annual Report, Airborne Toxic Elements and Organic Substances (ATEOS) Project, 1982.

SECTION III. EMISSION INVENTORY

The baseline and projected lead emission inventories were developed by the N.J. Division of Environmental Quality (DEQ) in accordance with guidance provided in several USEPA publications (2,7,8) and Federal Registers (5,9). Calendar year 1982, the latest year for which ambient air quality and emissions data were available, was selected as the base year from which to make comparisons with future years. Projected emission inventories were estimated for the years 1986 and 1990.

All known lead-emitting source categories in the state have been included in the inventory. These categories include transportation (highway vehicle exhaust emissions and reentrained dust from vehicle movement), solid waste disposal, industrial processes and fuel combustion. A summary of the lead emission inventory is shown in Table III-1. This table shows that total emissions of lead for the 1982 base year are expected to be reduced 37% by 1986 and 55% by 1990.

In the base year, transportation sources account for about 86% of the total emissions in New Jersey while industrial processes account for a significant part of the remainder. In future years, the continued phase-out of leaded gasoline in New Jersey, as shown in Figure III-1 is reflected by the lower emissions attributed to transportation sources; by 1990 these sources are expected to account for only 49% of the total emissions. Conversely, emissions from solid waste disposal, primarily resource recovery incineration, and industrial processes, are expected to increase in future years. Resource recovery facilities will gradually replace landfills as a means of waste disposal, and by 1990 approximately 20 of these facilities are expected to be in operation in New Jersey. Emissions from solid waste disposal will be about 21% of the total lead emissions by 1990. Industrial process emissions will gradually increase from 11% in 1982 to about 27% of the total lead emissions by 1990.

Emission Inventory Accuracy

Methodologies and emission factors recommended by USEPA were used where measured or permitted emissions were not available. The emission data were quality-assured through procedures which involved:

- the use of experienced personnel in data collection and evaluation
- the cross-checking of available resources to insure that all significant emission sources were included
- the routine checking of emission estimation methods and calculations
- the comparison of results with those of an example inventory generated by USEPA.

The source categories listed in Table III-1 can be defined according to their spatial distribution of points of emission. Thus emissions from elevated stacks or point sources are shown separately from the more numerous ground level sources, termed area sources. Fugitive emissions, as the name implies, are emissions that escape prior to collection for proper disposal. In the case of lead emissions from certain manufacturing processes, they can be a significant part of the total. For the purpose of the lead inventory, fugitive emissions are listed (where estimates are available) in the point source inventory.

Area Source Inventory

Area sources contribute 88% of the overall emissions to the 1982 inventory. The area source category for lead typically includes emissions from highway vehicles; residential, industrial, and commercial/institutional fuel burning; industrial process sources not classified as point sources; and off-highway vehicles. Highway vehicle exhaust emissions combined with reentrained dust emissions generated from vehicle movement over road surfaces account for a substantial part of the area source inventory. Emissions from highway vehicles, including both exhaust and reentrained lead emissions, and the methodology for determining these emissions are presented in Appendix III-1, Attachment III-G. These emissions are also summarized in Table III-1.

Emissions from fuel combustion were determined using fuel delivery data for New Jersey obtained from a U. S. Department of Energy (USDOE) report (3) and emission factors from a USEPA publication (2). Fuel data were obtained for each sector: residential, industrial and commercial/institutional. Statewide emissions were allocated to the counties based on population and employment data (4). Emission data by county for each of the fuel burning categories are shown in Appendix III-1, Attachment III-F.

Emission data from industrial process sources are covered in the point source summary (Table III-1 and Appendix III-1, Attachment III-C) and were obtained from the survey of field office files discussed under point source inventory.

Fuel consumption by off-highway vehicles is relatively small (see Appendix III-1, Attachment III-F) and produces insignificant emissions.

In addition to the above, emissions from waste oil combustion were also included in the area source inventory. Emissions from this category were estimated from the quantity of used automotive crankcase oil from vehicles using leaded gasoline and utilized as an alternate fuel, and USEPA emission factors (8). This methodology and the resultant emissions are presented in Appendix III-1, Attachment III-H.

Point Source Inventory

Point sources account for 12% of the overall 1982 emission inventory. But because their emissions are much higher than highway vehicle emissions in their vicinity, the likelihood of an ambient air violation is greater than their contribution to the statewide inventory would indicate.

USEPA defines a point source of lead as any stationary source whose actual emissions are 5 or more tons per year (TPY) of lead or lead compounds measured as elemental lead. New Jersey's Air Pollution Enforcement Data System (APEDS) along with field enforcement, permit, and stack test files were used in identifying thirty-three industrial source candidates as possible emitters of lead. A list of these sources ranked according to facility emissions is shown in Table III-2.

Field enforcement personnel completed survey forms (see Appendix III-1, Attachment III-A) requiring information on process operations, emission rates, and stack data for each lead emitting facility. Estimates of actual emissions were obtained directly from stack test results, where available, or from data in the enforcement or permit files. Emission data given as lead compounds (i.e., lead oxide, tetraethyl lead, etc.) were factored according to molecular weights to be reported as elemental lead only.

In most cases the emission data supplied by the field offices represented stack emissions only. Fugitive emission estimates were made for point sources following visits to facilities identified as having the potential to produce fugitive emissions. The inspection procedures that were followed during the plant visits are discussed in Appendix III-1, Attachment III-B. Process throughput rates and emission factors generated by USEPA were used to estimate fugitive emissions from U.S. Metals Refining in Carteret, Delco Remy Division of General Motors Corp. in New Brunswick, National Smelting of New Jersey (formerly NL Industries) in Pedricktown, and E.I. du Pont de Nemours & Co., Inc. in Deepwater. It was found that fugitive emissions from Delco Remy Division of General Motors Corp. were negligible. The estimated fugitive lead emissions for each of these facilities are also contained in Appendix III-1, Attachment III-B. In addition, efforts are currently being made to quantify fugitive emissions from Alpha Metals, Inc. in Jersey City, Federated Metals Corp. in Newark, Charles B. Hull Co. in North Arlington, Campbell Soup Co. in Camden and E. I. du Pont de Nemours & Co., Inc. in Newark. A summary of the stack and fugitive emissions for industrial and sludge incineration facilities is presented in Appendix III-1, Attachment III-C. A majority of these sources (twenty-four) emit less than 5 TPY. Rather than singling out the sources emitting greater than this amount, all surveyed sources for which emissions were obtained are included in the point source summary.

Table III-1 also shows lead emissions from other potential point sources such as electric generation, resource recovery incineration, and industrial coal burning. Emission estimates for the utilities were calculated using fuel consumption rates provided by USDOE (1) and emission factors contained in a USEPA publication (2). The results of this calculation are presented in Appendix III-1, Attachment III-D. No resource recovery facilities were in operation in New Jersey in 1982 but such facilities are anticipated in future years as discussed later in this section. Industrial coal burning facilities, including the type and quantity of coal burned and the expected emissions, are listed in Appendix III-1 Attachment III-E.

Projected Inventories

The 1982 baseline inventory emissions were projected to the years 1986 and 1990 based on the federal phase-down of lead in gasoline and control measures contained in Section V minus the effect of projected growth.

Emissions from industrial point sources and industrial and commercial/institutional fuel combustion were projected using growth factors developed from employment data presented in Appendix III-1, Attachment III-F. The projected emissions for industrial point sources estimated at 18% of the 1986 inventory and 27% of the 1990 inventory and sludge incineration showing minor increases in the projection years, are shown in Appendix III-1, Attachment III-I and those for fuel combustion are presented in Attachment III-F.

Population growth factors were used for projecting emissions from residential fuel combustion and incineration activities. Population is expected to increase by about 10% in the 1980's. The population data and projected emissions from these sources are shown in Appendix III-1, Attachments III-F and III-I, respectively.

Growth in electric generation was determined from an extrapolation of USDOE trend data for the period 1978-1981. Projected emissions for coal and fuel oil use by the utilities are not expected to change significantly from 1980 and are shown in Appendix III-1, Attachment III-D.

Emissions from resource recovery facilities that are expected to come online in the future were estimated for 1986 and 1990 based on data supplied by the N.J. Division of Waste Management. NJDEP is requiring that these facilities achieve a state-of-the-art particulate emissions standard of 0.03 grains per dry standard cubic foot (gr/dscf) rather than the federal New Source Performance Standard of 0.08 gr/dscf (see Section V, Regulations for Attaining and Maintaining the NAAQS). The methodology for estimating emissions from these facilities and their lead emissions are presented in Appendix III-1, Attachment III-J.

Projected statewide emissions from waste oil combustion, highway vehicles and re-entrained dust were determined using percent reductions in the projected volumes of leaded gasoline in New Jersey (Figure III-1), calculated from data (6) presented in Appendix III-1, Attachment III-G. The projected lead emission data estimated from this procedure are presented in Appendix III-1, Attachment III-H for waste oil combustion, and Attachment III-G for highway vehicles and re-entrained dust.

A lead emission inventory by county for the base year 1982 and each of the projection years is presented in Appendix III-1, Attachment III-K.

TABLE III-1

LEAD EMISSION INVENTORY SUMMARY IN TONS/YEAR

NEW JERSEY

SOURCE CATEGORY	BASE YEAR 1982	PROJECTION YEARS 1986	1990
Transportation			
* Highway Vehicle	2,036	922	536
* Reentrained Dust	597	317	134
Subtotal	2,633(86)	1,239(64)	670(49)
Industrial Process			
Chemical Manufacture	174	178	181
Primary Metals	88	94	100
Secondary Metals	74	76	79
Metal Fabrication	9	9	10
Mineral Products	2	2	2
Subtotal	347(11)	359(18)	372(27)
Solid Waste Disposal			
Resource Recovery Incineration	0	273	283
Sludge Incineration	11	12	13
Subtotal	11(1)	285(15)	296(21)
Fuel Combustion			
* Waste Oil	52	31	18
Electric Generation	19	19	19
* Industrial Fuel	2	5	5
* Commercial Fuel	1	1	1
* Residential Fuel	1	1	1
Subtotal	75(2)	57(3)	44(3)
STATE TOTAL	3,066	1,940	1,382
Overall percent reduction		37%	55%

( ) Indicates percent of state total
* Area sources

TABLE III - 2

POINT SOURCE EMISSION INVENTORY FOR LEAD
1982 BASELINE

Facility	Source Description	Emissions in Tons/Year
E. I. du Pont de Nemours & Co., Inc. [1], Deepwater, Salem Co.	Gasoline Additive Manufacturing	150.7 (+4 fugitive)
U.S. Metals Refining (AMAX) [1], Carteret, Middlesex Co.	Secondary Smelter	50.1 (+36 fugitive)
Delco Remy Division of General Motors [1], New Brunswick, Middlesex Co.	Battery Manufacturing	29.1
E. I. du Pont de Nemours & Co., Inc. [2], Newark, Essex Co.	Pigment Production	17.3
National Smelting of New Jersey [1], Pedricktown, Salem Co.	Secondary Smelting	16.6 [3]
Alpha Metals, Inc. [2], Jersey City, Hudson Co.	Solder Manufacturing	14.0
Campbell Soup Co. [2], Camden, Camden Co.	Can Manufacturing	7.0
Federated Metals Corp., [1], Newark, Essex Co.	Secondary Smelter	6.6
Rollins Environmental Services, Inc. [2], Logan Twp., Gloucester Co.	Chemical Incinerator	5.0
Charles B. Hull Co. [2], No. Arlington, Bergen Co.	Tin Residue Manufacturing	4.2
Atlantic Co. Sewerage Authority, Altantic City, Atlantic Co.	Sludge Incinerator	3.0
Goodall Rubber Co., Trenton, Mercer Co.	Rubber Manufacturing	1.6
Kearny Smelting & Refining Co., Kearny, Hudson Co.	Secondary Smelter	1.4
Lenox China, Inc., Galloway Twp., Atlantic Co.	Glass Manufacturing	1.2
Gloucester Co. Sewerage Authority W. Deptford, Gloucester Co.	Sludge Incinerator	0.9

TABLE III - 2 (continued)

Facility	Source Description	Emissions in Tons/Year
Pittsburgh Graphics, Jersey City, Hudson Co.	Linotype Manufacturing	0.8
Continental Can Co., Inc., Vineland, Cumberland Co.	Can Fabrication	0.8
Parsippany Sewage Treatment Plant, Parsippany, Morris Co.	Sludge Incinerator	0.8
Essex Metal Alloy, Inc., Newark, Essex Co.	Tin-Lead Manufacturing	0.7
Del Monte Corp., Swedesboro, Gloucester Co.	Can Fabrication	0.7
Stony Brook Regional Sewerage Authority, Princeton, Mercer Co.	Sludge Incinerator	0.7
Barry Bronze Bearing Co., Camden, Camden Co.	Bearing Manufacturing	0.6
Interstate Metals Separating Co., Kearny, Hudson Co.	Metals Separation	0.5
Wayne Sewage Treatment Plant, Wayne, Passaic Co.	Sludge Incinerator	0.5
Owens-Illinois, Inc., Vineland, Cumberland Co.	Glass Manufacturing	0.4
Jersey Smelting & Refining Co., Jersey City, Hudson Co.	Secondary Smelting	0.2
Bergen Point Brass Foundry, Inc., Bayonne, Hudson Co.	Castings Manufacturing	0.2
Arlington Lead Burning Co., Inc., Newark, Essex Co.	Metal Fabrication	0.1
Kester Solder Division of Litton Systems, Inc., Newark, Essex Co.	Solder Manufacturing	0.1
Kenrich Petrochemicals, Inc., Bayonne, Hudson Co.	Resins Manufacturing	0.1

TABLE III - 2 (continued)

Facility	Source Description	Emissions in Tons/Year
RFE Industries, Jersey City Hudson Co.	Secondary Metals	0.1
American Can Co., Edison, Middlesex Co	Can Fabrication	0.1
Atlantic Battery, Inc., Paterson, Passaic Co.	Battery Manufacturing	0.1
	TOTAL	316.2 (+40 fugitive)

1 Source requiring modeling.

2 Source which may require modeling.

3 Emissions calculated for full calendar year even though plant operated for only five months.

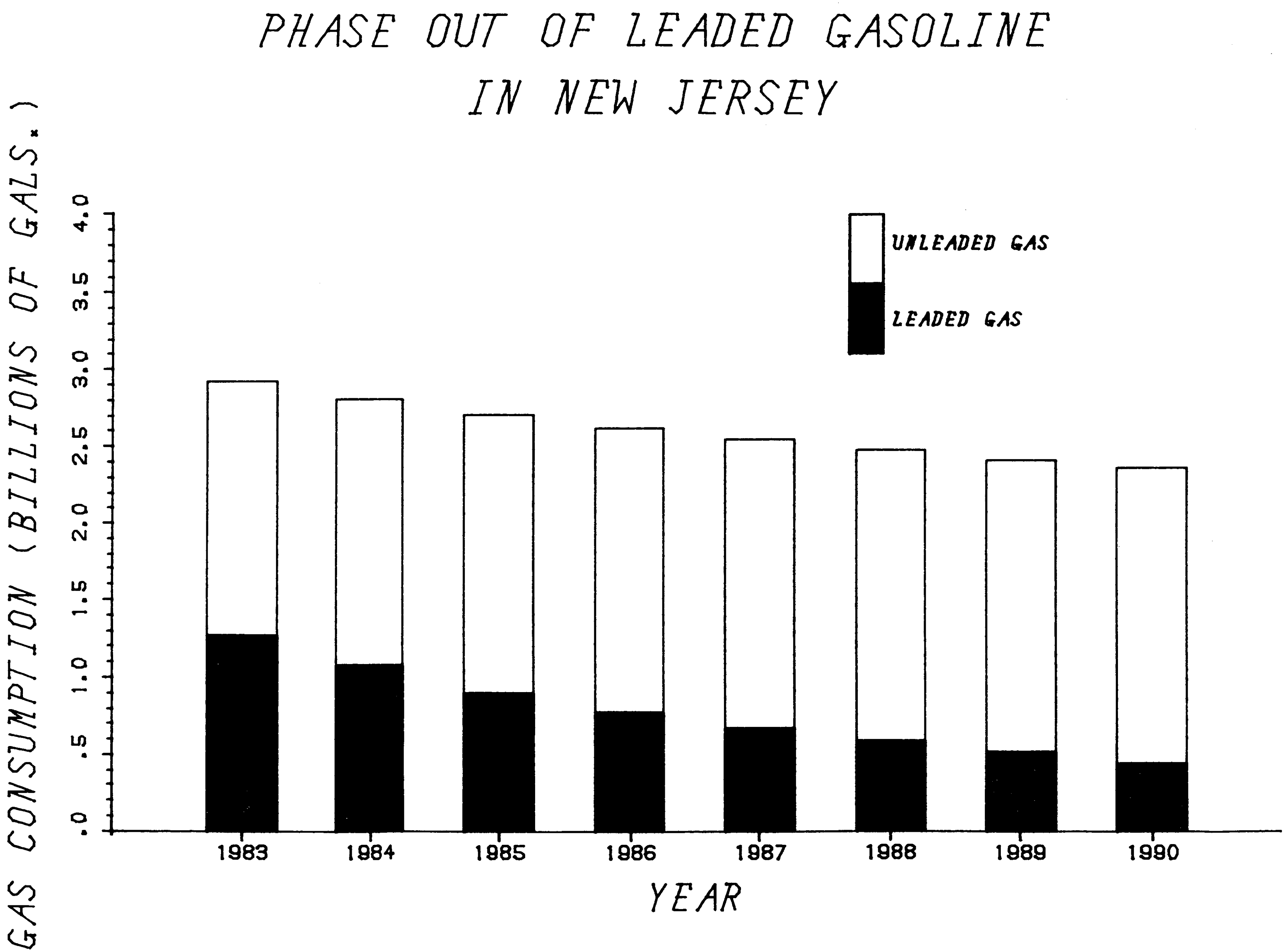

FIGURE III-1

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2. U.S. Environmental Protection Agency, Control Techniques for Lead Air Emissions, EPA-450/2-77-012, Research Triangle Park, N.C., December, 1977.

3. U.S. Department of Energy, Deliveries of Fuel Oil and Kerosene in 1981, DOE/EIS-0113, Washington, D.C., February, 1982.

4. N.J. Department of Environmental Protection, Division of Water Resources, Policy and Procedures for Water Resource Management Planning, Trenton, N.J., May, 1981.

5. U.S. Environmental Protection Agency, Regulation of Fuels and Fuel Additives, 47 FR 49322-34, October 29, 1982.

6. U.S. Environmental Protection Agency, Field Operation and Support Division, Washington, D.C. Gasoline Produced and Lead Used as Reported to EPA. Fact Sheet, (undated)

7. U.S. Environmental Protection Agency, A Lead Emission Factor For Reentrained Dust from a Paved Roadway, EPA-450/3-78-021, Research Triangle Park, N.C., April, 1978.

8. U.S. Environmental Protection Agency, Compilation of Air Pollutant Emission Factors, AP-42, Supplement 10, Research Triangle Park, N.C., February, 1980.

9. U.S. Environmental Protection Agency, Implementation Plans for Lead, 43 FR 46264-71, October 5, 1978.

SECTION IV. AIR QUALITY EVALUATION OF SIGNIFICANT POINT SOURCES

The State Implementation Plan must contain an air quality evaluation of any stationary source which emits 25 or more tons per year of elemental lead (1). Sources in this category are E. I. du Pont de Nemours & Co., Inc., Deepwater, Salem County; U.S. Metals Refining, Carteret, Middlesex County; and Delco Remy Division of General Motors Corp., New Brunswick, Middlesex County (see Section III, Table III-2). An air quality evaluation is also required for specific manufacturing processes emitting 5 or more tons per year, including primary and secondary lead smelters, primary copper smelters, lead gasoline additive plants, and lead-acid storage battery manufacturing plants that produce 2000 or more batteries per day. Two sources in New Jersey fall within this category, National Smelting of New Jersey, Pedricktown, Salem County and Federated Metals Corp., Newark, Essex County, both of which are secondary smelters.

The five sources that must undergo evaluation are shown in Figure IV-1. The total emissions from these sources are equal to approximately 80 percent of the lead emitted statewide by industrial processes in 1982.

Five additional sources were identified from the emission inventory as possible candidates for an air quality evaluation if significant fugitive emissions are found.

Air Quality Modeling Protocol

The maximum ambient lead concentration is found by modeling the contributions from the facility's stack and fugitive emissions, and adding surrounding background concentrations. Stack emissions are determined from permit applications or stack tests, or calculated from appropriate emission factors. Fugitive emissions are calculated from appropriate emission factors for the various categories of area sources. The contributions of those stack and fugitive emissions to ambient concentrations are computed by one of the "User's Network for Applied Modeling of Air Pollution" (UNAMAP) series of dispersion models approved by USEPA. Background concentrations are derived from appropriate air quality data from air monitoring sites similar in siting characteristics to the receptor in question.

Effects on lead air quality for each of the five facilities were evaluated in two steps. Initially the USEPA-approved multiple point source screening model (PTMTP) was used. Results show that all the facilities have potentially significant effects. A significant effect is defined as 0.1 ug/m^3, the de minimis value for Prevention of Significant Deterioration (PSD) applications.

In this screening demonstration, receptors were spaced at 0.5 kilometer (km) intervals or less for the first 2.5 km, and at increasing intervals beyond this distance. Emission rates were adjusted to reflect actual hours of operation. For example, if a plant shuts down for a week every quarter, emissions would be multiplied by 0.923 (assuming 24 hours/day, 7 days/week operation). As in the emission inventory, emission rates of elemental lead were used. In all cases, the screening model indicated that the maximum effects would occur very close to the property line, within two kilometers of the sources.

Refined modeling using the USEPA approved Climatological Dispersion Model (CDM) (2) or Industrial Source Complex (ISC) Model was later performed. Details and results of the refined modeling analyses are presented in Appendix IV.

To determine the extent of any fugitive emissions, field investigations have been conducted at four of the five sources listed above which require an air quality evaluation: Delco Remy Division of General Motors Corp., E. I. du Pont de Nemours & Co., Inc., (Deepwater), National Smelting of New Jersey and U.S. Metals Refining. The Federated Metals Corp. plant is not presently in full operation (see below). If fugitive emissions were observed, appropriate emission factors and control efficiencies were used to derive an emission rate. Emission factors and estimates of fugitive emissions from these point sources are contained in Appendix III-1, Attachment III-B.

Five additional sources were identified from the emission inventory as having the potential to require an air quality evaluation under USEPA guidelines if significant fugitive emissions were found. Of these, Campbell Soup Co., Camden, was found to have shut down some of its lead emitting processes, and to have no major fugitive problems. Rollins Environmental Services, Inc., Logan Twp., is under strict federal rules for chemical incineration and is, therefore, unlikely to have significant fugitive emissions. Charles B. Hull Co., North Arlington, was found to be shut down completely. Under these conditions, no air quality evaluation of these plants is planned. Alpha Metals, Inc., Jersey city, and E.I. du Pont de Nemours & Co., Inc., Newark, are still to be investigated. An evaluation of NJDEP enforcement files suggests that fugitive emissions are not significant at these facilities. In the event that fugitive sources are found, emissions derivations and an atmospheric dispersion analysis will be performed. Results of the modeling completed to date are discussed below.

Federated Metals Corp., Newark

This facility is considered a secondary lead smelter, one of the generic sources previously listed. The source is permitted to emit 6.6 tons of lead per year but is not presently in full operation. When the plant resumes full operation in 1984, NJDEP will complete an investigation of fugitive emissions.

The CDM maximum calculated concentration of ambient lead directly attributable to Federated Metals Corp. is 0.1 ug/m^3, quarterly average, occurring approximately 1 kilometer southeast of the plant, beyond the property line. This is based on fourth quarter meterological data only. Assuming a background level of 0.9 ug/m^3 (1982 fourth quarter measurements from site S-41 at Newark), the total predicted quarterly mean concentration at this location is 1.0 ug/m^3. This level is within the NAAQS for lead.

Additional modeling will be done if significant fugitive emissions are found.

Delco Remy Division of General Motors Corp., New Brunswick

Delco Remy Division of General Motors Corp. is a battery manufacturing plant. The facility is permitted to emit 29.1 tons per year of lead. This facility was completely modernized recently; no significant fugitive emissions were observed during the field inspection.

Initial results of modeling with CDM using the permitted emission rates and five years of meteorological data (1960-64) for Newark, indicated that contraventions of the NAAQS for lead could result beyond the General Motors property line as a result of emissions from the facility's stacks alone, without background concentrations (see Appendix IV-1). The maximum concentration from plant operations alone was predicted to be a quarterly average of 3.2 ug/m^3. This concentration would occur during the first quarter at a recepter 300 meters east of the source, outside the property line. The results of subsequent modeling based on updated emission rates are discussed in Section V.

E.I. du Pont de Nemours & Co., Inc., Deepwater

Du Pont manufactures the gasoline lead additive compounds tetramethyl lead (TML) and tetraethyl lead (TEL). In addition to 150.7 tons per year of lead from point sources, it was estimated from field observations and appropriate emission factors that 4 tons per year of fugitive emissions occur at this plant.

A detailed explanation of the refined modeling analysis of this facility is presented in Appendix IV-2. A summary of findings follows.

Using the CDM model and five years of meteorological data (1960-64) for Philadelphia, incremental concentrations were predicted for a receptor network consisting of highway, non-highway and sensitive receptors. The maximum quarterly impacts predicted for each receptor type, exclusive of background, were 1.0 ug/m^3 (fourth quarter), 1.2 ug/m^3 (third quarter) and 0.9 ug/m^3 (first quarter) for the highway, non-highway, and sensitive receptors respectively. With backgrounds of 0.5 ug/m^3 selected for highway and sensitive receptors and 0.2 ug/m^3 for non-highway receptors, a maximum concentration of 1.5 ug/m^3 was predicted at the base of the Delaware Memorial Bridge, 600 meters south of the source.

National Smelting of New Jersey, Pedricktown

National Smelting of New Jersey is a secondary lead smelter formerly owned by NL Industries and permitted to emit no more than 16.6 tons of lead per year. The Industrial Source Complex-Short Term (ISCST) model is being used to assess the effects of this facility on ambient air. Preliminary results of this modeling analysis show a relatively minor effect from stack emissions.

A maximum point source effect of less than 0.1 ug/m^3 was calculated for all quarters. The maximum predicted concentration, 0.04 ug/m^3 (third quarter) was calculated to occur 1 kilometer to the northeast of the facility. (See Appendix IV-4).

Fugitive emission rates, to include a term for the tracking of lead-containing soil by trucks leaving the plant, are currently being developed, and are to be added to the modeling. A field investigation was recently performed at National Smelting of New Jersey as part of the development of appropriate fugitive emission rates.

U.S. Metals Refining (AMAX), Carteret

This copper refinery emits 50.1 tons per year from its stacks. Fugitive emissions are estimated to be 36 tons per year, based on field observations. Sources with heavy fugitive emissions at the facility are the converter, cupola and reverberatory furnaces.

The CDM analysis of point and fugitive emissions, with five years of meteorological data (1960-64) for Newark predicts a maximum incremental concentration of 1.7 ug/m^3, which exceeds the NAAQS of 1.5 ug/m^3 without the addition of background concentration. This occurs during first quarter meteorological conditions at a receptor 400 meters east of the source, on the Arthur Kill (See Appendix IV-3). The addition of a background of 0.5 ug/m^3 to the predicted incremental concentration results in a maximum concentration of 2.2 ug/m^3.

The results of a subsequent modeling analysis, based on revised emissions expected as a result of controls installed under an Administrative Consent Order, are discussed in Section V.

SIGNIFICANT POINT SOURCES OF LEAD

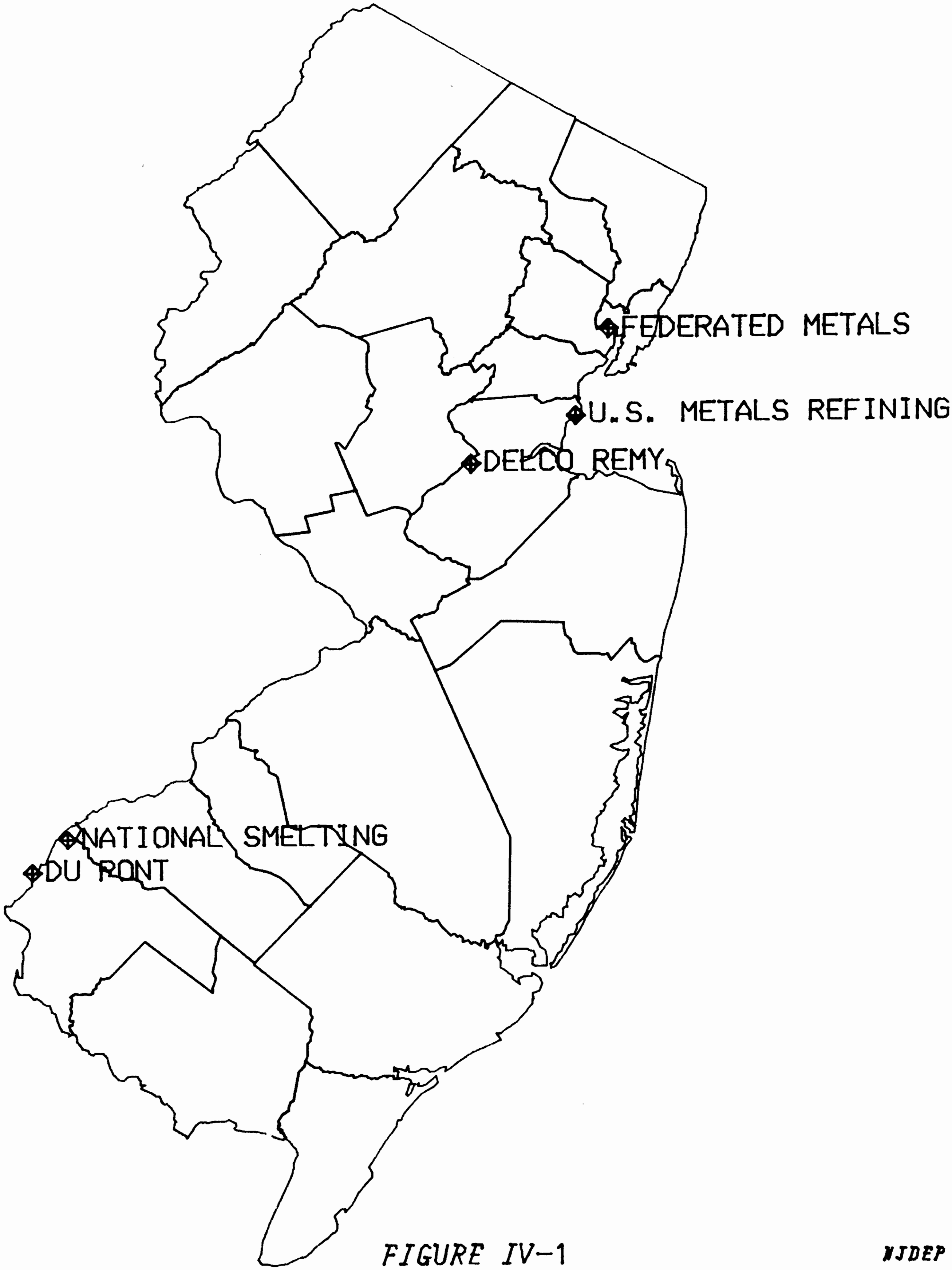

FIGURE IV-1

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SECTION V. DEMONSTRATION OF ATTAINMENT AND MAINTENANCE

New Jersey believes that all urban areas of the state and all known localized areas in the vicinity of point sources are in attainment of the lead NAAQS, except as documented in this section. Furthermore, lead levels in all urban areas are expected to improve as a result of the federal phase-down of lead in automotive gasoline. This section (1) documents attainment of the NAAQS for lead for urban areas; (2) summarizes the latest available modeling estimates and monitoring data for areas in the immediate vicinity of existing point sources; (3) describes how NJDEP will assure that additional existing sources, of which NJDEP is now unaware, or new sources or modifications to existing sources will not cause or contribute to a violation of the NAAQS for lead; (4) reviews New Jersey regulatory strategies and proposed modifications potentially applicable to controlling lead emissions and attaining and maintaining the NAAQS for lead; and (5) proposes modifications to several existing regulations, and the adoption of a new regulation.

Attainment and Maintenance of the NAAQS for Lead in Urban Areas

In most areas, concentrations of ambient lead are generally related directly to the amount of lead emitted by motor vehicles. Since the vast majority of the state's population lives in urban areas, demonstration of attainment and maintenance of the NAAQS for lead in urban areas is an important part of this SIP.

The three cities (Jersey City, Newark and Trenton) shown to have had recent violations of the NAAQS for lead have been selected for this demonstration. State actions to maintain the NAAQS for lead in all urban areas will consist of several strategies already committed to in the New Jersey SIP for carbon monoxide and ozone. New Jersey will rely also on several federal requirements which have been projected to bring about further reductions in lead emissions. These federal rules are referred to as the motor vehicle lead phase-down program.

Federal Phase-Down Program

Control measures of the federal phase-down program are embodied in three separate federal regulations - the motor vehicle Corporate Average Fuel Economy (CAFE) standards, the Federal Motor Vehicle Control Program (FMVCP) which precipitated the use of catalytic converters in 1975 and later model year vehicles, and the rules requiring refineries to limit the amount of lead in gasoline. The first two strategies are indirect controls in that they are intended to satisfy federal legislation for purposes other than lead emissions control. The CAFE standards were established to improve vehicle fuel efficiency under the Motor Vehicle Information and Cost Saving Act, 15 U.S.C. 2001 et seq., as amended by Title III of the Energy Policy and Conservation Act. The FMVCP standards were mandated by the Clean Air Act Amendments of 1977 to control carbon monoxide, hydrocarbon and nitrogen oxide emissions. The third strategy, the refinery standard, directly relates to the ambient lead standard. A brief description of each strategy follows.

Federal fuel economy standards for new motor vehicles require the average fuel economy for passenger motor vehicles in model year 1978 and thereafter to meet a schedule of gradually tighter standards. Light duty truck standards were established beginning with the 1979 model year. This program has reduced the amount of gasoline consumed by motor vehicles. As such, even if the concentration of lead in the fuel were not reduced, less gasoline consumption would have the effect of lowering ambient lead levels over time. Indeed, gasoline consumption has declined since 1978. For the period 1982 through 1990 this decline is expected to continue at an average annual rate of 2.4%.

Starting in 1973, USEPA required unleaded gasoline to be available for use in automobiles equipped with lead-sensitive emission control devices (catalytic converters). These devices were employed to comply with the tighter carbon monoxide (CO) and hydrocarbon (HC) vehicle emission standards beginning with the 1975 model year. Even low levels of lead in the gasoline render converters using platinum as the catalyst ineffective. USEPA required refineries to make available a virtually lead free fuel (no more than 0.05 gram of lead per gallon). As part of a lead phase-down strategy, the total lead employed by large refineries in both leaded and unleaded fuels was averaged in terms of a pooled standard. Under this standard total lead could not exceed 0.8 gram of lead per gallon of gasoline initially, (effective January 1, 1978 but suspended until October 1, 1979) and phased down to 0.5 gram per gallon by October 1, 1980 (1,2). No specific limits were placed on the concentration of lead in leaded fuel.

It was expected that growth in unleaded fuel use would closely parallel the purchase of new vehicles. In fact, this has not happened. The actual demand for unleaded gasoline in 1982 fell behind the projections made in 1978 by 18% (52% unleaded fuel actually used, while 63.5% was forecast) (3). USEPA has identified motorist misfueling as the major cause.

A 1982 USEPA study (4) indicates that in states without an Inspection/Maintenance (I/M) program, 15.1% of the cars designed for unleaded gasoline have been misfueled. In states with an I/M program, the average is 6.2%. However, anti-tampering regulations now proposed for inclusion in N.J.A.C. 7:27-15, Control and Prohibition of Air Pollution from Light-Duty Gasoline-Fueled Motor Vehicles (Appendix V-11), should significantly reduce the incidence of misfueling.

The price advantage of leaded over unleaded gasoline seems to be primarily responsible for the continued preference for leaded gasoline. Yet, if misfueling can be controlled, the pooled standard by itself could reduce total lead in gasoline at a nationwide average annual rate of 2.7% from 1983 to 1990.

In 1982, in order to accelerate the phase-down of lead in gasoline, USEPA adopted a different rule which limited the maximum concentration of lead in leaded gasoline to 1.10 grams per gallon (5). Smaller refineries were allowed to use larger amounts of lead per gallon for a limited time period. (See Appendix III-1, Attachment III-G, Table III-G-6.) (Under the earlier pooled standard, leaded fuel from all refineries had averaged from 1.19 to 2.12 grams of lead per gallon during the period 1975 to 1982.) The 1.10 grams per gallon of leaded gasoline standard has the effect of further reducing the concentration of lead regardless of the vehicle replacement or misfueling rate. This standard is expected to reduce nationwide lead use at an average annual rate of 2.9%. (See Appendix III-1, Attachment III-G, Table III-G-1.)

New Jersey Motor Vehicle Programs

Given the magnitude of the projected reduction in use of leaded gasoline (2.7 to 2.9%) and the resulting projected reduction in ambient concentration of lead, NJDEP has determined that no additional state control measures are necessary to further reduce lead emissions from motor vehicles. In order to maintain the ambient standards for automobile-related pollutants, New Jersey will continue to enforce the motor vehicle Inspection/Maintenance (I/M) emissions standards and will propose anti-tampering standards. Also, NJDEP will continue to support the prohibition of self-service at gasoline stations as an anti-fuel-switching strategy. These strategies, which are part of New Jersey's SIP to attain and maintain the NAAQS for ozone and carbon monoxide, will act as a deterrent against use of leaded gasoline in vehicles equipped with catalytic converters.

An analysis was performed by NJDEP to factor the effects of the federal phase-down program and the New Jersey anti-tampering and self-service prohibition into the attainment and maintenance of the NAAQS for lead in urban areas. NJDEP projects that the state programs should virtually eliminate misfueling, thereby reducing ambient lead levels in proportion to the total amount of lead used in all gasolines. As stated earlier, the three cities chosen for the analysis (Newark, Jersey City, and Trenton) were the urban areas in which the most recent violations of the NAAQS were monitored (see Table II-1).

The analysis indicated that lead in gasoline will be reduced by 73.6% in 1990 compared to the 1982 values. Factoring in an anticipated 1.6% annual growth rate assumed for the total vehicle miles traveled for the period, projected maximum lead concentrations in ambient air for 1990 were calculated to be 0.27, 0.17 and 0.15 micrograms per cubic meter for Newark, Jersey City, and Trenton respectively (Appendix V-1). These levels are well within the NAAQS of 1.5 micrograms per cubic meter.

Attainment and Maintenance of the NAAQS for Lead at Selected Point Sources

Special air quality monitoring and modeling analyses and engineering reviews are being conducted for five point sources and nearby locations found by NJDEP to have the potential for causing an exceedance of the NAAQS for lead. These sources are Federated Metals Corp., Newark; Delco Remy Division of General Motors Corp., New Brunswick; E.I. du Pont de Nemours & Co., Inc., Deepwater; National Smelting of New Jersey, Pedricktown; and U.S. Metals Refining (AMAX), Carteret.

Federated Metals Corp., Newark

As stated in Section IV, this facility will be scheduled for field investigation of fugitive emissions when full operation is resumed. Additional modeling will be done if significant fugitive emissions are found.

Delco Remy Division of General Motors Corp., New Brunswick

The company has maintained that the lead emission data previously submitted by it in the permit review process and used by NJDEP in the modeling analysis discussed in Section IV were not representative of actual lead emissions at the facility. On June 13, 1983, General Motors submitted new data containing lower emission rates (6). These emission rates are to be verified by stack testing.

Modeling was performed with the updated emission rates supplied by the company using protocol identical to the original modeling work discussed in Section IV. This subsequent analysis indicates that no violations of the NAAQS would occur on the basis of these plant emissions alone (see Appendix IV-1); however, if a background concentration of 0.5 ug/m^3 quarterly average is assumed (based on vehicle travel in the area) a maximum concentration of 1.6 ug/m^3 results. This violation of the quarterly standard may occur at one receptor point located 100 meters east of the property line. If stack test results indicate that emissions differ significantly from those used in the modeling, another modeling analysis will be performed.

A high volume air sampler has been installed on property adjacent to Delco Remy Division of General Motors Corp. to determine the combined results of the plant emissions and background concentrations. This location, approximately 240 meters northeast of the property line, is the site closest to the modeled exceedance which was available for siting the sampler. Data for one quarter (July-September, 1983) has been collected from this sampler so far. The quarterly average for this period was 0.6 ug/m^3, well within the NAAQS. However, these data are not adequate to make a determination of compliance with the NAAQS, since the sampling period is not long enough.

The motor vehicle lead phase-down program is expected to reduce lead emissions from motor vehicles enough to lower background concentrations about 40% (to 0.3 ug/m^3) by 1986, and 70% (to 0.15 ug/m^3) by 1990, as demonstrated in Appendix V-1. This lower background, when added to concentrations expected from projected increases in emissions for this facility (approximately 7% by 1986 and 15% by 1990) results in predicted concentrations below the NAAQS in the vicinity of the plant.

E.I. du Pont de Nemours & Co., Inc., Deepwater

As stated in Section IV, modeling does not indicate a violation of the NAAQS at this site. Continued compliance with permit requirements at the plant and continued reduction in vehicular emissions of lead because of the federal phase-down program are expected to maintain the NAAQS.

National Smelting of New Jersey, Pedricktown

Violations of the NAAQS for lead at the Pedricktown monitoring site (S-57) occurred in twelve of the sixteen quarters during the 1978-1981 period (see Table II-1), while NL Industries was operating their Pedricktown plant. NL Industries had addressed various compliance orders from NJDEP and the N.J. Superior Court pertaining to N.J.A.C. 7:27-6 and 7:27-8, primarily concerning emissions from the rotary kiln, furnaces, and slag crusher. Other orders requiring cleaning up fugitive emissions included measures such as covering open outdoor storage piles, washing truck tires, cleaning exposed paved areas, and removing lead-contaminated soil from marsh areas. Field investigations revealed intermittent compliance with the requirements to control fugitive emissions. NL Industries ceased major operations at the facility in May, 1982.

The facility has now been purchased by National Smelting of New Jersey (NSNJ). In addition to resuming the secondary smelting operation conducted by the former owner, NSNJ also plans to operate the facility as a primary smelter. The company indicated that it is improving housekeeping and maintenance practices to correct fugitive emission problems (7). These measures include scraping lead contaminated soils from marsh areas, seeding unpaved areas, minimizing the number of loader trips, washing truck wheels, and sweeping paved areas. A field investigation was conducted to quantify potential fugitive emissions and the predicted effectiveness of control measures. The results of the investigation will be used in the modeling to determine potential air quality effects.

NSNJ plans to install and operate samplers for lead in ambient air. These monitors will be located on NSNJ property in areas of predicted maximum ground level concentrations from both the main stack and fugitive emissions. The air sampler operated by NJDEP, however, will continue to be used to determine compliance with the NAAQS. Air quality data for the Pedricktown monitor (S-57) for the first three quarters of 1983 show a violation (1.81 ug/m^3) of the NAAQS, occurring during the third quarter. This violation and the effectiveness of control measures implemented to date are the topics of current discussions between NJDEP and the company.

U.S. Metals Refining (AMAX), Carteret

An Administrative Consent Order requiring compliance with N.J.A.C. 7:27-5 (Control of Air Pollution), -8 (Permits), -16 (Volatile Organic Substances), and -17 (Toxic Volatile Organic Substances) is in effect to reduce stack and fugitive emissions of lead, particulates, benzene, total hydrocarbons, and carbon monoxide from the cupola and converters. The timetable in the Consent Order for controlling the fugitive emissions from these sources mandates that the control measures be completed by May 31, 1984. The Consent Order is contained in Appendix V-2.

The Consent Order requires control of fugitive emissions from the converter and cupola. Assuming 90% control efficiency at these two sources, a net decrease in total fugitive emissions from the facility, from 1 gram per second to 0.4 gram per second, is expected. Subsequent modeling of the lowered fugitive emission rate shows that all areas surrounding the facility will be within the standard when the emissions are controlled (see Appendix IV-3). The maximum concentration predicted is 1.4 ug/m^3 on a quarterly average including a background of 0.5 ug/m^3. This concentration will occur under first quarter meteorological conditions at a receptor 400 meters east of the source. No violations of the NAAQS on Staten Island are predicted. In view of the uncertainty in the quantification of fugitive emissions, at least one ambient sampler for lead will be installed if a suitable site can be identified.

Control Strategies and Enforcement Methods to Attain and Maintain the Lead NAAQS

NJDEP will continue to attempt to identify and quantify all major lead emission sources through new source review and enforcement actions. For new or modified sources, a technical review will be accomplished through the permit process (N.J.A.C. 7:27-8, Permits and Certificates) (Appendix V-7). As shown in Figure V-1, determination of compliance must be made at this time for N.J.A.C. 7:27-6, -11, -13, -18, and, when it becomes effective, N.J.A.C. 7:27-19. For major new or modified sources, a demonstration must be made showing that the NAAQS for lead will not be contravened. For existing sources, periodic or complaint-initiated inspections will continue to be conducted. If fugitive emissions or a significant point source are discovered, NJDEP may decide to model the source or install a monitor to determine whether the NAAQS for lead is being exceeded. Should there be no violations of the subchapters with specific emissions standards, but violations of the NAAQS for lead are predicted by modeling and/or monitoring, actions will be taken under N.J.A.C. 7:27-5, Prohibition of Air Pollution (Appendix V-3) and/or N.J.A.C. 7:27-6, Control and Prohibition of Particles from Manufacturing Processes (Appendix V-6), and/or N.J.A.C. 7:27-8, Permits and Certificates (Appendix V-7). Following are the specific steps to be taken to verify non-attainment and/or reduce lead emissions at existing and new or modified lead sources. Figure V-1 illustrates this regulatory process.

Existing Sources of Lead Emissions

1.a. Determine emission rates from lead sources by stack testing, if necessary, and by evaluation of fugitive emissions to the extent possible.

b. Conduct ambient monitoring, if necessary, to verify ambient levels.

c. Analyze emission and ambient data to determine whether the source is violating the NAAQS.

2. Negotiate Consent Orders to implement control measures with each suspected or verified violator of the NAAQS for lead on a case-by-case basis.

3. Initiate enforcement action under the provisions of N.J.A.C. 7:27-5, -6, and/or N.J.A.C. 7:27-8 if a mutually agreeable Consent Order cannot be negotiated.

Attainment Schedule for Existing Sources

If violations of the NAAQS for lead are found in the vicinity of any existing source, New Jersey will commit to a specific attainment schedule for each such source. Each source will be required to reduce emissions as expeditiously as reasonable, within a total time not to exceed 2 years from approval of the lead SIP. The following schedule represents the maximum time estimated for an existing source to reduce lead emissions to levels specified by NJDEP.

1. If stack test is necessary, complete testing by July 1, 1984.

2. If ambient monitoring is necessary, complete monitoring by January 1, 1985 (possibly concurrent with items 1 and 3).

3. Negotiate Consent Order or hold hearing and issue departmental order to cease violations by July 1, 1985.

4. Complete control measures by July 1, 1986.

New or Modified Sources of Lead Emissions

1. Permit is required in accordance with N.J.A.C. 7:27-8.

2. Permits for new sources are reviewed to determine compliance with applicable subchapters which establish particulate emission standards.

3. New sources or modifications with lead emissions increases equal to or greater than the significant emission increase rate of 0.6 tons per year (to be incorporated into N.J.A.C. 7:27-18) will be modeled to demonstrate that no violations of the ambient air quality standard will result.

4. Selected sources, once constructed, will be stack-tested to verify that the approved emission rates are actually being achieved.

Regulations for Attaining and Maintaining the NAAQS

Although the following New Jersey regulations were not promulgated specifically to control lead, each contains provisions which either affect lead emissions or can contribute toward maintaining the NAAQS.

1. N.J.A.C. 7:27-4 (Appendix V-5)

Subchapter 4 "Control and Prohibition of Particles From Combustion of Fuel", contains limitations for total particulate emissions which result from the combustion of fuels. The limitations are expressed in pounds of particulate per million British Thermal Units (BTU) per hour heat input rate. The factor used to calculate maximum allowable emission rates for particulate emissions ranges from 0.6 pounds per million BTU for small combustion sources down to 0.1 pounds per million BTU for large industrial and utility-sized boilers.

Although liquid and gaseous fuel-fired boilers do not usually require particulate control devices to comply with this Subchapter, control apparatus is required on most solid fuel-fired sources and some liquid-fuel fired sources. This requirement contributes to attainment of the lead standard, since the controls are designed to reduce total particulates. However, the amount is uncertain because of the lack of emission test data and because of the varying concentrations of lead in different fuels. Published reports indicate that 99 percent lead removal rates are achievable by particulate control devices on coal-fired boilers (8).

2. N.J.A.C. 7:27-5 (Appendix V-3)

Subchapter 5, "Prohibition of Air Pollution," is a general regulation having a single provision which prohibits any person from causing the emission of substances into the outdoor atmosphere which results in air pollution. The term "air pollution" as defined in Subchapter 5 means "the presence in the outdoor atmosphere of one or more air contaminants in such quantities and duration as are, or tend to be, injurious to human health or welfare,......, or would unreasonably interfere with the enjoyment of life or property throughout the State.....".

Subchapter 5 is an important tool for maintaining the lead standard. NJDEP has successfully enforced the provision of Subchapter 5 in cases where citizen complaints regarding stack or fugitive emissions were received. Examples of such fugitive emissions include charging operations, road dust from asphalt plants and quarries, and fugitive dusts from leaking ductwork. Thus, the Subchapter is effective in preventing emissions of these types from "unreasonably interfering with the enjoyment of life or property."

Although Subchapter 5 has historically been applied only to situations involving citizen complaints, the definition of air pollution in the rule refers to the emissions of air contaminants which "are, or tend to be, injurious to human health." Stack and fugitive lead emissions which can be linked by modeling to contraventions of the ambient air quality standard can also be prohibited, whether or not citizen complaints are filed. Ambient monitoring and modeling data in combination with visual inspections and stack tests can provide a basis for requiring mitigative measures to insure attainment of the ambient standard.

3. N.J.A.C. 7:27-6 (Appendix V-6)

Subchapter 6, "Control and Prohibition of Particles from Manufacturing Processes" regulates particulate emissions from source operations. Specific maximum allowable emission rates are based on 99 percent control efficiency or a particulate concentration of 0.02 grains per standard cubic foot of source gas, whichever provides the greater allowable emission rate. Although lead is not specifically controlled by this regulation, lead emissions are correspondingly reduced, usually in proportion to the fraction of lead or lead compounds in the total particulate loading. The control of total particulates required by Subchapter 6 significantly reduces lead emissions in most cases.

To ensure that lead emissions from all new and existing source operations are kept to a minimum, NJDEP may revise Subchapter 6. If Subchapter 6 is revised, maximum allowable emission rates will be established for lead and incorporated into the Subchapter in accordance with the following schedule:

1. Begin technical evaluation on setting lead emission standards in Subchapter 6.	July 1, 1984

2. Initial draft of revisions to Subchapter 6 *. — January 1, 1985

3. Propose revisions to Subchapter 6 *. — July 1, 1985

4. Adopt revisions to Subchapter 6 *. — January 1, 1986

* If prior steps indicate proceeding with rule making is warranted.

The revision of Subchapter 6 is not mandatory for controlling lead in New Jersey since the other portions of N.J.A.C. 7:27 (in particular, Subchapters 5, 13, and 18) should provide adequate authority. However, New Jersey will evaluate and possibly revise Subchapter 6 to include specific lead emissions limitations in order to provide clearer and more easily enforced provisions for the control of lead.

4. N.J.A.C. 7:27-8 (Appendix V-7)

Subchapter 8, "Permits and Certificates," is the regulation by which NJDEP requires that persons obtain approved permits prior to constructing new sources or altering existing sources of air pollution. Permit applications must include details concerning raw materials, process equipment, control apparatus, and pollutant emission rate limitations for all air contaminants. Applications are evaluated for compliance with all state and federal air pollution control standards. Additionally, Subchapter 8 mandates that new or altered equipment or control apparatus incorporates advances in the art of air pollution control for the contaminants emitted. The application of this "state-of-the-art" requirement during the permit review process often results in the establishment of more stringent allowable emission rates than are otherwise required. For example, although Subchapter 4 contains a limit of 0.1 pound of particulate per million BTU heat input rate for large coal-fired boilers, NJDEP has required that a state-of-the-art limit of 0.03 pounds per million BTU be achieved for large new or altered boilers.

Having established the allowable emission rate of lead for a new source operation on the basis of this state-of-the-art limit, NJDEP then evaluates these emissions to insure that there will be no resulting NAAQS violations. In accordance with N.J.A.C. 7:27-18, "Emission Offset Rule", significant lead emission increases must be mathematically modeled to assess their effects in accordance with the procedures detailed later. The modeling must show that the increases will not cause or contribute to a violation of the NAAQS.

The emissions of lead and other air contaminants may be reduced as a consequence of activities associated with the field enforcement of Subchapter 8. These activities include visual inspections and emission testing. Sources are inspected for emissions from the stack and for fugitive emissions. Permitted sources are routinely inspected to verify proper operation. Fugitive emissions vented through doors, windows, leaking equipment, and so forth, represent violations of the permit conditions unless these emission points have been specifically identified, quantified, and permitted. Also, any component connected or attached to the equipment or control apparatus which is not functioning properly or is not in use in accordance with the approved Permit or the Certificate to

Operate represents a violation of Subchapter 8. These provisions of Subchapter 8 and associated inspection procedures are effective means for preventing fugitive lead emissions.

In order to clarify the intention and authority to deny a permit for any increase in lead emissions that would cause or significantly contribute to the violation of the ambient lead standard, Subchapter 8 will be amended to state that if dispersion modeling indicates that a violation of any ambient standard will occur, then a permit will not be issued. Subchapter 8 will be amended in accordance with following schedule:

1.	Begin preliminary review to consider changes.	August 1, 1983
2.	Complete draft of revision to Subchapter 8.	March 1, 1984
3.	Propose revision to Subchapter 8.	May 1, 1984
4.	Adopt revision to Subchapter 8.	November 1, 1984

5. <u>N.J.A.C. 7:27-11</u> (Appendix V-8), and <u>N.J.A.C. 7:26-10.7</u> (Appendix V-9)

Subchapter 11, "Incinerators," establishes a particulate emission standard for special incinerators. The standard is 0.10 grain per dry standard cubic foot (gr/dscf). The New Jersey Division of Waste Management regulation, N.J.A.C. 7:26-10.7 (Appendix V-9, pages 10-16), contains a particulate standard of 0.03 gr/dscf for hazardous waste incinerators. This regulation also requires the control of fugitive emissions.

The 0.10 gr/dscf limit, adopted in 1968, is no longer considered to represent the state of the art for most new and altered special incinerators. The state of the art for new hazardous waste and larger municipal incineration facilities, is 0.03 gr/dscf. For the upgrading of an existing hazardous waste incinerator, a standard of 0.08 gr/dscf was required. These more restrictive particulate emission limitations will result in reduced lead emissions.

In addition to governing emissions from incineration facilities, N.J.A.C. 7:26-1.4 of the Division of Waste Management rules also regulates the combustion of hazardous wastes in boilers and other fuel-burning equipment (Appendix V-9, page 18). This regulation defines equipment in which hazardous wastes are burned as hazardous waste incinerators, unless stringent criteria are met. The overall goal of the rules is to mandate that hazardous wastes be combusted in specially designed incinerators and large, efficient boilers only. As a result, ambient lead levels should improve since some waste fuels containing lead, such as used automotive crankcase oil, can no longer be legally burned in small combustion units. Upon applying for a permit to burn hazardous waste (such as waste oil), the NAAQS for lead will be evaluated.

6. N.J.A.C. 7:27-13 (Appendix V-10)

Subchapter 13, "Ambient Air Quality Standards," contains primary and secondary air quality standards for suspended particulate matter, sulfur dioxide, carbon monoxide, photochemical oxidants, hydrocarbons, and nitrogen dioxide. Last revised in 1973, the regulation is outdated. Because the lead standard will be used, in conjunction with the provisions of Subchapter 5, to regulate existing sources whose emissions otherwise comply with all the emission limitations established in N.J.A.C. 7:27, NJDEP commits to revising Subchapter 13 to include the NAAQS for lead. The rule revision will be conducted in accordance with the following schedule:

1.	Begin preliminary review to consider changes.	August 1, 1983
2.	Complete draft of revisions to Subchapter 13.	February 1, 1984
3.	Propose revisions to Subchapter 13.	May 1, 1984
4.	Adopt revisions to Subchapter 13.	November 1, 1984

7. N.J.A.C. 7:27-15 (Appendix V-11)

The State Implementation Plan for ozone and carbon monoxide commits NJDEP to amend Subchapter 15, "Control and Prohibition of Air Pollution from Light-Duty Gasoline-Fueled Motor Vehicles". The amendment will require that light-duty vehicles be inspected for emission control system failures. The inspection is to be carried out as part of the state's Inspection/Maintenance program. In addition, air pollution control apparatus on any motor vehicle will be required to be effective and operable when the vehicle is sold or in use. These anti-tampering provisions will be effective six months after adoption of the revised regulation.

Catalytic converters are used for emission control on most of the motor vehicles manufactured since 1975. These devices fail if leaded fuel is burned in the vehicle. Use of leaded fuel will also damage the oxygen sensor; in most cases this results in illumination of a dashboard indicator light. This is cause for failing inspection under the amendment to Subchapter 15. Hence the anti-tampering provisions of Subchapter 15 will ensure the use of unleaded gasoline and compliance with the federal phase-down program.

The implementation schedule for the revision of Subchapter 15 is contained in the SIP for ozone and carbon monoxide (9).

8. N.J.A.C. 7:27-18 (Appendix V-12)

Subchapter 18, "Control and Prohibition of Air Pollution from New or Altered Sources Affecting Ambient Air Quality in Nonattainment Areas" (the "Emission Offset Rule"), contains provisions which are designed to prevent new violations of NAAQS from being caused by significant increases in the emissions of criteria pollutants. A person who proposes significant emission increases at a facility must demonstrate, by use of an approved air quality simulation model, that no violation will result. Modeling must be conducted in accordance with the procedures detailed in Appendix V-13.

Presently, air quality modeling is required for proposed increases equal to or greater than 50 tons per year of any criteria pollutant. While this level may be appropriate for most of the criteria pollutants, it is too high for lead emissions. Therefore, NJDEP will revise Subchapter 18 to require air quality modeling for major new sources or modifications to major existing sources which will cause increases in lead emissions of 0.6 or more tons per year. This value corresponds to the significant emission rate in the federal regulations for Prevention of Significant Deterioration (40 CFR 51.24 (b) (23) (i); 40 CFR 52.21 (b) (23) (i)).

The revision of Subchapter 18 will be completed in accordance with the following schedule:

1.	Begin technical documentation of revisions of Subchapter 18.	July 1, 1983
2.	Complete final draft of revisions to Subchapter 18.	February 1, 1984
3.	Propose revisions to Subchapter 18.	October 1, 1984
4.	Adopt revisions to Subchapter 18.	April 1, 1985

9. N.J.A.C. 7:27-19 (To be proposed)

NJDEP is developing a regulation to govern the combustion of liquid fuels, tentatively entitled "Fuel Standards". The goal of this effort is to prevent unacceptable ground level concentrations of heavy metals and organic pollutants which result from burning waste oils and other hazardous substances. Significant concentrations of lead have been identified in some of these fuels, particularly in waste crankcase oils. Combustion of undiluted waste crankcase oil in small heaters in gasoline service stations and in new car dealer shops has become widespread. Preliminary air quality modeling of such installations indicates that significant increases in ambient lead levels can result from such use. The adoption of standards to limit the lead content of liquid fuel should aid in maintaining attainment status and eliminate potential localized violations of the NAAQS for lead.

Subchapter 19 is to be adopted in accordance with the following schedule:

1.	Complete initial draft of Subchapter 19.	February 1, 1984
2.	Propose adoption of new Subchapter 19.	May 1, 1984
3.	Adopt new Subchapter 19.	November 1, 1984

Summary of Commitments

In order to carry out the strategies that have been described, NJDEP has committed to revising N.J.A.C. 7:27-8, "Permits and Certificates"; N.J.A.C. 7:27-13, "Ambient Air Quality Standards"; N.J.A.C. 7:27-15, "Control and Prohibition of Air Pollution from Light-Duty Gasoline-Fueled Motor Vehicles", and N.J.A.C. 7:27-18, "Control and Prohibition of Air Pollution from New or Altered Sources Affecting Ambient Air Quality in Non-Attainment Areas (Emission Offset Rule)"; to adoption of N.J.A.C. 7:27-19, tentatively entitled "Fuel Standards"; and to the possible revision of N.J.A.C. 7:27-6, "Control and Prohibition of Particles from Manufacturing Processes".

The schedules for revision of these regulations have been given with the descriptions of the regulations and their application. Figure V-2 illustrates these schedules, showing the concurrent activities of NJDEP in developing these regulatory revisions.

FIGURE V-1

CONTROL MEASURES FOR SOURCES OF LEAD EMISSIONS

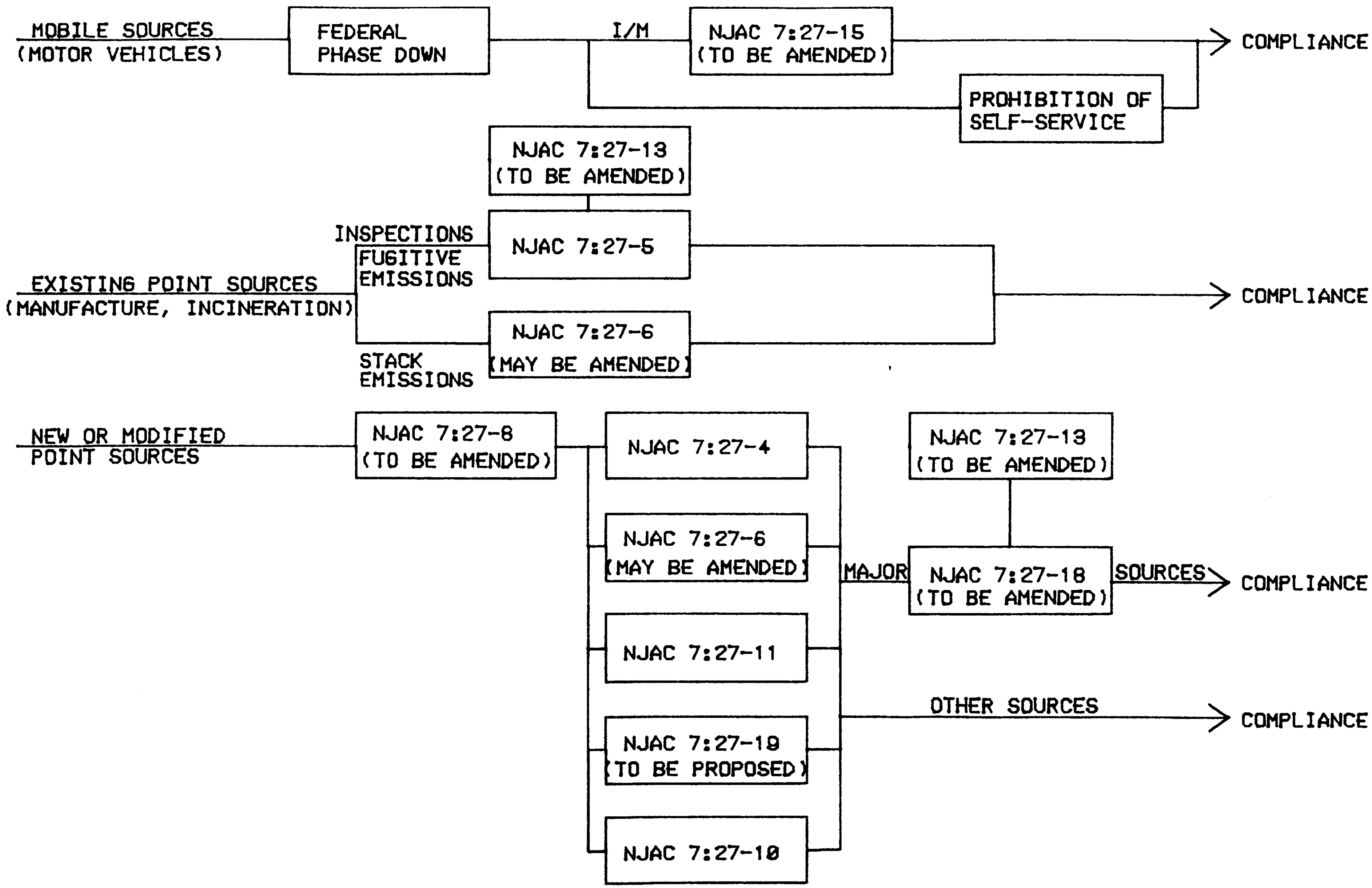

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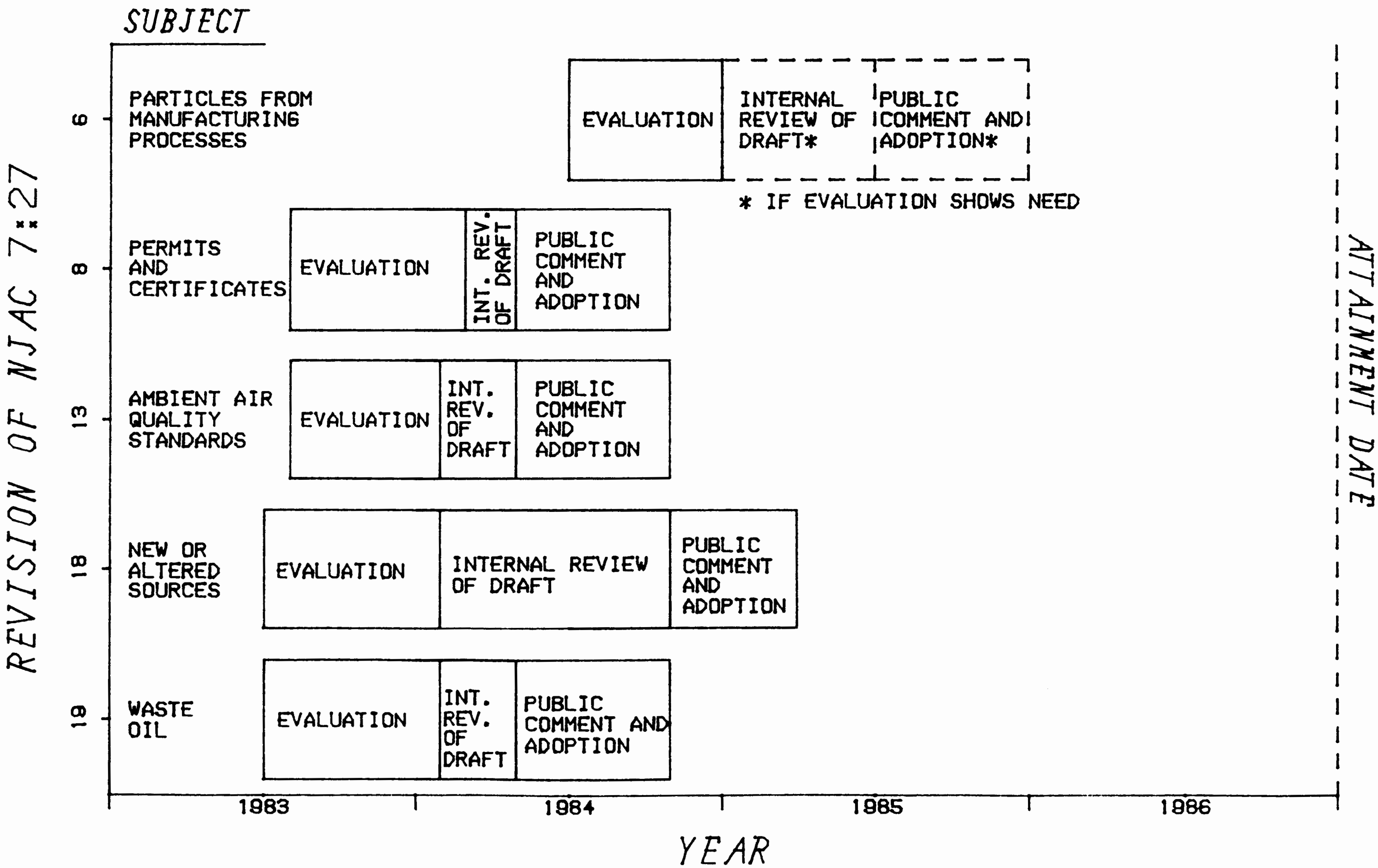
FIGURE V-2
SCHEDULE OF NJDEP LEAD CONTROL COMMITMENTS



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1. U. S. Environmental Protection Agency, Controls Applicable to Gasoline Refiners, 40 CFR 80.20.

2. U. S. Environmental Protection Agency, Controls Applicable to Gasoline Refineries Lead Phase-Down Regulations, 44 FR 53144-47, September 12, 1979.

3. William H. Lewis, Jr., Rethinking EPA's Gasoline Lead Content Standard to Incorporate Economic Incentives, The Environmental Forum, November, 1983.

4. U. S. Environmental Protection Agency, Motor Vehicle Tampering Survey, EPA-330/1-83-001, 1982.

5. U. S. Environmental Protection Agency, Regulation of Fuels and Fuel Additives, 47 FR 49322-34, October 29, 1982.

6. Delco Remy Division of General Motors Corp., Emissions Status Report, submitted by Fred Sprague, Anderson, Indiana, June 13, 1983.

7. National Smelting of New Jersey, letter from Michael Sappington, Lakes Engineering & Development, Inc., to Allan Edwards, N.J. Department of Environmental Protection, August 19, 1983.

8. Industrial Environmental Research Lab., Research Triangle Park, N.C., Trace Metals and Stationary Conventional Combustion Processes: Volume 1, Technical Report; Prepared by Radian Corp., Austin, Texas, August, 1980.

9. N. J. Department of Environmental Protection, Proposed New Jersey State Implementation Plan Revision for the Attainment and Maintenance of Ozone and Carbon Monoxide National Ambient Air Quality Standards, Revised September 1983.

ACRONYMS AND ABBREVIATIONS

ANOVA	-	Analysis of Variance
APEDS	-	Air Pollution Enforcement Data System
ATEOS	-	Airborne Toxic Elements and Organic Substances
BTU	-	British Thermal Unit
CAFE	-	Corporate Average Fuel Economy
CDM	-	Climatological Dispersion Model
CFR	-	Code of Federal Regulations
DEQ	-	Division of Environmental Quality
FMVCP	-	Federal Motor Vehicle Control Program
FR	-	Federal Register
gms/gal	-	Grams per Gallon
gr/dscf	-	Grains per Dry Standard Cubic Foot
Hi-Vol	-	High-Volume Air Sampler
ISC	-	Industrial Source Complex Model (Short Term or Long Term)
km	-	Kilometer
NAAQS	-	National Ambient Air Quality Standard
NAMS	-	National Air Monitoring Station
NASN	-	National Aerometric Sampling Network
N.J.A.C.	-	New Jersey Administrative Code
N.J.S.A.	-	New Jersey Statutes Annotated
NJDEP	-	New Jersey Department of Environmental Protection
NSNJ	-	National Smelting of New Jersey
OCTSR	-	Office of Cancer and Toxic Substance Research
Pb	-	Lead
PSD	-	Prevention of Significant Deterioration
PTDIS	-	A Short-term Single Point Source Dispersion Model
PTMTP	-	A Short-term Multiple Point Source Dispersion Model
SIP	-	State Implementation Plan
SLAMS	-	State and Local Air Monitoring Station
TEL	-	Tetraethyl Lead
TML	-	Tetramethyl Lead
TPY	-	Tons per Year
TSP	-	Total Suspended Particulates
ug/m^3	-	Micrograms per Cubic Meter
UNAMAP	-	User's Network for Applied Modeling of Air Pollution
U.S.C.	-	United States Code
USDOE	-	United States Department of Energy
USEPA	-	United States Environmental Protection Agency
VMT	-	Vehicle Miles Traveled
VOS	-	Volatile Organic Substances

LIST OF APPENDICES

V-1	Projected Lead Air Quality in Three Urban Areas
V-2	United States Metals Refining Administrative Consent Order, March 16, 1983
V-3	New Jersey Administrative Code, Title 7, Chapter 27, Subchapter 5, Prohibition of Air Pollution
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V-5	New Jersey Administrative Code, Title 7, Chapter 27, Subchapter 4, Control and Prohibition of Particles from Combustion of Fuel
V-6	New Jersey Administrative Code, Title 7, Chapter 27, Subchapter 6, Control and Prohibition of Particles from Manufacturing Processes
V-7	New Jersey Administrative Code, Title 7, Chapter 27, Subchapter 8, Permits and Certificates
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N.J. Department of Environmental Protection
Division of Environmental Quality
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NEW JERSEY LEAD SIP

APPENDIX II-1

Statistical Analysis of Ambient Air Lead Levels

In Three New Jersey Cities

APPENDIX II-1

Statistical Analysis of Ambient Air Lead Levels in Three New Jersey Cities

A steady decline in ambient concentrations of lead in three New Jersey cities (Newark, Jersey City and Trenton) occurred from 1978 to 1982. A similar decrease in lead content in gasoline sold nationwide was accomplished during the same time period. Byrd et. al (1) have reported that the decreased use of leaded gas has resulted in lower ambient lead concentrations in soils near highways. A statistical analysis was performed by the Division of Environmental Quality to investigate if a similar relationship exists between the decreases in lead in ambient air in the three cities and the phase-out of lead in fuels.

The co-variance (2) between measured quarterly ambient lead concentrations (ug/m^3) and grams of lead used in gasoline nationwide in the corresponding time period shows a good correlation between two variables being examined (r=0.90, P= 1%). The strong correlation is strong support for the hypothesis that decreases in the combustion of leaded fuel can be associated with the lower measured lead levels at the three cities. Table II-1-1 contains actual, estimated and projected lead in gasoline content for 1978-1990.

In order to ensure that data from the three cities were homogeneous, i.e, displaying similar ranges of variance, an analysis of variance (ANOVA) was performed. The analysis indicated that the three data sets are displaying similar variances (F=.08, P=92%). Therefore, all data from the same parametric population and the application of the Pearson Product correlation coefficient to these data is a valid technique to determine if the variables in this study are correlated.

TOTAL II-1-1

Actual, Projected and Estimated Lead

in Gasoline in the United States

Year	Billions of Grams of Lead Used [1,2,3]
1978	153.25 (A)
1979	129.49 (A)
1980	78.47 (A)
1981	60.96 (A)
1982	61.4 (E,4)
1983	47.0 (P)
1984	39.0 (P)
1985	32.7 (P)
1986	27.8 (P)
1987	24.3 (P)
1988	21.4 (P)
1989	18.7 (P)
1990	16.2 (P)

A = Actual
E = Estimated
P = Projected

1. Field Operations and Support Division, U.S. Environmental Protection Agency, Washington, D.C., Gasoline Produced and Lead Used as Reported to EPA

2. Personal Communications with John Silvasi, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina

3. Federal Register, 1982, Vol. 47, No. 210, October 29

4. Refer to Appendix III-1, Attachment III-G for the procedure used in determing this value.

REFERENCES

1 Byrd, D.S., J.T. Gilmore, and R.H. Leg 1983, Effect of Decreased Use of Lead in Gasoline on the Soil of a Highway. Environmental Science and Technology 17 -121-3.

2 Sokol, R.R. and F.J. Rolf, Introduction to Biostatistics W.H. Freeman and Company, San Francisco, California

New Jersey Lead SIP

APPENDIX II-2

Supplemental Ambient Air Quality Data for Lead

1974-1982

TABLE II-2-1
ANNUAL AVERAGE LEAD CONCENTRATION
AT FORMER NASN SITES IN NEW JERSEY

SITE (NJ#)	1974	1975	1976	1977	1978	1979	1980
Bayonne (N-01)	.97(3)	.90(15)	--	.82(29)	.73(23)	.62(14)	.34(24)
Camden[1] (N-02)	1.00(27)	1.00(17)	--	1.09(21)	.95(28)	.63(13)	--
Camden[1] (N-02)	--	--	--	--	--	.27(5)	.38(20)
Cherry Hill (N-03)	--	.82(15)	--	.73(23)	.54(23)	.59(14)	.30(16)
Elizabeth (N-04)	1.39(4)	1.32(19)	--	2.05(7)	.99(29)	.91(22)	.44(23)
Glassboro (N-05)	.37(4)	.44(17)	--	.46(21)	.49(27)	.39(22)	.17(19)
Jersey City (N-06)	.90(2)	1.13(13)	--	.96(23)	.96(23)	.50(17)	.50(23)
Newark (N-07)	1.17(4)	1.14(17)	--	1.07(21)	1.04(26)	.75(26)	.39(28)
Paterson (N-08)	1.08(3)	1.52(9)	1.69(7)	1.76(16)	1.54(17)	.84(19)	.59(13)
Perth Amboy (N-09)	.93(2)	.82(16)	--	.88(27)	.69(28)	.86(13)	--
Trenton (N-10)	.99(4)	.95(18)	--	.91(19)	.58(31)	.52(19)	.27(21)

[1] This site was moved from 3rd and Arch Streets to 4th and Penn Streets in July 1979

* In Micrograms Percubic meter (ug/m^3) - Numbers in parenthesis indicate the number of samples.

TABLE II-2-2

ISC PARTICULATE STUDY

NOVEMBER 1974 - MARCH 1975

AVERAGE LEAD CONCENTRATION BY SITE

LOCATION	LEAD CONCENTRATION[1]	# OF SAMPLES[2]
Asbury Park	0.64	24
Carteret	0.99	24
Jersey City	1.27	24
Linden	1.02	25
Roselle	1.28	24
Sayreville	0.69	25
Newark	5.09	158

[1] Micrograms per cubic meter

[2] Samplers were all 24-hour samples except Newark where 4-hour samples were taken.

TABLE II-2-3

OCTSR LEAD AND TOXIC METALS STUDY

APRIL - SEPTEMBER 1978

AVERAGE LEAD CONCENTRATION BY SAMPLING SITE

NEWARK	
NJIT CAMPUS	0.46(13
Doremus Ave	0.91(17)
Lafayette St.	0.46(4)

BRIDGEWATER TOWNSHIP		
Urban	Somerville-Bound Brook	0.92(8)
	Hillside School	0.28(3)
	Greenknoll	0.06(4)

RUTHERFORD-CARLSTADT-CLIFTON	
Pierrepont School	0.52(3)
16th Ave (Carstadt)	0.28(4)
NJDOT Yard (Clifton)	0.79(3)
Rt.3 & Main Ave (Clifton	6.46(3)
Park Ave (Rutherford)	0.36(3)
Memorial Park (Rutherford)	0.54(3)

SUBURBAN ESSEX & UNION	
Westfield	0.36(7)
Maplewood	0.27(5)
Kearny	0.25(5)

Concentrations in Micrograms per Cubic Meter

( ) Number of Samples in Average

TABLE II-2-4

OCTSR STUDY OF SELECTED TOXIC AND CARCINOGENIC SUBSTANCES

1979

QUARTERLY AVERAGE LEAD CONCENTRATION BY SAMPLING AREA

	QUARTER			
AREA	1	2	3	4
Camden	---	0.61(15)	0.79(7)	0.83(14)
Elizabeth	---	1.01(8)	1.30(15)	1.15(14)
Linden	0.54(15)	0.92(1)	---	---
Newark	0.91(14)	1.09(15)	1.32(16)	1.75(14)
Rutherford	0.78(13)	1.53(15)	1.10(16)	0.90(14)

Concentrations in Micrograms per Cubic Meter

( ) Number of Samples in Average

TABLE II-2-5

OCTSR LEAD MONITORING STUDY

AT 12 SITES IN THE CITY OF NEWARK

1980

SITE	AVERAGE LEAD CONCENTRATION	# OF VALID SAMPLES
76 Vincent St.	0.46	11
25 Foundary St.	0.85	12
116 Brill St.	0.57	12
55 Main St.	0.60	13
200 Murray St.	0.86	8
227 Oliver St.	0.52	12
117 Tichenor St.	0.42	7
98 Congress St.	0.50	11
122 Albert St.	0.42	13
St. Benedict's	0.33	6
99 St. Charlies St.	0.42	11
138 Clifford St.	0.77	11

Concentration in Micrograms Per Cubic Meter

TABLE II-2-6

ATEOS STUDY MONITORING RESULTS

AVERAGE LEAD CONCENTRATIONS

INHALABLE PARTICULATE FRACTION

SUMMER 1981 & WINTER 1982

	SUMMER 1981	WINTER 1982
CAMDEN	0.32(39)	0.23(39)
NEWARK	0.52(39)	0.36(39)
ELIZABETH	0.54(39)	0.29(39)
RINGWOOD	0.10(39)	0.10(39)

Concentrations in Micrograms Per Cubic Meter

( ) Number of Samples

TABLE II-2-7

24 HOUR LEAD CONCENTRATIONS

DEEPWATER, N.J.

MAY 1981 - APRIL 1982

SITE	5/22/81	5/28/81	6/27/81	9/13/81	12/12/81	12/18/81	4/17/82	4/29/82
1	0.86	0.12	0.22	0.22	0.46	0.27	0.07	0.22
2	0.76	0.12	0.17	0.17	0.46	0.27	0.07	0.17
3	0.07	0.07	0.17	0.27	0.32	0.27	0.07	0.17
4	0.41	0.12	0.12	0.27	0.17	0.17	0.07	0.27

Concentrations in Micrograms per Cubic Meter

[1] Analyzed filters are from high volume samplers which were operating on days with winds blowing from DuPont towards the samplers, except for May 28, 1981 and April 17, 1982. On these two days, winds were not originating from the direction of the facility.

New Jersey Lead SIP

APPENDIX III-1

Emission Inventory

APPENDIX III-1 EMISSION INVENTORY

LIST OF ATTACHMENTS

List of Tables

Appendix III-1

EMISSION INVENTORY

The baseline and projected lead emission inventories were developed by the N.J. Division of Environmental Quality (DEQ) in accordance with the requirements specified in 40 CFR Part 51 and guidance provided in several EPA publications (2, 5, 6, 7, 8, 9). The base year inventory represents annual emissions for 1982 while the projected emissions were estimated for the years 1986 and 1990.

This presentation is believed complete in that all known lead emitting source categories in the State have been included in the inventory process. In terms of accuracy, EPA-recommended methodologies and emission factors were used to determine emissions data in cases where measured or permitted emissions were not available and these data were quality assured through procedures which involved:

- the use of experienced personnel in data collection and evaluation

- the cross-checking of available resources to insure that all significant emission sources were included

- the routine checking of emission estimation methods and calculations

-the comparison of results with those of an EPA generated example inventory.

Point Source Inventory

A point source of lead is defined by EPA as any stationary source whose actual emissions exceed 5 tons per year (TPY) of lead or lead compounds measured as elemental lead. Field enforcement, permit and stack test files for industrial source emitters of lead were surveyed by personnel of the Bureau of Field Operations. A survey form (see Attachment III-A) prepared by the Bureau of Air Quality Management & Surveillance requiring information on process operations, emission rates and stack data was completed by a field enforcement officer for each lead emitting facility. Sources were identified from an Air Pollution Enforcement Data System (APEDS) Specific Contaminant Report generated for lead. This report provided the facility name, plant and stack identification, permit & certificate number, source number, and controlled and uncontrolled emission rates for every recorded lead emitting source in the State. Rather than relying totally on the emission rates provided by this report, estimates for actual emissions data were obtained directly from stack test results, where available, or from the enforcement or permit files. Emissions data given as lead compounds (ie. lead oxide, tetraethyl lead, etc.) were factored to report elemental lead only.

In most cases the emissions data supplied by the field offices represented stack emissions only. Fugitive emission estimates were made for significant point sources following plant visitations to these sources. Process throughput rates and EPA generated emission factors were used to estimate fugitive emissions from three facilities: U.S. Metals and Refining in Carteret, General Motors in New Brunswick and E.I. du Pont in Deepwater. The reports outlining the results of the analysis for each of these facilities are contained in Attachment III-B.

A summary of the stack and fugitive emissions for industrial and sludge incineration facilities are presented in Attachment III-C. Note that a majority of sources included in this summary emit less than 5 TPY. Rather than single out just the sources emitting greater than this amount, all surveyed sources for which emissions were obtained will be included in the point source summary.

In addition to emissions from the above sources, lead emissions are also produced from other potential point sources such as electric generation, resource recovery and industrial coal burning facilities. Emission estimates for the utilities were calculated using fuel consumption rates provided by the U.S. Department of Energy[1] and emission factors contained in the EPA publication entitled Control Techniques for Lead Air Emissions[2]. The results of this analysis are presented in Attachment III-D. No resource recovery facilities were in operation in New Jersey in 1982 but are anticipated in future years and will be discussed later in this Section. Industrial coal burning facilities including the type and quantity of coal to be burned and the expected emissions are discussed in Attachment III-E.

Area Source Inventory

The area source category for lead is typically comprised of emissions from residential, industrial and commercial/institutional fuel burning, industrial process sources not classified as point sources and off-highway and highway vehicles.

Emissions from fuel burning were determined using fuel delivery data for New Jersey obtained from the USDOE report "Deliveries of Fuel Oil and Kerosene for 1981"[3] and emission factors from EPA publication 450/2-77-012.[2] Fuel data were obtained for each sector: residential, industrial and commercial/institutional. Statewide emissions were allocated to the counties based on population and employment data obtained from the New Jersey Division of Water Resources.[4] Emissions data by county for each of the fuel burning categories are shown in Attachment III-F.

Emissions data from industrial process sources are covered in the point source summary table in Attachment III-C and were obtained from the survey of field office files as discussed above in the section on point sources.

Fuel consumption by off-highway vehicles is relatively small (see Attachment III-F) and produces insignificant emissions. Therefore, this category was not added to the inventory.

Emissions from highway vehicles inclusive of both exhaust and reentrained lead emissions and the methodology for determining these emissions are presented in Attachment III-G.

In addition to the above, emissions from waste oil combustion were also included in the area source inventory. Emissions from this category were estimated from the quantity of used automotive crankcase oil from vehicles using leaded gasoline and utilized as an alternate fuel, and emission factors from AP-42. This methodology and the resultant emissions are presented in Attachment III-H.

Projected Inventories

Projected lead emissions were estimated for the years 1986 and 1990.

Emissions from industrial point sources and industrial and commercial/institutional fuel combustion were projected using growth factors developed from employment data supplied by the N.J. Division of Water Resources (see Attachment III-F). The projected emissions for industrial point sources are shown in Attachment III-I and those for fuel combustion are presented in Attachment III-F.

Population growth factors were used for projecting emissions from residential fuel combustion and incineration activities. The population data (see Attachment III-F)were also obtained from the N.J. Division of Water Resources. The projected emissions from these sources are shown in Attachments III-F and III-I, respectively.

Growth in electric generation was determined from an extrapolation of USDOE trend data for the period 1978-1981. Projected emissions for coal and fuel oil use by the utilities are shown in Attachment III-D.

Emissions from resource recovery facilities that are expected to come on-line in the future were estimated for 1986 and 1990 based on data supplied by the N.J. Division of Waste Management. The methodology for estimating emissions from these facilities and their lead emissions are presented in Attachment III-J.

Projected emissions from waste oil combustion were determined using percent reductions in the projected volumes of leaded gasoline calculated from data presented in Attachment III-G. The projected lead emissions data estimated from this procedure are presented in Attachment III-H.

A lead emissions inventory for New Jersey for the base year 1982 and each of the projection years is presented by source category in Table III-1. The county inventories are presented in Attachment III-K. A statwide summary by county is presented in Table III-2.

TABLE III-1

Lead Emission Inventory Summary (tons/year)

New Jersey

Source Category	1982 Point	1982 Area	1986 Point	1986 Area	1990 Point	1990 Area
Fuel Combustion						
Residential Fuel						
Distillate Oil		1.0		1.1		1.1
Industrial Fuel						
Anthracite Coal	0.6		1.0		1.0	
Bituminous Coal			3.4		3.4	
Residual Oil		0.5		0.5		0.5
Distillate Oil		0.3		0.3		0.3
Commercial Fuel						
Residual Oil		0.6		0.6		0.6
Distillate Oil		0.3		0.3		0.3
Electric Generation						
Bituminous Coal	18.0		18.0		17.7	
Residual Oil	1.0		1.0		1.0	
Waste Oil		52.2		31.3		18.3
Industrial Process						
Chemical Manufacture	173.8		178.3		181.3	
Primary Metals	87.5		93.5		100.4	
Secondary Metals	73.8		76.2		78.9	
Mineral Products	1.6		1.6		1.6	
Metal Fabrication	8.7		9.0		9.5	
Other						
Solid Waste Disposal						
Incineration	10.9		11.8		12.6	
Resource Recovery			273.0		282.6	
Transportation						
Highway Vehicles		2035.8		921.8		536.2
Miscellaneous						
Reentrained Dust		597.4		316.9		134.0
STATE TOTAL	375.9	2688.1	666.8	1271.7	690.0	690.2

Table III-2

Lead Emission Inventory Statewide Summary (tons/year)

by County

Counties	1982 Point	1982 Area	1986 Point	1986 Area	1990 Point	1990 Area
Atlantic	4.2	65.1	5.0	30.8	5.3	16.7
Bergen	4.3	349.6	49.9	165.5	51.5	90.9
Burlington	0.1	127.9	15.4	60.1	16.0	32.6
Camden	7.6	170.4	12.4	80.6	12.9	43.9
Cape May	3.3	29.8	4.1	14.0	4.1	7.7
Cumberland	1.9	44.5	1.9	21.1	2.0	11.4
Essex	24.8	246.0	58.3	116.5	58.2	63.5
Gloucester	6.6	65.6	21.9	31.0	23.2	16.8
Hudson	23.5	141.3	38.5	66.9	38.3	36.5
Hunterdon	0.0	33.7	0.0	15.9	0.0	7.6
Mercer	9.4	121.3	21.0	57.4	21.4	31.2
Middlesex	116.0	228.0	142.0	107.9	152.7	57.8
Monmouth	0.0	197.1	15.0	93.4	15.6	50.6
Morris	0.8	169.1	21.1	80.0	21.9	43.4
Ocean	0.0	131.8	9.6	62.4	10.6	34.0
Passaic	0.6	170.9	21.6	80.9	22.4	44.0
Salem	172.4	20.6	177.4	9.7	180.9	5.2
Somerset	0.0	70.2	9.8	33.2	10.3	18.1
Sussex	0.0	42.6	0.0	20.1	0.0	10.9

Union	0.2	230.1	26.8	109.0	26.8	59.3
Warren	0.0	32.5	15.0	15.4	15.9	8.3
State Total	375.9	2688.1	666.8	1271.7	690.0	690.2

References

1. U.S. Department of Energy, Cost and Quantity of Fuels for Electric Utility Plants, 1981 Annual (DOE/EIS-0191), Washington, D.C., September 1982.

2. U.S. Environmental Protection Agency, Control Techniques for Lead Air Emissions (EPA-450/2-77-012), Research Triangle Park, December 1977.

3. U.S. Department of Energy, Deliveries of Fuel Oil and Kerosene in 1981 (DOE/EIS-0113), Washington, D.C., February 1982.

4. N.J. Department of Environmental Protection, Division of Water Resources, Policy and Procedures for Water Resource Management Planning, Trenton, N.J., May 1981.

5. Federal Register, Volume 47, No. 210, Environmental Protection Agency, October 29, 1982.

6. U.S. Environmental Protection Agency, Field Operation and Support Division, Washington, D.C., Gasoline Produced and Lead Used as Reported to EPA.

7. U.S. Environmental Protection Agency, A Lead Emission Factor For Reentrained Dust from a Paved Roadway (EPA-450/3-78-021), Research Triangle Park, North Carolina, April 1978.

8. U.S. Environmental Protection Agency, Compilation of Air Pollutant Emission Factors (AP-42), Research Triangle Park, North Carolina, February 1976.

9. Federal Register, Volume 43, No. 194, Environmental Protection Agency, October 5, 1978.

New Jersey Lead SIP

APPENDIX III-1, ATTACHMENT III-A

Survey Forms for Lead Industrial Point Source Inventory

Est 10015 161

Lead Air Emissions Survey

[illegible] EPA Office: | Plant Name: Same

[illegible]: 600 Route 440 Jersey City | UTM Coordinates: H 576.0 V 4508.5

Nature of Business: [illegible]

Operating Schedule (Normal): 16 hours/day, 5 days/week, 50 weeks/year

Information Representative of Calendar Year: 1982 Future Activities (% increase in production by 1982):

Source Description	Process	Materials Used in Operations (type & quantity)	Type & Efficiency of Control Equipment	Actual Lead Emissions (lbs/hr)	Method of Determining Emissions	Stack Data Height (ft)	Stack Data Diameter (ft)	Stack Data Exit Gas Flow (ACFM)	Stack Data Exit Gas Temperature (°F)
NJ #1 CT 6541 2-Lead Melting Pots	Melting of Lead/Tin Alloys	on P-CT 10,000 #/Batch 16 hrs/Batch Tin/Lead on Stack Test 3300 #/Batch	Baghouse 99+ %	on P-CT < 2 #/hr (1.9) Stack Test .95 #/hr	Stack test	32	2	10,000	100
NJ # 2 + 3 [illegible] 6 Flux Coating Chambers	Coating Lead/Tin Alloys with Rosin	Tin/Lead Rosin 5#/hr per Chamber	Fiberglass Matt Filter 99.8	.01 (.01)	Est.	2 Stacks 30	each 1.5	Total 4700	70
NJ # 5 CT 32226 12 Melting Pots	Melting of Lead/Tin Alloys	Tin + Lead 150 - 15,000 #/Batch Per Pot Max All Pots 46,000# Ave 4,000#/hr	Flex Kleen Bag house 99%	5.6#/hr (11.2)	P-CT	35	2.5	35,000	70
NJ #6 + 7 CT's 51744 51745 Lead Pot [illegible]	Melting of Lead Tin Alloys	Tin + Lead 3000 #/Batch Per Pot Ave 750 #/batch	None	.14 #/hr each (.56) .28 #/hr TOTAL	P-CT	2 Stacks 25	each 1	each 2000	140

Continued on attached

Completed by: John Walsh Field Office: Newark Date: 3-22-82

Lead Air Emissions Survey   ID# 10015

Company Name: Alpha Metals Inc   Continued   Plant Name: ____________

Plant Address: LLC Code 440 Jersey City   UTM Coordinates: ____________

Nature of Business: ____________

Operating Schedule (Normal): ______ hours/day, ______ days/week, ______ weeks/year

Information Representative of Calendar Year: ______   Future Activities (% increase in production by 1982):

Source Description	Process	Materials Used in Operations (type & quantity)	Type & Efficiency of Control Equipment	Actual Lead Emissions (lbs/hr)	Method of Determining Emissions	Stack Data: Height (ft)	Stack Data: Diameter (ft)	Stack Data: Exit Gas Flow (ACFM)	Stack Data: Exit Gas Temperature (°F)
NJ # 8 + 9 Log #s 81-1353, 1354 Melting Furnace #8, 9	Melting of Lead/Tin Alloy	Lead Tin 2200#/batch Per Furnace 650#/hr Total	NONE	.05#/hr each Furnace .1#/hr Total	P-Ct	2 Stacks 27	each 1	each 2950	120

Completed by: John Walsh   Field Office: Newark   Date: [illegible]

Lead Air Emissions Survey

ID# C5002 (: :)

...nco Incorporated — Plant Name: Federated Metals

Plant Address: 150 Saint Charles St Newark — UTM Coordinates: N 572.3 / E 4505.6

Nature of Business: Smelting, Refining of non-ferrous alloys & metals [illegible]

Operating Schedule (Normal): 24 hours/day, 5 days/week, 50 weeks/year

Information Representative of Calendar Year: 1982 — Future Activities (% increase in production by 1982)

Source Description	Process	Materials Used in Operations (type & quantity)	Type & Efficiency of Control Equipment	Actual Lead Emissions (lbs/hr)	Method of Determining Emissions	Stack Data: Height (ft)	Stack Data: Diameter (ft)	Exit Gas Flow (ACFM)	Exit Gas Temperature (°F)
NJ #1 G/F 4-Kettles 2-50T, 15T, 5T	Melting Non Ferrous Metals	Tin, Lead Antimony, Lead ≈ 80%	None	Unknown (.6) 0.2 #/hr	est.	62	3	25,000	100
G/F 2-Kettles 2-50T	Melting Non Ferrous Metals	Tin Lead Antimony Lead ≈ 80%	None	Unknown 0.2 #/hr	est.	62	3	25,000	100
NJ #2 G/F 8-Kettles 3T, 5T, 2-10T	Melting Non Ferrous Metals 15T, 30T, 50T	Tin Lead Antimony Lead 25 + 200#	None	Unknown 0.2 #/hr	est	40	2.7	16,700	115
NJ #3 Ct 13815 2-50T Reverb Furnace Charging, Tapping Ventilation	Smelting Metal [illegible] No 2 No 3	Tin Lead Antimony est. Lead ≈ 80%	Baghouse 99	0.8	Fact emission × lead content	40	3	27,167	125

Completed by: John Wall — Field Office: Newark — Date: 3-22-82

[illegible]

Lead Air Emissions Survey

Company Name: Asarco Incorporated Plant Name: [illegible]

Plant Address: 150 [illegible] [illegible] UTM Coordinates:

Nature of Business: [illegible]

Operating Schedule (Normal): ____ hours/day, ____ days/week, ____ weeks/year

Information Representative of Calendar Year: ____ Future Activities (% increase in production by 1982)

Source Description	Process	Materials Used in Operations (type & quantity)	Type & Efficiency of Control Equipment	Actual Lead Emissions (lbs/hr)	Method of Determining Emissions	Stack Data			
						Height (ft)	Diameter (ft)	Exit Gas Flow (ACFM)	Exit Gas Temperature (°F)
NJ005 CT 30275 5000#, 2000#, 1500#, 400# Kettles	Melting Non-Ferrous Metal Furnaces	Tin Lead Antimony Lead ≈ 20% Normal Max [illegible]	Baghouse 99%	.005	P-CT Lead emission listed	35	3	26200	150
NJ 007 CT 35112 2-50T Reverb. Furnaces No. 2, 3	Smelting Non-ferrous Metals	Tin Lead Zinc Antimony Copper 40-60% Lead	Baghouse 99%	0.41	P-CT Lead emission listed	150	6.5	38900	200
G/F Incinerator	Removing combustibles from Metal scrap	40 Tons/day Metal scrap 224 Tons [illegible] in 1981	None (Afterburner)	Unknown 0.20	est				
G/F Leaching Acid 2-Tanks Dross Mixer	Recovering & Mixing Non-Ferrous Metal	Tin Lead Zinc Antimony, ect up to 60% Lead 2775 Tons/year Dross Mixer 252 Tons/year [illegible] Acid tanks	None	Unknown 0.20	est				

Completed by: John Welsh Field Office: Newark Date: 3-[illegible]

Lead Air Emissions Survey IDN 0-5093

[illegible] Nemours + Co   Plant Name: Pigments Plant

Plant Address: 256 Vanderpool Street Newark   UTM Coordinates: H 569.3 V 4507.3

Nature of Business: Manufacture of Organic + Inorganic Pigments

Operating Schedule (Normal): 24 hours/day, 7 days/week, 50 weeks/year

Information Representative of Calendar Year: 1982   Future Activities (% increase in production by 1982)

Source Description	Process	Materials Used in Operations (type & quantity)	Type & Efficiency of Control Equipment	Actual Lead Emissions (lbs/hr)	Method of Determining Emissions Lead Chromate 64% Lead Molybdate 56%	Stack Data Equivalent Height (ft)	Stack Data Diameter (ft)	Stack Data Exit Gas Flow (ACFM)	Stack Data Exit Gas Temperature (°F)
NJ # 4 CT 37248 Proctor-Schwartz Conveyor Dryer + Bag Packer	Drying + Packaging Leaded Pigments	Lead Chromate or Lead Molybdate 5000 #/hr	Spray Scrubber 95%	1.4 #/hr	P.CT emissions x Lead content	33	≈ 2	19,000	110
NJ # 6 CT 11089 Grind Shop Bld #34	Grinding + Blending of Pigments	Same 5500 #/hr	Bag house 99%	0.01 #/hr	P-CT emissions x Lead Content	43	3	25000	100
NJ # 10 CT 17957 Hoffman Secondary	Pneumatic Transfer + Storage of Product operation of	Same 4700 #/hr Dust Storage Bin	Baghouse 99.9%	0.3 #/hr	P CT emission x Lead Content	42	1	620	150
NJ # 12 CT 37249 Tray Dryers to Dump Hood	Drying + Dumping Pigments	Same 2800 #/hr	Bag house 99%	0.2 #/h	P-CT emission x Lead Content	34	1.5	9000	105

Continued

Page #1 of 3

Completed by: John Walsh   Field Office: Newark   Date: 3-22-82

Lead Air Emissions Survey ID# 05003

Company Name: E. I. DuPont de Nemours & Co Continued Plant Name: Pigments Plant

Plant Address: [illegible] Newark UTM Coordinates:

Nature of Business: Manufacture Pigments

Operating Schedule (Normal): 24 hours/day, 7 days/week, 50 weeks/year

Information Representative of Calendar Year:

Future Activities (% increase in production by 1982)

Source Description	Process	Materials Used in Operations (type & quantity)	Type & Efficiency of Control Equipment	Actual Lead Emissions (lbs/hr)	Method of Determining Emissions	Stack Data Height (ft)	Diameter (ft)	Exit Gas Flow (ACFM)	Temperature (°F)
UT # 13 + 14 CT 18103, 18104 #4 MP MicroPulva #1 + #2 Units	Milling of Inorganic Pigments [illegible]	Lead Chromate + Lead Molybdate 1500 #/hr each unit	80% Fabric Filter 99.9%	0.25 #/hr each 0.5 #/hr total	P-CT emission + Lead Content	each - 2 stacks 63	.5	each 600	100
UT # 15 CT 18105 Pulverizers, Micro-Atomizers, Blending Tank	Milling + Blending of Inorganic Pigments	Same 1500 #/hr	Fabric Filter 99.9%	0.25 #/hr	P-CT emission + Lead Content	63	.5	800	100
UT # 16 CT 18106 MicroAtomizer - Bag Filter	Milling + Blending of Inorganic Pigments	Same 1500 #/hr	Bag Filter 99.9%	0.3 #/hr	P-CT emission + Lead Content	72	1	5500	100
UT # 17 CT 18107 Pulverizers, Blending + Packaging	Milling, Blending + Packaging Inorganic Pigments	Same 1500 #/hr	Bag Filter 99.9%	0.3 #/hr	P-CT emission + Lead Content	58	.5	53,500	100

Page # 2 of 3

Completed by: John Walsh Field Office: Newark

Lead Air Emissions Survey IPF 05003

de Nemours & Co Continued Plant Name: Pigments Plant

Address: UTM Coordinates:

Nature of Business:

Operating Schedule (Normal): ______ hours/day, ______ days/week, ______ weeks/year

Information Representative of Calendar Year: ______ Future Activities (% increase in production by 1982):

Source Description	Process	Materials Used in Operations (type & quantity)	Type & Efficiency of Control Equipment	Actual Lead Emissions (lbs/hr)	Method of Determining Emissions	Stack Data: Height (ft)	Stack Data: Diameter (ft)	Stack Data: Exit Gas Flow (ACFM)	Stack Data: Exit Gas Temperature (°F)
NJ #18 CT 18214 Exhaust Fans for Pulver, Blend, Packing	Room Ventilation for Milling, Blending, Packaging	Lead Chromate Lead Molybdate 1500 #/hr	None	0.15 #/hr	P-CT emission x lead content	63	4	9560	100
NJ #23 CT 48635 Bld 123 West Blend. Bag Filter	Blending Organic & Inorganic Pigments	Organic & Inorganic (50%) Pigments 4500 #/hr	Torit Dust Collector 99%	0.3 #/hr During Approx. 1/2 Total Operating Time	P-CT emissions x lead content	37	1	950	70
NJ #25 CT 51719 #12 Bld Vacuum System	Intermediate Transfer + Storage System	Lead Chromate 4400 #/hr	2 Dust Collectors 99%	0.1 #/hr	P-CT emission x lead content	40	1	800	80
NJ #25 CT 51615 123 Bld East Blending Bag Filter	Blending Organic & Inorganic Pigments	Lead Chromate + Lead Molybdate + Organic Pigment 4500 #/hr	Torit Dust Collector 99%	.3 #/hr ≈ 1/2 of Operating Time	P-CT emission x lead content	37	1	980	70

Page #3 of 3

Completed by: John Walsh Field Office: Newark Date: 3-22-82

Company Name: Garrick Powers Plant Name: Deko-Perry

Plant Address: Jersey Ave. New Brunswick UTM Coordinates: 544.8 - 4480.0

Nature of Business: ______

Operating Schedule (Normal): ______ hours/day, ______ days/week, ______ weeks/year

Information Representative of Calendar Year: ______ Future Activities (% increase in production by 1982): ______

Source Description	Process	Materials Used in Operations (type & quantity)	Type & Efficiency of Control Equipment	Actual Lead Emissions (lbs/hr)	Method of Determining Emissions	Stack Data Height (ft)	Diameter (ft)	Exit Gas Flow (ACFM)	Temperature (°F)
Equipment Removed from Service									
Reverb Furnace	Lead Reclamation Iron Plant Scrap	Fireloss, Plant Sand Scrap, Warranty Battery Lead Parts & Plate Groups,	A-11045 Hydrofilter & Fiberglass Bag house 99%	Lead oxide 2.7 #/hr ≈ 24 lbs/day	~~Stac~~ Cf - 13613	61	3	21,800	235
One Stacker & Heat-on Strap Machines	Industrial Vacuum Cleaning System	Lead Lead Oxide Lead Sulfate Sb-As Sn-Pb Alloy	Hoffman Gravity Separator & #481 Bag house Primary 80 - Secondary 99	PbO .16 #/hr 16 lbs/day	Cf - 9871	38	.5	690	80
Paste Mixers Equipment Removed from Service	Basic Paste	PbO 1.4 SG Sulfuric Acid 1/8 dynel fiber 1 lg Dispersing Oxide Indicator	Fuller Plenum Bag house 99%	1.5 #/hr 16 lbs/day	Cf 13614	57	1.4	9000	80
Encapsulators	Encapsulation	PbO Pb Grids PVC	Fuller Bag house 99%	.05 #/hr 16 lbs/day	Cf - 21817	44	3	34,000	86

NO CHANGE IN OPERATION SINCE 1979.

Completed by: Gene Keller Field Office: Ashland Date: 4/6/79

Plant Name: Delco-Remy

... City: New Brunswick UTM Coordinates: 549.8 - 4480.0

... of business: Manufacture of Automotive Batteries

Operating Schedule (Normal): 24/16/8 hours/day, 5 days/week, 50 weeks/year

Information Representative of Calendar Year: 79 Future Activities (% increase in production by 1982): None

Source Description	Process	Materials Used in Operations (type & quantity)	Type & Efficiency of Control Equipment	Actual Lead Emissions (lbs/hr)	Method of Determining Emissions	Stack Data: Height (ft)	Stack Data: Diameter (ft)	Stack Data: Exit Gas Flow (ACFM)	Stack Data: Exit Gas Temperature (°F)
Equipment Removed From Service									
Sonic Welder	~~Soldering~~	Toluene Lead Oxide ~~Hypane~~ Solder w/Resin Flux	~~None~~	Lead oxide .101 #/hr 8 hrs/day	~~EST.~~ St 4982	46	1.7	~~6275~~	~~80~~
North System Solder Operations	Soldering	Epoxy ~~Solder w/resin flux~~ Toluene	None	Lead Oxide .101 #/hr 8 hrs/day	EST St. 4983	46	1.7	5765	80
Pasting Lines #'s 1,2,5,6	Lead Sulfate Paste Mixing	Lead oxides (59%) Lead Grids (41%)	Filter Plenum Bag house 99%	Lead oxide 2 #/hr 16 hrs/day	Est St - ~~8189~~ 43652	48	2½	12,000	90
Stacker & Cast on Strap Machines	Stacking & Cutting Finishing of Plates	Lead, Lead oxide, Lead Sulfate, #'s SB-AS-SN-PB Alloy & PVC sheets	Filter Dunco Bag house 99	Lead oxide 1 #/hr 16 hrs/day	Est. St - 8578	26	3½	44600	85

No change in operation since 1979

Completed by: Gene Keller Field Office: Central Date: 4/9/79

Company Name: ~~Delco~~ General Motors Plant Name: Delco Remy

Plant Address: Jersey New Brunswick UTM Coordinates: 544.8-4480.0

Nature of Business: Man. of Automotive Batterys.

Operating Schedule (Normal): ______ hours/day, ______ days/week, ______ weeks/year

Information Representative of Calendar Year: ______ Future Activities (% increase in production by 1982):

Source Description	Process	Materials Used in Operations (type & quantity)	Type & Efficiency of Control Equipment	Actual Lead Emissions (lbs/hr)	Method of Determining Emissions	Stack Data: Height (ft)	Diameter (ft)	Exit Gas Flow (ACFM)	Exit Gas Temperature (°F)
Equipment Removed From Service									
~~Burn Wheels & Stackers~~	~~2 Stackers & Wheels to burn Connectors on Plate top~~	~~Pb & PbO~~	~~Fuller Baghouse 99%~~	~~PbO .53 #/hr 16 hrs/day~~	~~Ct 21818~~	~~44~~	~~3~~	~~31000~~	~~86~~
Plate Pasting lines	3-X-Hot Plate lines of PbO Lead Recovery & Bar Supplies	PbO & Pb Grids	Fuller Baghouse 99%	PbO 1,016 #/hr 16 hrs/day	Ct. 39267	44	2.5	24800	92
Reverb Furnace	Reclamation of Plant Scrap	Fuel oil, Plant Pb scrap, Warranty Battery Pb Pine B & Groups & Flux	Standard Havens Bag House	Pb Part. 2.7 16 hrs/day	Ct 22965	80	3.7	40889	200
Barton Pot (5)	Production of PbO	Pb & Air 1500 lb/hr/Pot	w Fuel Cleaner Baghouse & Roto Clone / Pot	PbO .13 #/hr/Pot 24 hrs/day	Stacks #26→30 Cpt. 7 Supp. Data Sheets	42	.9	2200 scfm	AMB

No changes in operation since 1979.

Completed by: Gene Keller Field Office: Central Date: 4-9-79

Plant Name: Delco Remy

[illegible] New Brunswick **UTM Coordinates:** 544.8 – 4480.0

[illegible]e of Business: Manufacture of Automotive Batteries

Operating Schedule (Normal): ________ hours/day, ________ days/week, ________ weeks/year

Information Representative of Calendar Year: ________ Future Activities (% increase in production by 1982):

Source Description	Process	Materials Used in Operations (type & quantity)	Type & Efficiency of Control Equipment	Actual Lead Emissions (lbs/hr)	Method of Determining Emissions	Stack Data Height (ft)	Diameter (ft)	Exit Gas Flow (ACFM)	Temperature (°F)
~~Lindberg Furnace~~	~~Casting & Extruding of Pb Grids~~	~~Lead~~	~~Filter Plenum Baghouse 99%~~	~~1 #/hr 24 hrs/day~~	~~CA 375-44~~	~~54~~	~~1.9~~	~~14000~~	~~90~~
Barton Pot	Production of PbO	Lead	Settling Chamber & Filter Plenum Baghouse 99%	1.8 #/hr 24 hrs/day	CP-37595	45	1.4	4000	130°
Stacker, Cast-on-Strap Machine, & Pallet Conveyor	Plate Group Assembly	PbO Pb Sulfate	Standard Havens Alpha Mark I Baghouse 99%	5 #/hr 16 hrs/day	P-40111	40	5	60000	95°

→ No change in operation since 1979

Completed by: Gene Keller Field Office: Central Date: 4-9-79

ID# 15002

Lead Air Emissions Survey

Company Name: United States Metals Refining Co. Plant Name: ______

Plant Address: 400 Middlesex Ave. Carteret UTM Coordinates: 566.0 → 4490.5

Nature of Business: Copper Refinery

Operating Schedule (Normal): 24 hours/day, 5-7 days/week, 50 weeks/year

Information Representative of Calendar Year: 82 Future Activities (% increase in production by 1982): ______

Source Description	Process	Materials Used in Operations (type & quantity)	Type & Efficiency of Control Equipment	Actual Lead Emissions (lbs/hr)	Method of Determining Emissions	Stack Data Height (ft)	Stack Data Diameter (ft)	Exit Gas Flow (ACFM)	Exit Gas Temperature (°F)
Smelter No. 1	Convert black copper into blister copper	Black copper Scrap copper Flux, Coke 104,000#/Batch	Baghouse 99%	5.2	Permit	400	16	160,852	190
Cupola	Smelting copper	Telephone scrap shredded telephone Brass + copper slag 80,000#/HR	Baghouse 99%	4.0	Permit	~~400~~ 250	11	400,000	200
Smelter #3 (7 sources)	Treatment of hot cupola slag	Hot cupola slag Limestone Coke 27,000#/HR	Baghouse 99%	2.0	Permit	71	6	120,000	135
5) Reverberatory Furnaces	Refining copper	copper 650,000#/batch	Baghouse 99%	5#/Maximum	Permit	70	—	260,000	250

Completed by: M. O'Neil Field Office: CFO Date: 3-...

[illegible] Co. Plant Name: ______

______ UTM Coordinates: ______

Nature of Business: ______

Operating Schedule (Normal): ______ hours/day, ______ days/week, ______ weeks/year

Information Representative of Calendar Year: ______ Future Activities (% increase in production by 1982): ______

Source Description	Process	Materials Used in Operations (type & quantity)	Type & Efficiency of Control Equipment	Actual Lead Emissions (lbs/hr)	Method of Determining Emissions	Stack Data			
								Exit Gas	
						Height (ft)	Diameter (ft)	Flow (ACFM)	Temperature (°F)
(4) Dore Furnaces + (2) Pig Mills	Charging + casting of precious metals	Sweeps Recyled secondary Electrolytic slimes 14,000#/DA	Baghouse 99%	.5#/Hr Total	Permit	90	1	36,000	100

Completed by: M. Oswai Field Office: CFO Date: 3.24.82

Lead Air Emissions Survey

Company Name: E.I. DUPONT DE NEMOURS & CO, INC. Plant Name: CHAMBERS WORKS

Plant Address: DEEPWATER UTM Coordinates: H-456.3 - V-4393.3

Nature of Business: CHEMICAL MFG. I.D. 65079

Operating Schedule (Normal): 24 hours/day, 7 days/week, 39 weeks/year

Information Representative of Calendar Year: 1982 Future Activities (% increase in production by 1982): ___

Source Description	Process Bldg #	Materials Used in Operations (type & quantity)	Type & Efficiency of Control Equipment	Actual Lead Emissions (lbs/hr)	Method of Determining Emissions	Stack Data Height (ft)	Diameter (ft)	Exit Gas Flow (ACFM)	Temperature (°F)
C & D Furnaces NJ #4 CT-48590	1249 Lead Recovery	Lead Lead Oxides Lead Chloride	Bag Filter 99.7%	(18.8) Particulate	Permit 1360	125	7	111,000	350
E & F Furnaces NJ #25 CT-48591	1258 Lead Recovery	Lead Lead Oxides Lead Chloride	Bag Filter 99.7%	11.1 Particulate	Permit 1290	125	5.5	76,000	350
Fan on "C" Ditch FN-5FF NJ #63	815 Waste-water	TML TEL	None	5.0 TEL & TML	Stack Test 1410	130	1.3	2300	AMB
Blender Bldg XH-2 NJ #98	856	TMEL Mix	None	0.7 TEL & TML	" 2100	90	6.0	50,000	AMB

Completed by: JULIUS G. TIVALD Field Office: SOUTHERN

CO., INC. Plant Name: CHAMBERS WORKS

DEEPWATER UTM Coordinates: H-456.3 - V-4393.3

Nature of Business: CHEMICAL MFG. I.D. 65079

Operating Schedule (Normal): 24 hours/day, 7 days/week, 39 weeks/year 6570 HRS/YR

Information Representative of Calendar Year: 1982 Future Activities (% increase in production by 1982): ____

Source Description	Process Bldg #	Materials Used in Operations (type & quantity)	Type & Efficiency of Control Equipment	Actual Lead Emissions (lbs/hr)	Method of Determining Emissions	Stack Data Height (ft)	Diameter (ft)	Exit Gas Flow (ACFM)	Exit Gas Temperature (°F)
Aerator "A" Bldg XH-4 NJ #69	1032	TEL	None	2.0 TEL	Stack Test 1550	160	1.3	2250	AMB
"A" Fume Scrubber XH-17 NJ #81	1032	TEL	Water Jet Venturi 95%	8.7 TEL	" "	125	2.0	6200	AMB
"E" Bldg Pit & Process XH-18E NJ#78 CT-49188	731	TML	None	6.5 TML	Pemit 1575	150	5.0	24,400	AMB
"C" Pit (Upper & Lower). FN-1CF NJ#58	643	Lead Oxide & Lead	None	0.0002 Lead Oxide 0.3 TEL	Stack Test	150	5.0	26,000	AMB

52.80 lbs/hr
173 tons/yr

Completed by: JULIUS G. TIVALD Field Office: SOUTHERN Date: 3-29-82

Lead Air Emissions Survey

Company Name: CAMPBELL SOUP COMPANY I.D. 50037 Plant Name: PLANT #1

Plant Address: 100 MARKET ST., CAMDEN UTM Coordinates: H-489.1 V-4421.6

Nature of Business: CAN MANUFACTURING

Operating Schedule (Normal): 16 hours/day, 5 days/week, 52 weeks/year

Information Representative of Calendar Year: 1974 Future Activities (% increase in production by 1982):

Source Description	Process	Materials Used in Operations (type & quantity)	Type & Efficiency of Control Equipment	Actual Lead Emissions (lbs/hr)	Method of Determining Emissions	Stack Data: Height (ft)	Stack Data: Diameter (ft)	Stack Data: Exit Gas Flow (ACFM)	Stack Data: Exit Gas Temperature (°F)
CAN BODY MAKERS #1-5 NJ 2 (COMMON STK)	SOLDERING OF CANS	SOLDER 75 #/HR	NONE	.19 (AS PbO)	COMPANY ESTIMATE	90	3.0	12600	75
CAN BODY MAKERS NJ3 #6-9 (COMMON STK)	SOLDERING OF CANS	SOLDER 75 #/HR	NONE	.32	"	90	2.6	13700	75
CAN BODY MAKERS NJ4 #10 (COMMON STK)	SOLDERING OF CANS	SOLDER 15 #/HR	NONE	0.02	"	85	2.5	3000	75
CAN BODY MAKERS NJ5 #10,12 (COMMON STK)	SOLDERING OF CANS	SOLDER 75 #/HR	NONE	0.4	"	90	3	11950	75

16

Completed by: CHARLES A. MELLON Field Office: SOUTHERN [redacted] Survey

[redacted]

Plant Name: PLANT #2

[redacted] & COOPER STS., CAMDEN

UTM Coordinates: H-490.8 V-4420.6

Nature of Business: CAN MANUFACTURING (SIC #2032)

Operating Schedule (Normal): 24 hours/day, 6 days/week, 52 weeks/year

Information Representative of Calendar Year: 1974

Future Activities (% increase in production by 1982):

Source Description	Process	Materials Used in Operations (type & quantity)	Type & Efficiency of Control Equipment	Actual Lead Emissions (lbs/hr)	Method of Determining Emissions	Stack Data: Height (ft)	Stack Data: Diameter (ft)	Exit Gas Flow (ACFM)	Exit Gas Temperature (°F)
CAN BODY MAKER #1 NJ #8	SOLDERING OF CANS	SOLDER 3/4 #/1000 CANS 15 #/HR	NONE	.15 (AS PbO)	COMPANY TEST	75	1.7	2482	75
MAKER #3 NJ ~~#9~~	"	"	"	"	"	"	"	"	"
MAKER #3 NJ ~~#10~~	"	"	"	"	"	"	"	"	"
MAKER #4 NJ ~~#11~~	"	"	"	"	"	"	"	"	"

delete body makers - all sources out

- they want to glass [illegible]

Completed by: CHARLES A. MELLON Field Office: SOUTHERN Date: 3-23-82

Lead Air Emissions Survey

Company Name: CAMPBELL SOUP COMPANY I.D. 50038 Plant Name: PLANT #2

Plant Address: DELAWARE & COOPER STS., CAMDEN UTM Coordinates: H-490.8 V-4420.6

Nature of Business: CAN MANUFACTURING (SIC #2032)

Operating Schedule (Normal): 24 hours/day, 6 days/week, 52 weeks/year

Information Representative of Calendar Year: 1974 Future Activities (% increase in production by 1982):

Source Description	Process	Materials Used in Operations (type & quantity)	Type & Efficiency of Control Equipment	Actual Lead Emissions (lbs/hr)	Method of Determining Emissions	Stack Data			
						Height (ft)	Diameter (ft)	Exit Gas Flow (ACFM)	Exit Gas Temperature (°F)
CAN BODY MAKER #5 NJ #12	SOLDERING OF CANS	SOLDER 3/4 #/1000 CANS 15#/HR	NONE	.15 (AS PbO)	COMPANY TEST	75	1.7	2482	75
MAKER #6 NJ #13	"	"	"	"	"	"	"	"	"
MAKER #7 NJ #14	"	"	"	"	"	"	"	"	"
MAKER #8 NJ #15	"	"	"	"	"	"	"	"	"

Completed by: CHARLES A. MELLON Field Office: SOUTHERN Date: 3-25-[illegible]

[illegible] Plant Name: PLANT #2

[illegible]ELAWARE & COOPER STS., CAMDEN UTM Coordinates: H-490.8 V-4420.6

Nature of Business: CAN MANUFACTURING (SIC #2032)

Operating Schedule (Normal): 24 hours/day, 6 days/week, 52 weeks/year

Information Representative of Calendar Year: 1974 Future Activities (% increase in production by 1982):

Source Description	Process	Materials Used in Operations (type & quantity)	Type & Efficiency of Control Equipment	Actual Lead Emissions (lbs/hr)	Method of Determining Emissions	Stack Data: Height (ft)	Stack Data: Diameter (ft)	Stack Data: Exit Gas Flow (ACFM)	Stack Data: Exit Gas Temperature (°F)
CAN BODY MAKER #9 NJ #16	SOLDERING OF CANS	SOLDER 3/4#/1000 CANS 15 #/HR	NONE	.15 (AS PbO)	COMPANY TEST	75	1.7	2482	75
MAKER #10 NJ #17	"	"	"	"	"	"	"	"	"

Completed by: CHARLES A. MELLON Field Office: SOUTHERN Date: 3-23-82

... Air Emissions Survey

Company Name: ROLLINS ENVIRONMENTAL SERVICES, INC. (55005) Plant Name: BRIDGEPORT FACILITY

Plant Address: RTE 322 BRIDGEPORT, NEW JERSEY UTM Coordinates: H-469.7 - V-4404.1

Nature of Business: DISPOSAL OF CHEMICAL WASTE MATERIAL

Operating Schedule (Normal): 24 hours/day, 7 days/week, 50 weeks/year 8000 HRS/YR

Information Representative of Calendar Year: 1982 Future Activities (% increase in production by 1982):

Source Description	Process	Materials Used in Operations (type & quantity)	Type & Efficiency of Control Equipment	Actual Lead Emissions (lbs/hr)	Method of Determining Emissions	Stack Data Height (ft)	Stack Data Diameter (ft)	Stack Data Exit Gas Flow (ACFM)	Stack Data Exit Gas Temperature (°F)
Industrial Waste Incinerator Including Rotary Kiln NJ #1 CT-51845	Incineration	Lead Acetate & Misc. Organ. Contain. Lead Vari. Amts.	Afterburner Scrubber Tray Absorb Demister Overall eff 95%	5 tons Per Yr.	Estimate	100	7	60,000	160

Completed by: Neil A. Cameron Field Office: Southern Date:

... Emissions Survey

[illegible] INC. **Plant Name:** NL METALS DIVISION

Address: PENNS GROVE-PEDRICKTOWN RD. OLDMANS TWP. **UTM Coordinates:** H-463.6 - V-4400.8

Nature of Business: SECONDARY LEAD SMELTER - STORAGE BATTERIES

Operating Schedule (Normal): 24 hours/day, 7 days/week, 48 weeks/year

Information Representative of Calendar Year: 1980 Future Activities (% increase in production by 1982): PLANT DOWN - 2-81 TO PRESENT

Source Description	Process	Materials Used in Operations (type & quantity)	Type & Efficiency of Control Equipment	Actual Lead Emissions (lbs/hr)	Method of Determining Emissions	Stack Data: Height (ft)	Stack Data: Diameter (ft)	Stack Data: Exit Gas Flow (ACFM)	Stack Data: Exit Gas Temperature (°F)
ROTARY KILN	SEC. LEAD SMELTING	LEAD METAL, OXIDES & FLUXES 56,000 #/hr	BAGHOUSE 99%	0.55	STACK TEST	80	3	38,000	220
** PELLETIZER	FORMING PELLETS FOR KILN FEED	PbO_2 20,000 #/hr	SCRUBBER 99%	2.3 as (PbO_2)	PERMIT	70	3	14,200	150
SANITARY BAGHOUSE	PICKUPS AT KILN DISCHARGE & REF. KETTLES	MOLTEN LEAD 40,000 #/hr	BAGHOUSE 99%	0.12	STACK TEST	60	3.9	39,500	125
FUGITIVE EMISSIONS FROM PLT. GROUNDS	---	PbO_2	NONE	UNKNOWN *EST 1.0	EST.	---	---	---	---

* FUGITIVE EMISSIONS ARE ASSUMED TO BE A CAUSE OF HIGH Pb CONCENTARTIONS RECORDED NEAR PLANT PROPERTY LINE ON MONITOR S-57

** INFORMATION IS FROM 1979 SURVEY. EQUIPMENT COVERED BY NEW P&C SINCE 1979 BUT DO NOT HAVE COPY. COPIES HAVE BEEN REQUESTED SEVERAL TIMES FROM NSR BUT HAVE NOT BEEN RECEIVED

Completed by: HARRY B. HORNIKEL **Field Office:** SOUTHERN **Date:** 3-29-82

Lead Air Emissions Survey

Company Name: NL INDUSTRIES, INC. Plant Name: NL METALS DIVISION

Plant Address: PENNS GROVE - PEDRICKTOWN RD. OLDMANS TWP. UTM Coordinates: H-463.6 - V-4400.8

Nature of Business: SECONDARY LEAD SMELTER - STORAGE BATTERIES

Operating Schedule (Normal): 24 hours/day, 7 days/week, 48 weeks/year

Information Representative of Calendar Year: 1980 Future Activities (% increase in production by 1982): PLANT DOWN - 2-81 TO PRESENT

Source Description	Process	Materials Used in Operations (type & quantity)	Type & Efficiency of Control Equipment	Actual Lead Emissions (lbs/hr)	Method of Determining Emissions	Stack Data			
						Height (ft)	Diameter (ft)	Exit Gas Flow (ACFM)	Exit Gas Temperature (°F)
SWEATER FURNACE	MELTING LEAD METAL	GRID METAL, PbO, $PbSO_4$, PLASTIC (11,250#/hr)	BAGHOUSE 99%	0.12	STACK TEST	56	3	35,000	150
SLAG CRUSHER	CRUSHING KILN SLAG	KILN SLAG (40,000 #/HR).	BAGHOUSE 99%	.015	STACK TEST	60	4	28,000	70

Completed by: HARRY B. HORNIKEL Field Office: SOUTHERN Date: 3-[illegible]

Completed survey forms for sources emitting less than 5 tons per year of elemental lead are available on request.

New Jersey Lead SIP

APPENDIX III-1, ATTACHMENT III-B

Procedures Followed In Inspecting for and Determination of Fugitive Lead Emissions from Point Sources

Procedures for Inspecting Plants with Potential Sources of Fugitive Emissions

Fugitive emissions are generally defined as those emissions that: (1) escape from industrial operations to the atmosphere through windows, doors, vents, etc., and not through a primary exhaust system such as a stack, flue or control system, or (2) are directly emitted to the atmosphere from those industrial activities that occur out-of-doors. Emissions related to dust particles that become airborne due to the forces of wind and/or man's activity in areas such as roadways or other exposed surfaces are a second fugitive category generally referred to as fugitive dust. Both categories, simply defined herein as fugitive emissions, were considered in the plant inspections conducted by NJDEP.

Fugitive emissions may be produced from activities related to manufacturing operations, materials handling, transfer and storage.

Emission factors are available to quantify fugitives from many industries included in the processing of lead (see Table III-B-1). The use of these factors usually requires knowledge of process throughput rates. Also of importance in this quantification are the housekeeping/maintenance procedures, plant design and the efficiency of control measures that may be implemented to control these emissions.

In an effort to quantify fugitive emissions from facilities regarded as having a high potential for these emissions, field trips were made to: Delco Remy Division of General Motors in New Brunswick, Du Pont in Deepwater, National Smelting of New Jersey in Pedricktown and U.S. Metals Refining in Carteret. Other facilities believed to have a marginal potential for producing fugitive emisssions are in the process of being inspected. These facilities are: Alpha Metals in Jersey City, Asarco in Newark, Campbell Soup in Camden, Charles B. Hull Co. in North Arlington, and Du Pont in Newark.

The procedure that was followed for estimating fugitive emissions from potential sources included:

- review available literature (1, 2, 3) on type of source to be inspected
- review NJDEP records on subject facility
- prepare checklist of sources to be inspected at facility
- obtain process throughput rates from plant engineers
- inspect facilities and qualitatively rate magnitude of emissions according to a scale ranging from none to heavy
- estimate fugitive emissions by applying emission factors to throughput rates and modify results to account for qualitative rating made during inspection.

All field trips were performed by the same office staff member of NJDEP to avoid bias in the qualitative ratings. An

NJDEP field inspector familiar with the facility being visited was also present during the inspection.

A tabulation of the fugitive emissions that have been calculated from the plants visited thus far is attached (see Table III-B-2). The detailed calculations are on file at NJDEP, Trenton.

References

1) EPA, 1977, Technical Guidance for Control of Industrial Process Fugitive Particulate Emissions, North Carolina.

2) EPA, 1978, Third Symposium on Fugitive Emissions Measurement and Control, North Carolina.

3) EPA, 1980, Proceedings - Fourth Symposium on Fugitive Emissions, Research Triangle Park.

Table III-B-1

Uncontrolled Fugitive Lead Emission Factors*

Source Category	Emission Factor
Ferroalloy-Open Furnace - 50% FeSi	0.1 lb Pb/ton prod.
" " " - Silicon Metal	0.1 lb Pb/ton prod.
" " " - Silicomanganese	0.075 lb Pb/ton prod.
" Semi-Cov'd Fnc.-Ferromn.	-
" Ore Handling	0.001 lb Pb/ton alloy prod.
" Chromium Alloy Fnc.	0.005 lb Pb/ton prod.
Iron and Steel Production	
Unloading Raw Materials	
Iron Ore-Lump	7.5×10^{-7} Pb/ton lump ore
Iron Ore-Pellets	8.3×10^{-6} lb Pb/ton pellets
Coal	3.8×10^{-7} lb Pb/ton co
Conveyor Transfer Stations	
Iron Ore-Lump	7.5×10^{-7} lb Pb/ton lump ore
Iron Ore-Pellets	8.3×10^{-7} lb Pb/ton pellets
Coal	3.8×10^{-7} lb Pb/ton co

Sinter	1.5×10^{-5} lb Pb/ton sinter
Storage Pile Activities	
Iron Ore-Lump	1.8×10^{-4} lb Pb/ton lump ore
Iron Ore-Pellet	1.8×10^{-4} lb Pb/ton pellets
Coal	1.2×10^{-6} lb Pb/ton coa
Sinter Input Mat'ls	1.2×10^{-4} lb Pb/ton input
Primary Zinc Smelting	
Zinc Ore Unloading	8.6×10^{-4} lb Pb/ton unloaded
Zinc Ore Storage	.0013 lb Pb/ton stored
Zinc Ore Handling & Transfer	.013 lb Pb/ton handled
Sinter Machine Windbox Discharge	.203 lb Pb/ton sinter
Sinter Machine Discharge & Screens	.45 lb Pb/ton sinter
Retort Fnc. Residue Discharge & Cooling	.375 lb Pb/ton Zn.
Secondary Copper, Brass, Bronze Prod.	
Sweat. Fnc.-Charging & Tapping	0.049 lb Pb/ton scrap chg.
Drying-Charging & Discharging	0.89 lb Pb/ton scrap dried
Insulation Burning	0.90 lb Pb/ton scrap burned
Electrical Induction Furnace-Charging & Tapping	0.006 lb Pb/ton scrap charged

Reverb Fnc.-Charging & Tapping	0.34 lb Pb/ton charged
Rotary Fnc.-Charging & Tapping	0.29 lb Pb/ton charged
Crucible Fnc.-Charging & Tapping	0.031 lb Pb/ton charged
Cupola (Blast) Fnc.-Charging & Tapping	0.15 lb Pb/ton charged
Casting	0.001 lb Pb/ton cast
Gray Iron Production	
Cupola	0.031 lb Pb/ton metal chg.
Reverb Furnace	0.003 do.
Elec. Induc. Fnc.	0.04 do.
Elec. Arc	0.46 do.
Secondary Lead Smelting	
Pot Fnc.	0.009 lb Pb/ton charged
Reverb Furnace	2.1 do.
Blast/Cupola Furnace	2.1 do.
Lead Oxide Prod.	NA
Lead/Iron Scrap Burning	0.35 lb Pb/ton scrap.
Sweating Furnace	0.6 lb Pb/ton charged
Casting	0.2 lb Pb/ton Pb cast
Portland Cement Mfg.	
Raw Material Unloading	
-Coal	See under iron & steel
-Other	9.7×10^{-5} lb Pb/ton mat'l
Raw Mat'l Cg. to Primary Crusher	9.1×10^{-6} lb Pb/ton rock charged
Primary Crusher	2.3×10^{-4} lb Pb/t

	crushed
Transfer Points and Associated Conveying	1.4×10^{-4} lb Pb/ton handled
Vibrating Screen; Secondary Crusher	6.8×10^{-4} lb Pb/ton screened
Unloading Outfall to Storage	2.3×10^{-3} lb Pb/ton unloaded
Raw Grinding Mill;Feed/Discharge Exhaust	4.5×10^{-5} lb Pb/ton milled
Raw Blending & Storage	2.3×10^{-5} lb Pb/ton blended
Coal Storage & Handling	See under iron & steel
Clinker/Gypsum-Unload & Storage	3.4×10^{-3} lb Pb/ton clink & gypsum
Finish Grinding	4.5×10^{-5} lb Pb/ton cement
Cement Loading	1.1×10^{-4} lb Pb/ton loaded

*Provided by USEPA

Table III-B-2

Estimated Fugitive Lead Emissions from Point Sources

Source		Emissions (Tons per Year)
Delco Remy Division of General Motors, New Brunswick		
-Storage area		negligible
Du Pont, Deepwater		
-Storage of ingots		1.8
-Central melt pots		0.8
-E furnace		1.5
	Total	4.1
U.S. Metals Refining, Carteret		
-Smelter #1		7.1
-Smelter #2		17.4
-Smelter #3		0.3
-Reverberatory furnace		11.2
	Total	36.0
National Smelting of New Jersey, Pedricktown		
- to come		

New Jersey Lead SIP

APPENDIX III-1, ATTACHMENT III-C

Stack and Fugitive Lead Emission Inventory
For Industrial Sources

Point Source Emission Inventory for Lead

1982

County	Facility	Source Description	Lead Emissions (tons/yr) Stack	Fugitive
Atlantic	Lenox China, Galloway	Mineral Products (Glass Manufacturing)	1.2	-
	Atlantic County Sewerage Authority, Atlantic City	Sludge Incinerator	3.0	-
Bergen	Charles B. Hull Company, No. Arlington	Secondary Metals (Tin Residue Manufacturing)	4.2	-
Burlington	-	-	-	-
Camden	Campbell Soup, Camden	Metal Fabrication (Can Manufacturing)	7.0	-
	Barry Bronze Bearing, Camden	Secondary Metals (Bearing Manufacturing)	0.6	-
Cape May	-	-	-	-
Cumberland	Continental Can, Vineland	Metal Fabrication (Can Manufacturing)	0.8	-
	Owens-Illinois, Vineland	Mineral Products (Glass Manufacturing)	0.4	-

Essex	Federated Metals Corp, Newark	Secondary Metals (Lead Smelting)	6.6	-
	E.I. DuPont, Newark	Chemical Manufacturing (Pigment Production)	17.3	-
	Essex Metal Alloy, Newark	Secondary Metals (Tin-Lead Manufacturing)	0.7	-
	Arlington Lead, Newark	Metal Fabrication	0.1	-
	Kester Solder, Newark	Secondary Metals (Solder Manufacturing)	0.1	-
Gloucester	Rollins, Logan Twp	Chemical Incinerator	5.0	-
	Gloucester Sewerage Authority, W. Deptford	Sludge Incinerator	0.9	-
	Del Monte, Swedesboro	Metal Fabrication (Can Manufacturing)	0.7	-
Hudson	Alpha Metals, Jersey City	Secondary Metals (Solder Manufacturing)	14.0	-
	Jersey Smelting & Refining, Jersey City	Secondary Metals (Lead Refining)	0.2	-
	Interstate Metals, Kearny	Secondary Metals (Metal Separation)	0.5	-
	Bergen Point Brass, Bayonne	Secondary Metals (Castings Manufacturing)	0.2	-
	Kenrich Petrochemicals, Bayonne	Chemical Manufacturing (Resins Manufacturing)	0.1	-
	Pittsburgh Graphics, Jersey City	Secondary Metals (Linotype Manufacturing)	0.8	-

	Kearny Smelting and Refining, Kearny	Primary Metals (Copper Refining)	1.4	-
	RFE Industries, Jersey City	Secondary Metals (Metal Refining)	0.1	-
Hunterdon	-	-	-	-
Mercer	Goodall Rubber, Trenton	Chemical Manufacturing (Rubber Manufacturing)	1.6	-
	Stony Brook Sewage, Princeton	Sludge Incinerator	0.7	-
Middlesex	General Motors, New Brunswick	Secondary Metals (Battery Manufacturing)	29.1	-
	American Can, Edison	Metal Fabrication (Can Manufacturing)	0.1	-
	US Metals & Refining, Carteret	Primary Metals (Copper Refining)	50.1	36.0
Monmouth	-	-	-	-
Morris	Parsippany Sewage Treatment, Parsippany	Sludge Incinerator	0.8	-
Ocean	-	-	-	-
Passaic	Atlantic Battery, Paterson	Secondary Metals (Battery Manufacturing)	0.1	-

	Wayne Sewage Treatment, Wayne	Sludge Incinerator	0.5	-
Salem	NL Industries, Oldmans Township	Secondary Metals (Lead Smelting)	16.6 (temporarily closed)	-
	E.I. duPont, Deepwater	Chemical Manufacturing (Gasoline Additive Mfg.)	150.7	4.1
Somerset	-	-	-	-
Sussex	-	-	-	-
Union	-	-	-	-
Warren	-	-	-	-
	TOTAL		316.2	40.1

New Jersey Lead SIP

APPENDIX III-1, ATTACHMENT III-D

Baseline and Projected Lead Emissions from Electric Generation Facilities

Lead Emissions from Electric Generation

Coal and fuel oil use by the utilities were obtained from the U.S. Department of Energy publication entitled "Cost and Quantity of Fuels for Electric Utility Plans for 1981", dated September 1982.

The emission factor for coal as defined in EPA's Control Techniques for Lead Air Emissions, EPA-450/2-77-012 is 1.6 (L) $lbs/10^3$ tons, where L is the average lead content of coal: suggested by the EPA document as 8.3 ppm by weight. Coal use for 1981 and the estimated lead emissions by utility are shown on Table III-D-1.

The emission factor for residual fuel oil as defined in EPA-450/2-77-012 is 4.2 (L) $lbs/10^6$ gals, where L is 1.0 ppm. Fuel oil use and emissions by utility are shown on Table III-D-2.

Utility fuel use trends from USDOE for the period 1978-1981 were extrapolated to obtain emissions growth factors to 1986 and 1990. Emissions from coal use and fuel oil use by the utilities for the projection years are shown in Tables III-D-3 and III-D-4, respectively.

Table III-D-1

Coal Use and Emissions by Utilities in 1981

Utility	Coal Use (10^3 tons)	Lead Emissions (TPY)
Atlantic Electric		
B.L. England	483	3.21
Deepwater	130	0.86
Public Service Electric & Gas		
Hudson	924	6.14
Mercer	1066	7.08
Vineland		
H.M. Down	103	0.68
TOTAL	2706	17.97

Table III-D-2

Fuel Oil Use and Emissions by Utilities in 1981

Utility	Fuel Oil Use (10^3 gals)	Lead Emissions (TPY)
Atlantic Electric		
B. L. England	56188	0.12
Deepwater	31756	0.07
JCP&L		
Werner	9177	0.02
Sayreville	24398	0.05
Gilbert	14742	0.03
PSE&G		
Bergen	28531	0.06
Burlington	56238	0.12
Essex	4284	0.01
Hudson	16422	0.03
Kearny	60900	0.13
Linden	105882	0.22
Sewaren	37086	0.08
Vineland Electric		
H.M. Down	5015	0.01
	TOTAL	0.95

Table III-D-3

Projected Lead Emissions from Coal Use at Utilities

Utility	Lead Emissions (TPY) 1986	1990
Atlantic Electric		
B.L. England	3.22	3.17
Deepwater	0.86	0.85
Public Service Electric & Gas		
Hudson	6.16	6.05
Mercer	7.10	6.98
Vineland		
H.M. Down	0.68	0.67
TOTAL	18.02	17.72

Table III-D-4

Projected Lead Emissions from Fuel Oil Use at Utilities

Utility	Lead Emissions (TPY) 1986	1990
Atlantic Electric		
B.L. England	0.12	0.12
Deepwater	0.07	0.07
JCP&L		
Werner	0.02	0.02
Sayreville	0.05	0.05
Gilbert	0.03	0.03
PSE&G		
Bergen	0.06	0.06
Burlington	0.12	0.12
Essex	0.01	0.01
Hudson	0.03	0.03
Kearny	0.13	0.13
Linden	0.22	0.22
Sewaren	0.08	0.08
Vineland Electric		
H.M. Down	0.01	0.01
TOTAL	0.95	0.95

New Jersey Lead SIP

APPENDIX III-1, ATTACHMENT III-E

Lead Emissions from Industrial Coal Burning Facilities

Emissions from Industrial Coal Burning

A listing of existing and proposed industrial coal burning facilities in the State was tabulated from information provided by the Division's Bureau of Engineering & Technology. This listing (see Table III-E-1) contains the facility name and location, the quantity and type of coal and the year when the facilities began or are expected to begin burning coal.

The following lead emission factors for coal combustion were obtained from AP-42, Compilation of Air Pollution Emission Factors.

Bituminous Coal: 1.6 (L) $lb/10^3$ ton
where L = 8.3 ppm

Anthracite Coal: 1.6 (L) $lb/10^3$ ton
where L = 8.1 ppm

Since the quantities of coal to be burned are the maximum expected and should not vary significantly throughout the remainder of the decade growth factors were not applied in the emission projection calculation process. Emissions data for 1982, 1986 and 1990 are presented in Table III-E-2.

Table III-E-1

Existing and Proposed

Industrial Coal Burning Sources

Facility	Location	Coal Type	Quantity (TPY)	Start-up Date
Marcal Paper	Elmwood Park, Bergen Co.	Bituminous	60,000	1985
Fisher Body	Ewing Twp., Mercer Co.	Bituminous	25,000	1986
Hercules Inc.	Parlin, Middlesex Co.	Anthracite	97,000	1982
Container Corp	Whippany, Morris Co.	Bitiminous	200,000	1984
Picatinny Arsenal	Dover, Morris Co.	Bituminous	140,000	1984
Ciba-Geigy	Toms River, Ocean Co.	Bituminous	91,000	1985
U.S. Gypsum	Clark, Union Co.	Anthracite	51,000	1983

Table III-E-2

Lead Emissions from Industrial Coal Burning Sources

Facility	Emissions (TPY) 1982	1986	1990
Marcal Paper	-	0.40	0.40
Fisher Body	-	0.17	0.17
Hercules, Inc.	0.63	0.63	0.63
Container Corp.	-	1.33	1.33
Picatinny Arsenal	-	0.93	0.93
Ciba-Geigy	-	0.60	0.60
U.S. Gypsum	-	0.33	0.33
Total	0.63	4.39	4.39

New Jersey Lead SIP

APPENDIX III-1, ATTACHMENT III-F

Lead Emissions from Area Source Fuel Combustion

Area Source Fuel Combustion

Deliveries of fuel oil by user category were obtained from USDOE's "Sales of Fuel Oil & Kerosene in 1981". Lead emissions from fuel oil combustion represent a small fraction of the total lead emitted in the State. Therefore, the user categories analyzed for lead emissions were those that consumed significant amounts of oil only. For distillate oil, these categories were the residential, commercial/institutional and industrial sectors with each burning 7.5 million barrels or more fuel in 1981 (see Table III-F-1). On-Highway vehicles also use large quantities of distillate oil. However, their emissions data will be contained in another part of this section. For residual oil the categories that were analyzed were commercial/institutional and industrial fuel burning with each using greater than 5.0 million barrels of fuel in 1981. Electric utilities, also a user of significant amounts of oil, is another category that is handled seperately.

Statewide the residential category used 23.2 million barrels of distillate oil in 1981. Using emission factors from EPA's <u>Control Techniques for Lead Air Emissions</u> EPA-450/2-77-012, the following emissions calculation is made:

23.2×10^6 bbls/yr x 42 gals/bbl x 4.2(P) $lbs/10^6$ gals = 2046 lbs/yr

where: P = 0.5 ppm by weight

These emissions, or 1.02 TPY, were allocated to the counties based on 1982 population data obtained from the New Jersey Division of Water Resources (see Table III-F-2). The resulting county emissions are shown on Table III-F-3. These emissions were then projected to 1986 and 1990 using population growth factors developed from the Water Resources data. The projected emissions are also shown on Table III-F-3.

The Commercial/institutional category used approximately 7.7 million barrels of distillate oil in 1981. Using the procedures described above, statewide emissions were calculated as 0.34 TPY. Similarly for the industrial category emissions were calculated as 0.33 TPY. These emissions figures were allocated to the counties using employment data obtained from the N.J. Division of Water Resources (see Table III-F-4) and projected to 1986 and 1990 using growth factors developed from these same data. Emissions from distillate oil use for the commerical/institutional and industrial sectors are shown on Tables III-F-5 and III-F-6, respectively.

Emissions from the commercial/institutional use of residual oil were calculated as:

6.5×10^6 bbls/yr x 42 gals/bbl x 4.2(p) lbs/10^6 gals = 1147 lbs/yr

where: p = 1.0 ppm by weight

For the industrial category, emissions were calculated as 900 lbs/yr, or 0.45 TPY. Statewide emissions from each category were also allocated to the counties and projected to 1986 and 1990 using the employment data discussed above. Emissions from residual oil use for the commercial/institutional and industrial categories are shown on Tables III-F-7 and III-F-8, respectively.

Table III-F-1

Deliveries of Fuel Oil in 1981 (10^3 barrels)

	Distillate	Residual
Residential	23,217	--
Commerical	7680	6468
Industrial	7635	5099
Oil Company	680	4192
Utility	949	10085
Farm	226	--
Military	142	126
Rail	291	0
Vessel	1496	12287
On Highway	7460	--
Off Highway	562	--
Other	635	22
Total	50,973	38,279

Source: USDOE's "Sales of Fuel Oil & Kerosene in 1981"

Table III-F-2

County Population Forecasts

Counties	1980[a]	1982[b]	1985[a]	1986[b]	1990[a]
Atlantic	209,500	235,940	275,600	281,920	307,200
Bergen	865,700	873,700	885,700	893,340	923,900
Burlington	379,024	387,391	399,942	404,112	420,793
Camden	526,617	537,145	552,937	558,165	579,079
Cape May	86,200	97,680	114,900	115,920	120,000
Cumberland	138,800	143,040	149,400	151,400	159,400
Essex	881,600	881,600	881,600	881,600	881,600
Gloucester	217,193	223,231	232,287	235,293	247,319
Hudson	584,100	586,700	590,600	591,900	597,100
Hunterdon	84,000	85,960	88,900	90,300	95,900
Mercer	348,641	354,917	364,330	367,459	379,976
Middlesex	602,000	625,200	660,000	674,000	730,000
Monmouth	517,100	527,380	542,800	547,960	568,600
Morris	420,000	430,000	445,000	450,000	470,000
Ocean	360,800	386,720	425,600	437,140	483,300
Passaic	448,300	454,140	462,900	467,920	488,000
Salem	62,700	63,100	63,700	64,240	66,400
Somerset	218,900	225,020	234,200	237,260	249,500
Sussex	117,000	123,160	132,400	136,020	150,500
Union	520,500	520,500	520,500	520,500	520,500

Warren	85,000	85,920	87,300	88,620	93,900
TOTAL	7,673,675	7,848,423	8,110,546	8,194,950	8,532,567

a-Obtained from New Jersey Division of Water Resources-"Policy and Procedures for the Use and Review of Population Forecasts for Water Resources Management Planning", dated May 1981.

b-Interpolation

Table III-F-3

Lead Emissions from Residential Fuel Combustion

of Distillate Oil

(Tons per Year)

Counties	1982	1986	1990
Atlantic	0.03	0.04	0.04
Bergen	0.11	0.11	0.12
Burlington	0.05	0.05	0.05
Camden	0.07	0.07	0.08
Cape May	0.01	0.01	0.01
Cumberland	0.02	0.02	0.02
Essex	0.11	0.11	0.11
Gloucester	0.03	0.03	0.03
Hudson	0.08	0.08	0.08
Hunterdon	0.01	0.01	0.01
Mercer	0.05	0.05	0.05
Middlesex	0.08	0.09	0.09
Monmouth	0.07	0.07	0.08
Morris	0.06	0.06	0.07
Ocean	0.05	0.06	0.06
Passaic	0.06	0.06	0.06
Salem	0.01	0.01	0.01
Somerset	0.03	0.03	0.03

Sussex	0.02	0.02	0.02
Union	0.07	0.07	0.07
Warren	0.01	0.01	0.01
TOTAL	1.02	1.06	1.10

Table III-F-4

County Employment Forecasts

Counties	1980[a]	1982[b]	1986[b]	1990[a]
Atlantic	68,366	68,897	69,959	71,021
Bergen	401,332	411,761	432,618	453,476
Burlington	101,388	104,995	112,210	119,424
Camden	168,825	172,077	178,582	185,086
Cape May	19,717	20,238	21,279	22,321
Cumberland	57,287	58,444	60,759	63,074
Essex	427,262	425,508	422,001	418,494
Gloucester	48,025	49,265	51,746	54,226
Hudson	242,953	241,425	238,368	235,312
Hunterdon	23,406	24,119	25,544	26,970
Mercer	165,134	168,182	174,279	180,376
Middlesex	268,398	278,852	299,759	320,667
Monmouth	158,051	163,314	173,071	184,366
Morris	155,141	161,118	173,071	185,025
Ocean	65,666	68,512	74,203	79,894
Passaic	196,357	197,778	200,621	203,464
Salem	23,879	24,186	24,800	25,414
Somerset	79,901	82,965	89,094	95,223
Sussex	23,778	24,505	25,958	27,402

Union	283,484	287,782	296,377	304,973
Warren	30,443	31,119	32,471	33,823
TOTAL	3,008,793	3,065,043	3,177,542	3,290,041

a-Obtained from New Jersey Division of Water Resources, "New Jersey Water Supply Master Plan"

b-Interpolation

Table III-F-5

Lead Emissions from Commercial/Institutional Fuel Combustion

of Distillate Oil

(Tons per Year)

Counties	1982	1986	1990
Atlantic	0.01	0.01	0.01
Bergen	0.04	0.04	0.04
Burlington	0.01	0.01	0.01
Camden	0.02	0.02	0.02
Cape May	--	--	--
Cumberland	0.01	0.01	0.01
Essex	0.05	0.05	0.05
Gloucester	0.01	0.01	0.01
Hudson	0.03	0.03	0.03
Hunterdon	--	--	--
Mercer	0.02	0.02	0.02
Middlesex	0.03	0.03	0.03
Monmouth	0.02	0.02	0.02
Morris	0.02	0.02	0.02
Ocean	0.01	0.01	0.01
Passaic	0.02	0.02	0.02
Salem	--	--	--
Somerset	0.01	0.01	0.01
Sussex	--	--	--

Union	0.03	0.03	0.03
Warren	--	--	--
TOTAL	0.34	0.34	0.34

Table III-F-6

Lead Emissions from Industrial Fuel Combustion of Distillate Oil

(Tons per Year)

Counties	1982	1986	1990
Atlantic	0.01	0.01	0.01
Bergen	0.04	0.04	0.04
Burlington	0.01	0.01	0.01
Camden	0.02	0.02	0.02
Cape May	--	--	--
Cumberland	0.01	0.01	0.01
Essex	0.04	0.04	0.04
Gloucester	0.01	0.01	0.01
Hudson	0.03	0.03	0.03
Hunterdon	--	--	--
Mercer	0.02	0.02	0.02
Middlesex	0.03	0.03	0.03
Monmouth	0.02	0.02	0.02
Morris	0.02	0.02	0.02
Ocean	0.01	0.01	0.01
Passaic	0.02	0.02	0.02
Salem	--	--	--
Somerset	0.01	0.01	0.01
Sussex	--	--	--

Union	0.03	0.03	0.03
Warren	--	--	--
TOTAL	0.33	0.33	0.33

Table III-F-7

Lead Emissions from Commercial/Institutional Fuel Combustion of Residual Oil

(Tons per Year)

Counties	1982	1986	1990
Atlantic	0.01	0.01	0.01
Bergen	0.08	0.08	0.09
Burlington	0.02	0.02	0.02
Camden	0.03	0.03	0.03
Cape May	--	--	--
Cumberland	0.01	0.01	0.01
Essex	0.08	0.08	0.08
Gloucester	0.01	0.01	0.01
Hudson	0.04	0.04	0.04
Hunterdon	--	--	--
Mercer	0.03	0.03	0.03
Middlesex	0.05	0.05	0.06
Monmouth	0.03	0.03	0.03
Morris	0.03	0.03	0.03
Ocean	0.01	0.01	0.01
Passaic	0.04	0.04	0.04
Salem	--	--	--
Somerset	0.02	0.02	0.02
Sussex	--	--	--

Union	0.05	0.05	0.05
Warren	0.01	0.0	0.01
TOTAL	0.57	0.57	0.57

Table III-F-8

Lead Emissions from Industrial Fuel Combustion

of Residual Oil

(Tons per Year)

Counties	1982	1986	1990
Atlantic	0.01	0.01	0.01
Bergen	0.06	0.06	0.07
Burlington	0.02	0.02	0.02
Camden	0.03	0.03	0.03
Cape May	--	--	--
Cumberland	0.01	0.01	0.01
Essex	0.06	0.06	0.06
Gloucester	0.01	0.01	0.01
Hudson	0.04	0.04	0.04
Hunterdon	--	--	--
Mercer	0.02	0.02	0.02
Middlesex	0.04	0.04	0.05
Monmouth	0.02	0.02	0.02
Morris	0.02	0.02	0.02
Ocean	0.01	0.01	0.01
Passaic	0.03	0.03	0.03
Salem	--	--	--
Somerset	0.01	0.01	0.01
Sussex	--	--	--

Union	0.04	0.04	0.04
Warren	--	--	--
TOTAL	0.45	0.45	0.45

New Jersey Lead SIP

APPENDIX III-I, ATTACHMENT III-G

Highway Vehicle Lead Emission Inventory

Highway Vehicles

Highway vehicle lead emission inventories have been prepared for both exhaust and reentrained lead emissions for the years 1982, 1986 and 1990. The inventories were prepared using information provided by EPA's Office of Air Quality Planning and Standards (see Tables III-G-1 and III-G-2).

A linear regression was performed on the sum of the first and second quarters divided by the annual total lead usage number for the years 1977 through 1981. This regression analysis projected that the first and second quarter proportion of the 1982 total is 0.51. The resulting 1982 sum is then calculated to be 61.39 billions of grams.

Using the value of 61.39×10^9 for 1982, (taken from the previous paragraph) 27.8 for 1986 (Table III-G-1) and 16.2 for 1990 (Table III-G-1) along with a New Jersey usage factor of .0304, the following statewide inventories were then determined:

1982 - 2055.35 tons/year

1986 - 930.62 tons/year

1990 - 542.38 tons/year.

The value of .0304 was determined by averaging the proportion f N.J. gasoline consumption (N.J. Department of Energy) to national soline consumption (Table III-G-2) for the years 1977 through 81.

Using 1981 vehicle registration data for New Jersey as supplied by the Polk Company, county factors were developed (see Table III-G-3). These factors were then applied to the 1982, 1986 and 1990 statewide totals to determine the county-wide mobile source lead inventories (Table III-G-4).

Table III-G-5 was prepared using lead reentrainment data in "A Lead Emission Factor for Reentrained Dust from a Paved Roadway" (EPA-450/3-78-021), dated April 1978. Vehicle exhaust lead will decrease as lead usage in gasoline is decreased. Lead in road dust will also decrease in proportion to lead content of gasoline.

The following reentrained lead factors and VMT values were used to determine the inventories summarized in Table III-G-5:

Year	Reentrained lead factor (grams/mile)-	VMT
1982	0.010	54.766×10^9
1986	0.005	58.083×10^9
1990	0.002	61.401×10^9

An EPA summary of lead phase-down standards for the period beginning November 1, 1979 to the present for both large and small refiners is presented in Table III-G-6.

Gasoline volume projections and estimated lead usage for calendar years 1983 through 1990

Calendar Year	Gasoline volume (Billions of gallons) Total	Leaded	Total lead (billions of grams) 0.50 gpg pooled standard (all refineries)	1.10 gpg leaded standard (1.90 gpg Temp. Std. for small)*	Reduction (difference)
1983	96.1	41.7	48.1	47.0	1.1
1984	92.3	35.4	46.1	39.0	7.1
1985	89.2	29.7	44.6	32.7	11.9
1986	86.1	25.3	43.0	27.8	15.2
1987	83.8	22.1	41.9	24.3	17.6
1988	81.5	19.5	40.7	21.4	19.3
1989	79.2	17.0	39.6	18.7	20.9
1990	77.7	14.7	38.8	16.2	22.6
		Totals	342.8	227.1	115.7

* The temporary 1.90 gpg leaded standard for small refineries is applicable for the first two quarters of 1983.

BILLING CODE 6560-50-C

Table III-G-2
GASOLINE PRODUCED AND LEAD USED AS REPORTED TO EPA

FACT SHEET

Year and Quarter	Gasoline Produced (Billions of Gallons)	Grams of Lead Used (Billions)	Average Lead Concentration (g
4/76-6/76	27.8	48.6	1.75
7/76-9/76	28.4	49.1	1.73
10/76-12/76	27.7	40.7	1.47
1976(3 Qtrs.)	83.9	138.4	1.65
1/77-3/77	27.1	39.3	1.45
4/77-6/77	28.2	45.0	1.60
7/77-9/77	28.5	45.2	1.59
10/77-12/77	29.37	39.19	1.33
1977	113.17	168.69	1.49
1/78-3/78	27.77	32.60	1.17
4/78-6/78	28.09	37.03	1.32
7/78-9/78	29.87	43.47	1.45
10/78-12/78	30.05	40.15	1.34
1978	115.78	153.25	1.32
1/79-3/79	27.40	34.38	1.25
4/79-6/79	27.78	35.18	1.27
7/79-9/79	28.21	37.33	1.32
10/79-12/79	27.82	22.60	.812
1979	111.21	129.49	1.16
1/80-3/80	29.30	21.24	.725
4/80-6/80	28.67	20.89	.73
7/80-9/80	26.40	21.30	.81
10/80-12/80	26.46	15.04	.57
1980	110.83	78.47	.71
1/81-3/81	25.16	14.57	.58
4/81-6/81	24.66	14.10	.57
7/81-9/81	26.54	16.00	.60
10/81-12/81	26.28	16.29	.62
1981	102.64	60.96	.59
1/82-3/82	23.72	14.42	.61
4/82-6/82	25.43	16.89	.66

SOURCE: Field Operations and Support Divisicn, U.S. Environmental Protection Agency, Washongton, DC 20460

TABLE III-G-3

POLK REGISTRATION DATA - 1981

County	Passenger Vehicle Registrations	Percent
Atlantic	91096	2.40
Bergen	488902	12.89
Burlington	177319	4.68
Camden	238129	6.28
Cape May	41875	1.10
Cumberland	62230	1.64
Essex	343552	9.06
Gloucester	91625	2.42
Hudson	197641	5.21
Hunterdon	47090	1.24
Mercer	169349	4.47
Middlesex	318542	8.40
Monmouth	275814	7.27
Morris	236237	6.23
Ocean	184186	4.86
Passaic	239009	6.30
Salem	28930	0.76
Somerset	98040	2.59
Sussex	59655	1.57
Union	321675	8.48
Warren	45321	1.20
TOTAL	3791581	100.00

TABLE III-G-4

HIGHWAY VEHICLE EXHAUST LEAD EMISSION INVENTORY

County	1982 Tons/Year	1986 Tons/Year	1990 Tons/Year
Atlantic	49.33	22.33	13.02
Bergen	264.93	119.96	69.91
Burlington	96.19	43.55	25.38
Camden	129.08	58.44	34.06
Cape May	22.61	10.24	5.97
Cumberland	33.71	15.26	8.90
Essex	186.21	84.31	49.14
Gloucester	49.74	22.52	13.13
Hudson	107.08	48.49	28.26
Hunterdon	25.49	11.54	5.73
Mercer	91.87	41.60	24.24
Middlesex	172.65	78.17	45.56
Monmouth	149.42	67.66	39.43
Morris	128.05	57.98	33.79
Ocean	99.89	45.23	26.36
Passaic	129.49	58.63	34.17
Salem	15.62	7.07	4.12
Somerset	53.23	24.10	14.05
Sussex	32.27	14.61	8.52
Union	174.29	78.92	45.99
Warren	24.66	11.17	6.51
TOTAL	2035.81	921.78	536.24

TABLE III-G-5

HIGHWAY VEHICLE REENTRAINED LEAD EMISSION INVENTORY

County	1982 Tons/Year	1986 Tons/Year	1990 Tons/Year
Atlantic	14.47	7.68	3.25
Bergen	77.74	41.23	17.43
Burlington	28.23	14.97	6.33
Camden	37.87	20.09	8.49
Cape May	6.62	3.52	1.49
Cumberland	9.89	5.25	2.21
Essex	54.65	28.99	12.26
Gloucester	14.59	7.74	3.27
Hudson	31.42	16.66	7.05
Hunterdon	7.48	3.96	1.74
Mercer	26.96	14.30	6.05
Middlesex	50.66	26.87	11.37
Monmouth	43.84	23.26	9.83
Morris	37.58	19.93	8.43
Ocean	29.32	15.55	6.57
Passaic	38.00	20.15	8.52
Salem	4.58	2.43	1.02
Somerset	15.62	8.28	3.50
Sussex	9.47	5.02	2.13
Union	51.15	27.18	11.46
Warren	7.24	3.84	1.62
TOTAL	597.38	316.90	134.02

Table III-G-6

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION II
26 FEDERAL PLAZA
NEW YORK, NEW YORK 10278

FACT SHEET

Lead Phase-Down
Standards

	Cutpoints (grams per gallon)	
	Large Refiners[a]	Small Refiners[a]
November 1, 1979[b]	.8 pla	---
June 1, 1980[b]	.8 pla	.8 - 2.65 pla
October 1, 1980[b]	.5 pla	.8 - 2.65 pla
November 1, 1982[c] [d]	1.10	1.19[e]
July 1, 1983[c]	1.10	1.10

a/ As defined in 40 CFR Part 80.20. Different standards were applied to different size refineries.

b/ Until November 1, 1982, EPA regulated the amount of lead in leaded gasoline through averaging the amount of lead used at the refinery against the total amount of gasoline (leaded and unleaded) manufactured. This method of measurement is referred to as the pooled lead average (pla).

c/ Since November 1, 1982, EPA only regulates the amount of lead actually in the leaded gasoline that is manufactured.

d/ The definition of a small refiner was also changed on this date.

e/ This standard was in effect briefly but was successfully challenged in court. It was replaced by a pooled lead average of 2.15 - 2.65 prams per gallon.

New Jersey Lead SIP

APPENDIX III-1, ATTACHMENT III-H

Lead Emissions from Waste Oil Combustion

Lead Emissions from Waste Oil Combustion

The predominate source of waste oil is used automotive crankcase oil and small amounts of other automotive fluids collected mostly from auto service stations.

According to the Division's Mobile Source Section, approximately 1.22 million vehicles used leaded fuel in New Jersey in 1982. Assuming that each vehicle had two oil changes per year, approximately 3.05 million gallons of waste oil was generated.

According to AP-42, Compilation of Air Pollutant Emission Factors, in 1975, 57 percent of waste crankcase oil was consumed as an alternative fuel. Applying this factor to the amount generated for New Jersey results in a quantity of 1.74 million gallons burned. Using the AP-42 emission factor of 75(P) lbs/10^3 gallons burned, where P=8000 ppm, averaged lead concentration, statewide emissions for 1982 were calculated as:

$$1.74\text{x}10^6 \text{ gals x } 75(.8) \text{ lbs}/10^3 \text{ gals x } 1 \text{ ton}/2000 \text{ lbs} = 52.2 \text{ tons/yr.}$$

Emissions for 1986 and 1990 were approximated from data contained in Attachment III-G on projected leaded gasoline volumes for the calendar years 1983 through 1990. Using the 1983 figure as a base, a 40 percent reduction in the use of leaded fuels by 1986 and a 65 percent reduction by 1990 were estimated. This equates to statewide emissions for these years of 31.3 TPY and 18.3 TPY, respectively. These emissions were allocated to the counties based on vehicle registrations and appear on Table III-H-

Table III-H-1

Lead Emissions from Waste Oil Combustion

Counties	Tons Per Year 1982	1986	1990
Atlantic	1.25	0.75	0.44
Bergen	6.73	4.03	2.36
Burlington	2.44	1.46	0.86
Camden	3.28	1.97	1.15
Cape May	0.57	0.34	0.20
Cumberland	0.86	0.51	0.30
Essex	4.73	2.84	1.66
Gloucester	1.26	0.76	0.44
Hudson	2.72	1.63	0.95
Hunterdon	0.65	0.39	0.23
Mercer	2.33	1.40	0.82
Middlesex	4.38	2.63	1.54
Monmouth	3.79	2.28	1.33
Morris	3.25	1.95	1.14
Ocean	2.54	1.52	0.89
Passaic	3.29	1.97	1.15
Salem	0.40	0.24	0.14
Somerset	1.35	0.81	0.47
Sussex	0.82	0.49	0.29
Union	4.43	2.65	1.55
Warren	0.63	0.38	0.22
Total	52.2	31.3	18.3

New Jersey Lead SIP

APPENDIX III-1, ATTACHMENT III-I

Projected Emissions for Industrial Sources
for 1986 and 1990

Projected Point Source Emission Inventory for Lead

County	Facility	Source Description	Stack & Fugitive Lead Emissions (tons/yr) 1986	1990
Atlantic	Lenox China	Mineral Products	1.2	1.2
	Atlantic Co. Sew. Authority	Incineration	3.6	3.9
Bergen	Charles B. Hull Co.	Secondary Metals	4.4	4.6
Burlington	-	-	-	-
Camden	Campbell Soup	Metal Fabrication	7.3	7.6
	Barry Bronze	Secondary Metals	0.6	0.6
Cape May	-	-	-	-
Cumberland	Continental Can	Metal Fabrication	0.8	0.9
	Owens-Illinois	Mineral Products	0.4	0.4
Essex	Federated Metals Corp.	Secondary Metals	6.5	6.5
	E.I. Dupont	Chemical Mfg.	17.1	17.0
	Essex Metal Alloy	Secondary Metals	0.7	0.7
	Kester Solder	Secondary Metals	0.1	0.1
	Arlington Lead	Metal Fabrication	0.1	0.1

Gloucester	Rollins	Incineration	5.3	5.6
	Gloucester Sew. Authority	Incineration	0.9	1.0
	Del Monte	Metal Fabrication	0.7	0.8
Hudson	Alpha Metals	Secondary Metals	13.9	13.6
	Jersey Smelting	Secondary Metals	0.2	0.2
	Interstate Metals	Secondary Metals	0.5	0.5
	Bergen Point Brass	Secondary Metals	0.2	0.2
	Kenrich Petro-chemical	Chemical Mfg.	0.1	0.1
	Pittsburgh Graphics	Secondary Metals	0.8	0.8
	Kearny Smelting & Refining	Primary Metals	1.4	1.4
	RFE Industries	Secondary Metals	0.1	0.1
Hunterdon	-	-	-	-
Mercer	Goodall Rubber	Chemical Mfg.	1.7	1.7
	Stony Brook Sewage	Incineration	0.7	0.7
Middlesex	General Motors	Secondary Metals	31.1	33.5
	American Can	Metal Fabrication	0.1	0.1
	U.S. Metals & Refining	Primary Metals	92.1	99.0

Monmouth	-	-	-	-
Morris	Parsippany Sewage	Incineration	0.8	0.9
Ocean	-	-	-	-
Passaic	Atlantic Battery	Secondary Metals	0.1	0.1
	Wayne Sewage Treatment	Incineration	0.5	0.5
Salem	NL Industries	Secondary Metals	17.0	17.4
	E.I. Dupont	Chemical Mfg.	159.4	162.5
Somerset	-	-	-	-
Sussex	-	-	-	-
Union	-	-	-	-
Warren	-	-	-	-
		TOTAL	370.4	384.3

New Jersey Lead SIP

APPENDIX III-1, ATTACHMENT III-J

Projected Emissions from Resource Recovery Facilities for 1986 and 1990

Projected Emissions from Resource Recovery Facilities

1986 and 1990

A listing of resource recovery facilities scheduled for construction throughout the remainder of the decade including the projected quantities of waste to be incinerated and their implementation schedule was provided by the N.J. Division of Waste Management (see Table III-J-1).

An emission factor of 0.1 pounds of lead per ton of refuse charged has been used to quantify the lead emissions from resource recovery facilities. This estimate was derived from a review of emission test results from several facilities including the Solid Waste Reduction Center in Washington, D.C., and the North Little Rock, Arkansas incineration facility. It also represents 25% of the uncontrolled emission factor published in AP-42, Compilation of Air Pollutant Emission Factors, Appendix E, July 1979. The assumption that 75% of the potential lead emissions from such units will be controlled is reasonable, because NJDEP is intending to require that such units achieve a state-of-the-art particulate emission standard of 0.03 gr/dscf corrected to 7% O_2 rather than the NSPS of 0.08 gr/dscf. Compliance with the 0.03 gr/dscf limit should result in an overall lead emission reduction of 75%, even considering the fact that lead emissions from such units are associated with small-size particles.

The following assumptions were made in estimating lead emissions from these facilities.

(1) Where a range was given for the quantity of waste to be charged, the upper limit was selected.

(2) The facilities were considered to be operational for 300 days per year.

(3) All facilities would be operating by 1986.

(4) Emissions were projected to 1990 using population growth factors.

(5) For those facilities where quantity of waste to be charged is not provided (Burlington, Gloucester, Monmouth) an average of the given quantities was used.

County emissions for 1986 and 1990 are presented in Table III-J-2.

[illegible] District Solid Waste Facility Implementation in New Jersey
(February 1983)

District/Facility (size)	Feasibility Studies Ongoing	Feasibility Studies Completed	Freeholder Site Selection	Plan Amendment	Application Submission	Operational Date in C of A
Atlantic						
County Landfill (N/A)		X (ACUA completed site study)				January 1986
Resource Recovery (8-12 T/D at County Correctional facility)						N/A
Resource Recovery	X (other sites)			(already in Plan)		
Bergen						
Resource Recovery (3000 T/D)				X (DEP Directive)		1983 (1988)
	(Ridgefield Park or Lyndhurst site)					
Transfer Station (N/A)		X				N/A
Burlington						
Resource Recovery (N/A)	X					1985
Fort Dix R. R. (4-20 T/D)					X	N/A
County Landfill (650 acres)				X		May 1982
Camden						
Resource Recovery (50 T/D)		X				1985
Resource Recovery (250 T/D) (-in Two Year Update)				X		1985
Cape May						
County Landfill (350 acres)			X (Woodbine Boro)	Scheduled for 1/83	Preliminary submission	January 1983
Pilot Resource Recovery (50 T/D)	X					

Table III-J-1

Status of District Solid Waste Facility Implementation in New Jersey
(February 1983)

District/Facility (size)	Feasibility Studies Ongoing	Feasibility Studies Completed	Freeholder Site Selection	Plan Amendment	Application Submission	Operational Date in C of A
Cumberland						
County Landfill (350 T/D)	X (County to submit Plan Amendment to redirect waste until landfill on line)					December 1982
Essex						
Resource Recovery (2250 T/D)			(Blanchard St. site)	X		January 1985
Transfer Station (N/A)	X					N/A
Gloucester						
Resource Recovery (N/A)		X				1984-85
Landfill (N/A)		X				N/A
H.M.D.C.						
Landfill (2000 T/D)			X (2 yr. Plan Update MSLA 1-A for Essex waste)			January 1983
Baler/Balefill (2000 T/D)				X		December 1983
Hudson						
Resource Recovery (1000 T/D)	X					1985
Hunterdon						
Transfer Station					X	December 1982

Status of District Solid Waste Facility Implementation in New Jersey
(February 1983)

District/Facility (size)	Feasibility Studies Ongoing	Feasibility Studies Completed	Freeholder Site Selection	Plan Amendment	Application Submission	Operational Date in C of A
Mercer						
Resource Recovery (750 T/D)				X (Trenton Freight-yards site)		1985
County Landfill (200 acres)	X					N/A
Middlesex						
Resource Recovery (1200 T/D)					X	January 1985
Landfill #1 North (100 acres)	(ILR Landfill expansion in 2 yr. Plan Update)					January 1981
Landfill #2 South (150 acres)	(Edgeboro landfill in 2 yr. Plan Update)					N/A
Monmouth						
Resource Recovery (N/A)	X					December 1986
Landfill (150 acres, Reclamation Center expansion)			X			January 1983
Morris						
Resource Recovery (1000 T/D)	X					N/A
Resource Recovery (Lakeland, 200 T/D)		X				N/A
County Landfill		X (Freeholders stated no suitable site in Morris County)				January 1982

Status of District Solid Waste Facility Implementation in New Jersey
(February 1983)

District/Facility (size)	Feasibility Studies Ongoing	Feasibility Studies Completed	Freeholder Site Selection	Plan Amendment	Application Submission	Operational Date in C of A
Ocean						
Landfill (Ocean Landfill Corp. 10+ yrs.)			X (DEP required site evaluation)			early 1982
Landfill (South Ocean, 10+ yrs.)			X (County wants extension to Sept. 1983)			June 1982
Resource Recovery (600 T/D)	X (Site of Oyster Creek Unit 2 Power Plant)					July 1982
Passaic						
Resource Recovery (1100-1400 T/D)		X				January 1985
Landfill (siting study)	X (no reports submitted by District)					January 1983
Salem						
County Landfill (350 T/D)				X (Litigation on Alloway Twp. site) (New Hearing Ordered)		June 1982
Somerset						
Resource Recovery (650 T/D)	X					1985
County Landfill (120 acres)		X (Bridgewater Twp. quarry under consideration)				April 1983
Sussex						
County Lanfill (N/A)		X (Local opposition to final site selection)				December 1982
Union						
Resource Recovery (1750 T/D)	(Widmer/Ernst project developer dissolved, RFP to be issued)			X (Rahway/Merck)		1985

[illegible] of District Solid Waste Facility Implementation in New Jersey
(February 1983)

District/Facility (size)	Feasibility Studies Ongoing	Feasibility Studies Completed	Freeholder Site Selection	Plan Amendment	Application Submission	Operational Date in C of A
Warren						
Resource Recovery (1000 T/D)	———	———X (RFP in early 1983)				1984
Landfill (10-40 acres, High Point expansion)	———	———	———X (Revised engineering designs by April 1983)			August 1982

Table III-J-2

Projected Lead
Emissions from Resource Recovery Facilities

(Tons per Year)

Counties	1986	1990
Atlantic	0.2	0.2
Bergen	45.0	46.4
Burlington	15.3	15.9
Camden	4.5	4.7
Cape May	0.8	0.8
Cumberland	-	-
Essex	33.8	33.8
Gloucester	15.0	15.8
Hudson	15.0	15.2
Hunterdon	-	-
Mercer	11.3	11.8
Middlesex	18.0	19.4
Monmouth	15.0	15.6
Morris	18.0	18.7
Ocean	9.0	10.0
Passaic	21.0	21.8
Salem	-	-
Somerset	9.8	10.3
Sussex	-	-
Union	26.3	26.3
Warren	15.0	15.9
Total	273.0	282.6

New Jersey Lead SIP

APPENDIX III-1, ATTACHMENT III-K

Lead Emission Inventory County Summaries

Lead Emission Inventory Summary (tons/year)
Atlantic County

Source Category	1982 Point	1982 Area	1986 Point	1986 Area	1990 Point	1990 Area
Fuel Combustion						
Residential Fuel						
Distillate Oil		NEG.		NEG.		NEG.
Industrial Fuel						
Anthracite Coal						
Bituminous Coal						
Residual Oil		NEG.		NEG.		NEG.
Distillate Oil		NEG.		NEG.		NEG.
Commercial Fuel						
Residual Oil		NEG.		NEG.		NEG.
Distillate Oil		NEG.		NEG.		NEG.
Electric Generation						
Bituminous Coal						
Residual Oil						
Waste Oil		1.3		0.8		0.4
Industrial Process						
Chemical Manufacture						
Primary Metals						
Secondary Metals						
Mineral Products	1.2		1.2		1.2	
Metal Fabrication						
Other						
Solid Waste Disposal						
Incineration	3.0		3.6		3.9	
Resource Recovery			0.2		0.2	
Transportation						
Highway Vehicles		49.3		22.3		13.0
Miscellaneous						
Reentrained Dust		14.5		7.7		3.3
COUNTY TOTAL	4.2	65.1	5.0	30.8	5.3	16.7

Lead Emission Inventory Summary (tons/year)
Bergen County

Source Category	1982 Point	1982 Area	1986 Point	1986 Area	1990 Point	1990 Area
Fuel Combustion						
Residential Fuel						
Distillate Oil		0.1		0.1		0.1
Industrial Fuel						
Anthracite Coal						
Bituminous Coal			0.4		0.4	
Residual Oil		0.1		0.1		0.1
Distillate Oil		NEG.		NEG.		NEG.
Commercial Fuel						
Residual Oil		0.1		0.1		0.1
Distillate Oil		NEG.		NEG.		NEG.
Electric Generation						
Bituminous Coal						
Residual Oil	0.1		0.1		0.1	
Waste Oil		6.7		4.0		2.4
Industrial Process						
Chemical Manufacture						
Primary Metals						
Secondary Metals	4.2		4.4		4.6	
Mineral Products						
Metal Fabrication						
Other						
Solid Waste Disposal						
Incineration						
Resource Recovery			45.0		46.4	
Transportation						
Highway Vehicles		264.9		120.0		69.9
Miscellaneous						
Reentrained Dust		77.7		41.2		17.4
COUNTY TOTAL	4.3	349.6	49.9	165.5	51.5	90.0

Lead Emission Inventory Summary (tons/year)
Burlington County

Source Category	1982 Point	1982 Area	1986 Point	1986 Area	1990 Point	1990 Area
Fuel Combustion						
Residential Fuel						
Distillate Oil		0.1		0.1		0.1
Industrial Fuel						
Anthracite Coal						
Bituminous Coal						
Residual Oil		NEG.		NEG.		NEG.
Distillate Oil		NEG.		NEG.		NEG.
Commercial Fuel						
Residual Oil		NEG.		NEG.		NEG.
Distillate Oil		NEG.		NEG.		NEG.
Electric Generation						
Bituminous Coal						
Residual Oil	0.1		0.1		0.1	
Waste Oil		2.4		1.5		0.9
Industrial Process						
Chemical Manufacture						
Primary Metals						
Secondary Metals						
Mineral Products						
Metal Fabrication						
Other						
Solid Waste Disposal						
Incineration						
Resource Recovery			15.3		15.9	
Transportation						
Highway Vehicles		96.2		43.6		25.4
Miscellaneous						
Reentrained Dust		28.2		15.0		6.3
COUNTY TOTAL	0.1	127.9	15.4	60.1	16.0	32.6

Lead Emission Inventory Summary (tons/year)
Camden County

Source Category	1982 Point	1982 Area	1986 Point	1986 Area	1990 Point	1990 Area
Fuel Combustion						
Residential Fuel						
Distillate Oil		0.1		0.1		0.1
Industrial Fuel						
Anthracite Coal						
Bituminous Coal						
Residual Oil		NEG.		NEG.		NEG.
Distillate Oil		NEG.		NEG.		NEG.
Commercial Fuel						
Residual Oil		NEG.		NEG.		NEG.
Distillate Oil		NEG.		NEG.		NEG.
Electric Generation						
Bituminous Coal						
Residual Oil						
Waste Oil		3.3		2.0		1.2
Industrial Process						
Chemical Manufacture						
Primary Metals						
Secondary Metals	0.6		0.6		0.6	
Mineral Products						
Metal Fabrication	7.0		7.3		7.6	
Other						
Solid Waste Disposal						
Incineration						
Resource Recovery			4.5		4.7	
Transportation						
Highway Vehicles		129.1		58.4		34.1
Miscellaneous						
Reentrained Dust		37.9		20.1		8.5
COUNTY TOTAL	7.6	170.4	12.4	80.6	12.9	43.9

Lead Emission Inventory Summary (tons/year)
Cape May County

Source Category	1982 Point	1982 Area	1986 Point	1986 Area	1990 Point	1990 Area
Fuel Combustion						
Residential Fuel						
Distillate Oil		NEG.		NEG.		NEG.
Industrial Fuel						
Anthracite Coal						
Bituminous Coal						
Residual Oil						
Distillate Oil						
Commercial Fuel						
Residual Oil						
Distillate Oil						
Electric Generation						
Bituminous Coal	3.2		3.2		3.2	
Residual Oil	0.1		0.1		0.1	
Waste Oil		0.6		0.3		0.2
Industrial Process						
Chemical Manufacture						
Primary Metals						
Secondary Metals						
Mineral Products						
Metal Fabrication						
Other						
Solid Waste Disposal						
Incineration						
Resource Recovery			0.8		0.8	
Transportation						
Highway Vehicles		22.6		10.2		6.0
Miscellaneous						
Reentrained Dust		6.6		3.5		1.5
COUNTY TOTAL	3.3	29.8	4.1	14.0	4.1	7.7

Lead Emission Inventory Summary (tons/year)
Cumberland County

Source Category	1982 Point	1982 Area	1986 Point	1986 Area	1990 Point	1990 Area
Fuel Combustion						
Residential Fuel						
Distillate Oil		NEG.		NEG.		NEG.
Industrial Fuel						
Anthracite Coal						
Bituminous Coal						
Residual Oil		NEG.		NEG.		NEG.
Distillate Oil		NEG.		NEG.		NEG.
Commercial Fuel						
Residual Oil		NEG.		NEG.		NEG.
Distillate Oil		NEG.		NEG.		NEG.
Electric Generation						
Bituminous Coal	0.7		0.7		0.7	
Residual Oil	NEG.		NEG.		NEG.	
Waste Oil		0.9		0.5		0.3
Industrial Process						
Chemical Manufacture						
Primary Metals						
Secondary Metals						
Mineral Products	0.4		0.4		0.4	
Metal Fabrication	0.8		0.8		0.9	
Other						
Solid Waste Disposal						
Incineration						
Resource Recovery						
Transportation						
Highway Vehicles		33.7		15.3		8.9
Miscellaneous						
Reentrained Dust		9.9		5.3		2.2
COUNTY TOTAL	1.9	44.5	1.9	21.1	2.0	11.4

Lead Emission Inventory Summary (tons/year)
Essex County

Source Category	1982 Point	1982 Area	1986 Point	1986 Area	1990 Point	1990 Area
Fuel Combustion						
Residential Fuel						
Distillate Oil		0.1		0.1		0.1
Industrial Fuel						
Anthracite Coal						
Bituminous Coal						
Residual Oil		0.1		0.1		0.1
Distillate Oil		NEG.		NEG.		NEG.
Commercial Fuel						
Residual Oil		0.1		0.1		0.1
Distillate Oil		0.1		0.1		0.1
Electric Generation						
Bituminous Coal						
Residual Oil	NEG.		NEG.		NEG.	
Waste Oil		4.7		2.8		1.7
Industrial Process						
Chemical Manufacture	17.3		17.1		17.0	
Primary Metals						
Secondary Metals	7.4		7.3		7.3	
Mineral Products						
Metal Fabrication	0.1		0.1		0.1	
Other						
Solid Waste Disposal						
Incineration						
Resource Recovery			33.8		33.8	
Transportation						
Highway Vehicles		186.2		84.3		49.1
Miscellaneous						
Reentrained Dust		54.7		29.0		12.3
COUNTY TOTAL	25.8	246.0	58.3	116.5	58.2	63.5

Lead Emission Inventory Summary (tons/year)
Gloucester County

Source Category	1982 Point	1982 Area	1986 Point	1986 Area	1990 Point	1990 Area
Fuel Combustion						
Residential Fuel						
Distillate Oil		NEG.		NEG.		NEG.
Industrial Fuel						
Anthracite Coal						
Bituminous Coal						
Residual Oil		NEG.		NEG.		NEG.
Distillate Oil		NEG.		NEG.		NEG.
Commercial Fuel						
Residual Oil		NEG.		NEG.		NEG.
Distillate Oil		NEG.		NEG.		NEG.
Electric Generation						
Bituminous Coal						
Residual Oil						
Waste Oil		1.3		0.8		0.4
Industrial Process						
Chemical Manufacture						
Primary Metals						
Secondary Metals						
Mineral Products						
Metal Fabrication	0.7		0.7		0.8	
Other						
Solid Waste Disposal						
Incineration	5.9		6.2		6.6	
Resource Recovery			15.0		15.8	
Transportation						
Highway Vehicles		49.7		22.5		13.1
Miscellaneous						
Reentrained Dust		14.6		7.7		3.3
COUNTY TOTAL	6.6	65.6	21.9	31.0	23.2	16.8

Lead Emission Inventory Summary (tons/year)
Hudson County

Source Category	1982 Point	1982 Area	1986 Point	1986 Area	1990 Point	1990 Area
Fuel Combustion						
Residential Fuel						
Distillate Oil		0.1		0.1		0.1
Industrial Fuel						
Anthracite Coal						
Bituminous Coal						
Residual Oil		NEG.		NEG.		NEG.
Distillate Oil		NEG.		NEG.		NEG.
Commercial Fuel						
Residual Oil		NEG.		NEG.		NEG.
Distillate Oil		NEG.		NEG.		NEG.
Electric Generation						
Bituminous Coal	6.1		6.2		6.1	
Residual Oil	0.1		0.1		0.1	
Waste Oil		2.7		1.6		1.0
Industrial Process						
Chemical Manufacture	0.1		0.1		0.1	
Primary Metals	1.4		1.4		1.4	
Secondary Metals	15.8		15.7		15.4	
Mineral Products						
Metal Fabrication						
Other						
Solid Waste Disposal						
Incineration						
Resource Recovery			15.0		15.2	
Transportation						
Highway Vehicles		107.1		48.5		28.3
Miscellaneous						
Reentrained Dust		31.4		16.7		7.1
COUNTY TOTAL	23.5	141.3	38.5	66.9	38.3	36.5

Lead Emission Inventory Summary (tons/year)
Hunterdon County

Source Category	1982 Point	1982 Area	1986 Point	1986 Area	1990 Point	1990 Area
Fuel Combustion						
Residential Fuel						
Distillate Oil		NEG.		NEG.		NEG.
Industrial Fuel						
Anthracite Coal						
Bituminous Coal						
Residual Oil						
Distillate Oil						
Commercial Fuel						
Residual Oil						
Distillate Oil						
Electric Generation						
Bituminous Coal						
Residual Oil	NEG.		NEG.		NEG.	
Waste Oil		0.7		0.4		0.2
Industrial Process						
Chemical Manufacture						
Primary Metals						
Secondary Metals						
Mineral Products						
Metal Fabrication						
Other						
Solid Waste Disposal						
Incineration						
Resource Recovery						
Transportation						
Highway Vehicles		25.5		11.5		5.7
Miscellaneous						
Reentrained Dust		7.5		4.0		1.7
COUNTY TOTAL	0.0	33.7	0.0	15.9	0.0	7.6

Lead Emission Inventory Summary (tons/year)
Mercer County

Source Category	1982 Point	1982 Area	1986 Point	1986 Area	1990 Point	1990 Area
Fuel Combustion						
Residential Fuel						
Distillate Oil		0.1		0.1		0.1
Industrial Fuel						
Anthracite Coal						
Bituminous Coal			0.2		0.2	
Residual Oil		NEG.		NEG.		NEG.
Distillate Oil		NEG.		NEG.		NEG.
Commercial Fuel						
Residual Oil		NEG.		NEG.		NEG.
Distillate Oil		NEG.		NEG.		NEG.
Electric Generation						
Bituminous Coal	7.1		7.1		7.0	
Residual Oil						
Waste Oil		2.3		1.4		0.8
Industrial Process						
Chemical Manufacture	1.6		1.7		1.7	
Primary Metals						
Secondary Metals						
Mineral Products						
Metal Fabrication						
Other						
Solid Waste Disposal						
Incineration	0.7		0.7		0.7	
Resource Recovery			11.3		11.8	
Transportation						
Highway Vehicles		91.9		41.6		24.2
Miscellaneous						
Reentrained Dust		27.0		14.3		6.1
COUNTY TOTAL	9.4	121.3	21.0	57.4	21.4	31.2

Lead Emission Inventory Summary (tons/year)
Middlesex County

Source Category	1982 Point	1982 Area	1986 Point	1986 Area	1990 Point	1990 Area
Fuel Combustion						
Residential Fuel						
Distillate Oil		0.1		0.1		0.1
Industrial Fuel						
Anthracite Coal	0.6		0.6		0.6	
Bituminous Coal						
Residual Oil		NEG.		NEG.		0.1
Distillate Oil		NEG.		NEG.		NEG.
Commercial Fuel						
Residual Oil		0.1		0.1		0.1
Distillate Oil		NEG.		NEG.		NEG.
Electric Generation						
Bituminous Coal						
Residual Oil	0.1		0.1		0.1	
Waste Oil		4.4		2.6		1.5
Industrial Process						
Chemical Manufacture						
Primary Metals	86.1		92.1		99.0	
Secondary Metals	29.1		31.1		33.5	
Mineral Products						
Metal Fabrication	0.1		0.1		0.1	
Other						
Solid Waste Disposal						
Incineration						
Resource Recovery			18.0		19.4	
Transportation						
Highway Vehicles		172.7		78.2		45.6
Miscellaneous						
Reentrained Dust		50.7		26.9		11.4
COUNTY TOTAL	116.0	228.0	142.0	107.9	152.7	57.8

Lead Emission Inventory Summary (tons/year)
Monmouth County

Source Category	1982 Point	1982 Area	1986 Point	1986 Area	1990 Point	1990 Area
Fuel Combustion						
Residential Fuel						
Distillate Oil		0.1		0.1		0.1
Industrial Fuel						
Anthracite Coal						
Bituminous Coal						
Residual Oil		NEG.		NEG.		NEG.
Distillate Oil		NEG.		NEG.		NEG.
Commercial Fuel						
Residual Oil		NEG.		NEG.		NEG.
Distillate Oil		NEG.		NEG.		NEG.
Electric Generation						
Bituminous Coal						
Residual Oil						
Waste Oil		3.8		2.3		1.3
Industrial Process						
Chemical Manufacture						
Primary Metals						
Secondary Metals						
Mineral Products						
Metal Fabrication						
Other						
Solid Waste Disposal						
Incineration						
Resource Recovery			15.0		15.6	
Transportation						
Highway Vehicles		149.4		67.7		39.4
Miscellaneous						
Reentrained Dust		43.8		23.3		9.8
COUNTY TOTAL	0.0	197.1	15.0	93.4	15.6	50.6

Lead Emission Inventory Summary (tons/year)
Morris County

Source Category	1982 Point	1982 Area	1986 Point	1986 Area	1990 Point	1990 Area
Fuel Combustion						
Residential Fuel						
Distillate Oil		0.1		0.1		0.1
Industrial Fuel						
Anthracite Coal						
Bituminous Coal			2.3		2.3	
Residual Oil		NEG.		NEG.		NEG.
Distillate Oil		NEG.		NEG.		NEG.
Commercial Fuel						
Residual Oil		NEG.		NEG.		NEG.
Distillate Oil		NEG.		NEG.		NEG.
Electric Generation						
Bituminous Coal						
Residual Oil						
Waste Oil		3.3		2.0		1.1
Industrial Process						
Chemical Manufacture						
Primary Metals						
Secondary Metals						
Mineral Products						
Metal Fabrication						
Other						
Solid Waste Disposal						
Incineration	0.8		0.8		0.9	
Resource Recovery			18.0		18.7	
Transportation						
Highway Vehicles		128.1		58.0		33.8
Miscellaneous						
Reentrained Dust		37.6		19.9		8.4
COUNTY TOTAL	0.8	169.1	21.1	80.0	21.9	43.4

Lead Emission Inventory Summary (tons/year)
Ocean County

Source Category	1982 Point	1982 Area	1986 Point	1986 Area	1990 Point	1990 Area
Fuel Combustion						
Residential Fuel						
Distillate Oil		0.1		0.1		0.1
Industrial Fuel						
Anthracite Coal						
Bituminous Coal			0.6		0.6	
Residual Oil		NEG.		NEG.		NEG.
Distillate Oil		NEG.		NEG.		NEG.
Commercial Fuel						
Residual Oil		NEG.		NEG.		NEG.
Distillate Oil		NEG.		NEG.		NEG.
Electric Generation						
Bituminous Coal						
Residual Oil						
Waste Oil		2.5		1.5		0.9
Industrial Process						
Chemical Manufacture						
Primary Metals						
Secondary Metals						
Mineral Products						
Metal Fabrication						
Other						
Solid Waste Disposal						
Incineration						
Resource Recovery			9.0		10.0	
Transportation						
Highway Vehicles		99.9		45.2		26.4
Miscellaneous						
Reentrained Dust		29.3		15.6		6.6
COUNTY TOTAL	0.0	131.8	9.6	62.4	10.6	34.0

Lead Emission Inventory Summary (tons/year)
Passaic County

Source Category	1982 Point	1982 Area	1986 Point	1986 Area	1990 Point	1990 Area
Fuel Combustion						
Residential Fuel						
Distillate Oil		0.1		0.1		0.1
Industrial Fuel						
Anthracite Coal						
Bituminous Coal						
Residual Oil		NEG.		NEG.		NEG.
Distillate Oil		NEG.		NEG.		NEG.
Commercial Fuel						
Residual Oil		NEG.		NEG.		NEG.
Distillate Oil		NEG.		NEG.		NEG.
Electric Generation						
Bituminous Coal						
Residual Oil						
Waste Oil		3.3		2.0		1.2
Industrial Process						
Chemical Manufacture						
Primary Metals						
Secondary Metals	0.1		0.1		0.1	
Mineral Products						
Metal Fabrication						
Other						
Solid Waste Disposal						
Incineration	0.5		0.5		0.5	
Resource Recovery			21.0		21.8	
Transportation						
Highway Vehicles		129.5		58.6		34.2
Miscellaneous						
Reentrained Dust		38.0		20.2		8.5
COUNTY TOTAL	0.6	170.9	21.6	80.9	22.4	44.0

Lead Emission Inventory Summary (tons/year)
Salem County

Source Category	1982 Point	1982 Area	1986 Point	1986 Area	1990 Point	1990 Area
Fuel Combustion						
Residential Fuel						
Distillate Oil		NEG.		NEG.		NEG.
Industrial Fuel						
Anthracite Coal						
Bituminous Coal						
Residual Oil						
Distillate Oil						
Commercial Fuel						
Residual Oil						
Distillate Oil						
Electric Generation						
Bituminous Coal	0.9		0.9		0.9	
Residual Oil	0.1		0.1		0.1	
Waste Oil		0.4		0.2		0.1
Industrial Process						
Chemical Manufacture	154.8		159.4		162.5	
Primary Metals						
Secondary Metals	16.6		17.0		17.4	
Mineral Products						
Metal Fabrication						
Other						
Solid Waste Disposal						
Incineration						
Resource Recovery						
Transportation						
Highway Vehicles		15.6		7.1		4.1
Miscellaneous						
Reentrained Dust		4.6		2.4		1.0
COUNTY TOTAL	172.4	20.6	177.4	9.7	180.9	5.2

Lead Emission Inventory Summary (tons/year)
Somerset County

Source Category	1982 Point	1982 Area	1986 Point	1986 Area	1990 Point	1990 Area
Fuel Combustion						
Residential Fuel						
Distillate Oil		NEG.		NEG.		NEG.
Industrial Fuel						
Anthracite Coal						
Bituminous Coal						
Residual Oil		NEG.		NEG.		NEG.
Distillate Oil		NEG.		NEG.		NEG.
Commercial Fuel						
Residual Oil		NEG.		NEG.		NEG.
Distillate Oil		NEG.		NEG.		NEG.
Electric Generation						
Bituminous Coal						
Residual Oil						
Waste Oil		1.4		0.8		0.5
Industrial Process						
Chemical Manufacture						
Primary Metals						
Secondary Metals						
Mineral Products						
Metal Fabrication						
Other						
Solid Waste Disposal						
Incineration						
Resource Recovery			9.8		10.3	
Transportation						
Highway Vehicles		53.2		24.1		14.1
Miscellaneous						
Reentrained Dust		15.6		8.3		3.5
COUNTY TOTAL	0.0	70.2	9.8	33.2	10.3	18.1

Lead Emission Inventory Summary (tons/year)
Sussex County

Source Category	1982 Point	1982 Area	1986 Point	1986 Area	1990 Point	1990 Area
Fuel Combustion						
Residential Fuel						
Distillate Oil		NEG.		NEG.		NEG.
Industrial Fuel						
Anthracite Coal						
Bituminous Coal						
Residual Oil						
Distillate Oil						
Commercial Fuel						
Residual Oil						
Distillate Oil						
Electric Generation						
Bituminous Coal						
Residual Oil						
Waste Oil		0.8		0.5		0.3
Industrial Process						
Chemical Manufacture						
Primary Metals						
Secondary Metals						
Mineral Products						
Metal Fabrication						
Other						
Solid Waste Disposal						
Incineration						
Resource Recovery						
Transportation						
Highway Vehicles		32.3		14.6		8.5
Miscellaneous						
Reentrained Dust		9.5		5.0		2.1
COUNTY TOTAL	0.0	42.6	0.0	20.1	0.0	10.9

Lead Emission Inventory Summary (tons/year)
Union County

Source Category	1982 Point	1982 Area	1986 Point	1986 Area	1990 Point	1990 Area
Fuel Combustion						
Residential Fuel						
Distillate Oil		0.1		0.1		0.1
Industrial Fuel						
Anthracite Coal			0.3		0.3	
Bituminous Coal						
Residual Oil		NEG.		NEG.		NEG.
Distillate Oil		NEG.		NEG.		NEG.
Commercial Fuel						
Residual Oil		0.1		0.1		0.1
Distillate Oil		NEG.		NEG.		NEG.
Electric Generation						
Bituminous Coal						
Residual Oil	0.2		0.2		0.2	
Waste Oil		4.4		2.7		1.6
Industrial Process						
Chemical Manufacture						
Primary Metals						
Secondary Metals						
Mineral Products						
Metal Fabrication						
Other						
Solid Waste Disposal						
Incineration						
Resource Recovery			26.3		26.3	
Transportation						
Highway Vehicles		174.3		78.9		46.0
Miscellaneous						
Reentrained Dust		51.2		27.2		11.5
COUNTY TOTAL	0.2	230.1	26.8	109.0	26.8	59.3

Lead Emission Inventory Summary (tons/year)
Warren County

Source Category	1982 Point	1982 Area	1986 Point	1986 Area	1990 Point	1990 Area
Fuel Combustion						
Residential Fuel						
Distillate Oil		NEG.		NEG.		NEG.
Industrial Fuel						
Anthracite Coal						
Bituminous Coal						
Residual Oil						
Distillate Oil						
Commercial Fuel						
Residual Oil						
Distillate Oil						
Electric Generation						
Bituminous Coal						
Residual Oil						
Waste Oil		0.6		0.4		0.2
Industrial Process						
Chemical Manufacture						
Primary Metals						
Secondary Metals						
Mineral Products						
Metal Fabrication						
Other						
Solid Waste Disposal						
Incineration						
Resource Recovery			15.0		15.9	
Transportation						
Highway Vehicles		24.7		11.2		6.5
Miscellaneous						
Reentrained Dust		7.2		3.8		1.6
COUNTY TOTAL	0.0	32.5	15.0	15.4	15.9	8.3

New Jersey Lead SIP

APPENDIX IV-1

CDM Modeling Analysis of

Delco Remy Division of General Motors Corp., New Brunswick

Appendix IV-1

CDM Modeling Analysis of

Delco Remy Division of General Motors, New Brunswick

A modeling analysis of lead emissions from the battery manufacturing process at Delco Remy Division of General Motors in New Brunswick was conducted using the Climatological Dispersion Model (CDM) and five years of meteorological data (1960-64) for Newark, covering all four quarters of the year.

Two model runs were performed, one using emissions data provided on original permits, and a second using updated emissions data provided on a revised permit. The latter emissions are currently being checked by stack tests. Emissions and stack parameters input to the model are shown on Table IV-1-1.

The receptor network consisted of a rectangular grid with uniform spacing of 0.2 km to a side out to 2.0 km from the source. Screening modeling indicated that maximum impacts would occur within this 2.0 km distance. The grid was superimposed over a USGS map with the origin located at the center of the building containing the battery manufacturing operation.

A background concentration of 0.5 ug/m^3 was assumed throughout the impact area for all four quarters. This background was selected from monitoring data for Trenton since its site characteristics are similar to those of the subject area. This concentration represents the highest quarterly average for Trenton in 1982, recorded during the 3rd and 4th quarters.

The predicted maximum incremental concentration based on original permitted emission rates was 3.2 ug/m^3, occurring during the first quarter (see Table IV-1-2). The maximums predicted for each of the quarters occurred at a receptor 300 meters east of the facility, just beyond the plant boundary, and were determined by interpolation from CDM predicted concentrations at a receptor at approximately 200 meters east of the source, and a receptor 400 meters east of the source. Delco contends that the permitted emissions overestimate actual emission rates. Revised rates were submitted and are currently being verified by stack tests. The predicted maximum incremental concentration using the revised emissions data was 1.1 ug/m^3. Adding background to this value results in a predicted maximum quarterly concentration of 1.6 ug/m^3.

Isopleths of the predicted 1st quarter concentrations (based on the revised emission rates) in the area around the facility are presented in Figure IV-1-1.

Table IV-1-1

Emission Rates and Stack Parameters for Lead Sources at Delco Remy Division of General Motors, New Brunswick

	Emission Rates		Stack		Exit Gas	
Stack Number	Original (g/sec)	Revised	Height (m)	Diameter (m)	Velocity (m/sec)	Temperature (C°)
5	0.16	-	14.5	0.60	17.4	32.2
6	0.07	0.04	7.9	1.10	23.8	29.4
9	0.01	0.01	11.5	0.15	18.1	26.7
14	0.04	0.02	13.3	0.91	28.4	30.0
16	0.08	0.03	13.3	0.80	26.0	33.3
20	0.05	0.03	24.2	1.10	19.5	93.3
26	0.14	0.04	13.6	0.40	13.4	54.4
31	0.02	0.03	13.6	0.40	8.9	66.0
42	0.04	0.02	12.1	1.50	15.7	35.0

Table IV-1-2

Predicted Maximum Quarterly Lead Concentrations*

Delco Remy Division of General Motors, New Brunswick

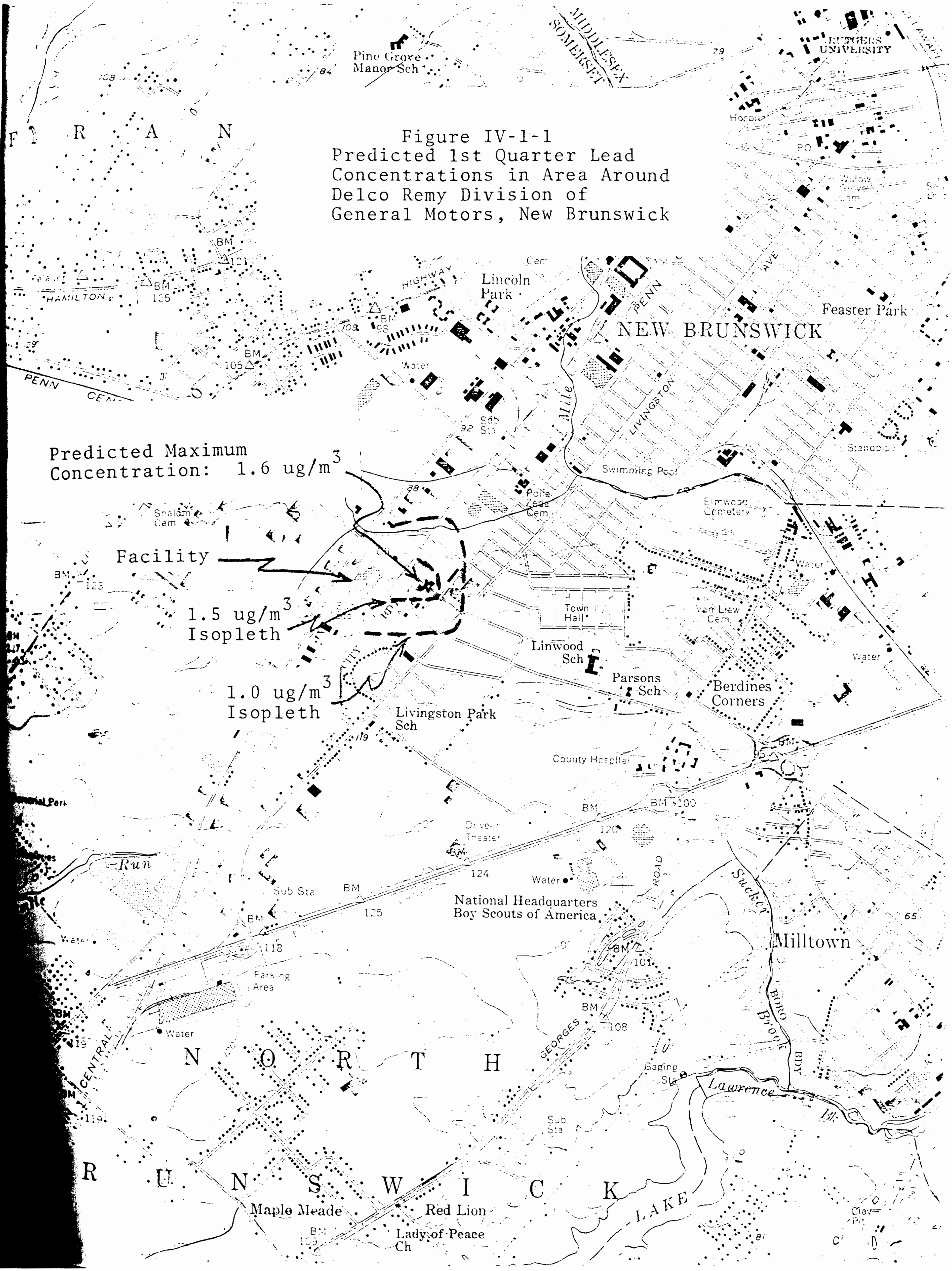
Concentration in ug/m^3

1st Qtr	2nd Qtr	3rd Qtr	4th Qtr
Incremental Concentrations - Based on Original Emission Rates			
3.2	1.9	2.4	2.6
Incremental Concentrations - Based on Revised Emission Rates			
1.1	0.7	0.9	0.9
Assume constant background concentration of 0.5 ug/m^3**			
Predicted Maximum Concentrations - Using Revised Emission Rates			
1.6	1.2	1.4	1.4

* Maximum concentrations for each quarter occurred at receptor located 300 meters east of facility.

**Maximum measured 1982 quarterly concentration at Trenton.

Figure IV-1-1
Predicted 1st Quarter Lead
Concentrations in Area Around
Delco Remy Division of
General Motors, New Brunswick



New Jersey Lead SIP

APPENDIX IV-2

CDM Modeling Analysis of

E.I. du Pont de Nemours & Co., Inc., Deepwater

Appendix IV-2

CDM Modeling Analysis of

Du Pont, Deepwater

A modeling analysis of the lead emissions from the TEL/TML process area of the Du Pont Chambers Works facility in Deepwater was conducted using the Climatological Dispersion Model (CDM) and five years of meteorological data (1960-64) for Philadelphia, covering all four quarters of the year.

Emissions and stack parameters input to the model are shown on Table IV-2-1.

The receptor network consisted of a rectangular grid with uniform spacing of 0.2 km to a side, out to 2.0 km from the source. Screening modeling indicated that maximum impacts would occur within this 2.0 km distance. The grid was superimposed over a USGS map with the origin located over that portion of the facility defined as the TEL/TML process area. Grid coordinates located over roadways were defined as highway receptors. All other coordinates were labeled as non-highway receptors, except for a school-playground complex located 1.5 km southeast of the source. This location was defined as a sensitive receptor.

A background concentration of 0.5 ug/m^3 was chosen for the highway receptors and sensitive receptor, and 0.2 ug/m^3 was chosen for the non-highway receptors. Both backgrounds were assumed constant over the four quarters. The background for the highway and sensitive receptors was selected from monitoring data for Camden since its site characteristics are similar to those of the subject area. The 0.5 ug/m^3 concentration was the highest quarterly average (4th qtr.) measured at Camden in 1982. A similar approach was used in selecting the background for the non-highway receptors and resulted in the selection of the 2nd quarter average from the Pedricktown (S58) monitor.

The maximum incremental concentrations predicted by CDM for each quarter and receptor type are presented in Table IV-2-2. The maximum quarterly impacts are 1.0 (4th quarter), 1.2 (3rd quarter) and 0.9 ug/m^3 (1st quarter) for the highway, non-highway and sensitive receptors, respectively. These impacts, combined with background, result in the predicted maximum concentrations shown on the bottom of Table IV-2-2. The maximum highway impact occurs at the base of the Delaware Memorial Bridge, 0.6 km. south of the source. The maximum non-highway impact occurs 0.6 km north of the source, in the Delaware River.

Isopleths of the predicted 4th quarter (the period during which the maximum quarterly concentration was predicted) concentrations in the area around the Du Pont facility are presented in Figure IV-2-1.

Table IV-2-1

Emissions Rates and Stack Parameters for

Lead Sources at Du Pont, Deepwater

Stack Number	Emission Rate (g/sec)	Stack Height (m)	Diameter (m)	Exit Gas Velocity (m/sec)	Temperature (°C)
4	1.700	37.8	2.10	14.8	17.7
25	1.000	37.8	1.70	16.4	17.7
63	0.330	39.4	0.40	8.9	10.0
69	0.120	48.5	0.40	8.7	10.0
78	0.480	45.5	1.50	6.3	10.0
81	0.530	37.9	0.60	10.0	10.0
98	0.050	27.3	1.80	9.1	10.0
Fugitive Sources	0.120	10.0	-	-	-

Table IV-2-2

Predicted Maximum Quarterly Lead Concentrations

Du Pont, Deepwater

	Concentration in ug/m^3 (Coordinates in Km)*			
	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr
Incremental Concentrations				
Highway Receptors	0.9(0.6,-0.6)	0.8(0,-0.6)	0.8(0,-0.6)	1.0(0,-0.6
Non-Highway Receptors	0.6(1.0,0.8)	0.8(-0.4,-0.2)	1.2(0,0.6)	0.8(0,0.6)
Sensitive Receptor (1.4,-0.6)	0.9	0.5	0.5	0.7

Background Concentrations

Highway Receptors: Assume constant background of 0.5 ug/m^{3}(A)

Non-Highway Receptors: Assume constant background of 0.2 ug//m^{3}(B)

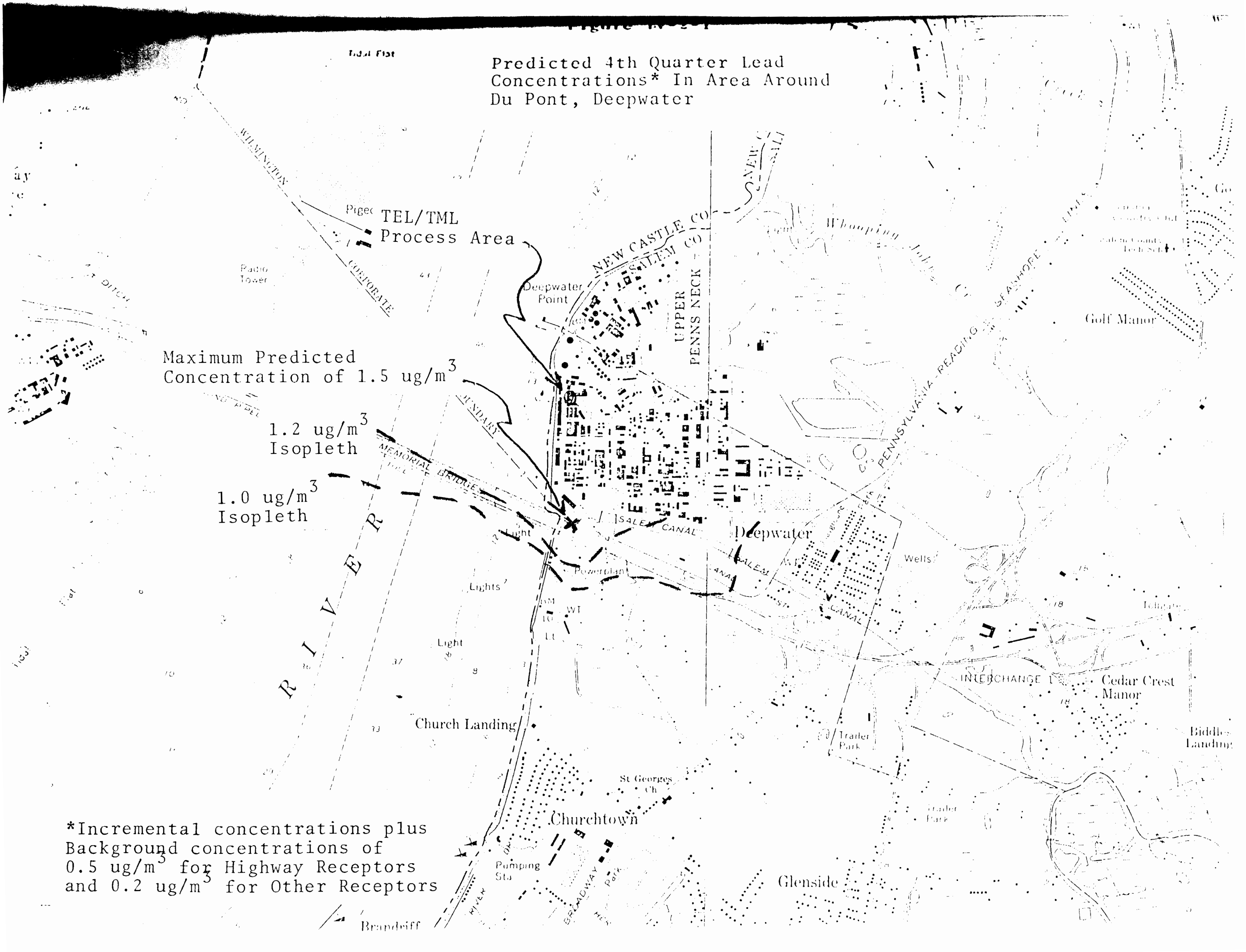
Sensitive Receptor: Assume constant background of 0.5 ug/m^{3}(A)

Predicted Maximum:	Concentration(ug/m^3)	Coordinates(km)
Highway Receptor	1.5	0,-0.6
Non-Highway Receptor	1.4	0,0.6
Sensitive Receptor	1.4	1.4,-0.6

*Origin at Du Pont TEL/TML process area

(A) - Maximum measured 1982 quaterly concentration at Camden

(B) - Maximum measured 1982 quarterly concentration at Pedricktown (S58)


Predicted 4th Quarter Lead Concentrations* In Area Around Du Pont, Deepwater
TEL/TML Process Area
Maximum Predicted Concentration of 1.5 ug/m3
1.2 ug/m3 Isopleth
1.0 ug/m3 Isopleth
*Incremental concentrations plus Background concentrations of 0.5 ug/m3 for Highway Receptors and 0.2 ug/m3 for Other Receptors
Tidal Flat
WILMINGTON
CORPORATE
Radio Tower
Deepwater Point
NEW CASTLE CO
SALEM CO
UPPER PENNS NECK
MEMORIAL BRIDGE
RIVER
SALEM CANAL
Deepwater
Powerplant
Lights
Light
Church Landing
St Georges Ch
Churchtown
Pumping Sta
BROADWAY
Brandriff
Glenside
Trailer Park
INTERCHANGE 1
Cedar Crest Manor
Biddles Landing
Wells
Golf Manor
Whooping John Cr
PENNSYLVANIA-READING SEASHORE LINES

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF ENVIRONMENTAL QUALITY
JOHN FITCH PLAZA, CN027, TRENTON, N.J. 08625

STEVEN G. KUHRTZ
DIRECTOR

January 18, 1984

TO: HEAD LIBRARIAN

REFERENCE: New Jersey State Implementation Plan (SIP) for Attainment and Maintenance of National Ambient Air Quality Standards for Lead

Attached is a copy of the subject SIP, including appendices and the Notice of Public Hearing concerning this proposed SIP. This material is for deposit in your library. Please make it available for inspection during normal hours until February 28, 1984.

Thank you for your assistance. Questions about the SIP, or the hearing, may be referred to me at the address below:

Mr. John C. Elston
Department of Environmental Protection
Division of Environmental Quality
Bureau of Air Quality Management & Surveillance
CN027
Trenton, New Jersey 08625
(609) 292 - 6710

Sincerely,

John C. Elston
Chief
Bureau of Air Quality
Management & Surveillance

JCE:vp

DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF ENVIRONMENTAL QUALITY

Ambient Air Quality Standards

State Implementation Plan (SIP) for Attainment and Maintenance of National Ambient Air Quality Standards for Lead

Notice of Public Hearing

Authorized by:	Robert E. Hughey, Commissioner Department of Environmental Protection
Authority:	N.J.S.A. 13:1D-5, -7, -9, and 26:2C-1 et seq.

DEP Docket Number: 073-83-12

A public hearing concerning the proposed SIP will be held at the following time and location:

February 22, 1984
10:00 a.m. until the close of testimony
New Jersey State Library
185 West State Street
First Floor Meeting Room
Trenton, N.J.

The Department is seeking testimony from the public on the objective of the plan, the way in which the plan was developed, the effects of the proposed measures, and recommendations for their implementation.

Interested persons may testify and submit, in writing, data, views or arguments relevant to the proposed SIP on or before February 28, 1984. These submissions and any inquires about submissions and responses should be addressed to:

John C. Elston
Bureau of Air Pollution Control
Department of Environmental Protection
CN 027
Trenton, New Jersey 08625
(609)292-6710

Copies of this notice and the SIP, including appendices, are being deposited and will be available for inspection during normal office hours until February 28, 1984 at:

New Jersey Bureau of Air Pollution Control, Main Office,

Room 1109, Labor and Industry Building,
Trenton, New Jersey 08625

New Jersey State Library, 185 West State Street,
Trenton, New Jersey 08625

New Jersey Bureau of Air Pollution Control,
Metropolitan Field Office,
1259 Rt. #46, Parsippany-Troy Hills, New Jersey 07054

New Jersey Bureau of Air Pollution Control,
Central Field Office,
65 Prospect Street, Trenton, New Jersey 08628

New Jersey Bureau of Air Pollution Control,
Newark Field Office,
1100 Raymond Boulevard, Room 510, Newark, New Jersey 07102

New Jersey Bureau of Air Pollution Control,
Southern Field Office,
100 Larwin Road, Cherry Hill, New Jersey 08034

COUNTY LIBRARIES

County	Municipality
Burlington	Mount Holly
Camden	Echelon Urban Complex, Voorhees
Cape May	Cape May Court House
Cumberland	Bridgeton
Monmouth	Freehold
Morris	Whippany
Ocean	Toms River
Somerset	Somerville
Sussex	Newton

PUBLIC LIBRARIES

Bloomfield, Cherry Hill, East Brunswick, East Orange, Elizabeth, Hackensack, Jersey City, Linden, New Brunswick, Newark, Paterson, Phillipsburg, Plainfield, Ridgewood, Trenton, Wayne, Woodbridge, and Woodbury.

SUMMARY

The federal Clean Air Act, 42 U.S.C. 7401 et seq., requires that each state, after reasonable notice and public hearings, adopt and submit to the United States Environmental Protection Agency (USEPA) a plan, known as a State Implementation Plan (SIP), which provides for the implementation, maintenance and enforcement of national ambient air quality standards in each air quality control region (or portion thereof) within such state.

Current monitoring shows the State to be in attainment of the national ambient air quality standards for lead. The Department has modeled air quality in the vicinities of the following industrial facilities. These models indicate there could potentially be a problem in their vicinities and the SIP commits the Department to monitor to determine if a problem exists. If a problem is determined to exist, control measures will be developed.

Asarco, Inc., Newark;
Delco Remy, Division of General Motors Corporation, New Brunswick;
E.I. du Pont de Nemours & Co., Inc., Deepwater;
National Smelting of New Jersey, Pedricktown; and
United States Metals Refining Company, subsidiary of AMAX, Inc., Carteret

Extensive sampling in New Jersey shows that there have been significant decreases in the concentration of airborne lead in recent years. These decreases have been concurrent with a decrease in the use of leaded gasoline, the predominant source of atmospheric lead. Federal rules requiring automobiles with catalytic converters to use unleaded gasoline have been effective in reducing exposure to atmospheric lead.

Lead emission levels are expected to rise substantially with the growth of incineration of waste products during the 1980's. Use of state-of-the-art particulate emission controls should keep ambient lead concentrations within the standards.

The SIP describes how air pollution control regulations would contribute to the reduction of lead emissions from industrial sources. The SIP sets forth a schedule of amendments to Department regulations concerning air pollution control. The amendments would insure that new and existing sources of lead do not cause violations of the national ambient air quality standards for lead. Adoption of the SIP would commit the Department to establish a State ambient air quality standard for lead. Such adoption would also commit the Department to lowering the emissions threshold at which a source owner or operator would be required to analyze the effects of lead emission increases on ambient air quality.

On October 5, 1978, the USEPA adopted primary (health-based) and secondary (welfare-based) national ambient air quality standards for lead. Notice of the adoption was published in the Federal Register (43 Fed. Reg. 46246, Oct. 5, 1978) and codified in the Code of Federal Regulations (40 C.F.R. 50.12). The USEPA promulgated regulations concerning SIPs for the attainment of the national ambient air quality standards for lead. The regulations had called for such attainment by October 1982. The regulations were published at 43 Fed. Reg. 46264 (Oct. 5, 1978) and codified in 40 C.F.R. 51.80-88. The USEPA subsequently revised the schedule for the approval of SIPs for lead for those states which had not submitted such plans (48 Fed. Reg. 36250, Aug. 10, 1983).

The USEPA policy regarding attainment dates is to follow the literal interpretation of Section 110 (a)(2)(A) of the Clean Air Act. (42 U.S.C. 7410 (a)(2)(A), see 48 Fed. Reg. 48978, Oct. 21, 1982). The Clean Air Act requires that the USEPA approve a SIP if it contains certain measures and provides for the attainment of the primary standard as expeditiously as practicable, but in no case later than three years from the date of approval of the plan. In the case of a plan implementing a national secondary ambient air quality plan, it should specify a reasonable time at which such secondary standard will be attained. 42 U.S.C. 7410 (a)(2)(A).

The SIP proposed by this notice demonstrates that the State will attain the national ambient air quality standard for lead by January 1, 1986.

Pursuant to USEPA regulations, for a SIP to be approved by USEPA, it must contain a demonstration that the national ambient air quality standards for lead will be attained and maintained in the vicinity of all major sources of lead, and in any area with lead concentrations in excess of the standards measured since January 1, 1974 (40 C.F.R. 51.80). USEPA regulations further require that an approvable SIP include emission data, air quality data, modeling of major sources and of areas with measured violations of the standards, and a description of administrative procedures and enforcement methods (40 C.F.R. 51.80).

On October 6, 1983, New Jersey submitted a draft SIP to USEPA, Region II. The SIP proposed by this notice contains minor revisions to the October 6 draft. As required by the USEPA regulations, the proposed SIP demonstrates attainment and maintenance of the national ambient air quality standards for lead in all areas with lead concentrations in excess of the standards measured since January 1, 1974 (40 C.F.R. 51.80).

Modeling of the five industrial facilities listed above is reported in the proposed SIP. At this time, the attainment status of areas in the vicinities of these facilities has not been determined. Supplemental modeling is now being conducted to determine their status. The Department expects that the results of this supplemental modeling will be made available at the time of publication of this notice.

The SIP contains a schedule for the proposal and adoption of amendments to the following Department regulations: N.J.A.C 7:27-8. (concerning permits and certificates); N.J.A.C 7:27-13 (concerning Ambient Air Quality Standards); N.J.A.C. 7:27-18 (concerning Control and Prohibition of Air Pollution from New or Altered Sources Affecting Ambient Air Quality in Non-Attainment Areas (Emission Offset Rule)); and possible amendments to N.J.A.C. 7:27-6 (concerning Control and Prohibition of Particles from Manufacturing Processes).

Social Impact

Implementation of the SIP would insure attainment of minimum health-based standards for ambient lead. The SIP would result in a reduction in the amount of lead reaching the human body.

Economic Impact

The SIP would commit the State to take measures including the adoption of amendments to certain Department regulations as described above. Such regulations would have a potential economic impact on sources that emit significant quantities of lead (25 or more tons per year of elemental lead) and/or specific manufacturing and processing facilities emitting five or more tons per year of elemental lead including: primary and secondary lead smelters, primary copper smelters, lead gasoline additive plants, and lead acid storage battery manufacturing plants.

Environmental Impact

The SIP provides for the implementation, maintenance and enforcement of national ambient air standards for lead in the State. The SIP would commit the State to take measures including the adoption of amendments to certain Department regulations as described above. The regulations would require use of air pollution control equipment representing state-of-the-art particulate emission controls to keep ambient lead concentration with ambient air quality standards.

The State may adopt the SIP without further notice. The SIP becomes effective and enforceable under the federal Clean Air Act upon approval by the Administrator of the USEPA.

DATE 12/19/83

Robert E. Hughey

ROBERT E. HUGHEY
Commissioner

DEPT. OF ENV PROTECTION
DIV OF ENV QUALITY
BUR OF AIR POLLUTION CONTROL
CN 027, TRENTON, N.J. 0862

New Jersey Lead SIP

APPENDIX IV-3

CDM Modeling Analysis of

U.S. Metals Refining (AMAX), Carteret

Appendix IV-3

CDM Modeling Analysis

U.S. Metals Refining (AMAX), Carteret

A modeling analysis of lead emissions from the U.S. Metals Refining (AMAX) facility in Carteret was conducted using the Climatological Dispersion Model (CDM) and five years of meteorological data (1960-64) for Newark, covering all four quarters of the year.

Two separate model runs were performed. The first used permitted stack emissions data along with estimated fugitive emissions data determined as a result of a field inspection of the facility. In the second run, fugitive emissions were revised to reflect controls anticipated from an Administrative Consent Order. The emissions and stack parameters that were input to the model are shown on Table IV-3-1.

The receptor network consisted of a rectangular grid with uniform spacing of 0.2 km to a side out to 1.0 km from the source. Screening modeling indicated that maximum impacts would occur within this 1.0 km distance. The grid was superimposed over a USGS map with the origin located at the center of the cupola/converter operation.

A selected background concentration of 0.5 ug/m^3 was assumed throughout the impact area for all four quarters. This background concentration is considered conservative since the subject area is not heavily influenced by automobile traffic or other lead-emitting industries.

The maximum quarterly concentration produced by the facility, excluding background, and based on pre-controlled fugitive emission rates was 1.7 ug/m^3 (1st quarter), occurring 400 meters east of the plant (see Table IV-3-2). The facility is subject to an Administrative Consent Order to control fugitive emissions. It is estimated that converter and cupola emissions will be controlled by approximately 90%. A modeling analysis using revised fugitive emission rates resulted in predicting a maximum incremental concentration of 0.9 ug/m^3 occurring once again during the first quarter at the receptor 400 meters east of the plant. The addition of background produces a predicted maximum quarterly concentration of 1.4 ug/m^3.

Isopleths of the predicted first quarter concentrations (based on controlled fugitive emissions) in the area around the facility are shown in Figure IV-3-1.

Table IV-3-1

Emission Rates and Stack Parameters for

Lead Sources at U.S. Metals Refining (AMAX), Carteret

	Emission Rate		Stack		Exit Gas	
Stack Number	Original (g/sec)	Revised	Height (m)	Diameter (m)	Velocity (m/sec)	Temperature (°C)
1	0.66	0.66	121.0	4.8	4.1	87.8
3	0.23	0.23	21.5	1.8	21.8	57.3
6	0.50	0.50	75.8	3.3	21.6	93.3
8	0.63	0.63	21.2	3.0	17.0	121.0
9	0.06	0.06	27.3	0.3	235.6	37.8
Fugitive Sources	1.00	0.37	10.0	-	-	-

Table IV-3-2

Predicted Maximum Quarterly Lead Concentrations

U.S. Metals Refining, Carteret

Concentration in ug/m^3 (Coordinates in Km)*

1st Qtr	2nd Qtr	3rd Qtr	4th Qtr
Incremental Concentrations - Based on Pre-controlled Fugitive Emission Rates			
1.7(0.4,0)	1.0(0.4,0)	1.2(0.4,0)	1.4(0.4,0)
Incremental Concentrations - Based on Controlled Fugitive Emission Rates			
0.9(0.4,0)	0.6(0.4,-0.2)	0.6(0.4,0)	0.7(0.4,0)

Assume constant background concentration of 0.5 ug/m^3

Predicted Maximum Concentrations: Using controlled fugitive emission rates

1st Qtr	2nd Qtr	3rd Qtr	4th Qtr
1.4(0.4,0)	1.1(0.4,-0.2)	1.1(0.4,0)	1.2(0.4,0)

*Origin located at cupola/converter building

Figure IV-3-1
Predicted 1st Quarter Lead Concentrations in Area Around U.S. Metals Refining (AMAX), Carteret

New Jersey Lead SIP

APPENDIX IV-4

ISC Modeling Analysis of National Smelting of New Jersey, Pedricktown

(To Come)

New Jersey Lead SIP

APPENDIX V-1

Attainment and Maintenance of NAAQS
in Three Urban Areas

APPENDIX V-1

Attainment and Maintenance of NAAQS in Three Urban Areas

A statistical analysis was performed to investigate the relationship between the decreases in lead in ambient air in the cities of Newark, Jersey City and Trenton and the phase-out of lead in fuels (see Appendix II-I). Since it was shown that the lead in gasoline and ambient air levels of lead are closely correlated (r=0.90), it was assumed that an approximately one to one relationship exists between the two variables. Thus, since it is expected that lead in gasoline in 1990 will be 26.4% of 1982 values, the average ambient lead in 1990 is expected to be reduced by the same percentage with respect to measured 1982 quarterly averages in the three cities.

More restrictive lead phase-out regulations were promulgated by EPA in 1982 (Federal Register, Vol. 47, No. 210, October 29, 1982). These regulations account for the significant reduction of lead in gasoline in 1983, when compared with 1982, and the lesser reductions anticipated for the subsequent years (see Table V-1-1). To account for the sharp initial reduction, a factor of 0.766 was applied to 1982 air quality data from the three cities to calculate projected concentrations for 1983. Base year (1982) concentrations were reduced by an additional 7.2 percent in each year following 1983. This percentage is the yearly average reduction of lead in gasoline, with respect to the base year, following 1983. In addition, projections were modified to account for the predicted yearly increase in vehicle miles traveled (VMT) from 1983 to 1990, by a yearly growth increment of 0.016 with respect to the base year.

The following equation was used to calculate the projected air quality levels.

$$AQ_P = [0.016(n+1)+1]\ [0.766 - 0.072n] AQ_0$$

where: AQ_P = projected lead air quality (ug/m^3)

AQ_0 = base year (1982) lead air quality (ug/m^3)

n = projection year minus 1983

For example, the following calculation was performed to estimate lead air quality for Newark in 1986:

$$AQ_P \text{ (Newark, 1986)} = [0.016(3+1)+1]\ [0.766 - 0.072(3)]\ (0.91)$$
$$= 0.53\ ug/m^3$$

Similarly, the projected quarterly averages of lead in 1990 were calculated to be 0.17, 0.27 and 0.15 ug/m^3 for Jersey City, Newark and Trenton, respectively. Projected lead air quality for the three cities and the percent reduction from the base year are presented in Table V-1-2.

TABLE V-1-1

Actual, Projected and Estimated Lead in Gasoline in the United States

Year	Total Volume of Gasoline Billions of Gallons	Total Weight of Lead Billions of Grams[1,2,3]
1978	115.78	153.25 (A)
1979	111.21	129.49 (A, 5)
1980	110.83	78.47 (A, 5, 6)
1981	102.64	60.96 (A, 6)
1982	96.4 (E,4)	61.4 (E, 4, 6, 7)
1983	96.1	47.0 (P, 7, 8)
1984	92.3	39.0 (P, 8)
1985	89.2	32.7 (P, 8)
1986	86.1	27.8 (P, 8)
1987	83.8	24.3 (P, 8)
1988	81.5	21.4 (P, 8)
1989	79.2	18.7 (P, 8)
1990	77.7	16.2 (P, 8)

A = Actual

E = Estimated

P = Projected

REFERENCES FOR TABLE V-1-1

1. Field Operations and Support Division, U.S. Environmental Protection Agency, Washington, D.C. (Appendix III, Attachment III-G, Table III-G-2)

2. Personal Communications with John Silvasi, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina

3. Federal Register, Vol. 47, No. 210, October 29, 1982

4. Refer to Appendix III-1, Attachment III-G for the procedure used in determining this value.

5. 0.8 gm/gal pooled standard for average lead content of gasoline

6. 0.50 gm/gal pooled standard for average lead content of gasoline (except certain refineries $<$50,000 barrels per day)

7. 1.10 gm/gal standard for leaded gasoline; temporary standard for gasoline from certain refineries $<$10,000 barrels per day

8. 1.10 gm/gal standard for leaded gasoline, all refineries

Table V-1-2

Projected Lead Air Quality in
Three New Jersey Cities

	Lead Concentrations (ug/m^3)			Percent Reduction
	Jersey City	Newark	Trenton	from Base Year
Base Year (1982)	0.56	0.91	0.51	
1986	0.33	0.53	0.30	41%
1990	0.17	0.27	0.15	70%

Projected concentrations are quarterly averages based on percentage reductions of lead in gasoline applied to the fourth quarter averages of ambient lead in 1982.

New Jersey Lead SIP

APPENDIX V-2

United States Metals Refining Company

Administrative Consent Order

March 16, 1983

LOG #20452

[handwritten initials] 4/11/86

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF ENVIRONMENTAL QUALITY
JOHN FITCH PLAZA, CN027, TRENTON, N.J. 08625

IN THE MATTER OF	)	ADMINISTRATIVE
UNITED STATES METALS REFINING COMPANY	)	CONSENT
SUBSIDIARY OF AMAX, INCORPORATED	)	ORDER

The following FINDINGS are made and ORDER issued pursuant to the authority vested in the Commissioner of the New Jersey Department of Environmental Protection and duly delegated to the Assistant Director, Enforcement Branch, Division of Environmental Quality pursuant to N.J.S.A. 13:1B-5, N.J.S.A. 13:1D-1 et seq., and the Air Pollution Control Act (1954), N.J.S.A. 26:2C-1 et seq., and amendments made thereto.

FINDINGS

1. UNITED STATES METAL REFINING COMPANY, SUBSIDIARY OF AMAX, INCORPORATED (hereinafter, the "Company") is located on the premises known as 400 Middlesex Avenue, Block 2, Lots 2, 3, and 4, Borough of Carteret, County of Middlesex, New Jersey.

2. Conferences were conducted between the Department of Environmental Protection (hereinafter, the "Department") and the Company under the authority of N.J.S.A. 26:2C-14, to discuss alleged

and/or potential violations of N.J.A.C. 7:27-5.1 et seq. (Control of Air Pollution), N.J.A.C. 7:27-8.1 et seq. (Permits), N.J.A.C. 7:27-16.1 et seq. (Volatile Organic Substances), and N.J.A.C. 7:27-17.1 et seq. (Toxic Volatile Organic Substances).

3. The parties hereto agree to the disposition of this matter in this manner without any admission by the Company of any of said alleged and/or potential violations of N.J.A.C. 7:27-5.1 et seq., N.J.A.C. 7:27-8.1 et seq., N.J.A.C. 7:27-16.1 et seq. and N.J.A.C. 7:27-17.1 et seq.

4. The parties are desirous of adjusting their differences and have agreed to the form and content of this Order.

NOW THEREFORE, IT IS ORDERED AND AGREED THAT:

5. UNITED STATES METAL REFINING COMPANY, SUBSIDIARY OF AMAX INCORPORATED, its employees, successors, assigns, tenants, agents and any trustee for its assets shall comply with N.J.A.C. 7:27-5.1 et seq., N.J.A.C. 7:27-8.1 et seq., N.J.A.C. 7:27-16.1 et seq., and N.J.A.C. 7:27-17.1 et seq. no later than August 25, 1984 and that said parties listed hereinabove shall take the measures including but not limited to those set forth in the following schedule to control emissions from the cupola stack which includes the

cupola, arc furnaces, settler tap holes and settler ladles and fugitive emissions from the cupola, converters and slag dumping operations.

PHASE I

A. CUPOLA - SUPPLEMENTAL BURNERS AND SUPPLEMENTAL OXYGEN

	ITEM	TO BE COMPLETED BY
1.	Complete the preliminary engineering.	May 1, 1983
2.	Submit the necessary Permit to Construct and Certificate to Operate application(s).	May 9, 1983
3.	Purchase the supplemental burners and supplemental oxygen equipment with associated equipment and materials.	June 18, 1983
4.	Complete the final engineering.	June 25, 1983
5.	Complete the installation of the supplemental burners and supplemental oxygen equipment with associated equipment, start-up and debug the entire system.	December 10, 1983

B. CUPOLA - REDUCTION OF INFILTRATION AIR

	ITEM	TO BE COMPLETED BY
1.	Complete the preliminary engineering.	May 1, 1983
2.	Purchase the necessary equipment and materials to ensure reduction of infiltration air and control of fugitive emissions.	July 2, 1983

	ITEM	TO BE COMPLETED BY
3.	Complete the final engineering.	August 20, 1983
4.	Complete the installation of the necessary equipment to ensure reduction of infiltration air and control of fugitive emissions, and start-up and debug the entire system.	February 11, 1984

C. CUPOLA - CONTINUOUS MONITORING AND RECORDING INSTRUMENTATION (OXYGEN, TOTAL HYDROCARBONS, CARBON MONOXIDE, BENZENE)

	ITEM	TO BE COMPLETED BY
1.	Complete the preliminary engineering.	August 6, 1983
2.	Purchase the necessary approved equipment for the purpose of continuously monitoring and recording emissions of oxygen, total hydrocarbons, carbon monoxide and benzene.	September 17, 1983
3.	Complete the final engineering.	October 1, 1983
4.	Submit stack testing protocol for cupola emissions stated on Permit to Construct application.	January 1, 1984
5.	Complete the installation of the necessary instrumentation and start continuous monitoring and recording of emissions.	March 3, 1984
6.	Conduct cupola stack tests in accordance with approved protocol.	April 14, 1984
7.	Submit cupola stack test report.	May 31, 1984

D. CONVERTERS

	ITEM	TO BE COMPLETED BY
1.	Evaluate fugitive emissions from the converters; complete preliminary engineering.	October 1, 1983

	ITEM	TO BE COMPLETED BY
2.	Submit the necessary Permit to Construct and Certificate to Operate application(s).	November 1, 1983
3.	Purchase the necessary equipment and/or materials to control fugitive emissions.	December 31, 1983
4.	Complete the final engineering.	February 1, 1984
5.	Complete the installation of the necessary equipment to control fugitive emissions.	May 31, 1984

E. MISCELLANEOUS ITEMS

	ITEM	TO BE COMPLETED BY
1.	Model present cupola stack and fugitive emissions for carbon monoxide, total hydrocarbons, benzene and heavy metals including lead; model converter stack and fugitive emissions for particulates and lead; and submit results.	May 1, 1983
2.	Evaluate fugitive emissions from the converters slag dumping operation, and submit results.	August 4, 1983
3.	Institute approved fugitive emission control plan for the slag dumping operation.	December 31, 1983
4.	Upon the completion of Phase I stack tests, model cupola emission for carbon monoxide, total hydrocarbons, benzene and heavy metals including lead; model converter stack and fugitive emission for particulates and lead; and submit results.	May 31, 1984

PHASE II

AGGLOMERATION OF FINES FOR CUPOLA CHARGE

	ITEM	TO BE COMPLETED BY
1.	Complete the preliminary engineering.	July 2, 1983
2.	Purchase the necessary equipment to incorporate the fines agglomeration of the cupola charge.	October 29, 1983
3.	Complete the final engineering.	December 3, 1983
4.	Submit stack testing protocol for cupola emissions stated on Permit to Construct application(s).	June 1, 1984
5.	Complete the installation of the necessary agglomeration equipment.	June 23, 1984
6.	Stack test cupola in accordance with previously approved protocol.	July 14, 1984
7.	Submit cupola stack test report.	August 25, 1984

6. Should the Company believe that compliance with any of the completion dates provided herein be prevented by a cause or causes beyond the control of the Company (e.g. acts of God, strikes, equipment delays, delays by third parties, or other similar delays), then upon prompt written notice to the Department, but in no case more than five (5) days after it has knowledge of said purported cause or causes, the schedule set forth hereinabove for compliance may be adjusted by the Department, acting in its sole

discretion as it determines, to the extent of modification deemed necessary by such a cause or causes.

7. The Company shall maintain and operate all source equipment and air pollution control devices, currently in use, in a manner consistent with the Company's approved operating certificate(s).

8. The Company shall submit a detailed report describing the progress of its air pollution control activities within the terms of said Order to the Supervisor, Bureau of Air Pollution Control, Central Field Office, 65 Prospect Street, Trenton, New Jersey 08625 and Kenneth Eng, Permits Administration Branch, US Environmental Protection Agency, 26 Federal Plaza, New York, New York 10278 by May 15, 1983, and thereafter by the fifteenth of every month until compliance with all the terms of this Administrative Consent Order has been demonstrated to the satisfaction of the Department.

9. The Company shall pay a sum of $50,000 pursuant to N.J.S.A. 26:2C-19 which shall be paid within ten (10) days of the execution of this Administrative Consent Order; however, should the Department in its sole discretion be satisfied that the Company has fully complied with the provisions of this Administrative Consent Order and the Company maintains compliance with all of

the regulations stated below for a period of six (6) months commencing with such demonstration of compliance with all such regulations, then the Department shall, based on application by the Company, rebate 50% of the settlement, to wit $25,000. For N.J.A.C. 7:27-8.1 et seq., N.J.A.C. 7:27-16.1 et seq. and N.J.A.C. 7:27-17.1 et seq., compliance shall be determined by stack tests and continuous monitoring. For odors and fugitive emissions beyond the Company's property line as regulated by N.J.A.C. 7:27-5.1 et seq., compliance shall be determined based on the degree and frequency of verified complaints.

RESERVATION OF RIGHTS

10. UNITED STATES METAL REFINING COMPANY, SUBSIDIARY OF AMAX INCORPORATED hereby consents to and agrees to comply with all terms and provisions of this Administrative Consent Order which shall be fully enforceable in the Superior Court of New Jersey upon the filing of a summary action for compliance pursuant to N.J.S.A. 26:2C-1 et seq., and also may be enforced in the same fashion as an Administrative Order issued by the Department pursuant to this same statutory authority. No obligations imposed by this Administrative Consent Order (with the exception of #9) are intended to constitute a debt, damage claim, penalty or other civil action which should be limited or discharged in a bankruptcy proceeding.

All obligations imposed by this Administrative Consent Order shall constitute continuing regulatory obligations imposed pursuant to the police powers of the State of New Jersey, intended to protect the public's health, safety and welfare. UNITED STATES METAL REFINING COMPANY, SUBSIDIARY OF AMAX, INCORPORATED hereby waives the right to an administrative hearing pertaining to this Administrative Consent Order as provided in N.J.S.A. 26:2C-14 and N.J.S.A. 26:2C-14.1 or as otherwise provided.

DATED March 16, 1983

Thomas A Pluta
Thomas A. Pluta, Assistant Director
Division of Environmental Quality
Enforcement Branch

DATED 16 March '83

BY: Eugene F. Deutsch
FOR THE COMPANY

Eugene F. Deutsch
NAME (PRINT OR TYPE)

V.P.
TITLE
United States Metal Refining Co.
Sub of Amax Inc.

New Jersey Lead SIP

APPENDIX V-3

New Jersey Administrative Code,
Title 7, Chapter 27, Subchapter 5
Prohibition of Air Pollution

NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION

NEW JERSEY ADMINISTRATIVE CODE

TITLE 7, CHAPTER 27

SUBCHAPTER 5

PROHIBITION OF AIR POLLUTION

Filed: October 27, 1960
Effective: January 1, 1961
Revision Promulgated: August 5, 1977
Revision Effective: October 12, 1977

Subchapter 5, PROHIBITION OF AIR POLLUTION, of Title 7, Chapter 27, New Jersey Administrative Code, which became effective January 1, 1961, is hereby repealed. This repeal shall not affect actions, proceedings, or departmental orders pending or outstanding on the effective date of the new regulation; said actions, proceedings or departmental orders may be prosecuted, defended and continued in the same manner and to the same effect as if the new regulation had not been adopted. The text of the new regulation follows.

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7:27-5.1 DEFINITIONS

"Air pollution" means the presence in the outdoor atmosphere of one or more air contaminants in such quantities and duration as are, or tend to be, injurious to human health or welfare, animal or plant life or property, or would unreasonably interfere with the enjoyment of life or property throughout the State and in such territories of the State as shall be affected thereby and excludes all aspects of employer-employee relationship as to health and safety hazards.

"Economic poisons" means those chemicals used as insecticides, rodenticides, fungicides, herbicides, nematocides or defoliants.

7:27-5.2 GENERAL PROVISIONS

(a) Notwithstanding compliance with other Subchapters of this Chapter, no person shall cause, suffer, allow or permit to be emitted into the outdoor atmosphere substances in quantities which shall result in air pollution as defined herein.

(b) The provisions of subsection (a) of this Section shall not apply to the use of economic poisons.

New Jersey Lead SIP

APPENDIX V-5

New Jersey Administrative Code,

Title 7, Chapter 27, Subchapter 4

Control And Prohibition Of Particles From Combustion Of Fuel

NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION

NEW JERSEY ADMINISTRATIVE CODE

TITLE 7, CHAPTER 27

SUBCHAPTER 4

CONTROL AND PROHIBITION OF PARTICLES FROM COMBUSTION OF FUEL

Promulgated:	October 21, 1957
Filed:	October 22, 1957
Effective:	July 1, 1958

Amendment Promulgated:	December 20, 1965
Amendment Effective:	March 1, 1966
Revision Promulgated:	January 27, 1972
Revision Effective:	March 27, 1972
Revision Promulgated:	August 5, 1977
Revision Effective:	October 12, 1977

Subchapter 4, CONTROL AND PROHIBITION OF SOLID PARTICLES FROM COMBUSTION OF FUEL, of Title 7, Chapter 27, New Jersey Administrative Code, which became effective March 27, 1972, is hereby repealed. This repeal shall not affect actions, proceedings, or departmental orders pending or outstanding on the effective date of the new regulation; said actions, proceedings or departmental orders may be prosecuted, defended and continued in the same manner and to the same effect as if the new regulation had not been adopted. The text of the new regulation follows.

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7:27-4.1 DEFINITIONS

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

"Air contaminant" means solid particles, liquid particles, vapors or gases which are discharged into the outdoor atmosphere.

"Control apparatus" means any device which prevents or controls the emission of any air contaminant.

"Department" means the Department of Environmental Protection.

"Direct heat exchanger" means equipment in which heat from the combustion of fuel is transferred to a substance being heated so that the latter is contacted by the products of combustion and may contribute to the total effluent.

"Equipment" means any device capable of causing the emission of an air contaminant into the open air and any stack, chimney, conduit, flue, duct, vent or similar device connected or attached to, or serving the equipment. This shall include equipment in which the preponderance of the air contaminants emitted is caused by the manufacturing process.

"Fuel" means solid, liquid or gaseous materials used to produce useful heat by burning.

"Heat input rate" means the rate at which the aggregate heat content based on the higher heating value of the fuel is introduced into the fuel burning equipment.

"Isokinetic" means a method for sampling air contaminants from the gas stream in a stack or chimney in such a manner that the gas stream enters a sampling probe in the same direction and at the same velocity as the gas stream in a stack or chimney.

"Liquid particles" means particles which have volume but are not of rigid shape and which upon collection tend to coalesce and create uniform homogeneous films upon the surface of the collecting media.

"Manufacturing process" means any action, operation or treatment embracing chemical, industrial, manufacturing, or processing factors, methods or forms including, but not limited to, furnaces, kettles, ovens, converters, cupolas, kilns, crucibles, stills, dryers, roasters, crushers, grinders, mixers, reactors, regenerators, separators, filters, reboilers, columns, classifiers, screens, quenchers, cookers, digesters, towers, washers, scrubbers, mills, condensers or absorbers.

"Marine installation" means equipment for propulsion, power or heating on all types of marine craft and floating equipment.

"Maximum allowable emission rate" means the maximum amount of air contaminant which may be emitted into the outdoor air at any instant in time or during any prescribed interval of time.

"Particles" means any material, except uncombined water, which exists as liquid particles or solid particles at standard conditions.

"Performance test principle" means a concept of measurement as required for determining compliance with a specific standard for the emission of air contaminants.

"Sampling train" means a combination of entrapment devices, instruments, and auxiliary apparatus arranged in a prescribed sequence to selectively separate and collect samples of specified air contaminants.

"Solid particles" means particles of rigid shape and definite volume.

"Stack or chimney" means a flue, conduit or opening designed, constructed, and/or utilized for the purpose of emitting air contaminants into the outdoor air.

"Standard conditions" means or shall be 70 degrees Fahrenheit and one atmosphere pressure (14.7 psia or 760 mm Hg).

7:27-4.2 STANDARDS FOR THE EMISSION OF PARTICLES

(a) No person shall cause, suffer, allow or permit particles arising from the combustion of fuel to be emitted from any stack or chimney into the outdoor air in excess of the maximum allowable emission rate set forth in the following Table. For a heat input rate between any two consecutive rates shown, the maximum allowable emission rate shall be determined by interpolation:

HEAT INPUT RATE (Millions of British Thermal Units per Hour)	MAXIMUM ALLOWABLE EMISSION RATE (Pounds per Hour)	HEAT INPUT RATE (Millions of British Thermal Units per Hour)	MAXIMUM ALLOWABLE EMISSION RATE (Pounds per Hour)
1	00.6	200	20
10	06	400	40
20	08	600	60
30	09	800	80
40	10	1,000	100
50	11	2,000	200
60	12	3,000	300
70	13	4,000	400
80	14	5,000	500
90	14.5	6,000	600
100	15	7,000	700
120	16.5	8,000	800
140	17.5	10,000	1,000
160	18.5		
180	19.3		

NOTE: Heat input rate shall be the sum of the heat input rates of all fuel burning equipment discharging through a single stack or chimney.

7:27-4.3 PERFORMANCE TEST PRINCIPLE

(a) For purposes of measuring emissions in accordance with the provisions of this Subchapter, particles shall be drawn by isokinetic procedures from the stack or chimney and the weight of the particles determined gravimetrically after removal of uncombined water.

(b) The measured emission weight shall be the combined weight of all particles collected and analyzed in accordance with the sampling and analytical procedures set forth in N.J.A.C. 7:27B-1.

7:27-4.4 EMISSION TESTS

(a) Any person responsible for the emission of particles arising from the combustion of fuel shall, when requested by the Department, provide such sampling facilities exclusive of instrumentation and sensing devices as may be necessary for the Department to determine the rate at which the particles are or may be discharged from the fuel burning operation.

(b) During such testing by the Department, the fuel burning operation shall be operated under normal, routine operating conditions or under such other conditions within the capacity of the equipment as may be requested by the Department.

(c) The facilities may be either permanent or temporary, at the discretion of the person responsible for their provision, and shall conform to all applicable laws and regulations concerning safe construction and safe practice.

7:27-4.5 PERMIT TO CONSTRUCT, INSTALL OR ALTER AND CERTIFICATE TO OPERATE

(a) No person shall construct or install any new fuel burning equipment, or any new control apparatus, or alter any existing fuel burning equipment, or any control apparatus without first having obtained a "Permit to construct, install or alter control apparatus or equipment" from the Department, in accordance with the provisions of Subchapter 8 of this Chapter.

(b) No person shall use or cause to be used any new or altered fuel burning equipment, or any new or altered control apparatus without first having obtained a "Certificate to operate control apparatus or equipment" from the Department, in accordance with Subchapter 8 of this Chapter.

(c) No person shall use or cause to be used any fuel burning equipment unless all components connected, or attached to, or serving the equipment, including control apparatus, are functioning properly and are in use, in accordance with the permit to construct and the certificate to operate.

7:27-4.6 EXCEPTIONS

(a) The provisions of this Subchapter shall not apply:

1. When the heat input rate to the fuel burning equipment is less than 1,000,000 British Thermal Units per hour;

2. To marine installations, vehicles or other movable or portable equipment;

3. To direct heat exchangers.

New Jersey Lead SIP

APPENDIX V-6

New Jersey Administrative Code

Title 7, Chapter 27, Subchapter 6

Control And Prohibition Of Particles From Manufacturing Processes

NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION

NEW JERSEY ADMINISTRATIVE CODE

TITLE 7, CHAPTER 27

SUBCHAPTER 6

CONTROL AND PROHIBITION OF PARTICLES FROM MANUFACTURING PROCESSES

Promulgated: May 18, 1964
Effective: October 1, 1964

Revision Promulgated: January 27, 1972
Revision Effective: March 27, 1972
Revision Promulgated: March 18, 1977
Revision Effective: May 23, 1977

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7:27-6.1 DEFINITIONS

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

"Air contaminant" means solid particles, liquid particles, vapors or gases which are discharged into the outdoor atmosphere.

"Control apparatus" means any device which prevents or controls the emission of any air contaminant.

"Cullet" means broken, waste, or recycled glass.

"Department" means the Department of Environmental Protection.

"Dilution gas" means air or gas from any source whatsoever added to the source gas emitted from a source operation.

"Equipment" means any device capable of causing the emission of an air contaminant into the open air and any stack, chimney, conduit, flue, duct, vent or similar device connected or attached to, or serving the equipment. This shall include equipment in which the preponderance of the air contaminants emitted is caused by the manufacturing process.

"Fuel" means solid, liquid or gaseous materials used to produce useful heat by burning.

"Glass means a hard amorphous inorganic substance made by fusing silicates and sometimes borates and phosphates with certain basic oxides.

"Glass manufacturing furnace" means equipment using energy in the form of intense heat for the production of glass.

"Incinerator" means any device, apparatus, equipment or structure used for destroying, reducing or salvaging by fire any material or substance including, but not limited to, refuse, rubbish, garbage, trade waste, debris or scrap or a facility for cremating human or animal remains.

"Indirect heat exchanger" means equipment in which heat from the combustion of fuel is transferred by conduction through a heat-conducting material to a substance being heated, so that the latter is not contacted by, and adds nothing to, the products of combustion.

"Isokinetic" means a method for sampling air contaminants from the gas stream in a stack or chimney in such a manner that the gas stream enters a sampling probe in the same direction and at the same velocity as the gas stream in a stack or chimney.

"Lead glass" means a glass produced from the fusion of silica, alkali and lead oxide, and characterized by a high index of refraction, high light dispersion, high electrical resistance, and high density.

"Liquid particles" means particles which have volume but are not of rigid shape and which upon collection tend to coalesce and create uniform homogeneous films upon the surface of the collecting media.

"Manufacturing process" means any action, operation or treatment embracing chemical, industrial, manufacturing or processing factors, methods or forms including, but not limited to, furnaces, kettles, ovens, converters, cupolas, kilns, crucibles, stills, dryers, roasters, crushers, grinders, mixers, reactors, regenerators, separators, filters, reboilers, columns, classifiers, screens, quenchers, cookers, digesters, towers, washers, scrubbers, mills, condensers or absorbers.

"Maximum allowable emission rate" means the maximum amount of an air contaminant which may be emitted into the outdoor air at any instant in time or during any prescribed interval of time.

"Opacity" means the property of a substance which renders it partially or wholly obstructive to the transmission of visible light expressed as the percentage to which the light is obstructed.

"Particles" means any material, except uncombined water, which exists as liquid particles or solid particles at standard conditions.

"Performance test principle" means a concept of measurement as required for determining compliance with a specific standard for the emission of air contaminants.

"Potential emission rate" means the mass rate of air contaminants emitted or to be emitted through a stack or chimney into the outdoor air exclusive of any type of control apparatus.

"Process weight" means the total weight of all materials introduced into a source operation excluding liquid or gaseous fuel, uncombined water, and air.

"Refuse" means rubbish, garbage, trade waste and plant life.

"Sampling train" means a combination of entrapment devices, instruments, and auxiliary apparatus arranged in a prescribed sequence to selectively separate and collect samples of specified air contaminants.

"Solid particles" means particles of rigid shape and definite volume.

"Source gas" means air or gases passed through or generated by a source operation and discharged from the source operation.

"Source operation" means any manufacturing process or any identifiable part thereof emitting an air contaminant into the outdoor atmosphere through one or more stacks or chimneys.

"Stack or chimney" means a flue, conduit or opening designed and constructed for the purpose of emitting air contaminants into the outdoor air.

"Standard conditions" means or shall be 70 degrees Fahrenheit and one atmosphere pressure (14.7 psia or 760 mm Hg).

7:27-6.2 STANDARDS FOR THE EMISSION OF PARTICLES

(a) No person shall cause, suffer, allow or permit particles as measured by the performance test principles set forth in Section 3 (Performance Test Principles) of this Subchapter to be emitted from any source operation, except as provided in subsection (b) of this Section, through any stack or chimney into the outdoor air in excess of the maximum allowable emission rate as determined below:

MAXIMUM ALLOWABLE EMISSION RATE FOR PARTICLES

1	2	3	4
POTENTIAL EMISSION RATE FROM SOURCE OPERATION (lbs. per hr.)	ALLOWABLE EMISSION RATE (lbs. per hr.) (Based on 99% efficiency of collection)	SOURCE GAS EMITTED FROM SOURCE OPERATION (Standard cu. ft. per min.)	ALLOWABLE EMISSION RATE (lbs. per hr.) (Based on 0.02 grains per SCF)
50 or less	0.5	3,000 or less	0.5
100	1.0	6,000	1.0
1000	10.0	35,000	6.0
2000	20.0	70,000	12.0
3000 or greater	30.0	140,000	24.0
		175,000 or greater	30.0

Instructions:

1. From columns 1 and 2 above, determine the allowable emission rate based upon the potential emission rate of particles from the source operation as measured by the performance test principles set forth in subsections 3(a) and 3(b) of this Subchapter.

2. From columns 3 and 4 above, determine the allowable emission rate based upon the source gas emitted from the source operation. Whenever dilution gas is, for any purpose, added to the source gas from a source operation, the source gas emitted shall be considered to be the gas discharge rate prior to such dilution.

3. The greater of the two emission rates as determined from 1 and 2 above shall be the maximum allowable emission rate. For rates between any two consecutive values stated in columns 1 and 3, the corresponding allowable emission rates shall be as determined by interpolation.

(b) The provisions of subsection 2(a) of this Section shall not apply to any glass manufacturing furnace. Such furnace(s) shall be subject to the following:

No person shall cause, suffer, allow or permit particles as measured by the performance test principles set forth in subsections 3(a) and 3(b) of this Subchapter to be emitted from any glass manufacturing furnace through any stack or chimney into the outdoor air in excess of the maximum allowable emission rate as determined from the equation below:

$$A = 5 + (.48 \times W)$$

A = maximum allowable emission rate (lbs. per hr.)

W = process weight per hour (tons per hr.)

(c) The provisions of subsections 2(b) and 5(b) of this Subchapter shall not apply to any glass manufacturing furnace used for the production of lead glass.

(d) No person shall cause, suffer, allow or permit particles to be emitted from any stack or chimney into the outdoor air the shade or appearance of which is greater than 20 percent opacity, exclusive of visible condensed water vapor.

(e) The provisions of subsection (d) of this Section shall not apply to particles the shade or appearance of which is greater than 20 percent opacity, exclusive of visible condensed water vapor, for a period of not longer than three minutes in any consecutive 30-minute period.

7:27-6.3 PERFORMANCE TEST PRINCIPLES

(a) For purposes of measuring emissions in accordance with the provisions of subsections 2(a) and 2(b) (Standards for the Emission of Particles) of this Subchapter, particles shall be drawn by isokinetic procedures from the stack or chimney and the weight of the particles determined gravimetrically after removal of uncombined water.

(b) The measured emission weight shall be the combined weight of all particles collected and analyzed in accordance with the sampling and analytical procedures set forth in N.J.A.C. 7:27B-1.

(c) Opacity measurements shall be carried out in accordance with the procedures set forth in N.J.A.C. 7:27B-2.

7:27-6.4 EMISSION TESTS

(a) Any person responsible for the emission of particles from a source operation shall, when requested by the Department, provide the facilities and necessary equipment for determining the opacity of emissions being discharged through a stack or chimney and shall conduct such opacity tests using methods approved by the Department. Opacity test data shall be recorded in a permanent log at such time intervals as specified by the Department and shall be maintained for a period of not less than one year and shall be available for review by the Department.

(b) Any person responsible for the emission of particles from a source operation shall, upon request of the Department, provide such sampling facilities and testing facilities exclusive of instrumentation and sensing devices as may be necessary for the Department to determine the nature and quantity of particles being emitted from the source operation. During such testing by the Department, the source operation shall be operated under normal, routine operating conditions or under such other conditions within the capacity of the source operation as may be requested by the Department. The facilities may be either permanent or temporary, at the discretion of the person responsible for their provision, and shall conform to all applicable laws and regulations concerning safe construction and safe practice.

7:27-6.5 VARIANCES

(a) Whenever a person responsible for the emission of particles from a source operation believes that advances in the art of control for the kind and amount of particles emitted has not developed to a degree which would enable the requirements of Section 2 (Standards for the Emission of Particles) of this Subchapter to be attained, he may apply to the Department for a variance, setting forth his reasons and justifications. The Department may issue a variance from subsections 2(a), 2(b) and/or 2(d) of this Subchapter and such variance shall be valid for a period not to exceed five years from the date of issuance and may be renewed upon application to the Department setting forth reasons and justifications for its continuation. Variances issued under the provisions of this Section shall be conditional on the compliance with any requirements which the Department deems to be necessary.

(b) The Department may grant a variance from subsection 2(b) of this Subchapter, if the person responsible for the operation of a glass furnace demonstrates, to the satisfaction of the Department, that the process weight for the furnace continually consists of greater than 25 percent by weight cullet. Such variance:

1. Shall not be granted unless the applicant demonstrates compliance with all other requirements of this Chapter including, but not limited to, compliance with Subchapter 13 (Ambient Air Quality Standards) of this Chapter, as well as any other requirements the Department deems necessary.

2. Shall specify conditions including, but not limited to, a maximum allowable emission rate not to exceed the maximum allowable emission rate as determined from the following table:

CULLET USAGE (Percent by weight)	MAXIMUM ALLOWABLE EMISSION RATE (lbs. per hr.)
25 - 35%	6 + (.48 x W)
35 - 45%	7 + (.48 x W)
45% or more	8 + (.48 x W)

W = process weight per hour (tons per hr.)

3. Shall be valid for a period not to exceed two years from the date of issuance and may be renewed upon application to the Department setting forth reasons and justifications for such renewal.

(c) The Department may grant a variance from subsection 2(d) of this Subchapter if the person responsible for the operation of a glass furnace demonstrates, to the satisfaction of the Department, that the glass furnace is capable of conforming with the provisions of subsection 2(b) or 5(b) of this Subchapter but not capable of simultaneously conforming with the provisions of subsection 2(d) of this Subchapter. Such variance:

1. Shall not be granted unless the applicant demonstrates compliance with all other requirements of this Chapter, as well as any other requirements the Department deems necessary.

2. Shall specify conditions including, but not limited to, a requirement that the shade or appearance of the emissions from the glass furnace not exceed a percent opacity specified by the Department.

3. Shall be valid for a period not to exceed five years from the date of issuance and may be renewed upon application to the Department setting forth reasons and justifications for such renewal.

(d) Any person seeking a variance under the provisions of subsections 5(b) or 5(c) of this Subchapter shall file with the Department an application on a form provided by the Department and shall furnish any other information subsequently requested by the Department.

(e) Any person aggrieved by the denial or the prescribed conditions by the Department of a variance authorized by this Section may, upon application made within 15 days after notice thereof, be entitled to a hearing before the Department upon at least 15 days written notice. Within 30 days after such hearing the Department shall issue a notice amending, affirming or rescinding its previous action.

7:27-6.6 PERMIT TO CONSTRUCT AND CERTIFICATE TO OPERATE

(a) No person shall construct or install any new equipment or any new control apparatus, or alter any existing equipment or control apparatus from which particles are emitted through any stack or chimney into the outdoor air without first having obtained a "Permit to Construct, Install or Alter Control Apparatus or Equipment" from the Department, in accordance with the provisions of Subchapter 8 of this Chapter.

(b) No person shall use or cause to be used any new or altered equipment, or any new or altered control apparatus from which particles are emitted through any stack or chimney into the outdoor air without first having obtained a "Certificate to Operate Control Apparatus or Equipment" from the Department,in accordance with the provisions of Subchapter 8 of this Chapter.

(c) No person shall use or cause to be used any equipment from which particles are emitted through any stack or chimney into the outdoor air unless all components connected, or attached to, or serving the equipment, and/or control apparatus, are functioning properly and are in use, in accordance with the permit to construct, install or alter and the certificate to operate.

7:27-6.7 EXCEPTIONS

(a) The provisions of this Subchapter shall not apply:

1. To indirect heat exchangers

2. To incinerators

New Jersey Lead SIP

APPENDIX V-7

New Jersey Administrative Code
Title 7, Chapter 27, Subchapter 8
Permits And Certificates

NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION

NEW JERSEY ADMINISTRATIVE CODE

TITLE 7, CHAPTER 27

SUBCHAPTER 8

PERMITS AND CERTIFICATES

Filed:	November 15, 1967
Effective:	January 15, 1968
Amendment Filed:	January 4, 1973
Amendment Effective:	March 5, 1973
Second Amendment Filed:	March 29, 1976
Second Amendment Effective:	June 1, 1976

Subchapter 8, PERMITS and CERTIFICATES, of Title 7, Chapter 27, New Jersey Administrative Code, which became effective March 5, 1973, is hereby repealed. This repeal shall not affect actions, proceedings, or departmental orders pending or outstanding on the effective date of the new regulation; said actions, proceedings or departmental orders may be prosecuted, defended and continued in the same manner and to the same effect as if the new regulation had not been adopted. The text of the new regulation follows.

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7:27-8.1 Definitions

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

"Air contaminant" means solid particles, liquid particles, vapors or gases which are discharged into the outdoor atmosphere.

"Alteration" means any change made to equipment or control apparatus or the use thereof, or in a process; including but not limited to any physical change, change in material being processed or a change in the rate of production except where such a production rate change does not increase the quantity of air contaminant emitted or does not change the quality or nature of the air contaminant emitted.

"Commercial fuel" means solid, liquid, or gaseous fuel normally produced, manufactured, used or sold for the purpose of creating useful heat.

"Control appartus" means any device which prevents or controls the emission of any air contaminant.

"Department" means the Department of Environmental Protection.

"Equipment" means any device capable of causing the emission of an air contaminant into the open air, and any stack, chimney, conduit, flue, duct, vent or similar device connected or attached to, or serving the equipment. This shall include equipment in which the preponderance of the air contaminants emitted is caused by the manufacturing process.

"Equivalent stack diameter" means the diameter of a circular cross section having the same area as the non-circular cross sections at the point of emission discharge.

"Incinerator" means any device, apparatus, equipment or structure used for destroying, reducing or salvaging by fire any material or substance including but not limited to refuse, rubbish, garbage, trade waste, debris or scrap or a facility for cremating human or animal remains.

"Liquid particles" means particles which have volume but are not of rigid shape and which upon collection tend to coalesce and create uniform homogeneous films upon the surface of the collecting media.

"Manufacturing process" means any action, operation or treatment embracing chemical, industrial, manufacturing, or processing factors, methods or forms including, but not limited to, furnaces, kettles, ovens, converters, cupolas, kilns, crucibles, stills, dryers, roasters, crushers, grinders, mixers, reactors, regenerators, separators, filters, reboilers, columns, classifiers, screens, quenchers, cookers, digesters, towers, washers, scrubbers, mills, condensers or absorbers.

"Non-commercial fuel" means solid, liquid or gaseous fuel not normally produced, manufactured, used or sold for the purpose of creating useful heat.

"Particles" means any material, except uncombined water, which exists as liquid particles or solid particles at standard conditions.

"Person" includes corporations, companies, associations, societies, firms, partnerships and joint stock companies, as well as individuals, and shall also include all political subdivisions of this State or any agencies or instrumentalities thereof.

"Solid fuel" means a fuel which is fired as a solid, such as anthracite or semianthracite coal, bituminous or sub-bituminous coal, lignite, coke breeze, wood or any solid by-product of a manufacturing process that may be substituted for any of the above specifically mentioned fuels.

"Solid particles" means particles of rigid shape and definite volume.

"Source operation" means any manufacturing process or any identifiable part thereof emitting an air contaminant into the outdoor atmosphere through one or more stacks or chimneys.

"Stack or chimney" means a flue, conduit or opening designed, constructed, and/or utilized for the purpose of emitting air contaminants into the outdoor air.

"Stack diameter" means the internal diameter of a circular stack at the point of emission discharge.

"Standard conditions" shall be 70°F and one atmosphere pressure (14.7 psia or 760 mm Hg).

7:27-8.2 Permits and Certificates Required

(a) Control apparatus and equipment for which a permit to construct and a certificate to operate are required include:

1. All control apparatus;

2. Equipment used in a manufacturing process involving surface coating, including but not limited to spray and dip painting, roller coating, electrostatic depositing or spray cleaning, which emits air contaminants into the open air and in which the quantity of material used in any source operation is in excess of 10 pounds in any one hour;

3. Equipment used in a manufacturing process involving surface cleaning or preparation, including but not limited to degreasing, etching, pickling, or plating, which emits air contaminants into the open air from a tank or vessel, the capacity of which is in excess of one hundred gallons;

4. Equipment, used in a manufacturing process, other than as set forth in subsections (a)2 and (a)3 of this Section, which emits air contaminants into the open air either directly or indirectly and in which the combined weight of all materials, excluding air and water, introduced into any one source operation is in excess of 50 pounds in any one hour;

5. Tanks, reservoirs, containers and bins used for the storage of:

i. Liquids except water, including, but not limited to, acids, solvents, diluents or thinners, inks, colorants, lacquers, enamels, varnishes, liquid resins, gasolines, crude oils, petrochemicals, commercial fuels, non-commercial fuels and petroleum derivatives; and having a capacity in excess of 10,000 gallons;

ii. Solid particles including, but not limited to, binders, fillers, foodstuffs, detergents, fluxes, catalysts, mineral wools, resins, plastics, pigments, construction materials and solid fuels; and having a capacity in excess of 2,000 cubic feet;

6. Stationary material handling equipment using pneumatic, bucket or belt conveying systems which emit air contaminants into the open air either directly or indirectly;

7. Commercial fuel burning equipment having a heat input rate of 1,000,000 BTU per hour or greater to the burning chamber;

8. Any equipment used for the burning of non-commercial fuel, crude oil or Process by-products in any form;

9. Any incinerator, except incinerators constructed, installed or used in one or two-family dwellings or in multi-occupied dwellings containing (6) six or less family units, one of which is owner occupied.

7:27-8.3 General Provisions

(a) No person shall construct, install or alter any equipment or control apparatus without first having obtained a "Permit to Construct, Install or Alter Control Apparatus or Equipment" from the Department. Such permits may be cancelled if construction, installation or alteration is not begun within one year from the date of issuance.

(b) No person shall use or cause to be used any new or altered equipment or control apparatus without first having obtained a "Certificate to Operate Control Apparatus or Equipment" from the Department. Such certificates shall be valid for a period of five years unless sooner revoked by the Department, and such certificates may be renewed only after application to the Department not less than 90 days prior to their expiration date.

(c) Upon receipt of an application for the issuance of a "Certificate to Operate Control Apparatus or Equipment" or any renewal thereof, the Department may issue a temporary certificate valid for a period not to exceed 90 days.

(d) Any person in possession of a "Certificate to Operate Control Apparatus or Equipment" shall maintain said certificate readily available on the operating premises.

(e) No person shall use or cause to be used any equipment or control apparatus unless:

1. all conditions and provisions of the "Permit to Construct, Install or Alter Control Apparatus or Equipment" and "Certificate to Operate Control Apparatus or Equipment" are fulfilled and;

2. all components connected or attached to, or serving the equipment and/or control apparatus are functioning properly and are in use in accordance with the "Permit to Construct, Install or Alter Control Apparatus or Equipment" and "Certificate to Operate Control Apparatus or Equipment."

(f) A "Certificate to Operate Control Apparatus or Equipment" shall not be transferable either from one location to another or from one piece of control apparatus or equipment to another. A transfer from one person to another is permissible provided such transfer is reported to the Department within 90 days of the occurrence.

(g) The possession of a "Certificate to Operate Control Apparatus or Equipment" does not relieve any person from the obligation to comply with all other provisions of this Chapter.

(h) Permits and certificates issued under this Subchapter are based on emissions of air contaminants only and do not in any way void the applicant's obligation to obtain necessary permits from other governmental agencies.

(i) The provisions of subsections (a) and (b) of this Section shall not apply to structural changes, repairs or maintenance, if such changes, repairs or maintenance will not change the quality, nature or quantity of the air contaminant emitted.

7:27-8.4 Applications for Permits and Certificates

(a) Applications for a "Permit to Construct, Install or Alter Control Apparatus or Equipment" or a "Certificate to Operate Control Apparatus or Equipment" shall be made to the Department on forms provided by the Department.

(b) The Department may require such details regarding the equipment or control apparatus as it considers necessary to determine that the equipment or control apparatus is designed to operate without causing a violation of any provisions of the New Jersey Air Pollution Control Act or any provisions of codes, rules or regulations promulgated thereunder and that the equipment or control apparatus incorporates advances in the art of air pollution control developed for the kind and amount of air contaminant emitted by the applicant's equipment. Such information may include description of processes, raw materials used, operating procedures, physical and chemical nature of air contaminants, volume of gas discharge and such other information as the Department considers necessary.

(c) Before a "Certificate to Operate Control Apparatus or Equipment" or any renewal thereof is issued, the Department may require the applicant to conduct such tests as are necessary in the opinion of the Department to determine the kind and/or amount of air contaminants emitted from the equipment or control apparatus. Such tests shall be conducted in a manner approved by the Department and shall be made at the expense of the applicant who shall give the Department no less than 48 hours advance notice of the time of the start of the test. The test results shall be reviewed and certified by a New Jersey licensed Professional Engineer, or by an Industrial Hygienist who has been certified by the American Board of Industrial Hygiene.

(d) Any person applying for a "Certificate to Operate Control Apparatus or Equipment" or a renewal thereof, or to whom such certificate has been issued shall, when requested by the Department, provide such sampling facilities exclusive of instrumentation and sensing devices as may be necessary for the Department to determine the kind and/or amount of air contaminants emitted from the equipment or control apparatus. During such testing by the Department, the equipment and/or control apparatus shall be operated under such conditions within their capacities as may be requested by the Department. The facilities may be either permanent or temporary, at the discretion of the person responsible for their provision, and shall conform to all applicable laws and regulations concerning safe construction and safe practice.

7:27-8.5 Service Fees

(a) Any person subject to the provisions of this Subchapter, except as noted in subsection 8.5 (g), shall submit with each application for a "Permit to Construct, Install or Alter Control Apparatus or Equipment", as an integral part thereof, a service fee in accordance with the following schedule:

$40.00 Base fee per "Permit to Construct, Install or Alter Control Apparatus or Equipment" which fee shall also include the associated initial temporary "Certificate to Operate" and initial permanent "Certificate to Operate Control Apparatus or Equipment".

Plus

An Incremental Additional Service Fee to be derived from the following Table:

INCREMENTAL ADDITIONAL SERVICE FEE

Stack Diameter or Equivalent Stack Diameter		Additional Fee	INSTRUCTIONS
1	2	3	
Not Less Than	But Less Than		1. Determine the stack diameter range or equivalent stack diameter range (feet).
—	5ft.	$ 0.00	2. From Columns 1 and 2, locate the applicable stack diameter range.
5	7	50.00	
7	9	100.00	
9	12	150.00	3. Add the additional service fee in the corresponding entry of Column 3 to the base fee.
12	15	250.00	
15	20	350.00	
20ft. and Greater		450.00	

(b) Any person subject to the provisions of this Subchapter shall submit with an application for renewal for a permanent "Certificate to Operate Control Apparatus or Equipment", as an integral part thereof, a service fee of $20.00 for each such renewal.

(c) Any person applying for a transfer of title from one person to another for a permanent or a temporary "Certificate to Operate Control Apparatus or Equipment" shall submit a service fee of $10.00 as an integral part of each group of such applications, regardless of the number of Certificates affected by such applications.

(d) Service fees shall be submitted in the form of a certified check or postal order payable to the order of the New Jersey Bureau of Air Pollution Control.

(e) No service fee(s) or portions thereof rendered in accordance with any provisions of this Subchapter shall be returnable except in the case of overpayment due to miscalculation of the required fee.

(f) No additional service fee(s) will be levied if the information on the first submittal is found deficient and the applicant is required to provide additional information provided the additional information does not affect the service fee established in subsection 8.5 (a).

(g) Any person submitting an application for a "Permit to Construct, Install or Alter Control Apparatus or Equipment" for any storage tank shall include, as an integral part thereof, a service fee of $10.00 provided that such an application is solely for the painting of said storage tank subject to the provisions of Subchapter 16 of this Chapter.

New Jersey Lead SIP

APPENDIX V-8

New Jersey Administrative Code
Title 7, Chapter 27, Subchapter 11

Incinerators

NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION

NEW JERSEY ADMINISTRATIVE CODE

TITLE 7, CHAPTER 27

SUBCHAPTER 11

INCINERATORS

Promulgated: June 12, 1968
Effective: August 15, 1968

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7:27-11.1 DEFINITIONS

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

"Auxiliary fuel" means fuel other than waste materials used to attain temperatures sufficiently high to dry and ignite waste materials, to maintain ignition, or to effect complete combustion of combustible solids, vapors and gases.

"Common incinerator" means an incinerator designed and used to burn waste materials of Types 0, 1, 2, and 3 only, in all capacities not exceeding 2,000 pounds per hour of waste material input.

"Control apparatus" means any device which prevents or controls the emission of any air contaminant.

"Department" means the State Department of Environmental Protection.

"Existing incinerator" means an incinerator purchased, acquired, or used before the effective date of this Subchapter.

"Incinerator" means any device, apparatus, equipment or structure used for destroying, reducing or salvaging by fire any material or substance including but not limited to refuse, rubbish, garbage, trade waste, debris or scrap or a facility for cremating human or animal remains.

"Liquid particles" means particles which have volume but are not of rigid shape and which upon collection tend to coalesce and create uniform homogeneous films upon the surface of the collecting media.

"Multiple chamber incinerator" means an incinerator with two or more refractory-lined combustion chambers in series physically separated by refractory walls, interconnected by gas passages, and employing adequate design parameters necessary for maximum combustion of the waste materials.

"Municipal incinerator" means an incinerator owned or operated by government or by a person who provides incinerator service to government or others, and designed and used to burn waste materials of any and all types, 0 to 6 inclusive.

"New incinerator" means an incinerator purchased or constructed after the effective date of this Subchapter.

"Particles" means any material, except uncombined water, which exists in a finely divided form as liquid particles or solid particles at standard conditions.

"Pathological waste incinerator" means an incinerator designed and used to burn Type 4 waste materials, primarily human and animal remains, in all burning capacities. Crematoriums are included in this category.

"Ringelmann smoke chart" means the "Ringelmann Scale for Grading the Density of Smoke" published by the United States Bureau of Mines or any chart, recorder, indicator or device for the measurement of smoke density which is approved by the Department as the equivalent of the Ringelmann Scale.

"Single flue-fed incinerator" means an incinerator provided with a single flue which serves as both the charging chute and the flue to transport products of combustion to the atmosphere.

"Smoke" means and includes small gas-borne and airborne particles arising from a process of combustion in sufficient number to be observable.

"Solid particles" means particles of rigid shape and definite volume.

"Special incinerator" means a municipal, pathological waste, or trade waste incinerator of any burning capacity, or any incinerator with a burning capacity in excess of 2,000 pounds per hour.

"Standard conditions" means 70 degrees Fahrenheit and one atmosphere pressure (14.7 psia or 760 mm Hg).

"Trade waste incinerator" means an incinerator designed and used to burn waste material primarily of Types 5 and 6, either separately or together with waste materials of Types 0, 1 and 3.

"Type 0 waste" means trash, a mixture of highly combustible waste such as paper, cardboard, cartons, wood boxes and combustible floor sweepings, containing approximately ten percent moisture and five percent incombustible solids, and having a heating value of approximately 8500 British Thermal Units per pound as fired, and deriving from commercial and industrial activities. The mixtures contain up to ten percent by weight of plastic bags, coated paper, laminated paper, treated corrugated cardboard, oily rags, and plastic or rubber scraps.

"Type 1 waste" means rubbish, a mixture of combustible waste such as paper, cardboard cartons, wood scraps, foliage and combustible floor sweepings, containing approximately 25 percent moisture and ten percent incombustible solids and having a heating value of approximately 6500 British Thermal Units per pound as fired, and deriving from domestic, commercial and industrial activities. The mixture contains up to 20 percent by weight of restaurant or cafeteria waste, but contains little or no treated paper, plastic or rubber wastes.

"Type 2 waste" means refuse, consisting of an approximately even mixture of rubbish and garbage by weight, containing up to 50 percent moisture and approximately 4300 British Thermal Units per pound as fired, and commonly deriving from apartment and residential occupancy.

"Type 3 waste" means garbage, consisting of animal and vegetable wastes containing up to 70 percent moisture and up to five percent incombustible solids and having a heating value of approximately 2500 British Thermal Units per pound as fired and deriving from restaurants, cafeterias, hotels, hospitals, markets, and like installations.

"Type 4 waste" means human and animal remains, consisting of carcasses, organs and solid organic wastes from hospitals, laboratories, abattoirs, animal pounds, and similar sources, consisting of up to 85 percent moisture and approximately five percent incombustible solids and having a heating value of approximately 1,000 British Thermal Units per pound as fired.

"Type 5 waste" means by-product waste, gaseous, liquid or semi-liquid, such as tar, paints, solvents, sludge, fumes, and so forth, from industrial operations.

"Type 6 waste" means solid by-product waste, such as rubber, plastics, wood waste and so forth, from industrial operations.

7:27-11.2 CONSTRUCTION STANDARDS

(a) No person shall construct, install, use or cause to be used any existing or new incinerator unless such incinerator is of the multiple chamber type or of a type approved by the Department as being equally effective for the purpose of air pollution control.

(b) Two years from the effective date of this Subchapter, no person shall use or cause to be used an existing incinerator unless such incinerator is of multiple chamber type or type approved by the Department as being equally effective for the purpose of air pollution control.

(c) No person shall construct, install, use, or cause to be used any new single flue-fed incinerator.

7:27-11.3 EMISSION STANDARDS

(a) Particles emission standards shall be as follows:

1. No person shall construct, install, use, or cause to be used any new incinerator or alter or relocate and use or cause to be used any existing

common incinerator which will emit more than 0.2 grains of particles including ash per cubic foot of dry flue gas at standard conditions corrected to 12 percent carbon dioxide by volume excluding the contribution of auxiliary fuel.

2. No person shall construct, install, use, or cause to be used any new special incinerator or alter or relocate and use or cause to be used any existing special incinerator which will emit more than 0.1 grains of particles including ash per cubic foot of dry flue gas at standard conditions corrected to 12 percent carbon dioxide by volume excluding the contribution of auxiliary fuel.

3. Two years from the effective date of this Subchapter no person shall use or cause to be used any existing common incinerator which will emit more than 0.2 grains of particles, including ash per cubic foot of dry flue gas at standard conditions corrected to 12 percent carbon dioxide by volume excluding the contribution of auxiliary fuel.

4. Two years from the effective date of this Subchapter no person shall use or cause to be used any existing special incinerator which will emit more than 0.1 grains of particles, including ash per cubic foot of dry flue gas at standard conditions corrected to 12 percent carbon dioxide by volume excluding the contribution of auxiliary fuel.

(b) Smoke emission standards shall be as follows:

1. The provisions of Subchapter 3 (Smoke) of this Chapter insofar as they relate to smoke from incinerators are superseded by this subsection.

2. No person shall cause, suffer, allow or permit smoke from any incinerator the shade or appearance of which is darker than Number 1 of the Ringelmann Smoke Chart.

i. To be emitted into the open air; or

ii. To be emitted of such opacity within a stack or chimney, or exclusive of water vapor, of such opacity leaving a stack or chimney to a degree greater than the emission designated at Number 1 of the Ringelmann Smoke Chart.

3. The provisions of paragraph 2 of this Subsection shall not apply to:

i. Smoke emitted during the building of a new fire the shade or appearance of which is not greater than Number 2 of the Ringelmann Smoke Chart for a period of three consecutive minutes; or

ii. Emissions of such opacity within a stack or chimney, or exclusive of water vapor, of such opacity leaving a stack or chimney to a degree greater than the emission designated as Number 2 of the Ringelmann Smoke Chart for a period not greater than three consecutive minutes.

(c) No person shall cause, suffer, allow, or permit the emission of particles of unburned waste or ash from any common incinerator or from any special incinerator which are individually large enough to be visible while suspended in the atmosphere.

(d) No person shall construct, install, use or cause to be used any common incinerator or any special incinerator which will result in odors being detectable by sense of smell in any area of human use or occupancy.

(e) Stack test emission standards shall be as follows:

1. Any person responsible for the construction, installation, alteration, or use of an incinerator shall, when ordered by the Department, provide the facilities and necessary equipment for determining the density of smoke being discharged from a stack or chimney and shall conduct such smoke tests using methods approved by the Department. All smoke test data shall be recorded in a permanent log at such time intervals as specified by the Department. The data shall be maintained for a period of not less than one year and shall be available for review by the Department.

2. Any person responsible for the use of a new or existing incinerator shall upon request of the Department provide such sampling facilities and testing facilities exclusive of instruments and sensing devices as may be necessary for the Department to determine the nature and quantity of emissions from such incinerators and shall during such testing, operate the incinerator at a charging rate of waste no less than the designed capacity of the incinerator using materials representative of the types of wastes normally burned. Such facilities may be either permanent or temporary, at the discretion of the person responsible for their provision, and shall conform to all applicable laws and regulations concerning safe construction or safe practice.

7:27-11.4 PERMIT TO CONSTRUCT: CERTIFICATE TO OPERATE

(a) No person shall construct or install any new incinerator, or any new control apparatus, or alter any existing incinerator, or any existing control apparatus without first having obtained a permit to construct, install or alter control apparatus or equipment from the Department, in accordance with the provisions of Subchapter 8 (Permits and Certificates) of this Chapter.

(b) No person shall use or cause to be used any new or altered incinerator, or any new or altered control apparatus without first having obtained a certificate to operate control apparatus or equipment from the Department, in accordance with the provisions of Subchapter 8 (Permits and Certificates) of this Chapter.

7:27-11.5 OPERATION

(a) Written procedures to be followed for proper operation and maintenance for a new incinerator, or an altered existing incinerator, shall be submitted to the Department for review and approval together with the application for a certificate to operate.

(b) Any person in possession of a certificate to operate an incinerator shall maintain said certificate readily available on the operating premises. Operating procedures and rated burning capacity of the incinerator shall be posted at a convenient place as near as practical to the point of operation.

(c) No person shall use or cause to be used any incinerator unless all components connected, or attached to, or serving the incinerator, including control apparatus, are functioning properly and are in use, in accordance with the permit to construct, and the certificate to operate.

7:27-11.6 EXCEPTIONS

The provisions of this Subchapter shall not apply to incinerators installed or used in one or two-family dwellings or in multi-occupied dwellings containing six or less family units one of which is owner occupied.

New Jersey Lead SIP

APPENDIX V-9

New Jersey Administrative Code

Title 7, Chapter 26, Subchapter 10

Additions And Modifications To The New Jersey

Hazardous Waste Management Regulations

ADDITIONS AND MODIFICATIONS TO
THE NEW JERSEY HAZARDOUS WASTE MANAGEMENT REGULATIONS

Proposed: September 10, 1981
Adopted: September 8, 1982
Effective: October 4, 1982

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SUBCHAPTER 10

Additional Operational and Design Standards
for Hazardous Waste Facilities

Effective October 4, 1982

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7:26-10.1 Applicability

(a) This subchapter applies to owners and operators of all facilities which treat, store or dispose of hazardous waste except:

1. As specifically provided otherwise in this subchapter; or

2. To owners or operators exempted by the provisions of N.J.A.C. 7:26-8.1 et seq.; or

3. To owners and operators exempted from the provisions of N.J.A.C. 7:26-9.1 et seq.

7:26-10.2 Relationship to Existing Facilities

(a) An owner or operator who has fully complied with the requirements for existing facilities as defined in N.J.A.C. 7:26-1.4 and N.J.A.C. 7:26-12.1 et seq. must comply with the regulations specified in N.J.A.C. 7:26-11.1 et seq. in lieu of the standards and requirements of this subchapter, until final disposition of the permit application is made.

7:26-10.3 Location Standards for New Hazardous Waste Facilities

(a) Floodplains consideration for the siting of new hazardous waste facilities include the following:

1. A facility located in a 100 year floodplain must be designed, constructed, operated and maintained to prevent washout of any hazardous waste by a 100-year flood unless the owner or operator can demonstrate to the Department that procedures are in effect which will cause the waste to be removed safely, before flood waters can reach the facility, to a location where the wastes will not be vulnerable to floodwaters.

2. As used paragraph 10.3(a)1 of this section:

i. "100-year floodplain" means any land area which is subject to a one percent or greater chance of flooding in any given year from any source;

ii. "Washout" means the movement of hazardous waste from the active portion of the facility as a result of flooding; and

iii. "100-year flood" means a flood that has a one percent chance of being equalled or exceeded in any given year.

(b) Additional regulations concerning the siting of all hazardous waste facilities, including those covered by N.J.S.A. 13:1E-49, the Major Hazardous Waste Facilities Siting Act, will be published in the N.J.A.C. in 1983.

7:26-10.4 Use and Management of Containers

(a) This section applies to owners and operators of all hazardous waste facilities that store containers of hazardous waste, unless:

1. N.J.A.C. 7:26-10.1 or N.J.A.C. 7:26-10.2 provide otherwise; or

2. The container is "empty" pursuant to N.J.A.C. 7:26-8.4.

(b) Rules on containment in container storage areas include the following:

1. Container storage areas must have a containment system that is capable of collecting and holding spills, leaks, and precipitation. The containment system shall:

i. Have a base underlying the containers which is free of cracks or gaps and is sufficiently impervious to contain leaks, spills, and accumulated rainfall until the collected material is detected and removed. The base shall have a permeability rating no greater than 10^{-7} centimenters per second (cm/sec), in addition to adequate structural integrity to withstand the maximum anticipated stress applied to the base due to activities or structures placed in the containment area. The thickness of the base shall be specified in the permit;

ii. Consist of material compatible with the wastes being stored;

iii. Be sloped, or the containment system must be otherwise designed and operated to efficiently drain and remove liquids resulting from leaks, spills or precipitation. Containers shall be protected from contact with accumulated liquids; and

iv. Have sufficient capacity to contain 10 percent of the volume of all of the containers; or the volume of the largest container whichever is greater; additional capacity shall be provided to compensate for any anticipated normal accumulation of rainwater;

2. Run-on into the containment system shall be prevented, unless the Department waives this requirement in the permit after determining that the collection system has sufficient excess capacity in addition to that required in N.J.A.C. 7:26-10.4(b)1.iv to accommodate any run-on which might enter the system;

3. Accumulated precipitation shall be removed from the sump or collection area in as timely a manner as is necessary to prevent blockage or overflow of the collection system; and

4. Spilled or leaked waste shall be removed from the sump or collection area daily.

i. If the collected material is a hazardous waste under N.J.A.C. 7:26-8.1 it shall be managed as a hazardous waste in accordance with all applicable require-ments of Title 7 Chapter 26 of the New Jersey Administrative Code (Rules of the Bureau of Solid Waste Management).

ii. If the collected material is discharged through a point source to water of the State, it is subject to the requirements of NJPDES in N.J.A.C. 7:26-7:14A-1.1 et seq. (Regulations concerning the New Jersey Pollutant Discharge Elimination System).

(c) An owner or operator shall comply with the closure requirements of this subsection.

1. All hazardous waste and hazardous waste residues shall be removed from the containment system at closure. Remaining containers, liners, bases, and soil containing or contaminated with hazardous waste or hazardous waste residues shall be decontaminated or removed.

2. As throughout the operating period, unless the owner or operator can demonstrate in accordance with N.J.A.C. 7:26-8.1 et seq. that the solid waste removed from the containment system at closure is not a hazardous waste, the owner or operator becomes a generator of hazardous waste and shall manage it in accordance with all applicable requirements of Title 7, Chapter 26, of the New Jersey Administrative Code (Bureau of Solid Waste Management).

7:26-10.5 Tanks

(a) This section applies to owners and operators of facilities that use tanks to treat or store hazardous waste except as N.J.A.C. 7:26-10.1 and N.J.A.C. 7:26-10.2 et seq. provide otherwise.

(b) An owner or operator shall comply with the design requirements of this subsection.

1. Tanks shall have sufficient shell strength and, for closed tanks, pressure controls (for example, vents) to assure that they do not collapse or rupture.

2. The Department will review the design of the tanks, including the foundation, structural support, seams and pressure controls. The Department shall require that a minimum shell thickness be maintained at all times to ensure sufficient shell strength. Shell thickness reports shall be kept at the facility for the whole life of the tank. Factors to be considered in establishing minimum thickness include the width, height, and materials of construction of the tank, and the specific gravity of the waste which will be placed in the tank. In reviewing the design of the tank and establishing a minimum thickness, the Department shall rely upon appropriate industrial design standards and other available information.

(c) General operating requirements for tanks include the following:

1. Wastes and other materials which are incompatible with the material of construction of the tank shall not be placed in the tank;

2. The owner or operator shall use appropriate controls and practices to prevent overfilling including, but not limited to:

i. Controls to prevent overfilling (for example, waste feed cutoff system or by-pass system to a standby tank); and

ii. For uncovered tanks, maintenance of sufficient freeboard to prevent overtopping by wave or wind action or by precipitation; sufficient freeboard shall be defined as: at least 60 centimeters (2 feet); or an amount of freeboard other than 60 centimeters based on documentation, acceptable to the Department, that the specified amount of freeboard will prevent overtopping.

(d) [Reserved]

(e) An owner or operator shall comply with the inspection requirements of this subsection.

1. The owner or operator shall inspect:

i. Overfilling control equipment (for example, waste feed cut-off systems and by-pass systems) at least once each operating day to ensure that it is in good working order; continuous monitoring shall be mandatory, unless automatic alarm systems are used, during times when tanks are being filled/used for processing; for the purposes of this subchapter, and N.J.A.C. 7:26-9.4(d), inspection each "operating day" means once every calendar day unless no operations are occurring on-site during this period;

ii. Data gathered from monitoring equipment (for example, pressure and temperature gauges) where present, at least once each operating day to ensure that the tank is being operated according to its design;

iii. Monitoring equipment (for example, pressure and temperature gauges) shall be monitored continuously during use, where no operable automatic alarm system for such equipment exists.

iv. For uncovered tanks, the level of waste in the tank, at least once each operating day to ensure compliance with N.J.A.C. 7:26-10.5(c)2ii;

v. The construction materials of the above-ground portions of the tank, at least each operating day, unless it is determined, and documented by the Department, that conditions warrant more frequent inspection, to detect corrosion or erosion and leaking of fixtures, pipes and seams; and

vi. The area immediately surrounding the tank, at least each operating day, unless it is determined, and documented by the Department that conditions warrant more frequent inspection, to detect obvious signs of leakage (for example, wet spots or dead vegetation).

2. As part of the inspection schedule required in N.J.A.C. 7:26-9.4(f) and in addition to the specific requirements of N.J.A.C. 7:26-10.5(e)1, the owner or operator shall develop and implement a schedule and procedure for assessing the condition of the tank. The schedule and procedure shall be adequate to detect cracks, leaks corrosion or erosion which may lead to cracks or leaks, or wall thinning to less that the thickness required under N.J.A.C. 7:26-10.5(b). Procedures for emptying a tank to allow entry and inspection of the interior shall be established when necessary to detect corrosion or erosion of the tank sides and bottom. The frequency of these assessments shall be based on the material of construction of the tank, the type of corrosion or erosion protection used, the rate of corrosion or erosion observed during previous inspections, and the characteristics of the waste being treated or stored;

3. As part of the contingency plan required under N.J.A.C. 7:26-9.7 the owner or operator shall specify the procedures to be used to respond to tank spills or leakage, including procedures and timing for expeditious removal of leaked or spilled waste and repair of the tank;

4. As required in N.J.A.C. 7:26-9.4(f) the owner or operator shall remedy any leak, crack, or wall thinning in violation of N.J.A.C. 7:26-10.5(b) or equipment or process malfunction in violation of N.J.A.C. 7:26-10.5(c) which is discovered during inspection.

5. Above ground tanks shall be subjected to periodic integrity testing on a schedule which shall take into consideration the construction materials of the tank, substances stored in the tank, soil conditions and other circumstances that affect the life of the tank. Acceptable testing methods include hydrostatic or liquid pressure testing, visual inspection, or a system of non-destructive shell thickness testing; and

6. Underground tanks shall be subjected to periodic integrity testing. Acceptable methods are hydrostatic or product pressure testing or any alternative method acceptable to the Department which reflects the best practical technology standards. Acceptable integrity test accuracy will be specified in the permit.

(f) [Reserved]

(g) [Reserved]

(h) Rules for closure of tanks include the following:

1. At closure, all hazardous waste and hazardous waste residues shall be removed from tanks, discharge control equipment, and discharge confinement structures; and

2. At closure, as throughout the operating period, unless the owner or operator can demonstrate in accordance with N.J.A.C. 7:26-8.1 et seq. that the solid waste removed from a tank is not a hazardous waste, the owner or operator becomes a generator of hazardous waste and shall manage it in accordance with all applicable requirements of Title 7, Chapter 26, of the New Jersey Administrative Code (Bureau of Solid Waste Management).

(i) Special requirements for ignitable or reactive wastes include the following:

1. Ignitable or reactive waste shall not be placed in a tank unless:

i. The waste is treated, rendered, or mixed before or immediately after placement in the tank so that:

(1) The resulting waste, mixture, or dissolution of material no longer meets the definition of ignitable or reactive waste under N.J.A.C. 7:26-8.9 or N.J.A.C. 7:26-8.11, respectively; and

(2) There is compliance with N.J.A.C. 7:26-9.4(e); or

ii. The waste is stored or treated in such a way that it is protected from any material or conditions which may cause the waste to ignite or react; or

iii. The tank is used solely for emergencies;

2. The owner or operator of a facility which treats or stores ignitable or reactive waste in covered tanks shall comply with the National

Fire Protection Association's (NFPA's) buffer zone requirements for tanks, contained in Tables 2-1 through 2-6 of the "Flammable and Combustible Liquids Code "(1977 or 1981)".

3. As required by N.J.A.C 7:26-9.4(b) the waste analysis plan shall include analyses needed to comply with N.J.A.C. 7:26-10.5(i).

4. As required by N.J.A.C. 7:26-9.4(i), the owner or operator shall place the results of each waste analysis and trial test, and any documented information, in the operating record of the facility.

(j) An owner or operator shall comply with the special requirements for incompatible wastes in this subsection.

1. Incompatible wastes, or incompatible wastes and materials shall not be placed in the same tank, unless N.J.A.C. 7:26-9.4(e)2 is complied with.

2. Hazardous waste shall not be placed in an unwashed tank which previously held an incompatible waste or material, unless N.J.A.C. 7:26-9.4(e)2 is complied with.

3. As required by N.J.A.C. 7:26-9.4(b) the waste analysis plan shall include analyses needed to comply with N.J.A.C. 7:26-10.5(j).

4. As required by N.J.A.C. 7:26-9.4(i), the owner or operator must place the results of each waste analysis and trial test, and any documented information, in the operating record of the facility.

7:26-10.6 Surface Impoundments (Reserved)

7:26-10.7 Hazardous Waste Incinerators

(a) This section applies to owners and operators of facilities that incinerate hazardous waste, except as N.J.A.C. 7:26-10.1, N.J.A.C. 7:26-10.2 and N.J.A.C. 7:26-1.4 provide otherwise.

1. If the Department finds, upon an examination of the waste analysis included with Part B of the applicant's permit application, that the analysis of the waste to be burned includes none of the hazardous constituents listed in N.J.A.C. 7:26-8.16 then the department may, in establishing the permit conditions, exempt the applicant from all requirements of this section except N.J.A.C. 7:26-10.7(b) and N.J.A.C. 7:26-10.7(l).

2. The owner or operator of a hazardous waste incinerator may conduct trial burns, subject to the requirements of the short term permit (trial burn permits), as provided in N.J.A.C. 7:26-12.9 and N.J.A.C. 7:27-8.__ .

(b) An owner or operator shall comply with the waste analysis requirements for hazardous waste incinerators in this subsection.

1. The owner or operator shall include an analysis of the waste feed which is sufficient to provide all information as required by the short term permits (trial burn permits), as provided in N.J.A.C. 7:26-12.9.

2. Throughout normal operation the owner or operator must conduct sufficient waste analyses by methods acceptable to the department to verify that waste feed to the incinerator is within the physical and chemical composition limits specified in the permit (under N.J.A.C. 7:26-10.7(f)2). The frequency and method of analyses will be determined on a case by case basis and will be specified in the permit.

(c) Designation of principal organic hazardous constituents and hazardous combustion by-products is as follows:

1. Principal organic hazardous constitutents (POHC's) and hazardous combustion by-products shall be treated to the extent required by the performance standards specified in N.J.A.C. 7:26-10.7(d);

2. For each waste feed to be burned, one or more POHC's and hazardous combustion by-products will be specified by the applicant and approved by the department from among those constitutents listed in N.J.A.C. 7:26-8.16.

i. This specification will be based on the degree of difficulty of incineration of the organic constituents of the waste feed and its combustion by-products, and their concentration or mass in the waste feed and emissions, considering the results of waste analyses and trial burns or alternative data submitted with Part B of the facility's permit application. Organic constituents or by-products which represent the greatest degree of difficulty of incineration will be those most likely to be designated as POHC's or hazardous combustion by-products. Constitutents are more likely to be designated as POHC's or hazardous combustion by-products if they are present in large quantities or concentrations.

ii. Trial POHC's will be designated for performance of trial burns in accordance with the procedure specified in N.J.A.C. 7:26-12.9 for obtaining trial burn permits. Trial hazardous combustion by-products may be designated under the same procedures.

(d) Performance standards for hazardous waste incinerators include the following:

1. Any person responsible for an incinerator burning hazardous waste shall ensure that it is designed, constructed, and maintained so that, when operated in accordance with operating requirements specified under N.J.A.C. 7:26-10.7(f) and 10.7(g) it will meet the following performance standards:

i. An incinerator burning hazardous waste must achieve a destruction and removal efficiency (DRE) of 99.99 percent for each principal organic hazardous constituent (POHC) designated (under N.J.A.C. 7:26-10.7(e)) in its permit for each waste feed. DRE is determined for each POHC from the following equation:

$$DRE = \frac{(W_{in}\ W_{out})}{W_{in}} \times 100\%$$

Where:

W_{in} = Mass feed rate of one principal organic hazardous constituent (POHC) in the waste stream feeding the incinerator, and

W_{out} = Mass emission rate of the same POHC present in exhaust emissions prior to release to the atmosphere.

ii. An incinerator burning hazardous waste containing more than 0.5 percent chlorine by weight must remove at least 99 percent of the total hydrogen chloride from the exhaust gas, and

iii. The stack emissions of total hydrogen halides from any hazardous waste incinerator shall not exceed 50 parts per million (ppm) by volume adjusted to 7 percent oxygen by volume in the wet flue gas using the formula:

$$PPM_7 = PPM_s \times (14/(21-\%O_2))$$

Where:

PPM_7 is the parts per million adjusted to 7% Oxygen

PPM_s is the ppm by volume determined to be in the flue gas, and

$\%O_2$ is the percentage of oxygen determined to be in the wet flue gas.

iv. New hazardous waste incinerators shall not emit particulate matter exceeding 0.03 grains per dry standard cubic foot when corrected to 7 percent oxygen using the procedures presented in the Clean Air Act regulations, "Standards of Performance for Incinerators", 40 CFR 60.50, Subpart E except the percent oxygen obtained from stack gas analysis is to be used to correct particulate matter emissions to 7 percent oxygen (O2) using the following formula:

$$C_7 = C x 14/(21 - \%O_2)$$

where:

C_7 is the concentration of particulate matter corrected to 7 percent oxygen (O_2),

C is the concentration of particulate matter as measured by EPA Method 5, and

$\%O_2$ is the percentage of oxygen (O_2) in the dry flue gas as measured by EPA Method 3.

v. If auxiliary oxygen, other than that in air, is added to the incinerator, the correction factor shall be established by the department during review of the Part B application.

2. For purposes of permit enforcement, compliance with the operating requirements specified in the permit (under N.J.A.C. 7:26-10.7(f)) will be regarded as compliance with this section. However, evidence that compliance with those permit conditions is insufficient to ensure compliance with the performance requirements of this section may be "information" justifying modification, revocation, or reissuance of a permit under N.J.A.C. 7:26-12.

(e) An owner or operator shall comply with the trial burns or permit modifications requirements for wastes not already included in an effective State of New Jersey hazardous waste facility permit.

1. The owner or operator of a hazardous waste incinerator may burn only wastes specified in an approved permit and only under operating conditions specified for those wastes under N.J.A.C. 7:26-10.7(f), except in approved trial burns under N.J.A.C. 7:26-12.9. In order to conduct a trial burn for a new type of waste and/or operating condition, a new air pollution "Permit to Construct, Install, or Alter Control Apparatus or Equipment and Certificate to Operate Control Apparatus or Equipment" pursuant to N.J.A.C. 7:27-8 shall be obtained prior to the trial burn.

2. Wastes, other than hazardous wastes specified in the permit, may be burned only after operating conditions have been specified in a new permit or a permit modification as applicable. Operating requirements for a new type of waste may be based on either trial burn results or alternative data included with Part B of a permit application made under N.J.A.C. 7:26-12.

(f) Any person responsible for operating a hazardous waste incinerator shall comply with the following:

1. A hazardous waste incinerator shall be operated in accordance with operating requirements specified in the permit. Operating requirements will be specified by the department on a case-by-case basis as those demonstrated (in a trial burn or in alternative data as specified in N.J.A.C. 7:26-10.7(e) and included with Part B of a facility's permit application) to be sufficient to comply with the performance standards of N.J.A.C. 7:26-10.7(d);

2. Each set of operating requirements will specify the composition of the waste feed (including acceptable variations in the physical or chemical properties of the waste feed which will not affect compliance with the performance requirement of N.J.A.C. 7:26-10.7(d)) to which the operating requirements apply. For each such waste feed, the permit application shall specify acceptable operating limits including the following conditions:

i. Carbon monoxide (CO) concentration by volume in the stack exhaust gas;

ii. Waste feed rate;

iii. Combustion temperature;

iv. Air feed rate to the combustion system;

v. Allowable variations in incinerator system operating parameters; and

vi. Such other operating requirements as are necessary to ensure that the performance standards of N.J.A.C. 7:26-10.7(d) are met.

3. During start-up and shut-down of an incinerator, hazardous waste shall not be fed into the incinerator unless the incinerator is operating within the conditions of operation (such as temperature, air feed rate) specified in the permit.

4. Fugitive emissions from the combustion zone must be controlled by:

i. Keeping the combustion zone totally sealed against fugitive emissions; or

ii. Maintaining a combustion zone pressure lower than atmospheric pressure; or

iii. An alternative means of control demonstrated (with Part B of the permit application) to provide fugitive emissions control equivalent to maintenance of combustion zone pressure lower than atmospheric pressure.

5. A hazardous waste incinerator shall be operated with a functioning system that will automatically cut off all waste feed to the incinerator when critical operating conditions such as, but not limited to, combustion temperature and scrubber liquor pressure drop, deviate from limits established under N.J.A.C. 7:26-10.7(f)1. Critical operating conditions requiring automatic waste feed cut-off systems shall be designated by the department as part of the permit review process.

6. A hazardous waste incinerator shall cease operation if changes in waste feed, or operating conditions exceed limits designated in its permit;

7. In addition to the requirements of this subchapter, no person shall use or cause to be used any equipment or control apparatus unless:

i. All conditions and provisions of the "Permit to Construct, Install or Alter Control Apparatus or Equipment and Certificate to Operate Control Apparatus or Equipment" as required by N.J.A.C. 7:27-8 (Rules of the Bureau of Air Pollution Control) are fulfilled; and

ii. All components connected or attached to, or serving the equipment and/or control apparatus are functioning properly and are in use in accordance with the "Permit to Construct, Install or Alter Control Apparatus or Equipment and Certificate to Operate Control Apparatus or Equipment" as required by N.J.A.C. 7:27-8.

8. Specific standards for metals in the waste feed, and stack emissions of metals and acid gases will be specified by the applicant and approved by the department and will be included as permit conditions.

(g) Any person responsible for operating a new hazardous waste incinerator shall insure that the incinerator complies with the following design requirements:

1. The minimum temperature of combustion gases in a defined high temperature zone shall be at least $1800^{\circ}F$. Temperature shall be continuously monitored at point(s) designated by the department, including the exit of the high temperature zone.

2. The minimum residence time of the combustion gases in the defined high temperature zone shall be at least two seconds, calculated by dividing the high temperature zone volume by the combustion gas volume flow rate at $1800^{\circ}F$.

3. If waste with a total halogen content exceeding 0.5 percent by weight is to be burned, the minimum temperature of combustion gases in a defined high temperature zone shall be at least $2000^{\circ}F$.

4. If waste with a total halogen content exceeding 0.5 percent by weight is to be burned, the minimum residence time of the combustion gases in the defined high temperature zone must be at least two seconds, calculated by dividing the high temperature zone volume by the combustion gas volume flow rate at $2000^{o}F$.

5. The design shall address the need for adequate turbulence in the high temperature zone.

6. The department may grant a variance from the provisions of this subsection if the applicant demonstrates to the satisfaction of the department that alternative design specifications will achieve the performance specifications of subsection 10.7(d)1i. Any variances issued pursuant to the provisions of this subsection shall be conditional on compliance with any requirements which the department deems to be necessary.

(h) Monitoring and inspections requirements for hazardous waste incinerators include the following:

1. The owner or operator shall conduct, as a minimum, the following monitoring while incinerating hazardous waste:

i. Combustion temperature, waste feed rate, auxilliary fuel feed rate, and air feed rate shall be monitored on a continuous basis.

ii. Carbon monoxide (CO) and oxygen (O_2) shall be monitored on a continuous basis at a point in the incinerator downstream of the combustion zone and prior to release to the atmosphere.

iii. Upon request by the department, sampling and analysis of the waste and exhaust emissions shall be conducted to verify that the operating requirements established in the permit achieve the performance standards of N.J.A.C. 7:26-10.7(d).

iv. Upon request by the department, monitoring on a continuous basis at a point in the incinerator downstream of the combustion zone and prior to release to the atmosphere shall be conducted for sulfur dioxide, total organics, opacity, or any other contaminant or parameter specified by the department.

2. The incinerator and associated equipment (such as pumps, valves, conveyors, pipes) shall be completely inspected at least daily for leaks, spills, and fugitive emissions. All emergency waste feed cut-off controls and system alarms must be checked daily to verify proper operation.

3. This monitoring and inspection data shall be recorded and the records shall be placed in the operating log required by N.J.A.C. 7:26-9.4.

(i) [Reserved]

(j) [Reserved]

(k) [Reserved]

(l) Closure requirements for hazardous waste incinerators include the following:

1. The owner or operator shall remove all hazardous waste and hazardous waste residues (including but not limited to ash, scrubber waters, and scrubber sludges) from the incinerator site.

2. The scrubber water shall be tested and approval received from the Department before discharge to publicly owned treatment works (POTW) or to a navigable water.

3. Unless the owner or operator demonstrates to the Department that the residue removed from the incinerator is not a hazardous waste, then the owner or operator becomes a generator of hazardous waste and shall manage it in accordance with applicable requirements of N.J.A.C. 7:26-1 et seq. (Rules of the Bureau of Solid Waste Management).

(m) The Department intends to propose modifications to this rule concerning hazardous waste incinerators, after evaluation of EPA's interim final amendments published in the Federal Register (Vol. 47, No. 122, pg. 27520.

7:26-10.8 Hazardous Waste Landfills [Reserved]

7:26-10.9 Thermal Treatment [Reserved]

7:26-10.10 Chemical, Physical and Biological Treatment [Reserved]

II. N.J.A.C. 7:26-1.4 (Definitions)

Additional definitions were proposed to be added to the rules concerning solid and hazardous waste. The adopted language follows.

The definition of "authorized facility" needed modification to be consistent with the revised criteria for exemption from the hazardous waste incinerator permit requirements. The added language provides the requirement of waste classification and manifesting by the generator when shipping waste to be burned at an intra-company, intra-state facility.

"Authorized facility" means a hazardous waste treatment, storage or disposal facility which has received a permit to operate from the USEPA or N.J. DEP (or a facility determined by the N.J.DEP to be in full compliance with all requirements set forth in N.J.A.C. 7:26-12.3 governing the operations of existing hazardous waste facilities until final disposition of the permit application is made) in accordance with the requirements of 40 CFR Parts 122 and 124, N.J.A.C. 7:26-1.1 et seq., or a permit or other permission to operate from a State authorized in accordance with 40 CFR 123. Those facilities exempt from the N.J. hazardous waste facility permitting requirements, as designated at N.J.A.C. 7:26-12.1(b)7, are considered "authorized facilities" for the purpose of the regulations found in N.J.A.C. 7:26-7 and 8.

"Hazardous waste incinerator" means a device using combustion to decompose hazardous waste. A device burning hazardous waste is not a hazardous waste incinerator if:

i. The wastes to be burned in the device are to be beneficially used orreused as a fuel for the purpose of recovering useable energy, and are limited to on-site wastes or specific wastes between intra-company and intra-state facilities under the control of the same person. Said wastes to be burned pursuant to this authorization shall be fully classified in accordance with the requirements of N.J.A.C. 7:26-8, and shipped using N.J.DEP manifests in accordance with the requirements of N.J.A.C. 7:26-7.

ii. A "Permit to Construct, Install or Alter Control Apparatus or Equipment and Certificate to Operate Control Apparatus or Equipment" has been issued in accordance with the provisions of N.J.A.C. 7:27-8. Such permit description must include a listing of each specific waste, the composition of each waste, and the process from which each waste was generated.

iii. The rated gross heat input of the device is greater than 20 million British Thermal Units (BTU) per hour.

iv. The device has a minimum combustion efficiency of at least 99.9%, as determined by the following formula where carbon dioxide (CO_2) and carbon monoxide (CO) are measured in concentration by volume:

$$\text{Combustion efficiency} = CO_2/(CO_2+CO) \times 100\%$$

v. The device is continuously monitored for O_2 and either CO or total hydrocarbons and the levels are continuously recorded.

vi. A full-time operator is present when the waste is burned. If the device is a boiler, the engineer-in charge must possess a current, 1-C "blue-seal" third class engineers license.

vii. The device is located in an area zoned for industrial use, and shall not be located in a residential building.

"Incinerator" means a thermal device in which solid waste is burned for the purposes of volume reduction (an incinerator used to obtain energy shall be classified as a resource recovery facility).

"New hazardous waste incinerator" means a hazardous waste incinerator which began operation, or for which construction commenced, after January 1, 1982. Construction commenced if the owner or operator has obtained all necessary Federal permits as well as any permit by the Solid Waste Administration and either:

1. a continuous physical, on-site construction program has begun; or

2. the owner or operator has entered into contractual obligations - which cannot be cancelled or modified without substantial loss - for the construction of the facility to be completed within a reasonable time.

III. Amendments adopted pursuant to changes proposed September 10, 1981

(A.) N.J.A.C. 7:26-7.4 Hazardous Waste Manifest System and Handling Requirements - Generator Responsibilities.

As the definition of "Authorized facility" is being amended in this rule package, it is therefore necessary to amend this provision within Subchapter 7 so that the rules are consistent.

N.J.A.C. 7:26-7.4(e)3. It shall be considered a violation of these regulations for a hazardous waste generator to:

1. through 2. - (no change)

3. Designate on the manifest form a hazardous waste facility which is not an authorized facility (See N.J.A.C. 7:26-1.4) or

4. - (no change)

(B.) N.J.A.C. 7:26-9; Requirements for Hazardous Waste Facilities

The language of N.J.A.C. 7:26-9 was proposed to be modified so as to remain consistent with N.J.A.C. 7:26-10.1 et seq. The adopted language follows:

N.J.A.C. 7:26-9.1(c) The standards and requirements of this subchapter do not apply to:

1. through 8. - (no change)

9. The owner or operator of a device burning a hazardous waste, provided the following conditions are met:

i. The wastes to be burned in the device are limited to on-site wastes or specific wastes between intra-company and intra-state facilities under the control of the same person. Said wastes to be burned pursuant to this authorization shall be fully classified in accordance with the requirements of N.J.A.C. 7:26-8, and shipped using N.J.DEP manifests in accordance with the requirements of N.J.A.C. 7:26-7.

ii. A "Permit to Construct, Install or Alter Control Apparatus or Equipment and Certificate to Operate Control Apparatus or Equpment" has been issued in accordance with the provisions of N.J.A.C. 7:27-8. Such permit description must include a listing of each specific waste, the composition of each waste, and the process from which each waste was generated.

iii. The rated gross heat input of the device is greater than 20 million British Thermal Units (BTU) per hour.

iv. The device has a minimum combustion efficiency of at least 99.9%, as determined by the following formula where carbon dioxide (CO_2) and carbon monoxide (CO) are measured in concentration by volume:

$$\text{Combustion efficiency} = CO_2/(CO_2+CO) \times 100\%$$

v. The device is continuously monitored for O_2 and either CO or total hydrocarbons and the levels are continuously recorded.

vi. A full-time operator is present when the waste is burned. If the device is a boiler, the engineer-in-charge must possess a current, 1-C "blue seal" third class engineers license.

vii. The device is located in an area zoned for industrial use, and shall not be located in a residential building.

N.J.A.C. 7:26-9.2(b) No person shall cause, suffer, allow or permit:

1. through 2. - (No change)

3. The use of any existing underground hazardous waste storage tank unless:

i. Monitoring pursuant to N.J.A.C. 7:14A-6.1 et seq. is performed;

ii. Such use is limited to the specified lifetime of the tank; and

iii. It is managed pursuant to N.J.A.C. 7:26-10.5(e)6; and

4. - (No Change)

The language of N.J.A.C. 7:26-9.4(b)2 was proposed to be modified to include a cross reference to N.J.A.C. 7:26-10.1 et seq. The adopted language follows:

N.J.A.C. 7:26-9.4(b)2. The owner or operator must develop and follow a written waste analysis plan which describes the procedures which the owner or operator will perform to comply with N.J.A.C. 7:26-9.4(b)1. The owner or operator must keep this plan at the facility. At a minimum the plan must specify:

i. through v. - (No Change)

vi. Where applicable, the methods which will be used to meet the additional waste analysis requirements for specific waste management methods as specified in N.J.A.C. 7:26-10.1 et seq. and N.J.A.C. 7:26-11.1 et seq.

The language of N.J.A.C. 7:26-9.4(d)7 was proposed to be modified to delete the reference requiring compliance with N.J.A.C. 7:26-9.4(e)2 when mixing incompatible wastes, as mixing such wastes was proposed to be forbidden. As the Department has decided to allow this practice, appropriate precautions must be undertaken; these precautions are found at N.J.A.C. 7:26-9.4(e)2, hence the language of N.J.A.C. 7:26-9.4 need not be modified. The adopted language follows.

N.J.A.C. 7:26-9.4(d) 7. Special requirements for incompatible wastes include the following:

i. Incompatible wastes, or incompatible wastes and materials, shall not be placed in the same container, except in compliance with N.J.A.C. 7:26-9.4(e)2;

ii. Hazardous waste shall not be placed in an unwashed container that previously held an incompatible waste or material, except in compliance with N.J.A.C. 7:26-9.4(e)2;

iii. A storage container holding a hazardous waste that is incompatible with any waste or other materials stored nearby in other containers, open tanks, or surface impoundments shall be separated from the other materials or protected from them by means of a dike, berm, wall, or other device.

The language of N.J.A.C. 7:26-9.4(e)2 was proposed to be modified to delete the reference to the mixture of incompatible wastes, or incompatible wastes and materials, as proposed N.J.A.C. 7:26-10.1 et seq. did not allow the mixing of such wastes. The Department has decided to allow this practice, and the modification is, therefore, not necessary. The adopted language follows.

N.J.A.C. 7:26-9.4(e) General requirements for ignitable, reactive, or incompatible wastes include the following:

1. (No Change)

2. The treatment, storage, or disposal of ignitable or reactive waste, and the mixture of incompatible wastes, or incompatible wastes and materials, shall be conducted so that it does not:

i. (No Change).......
to
v. (No Change)

(C.) N.J.A.C. 7:26-11; Additional Requirements for Hazardous Waste Facilities Operating under Existing Facility Status

The language of N.J.A.C. 7:26-11 was proposed to be modified so as to remain consistent with the language of N.J.A.C. 7:26-10. The adopted language follows.

The language of N.J.A.C. 7:26-11.2 and 11.3 was proposed to be modified to delete the reference requiring compliance with N.J.A.C. 7:26-9.4(e)2 when mixing incompatible wastes, as mixing such wastes was proposed to be forbidden. As the Department has decided to allow this practice, appropriate precautions must be undertaken; these precautions are found at N.J.A.C. 7:26-9.4(e)2, hence the language of N.J.A.C. 7:26-11.2 and 11.3 need not be modified.

The language of N.J.A.C. 7:26-11.5 was proposed to be modified so as to remain consistent with the language of N.J.A.C. 7:26-10.

The adopted language follows:

N.J.A.C. 7:26-11.2(f) Special requirements for incompatible wastes include the following:

1. Incompatible wastes, or incompatible wastes and materials, shall not be placed in the same tank, except in compliance with N.J.A.C. 7;26-9.4(e)2; and

2. Hazardous waste shall not be placed in an unwashed tank which previously held an incompatible waste or material, except in compliance with N.J.A.C. 7:26-9.4 (e)2.

N.J.A.C. 7:26-11.3(g) Incompatible wastes, or incompatible wastes and materials, shall not be placed in the same surface impoundment, unless N.J.A.C. 7:26-9.4(e)2 is complied with.

7:26-11.5 Hazardous Waste Incinerators

(a) An owner or operator shall comply with the general operating requirements of this subsection.

1. Before adding hazardous waste, the owner or operator shall bring the incinerator to steady state (normal) conditions of operation--including steady state operating temperature and air flow-using auxiliary fuel or other means.

2. The total amount of mercury in the waste feed shall not exceed 2000 grams per day.

3. If the total amount of lead in the waste feed is to exceed 1000 grams per day, the owner or operator shall:

i. Determine by use of an air quality simulation model approved by the department, whether the stack emissions of lead would jeopardize or contribute to a contravention of the National Ambient Air Quality Standards (NAAQS) for lead; and

ii. Institute a feed limitation for lead, approved by the department, which protects the NAAQS for lead.

4. The stack emissions of sulfur dioxide shall not exceed 310 parts per million by volume adjusted to 12 percent carbon dioxide by volume in the wet flue gas.

5. The stack emissions of hydrogen halides shall not exceed 50 parts per million by volume adjusted to 7 percent oxygen by volume in the wet flue gas. An incinerator burning hazardous waste containing more than 0.5 percent chlorine by weight shall be controlled to remove at least 99 percent of the hydrogen chloride from the exhaust gas.

6. If auxiliary oxygen, other than that in air, is added to the incinerator, the adjustment factor for adjusting concentration to 7 percent oxygen by volume shall be established by the department during review of the Part B application. When auxilliary oxygen is not added to the incinerator, the adjustment factor shall be $14/(21-\%O_2)$, where $\%O_2$ is the percentage oxygen in the wet flue gas.

(b) Waste analysis requirements for hazardous waste incinerators include the following:

1. In addition to the waste analyses required by N.J.A.C. 7:26-9.4(b), the owner or operator shall sufficiently analyze any waste which has not been previously burned in the incinerator to enable the owner or operator to establish steady state (normal) operating conditions and to determine the type of pollutants which might be emitted. At a minimum, the analysis shall determine:

i. Heating value of the waste;

ii. Halogen content and sulfur content in the waste; and

iii. Concentrations in the waste of lead and mercury, unless the owner or operator has written, documented data that show that the element is not present; and

2. As required by N.J.A.C. 7:26-9.4(i), the owner or operator shall place the results from each waste analysis and trial test, or the documented information, in the operating record of the facility.

(c) The owner or operator shall conduct, as a minimum, the following monitoring and inspections when incinerating hazardous waste:

1. Existing instruments which relate to combustion and emission control shall be monitored at least every 15 minutes. Appropriate

corrections to maintain steady state combustion conditions shall be made immediately either automatically or by the operator. Instruments which relate to combustion and emission control would normally include those measuring waste feed, auxiliary fuel feed, air flow, incinerator temperature, scrubber flow, scrubber pH, and relevant level controls.

2. The stack plume (emissions) shall be observed at least hourly for normal color and opacity unless darkness or weather conditions prohibit. The operator shall immediately make any indicated operating correction necessary to return visible emissions to their normal appearance. Based on the appearance of the plume during the trial burn the department may specify a maximum opacity standard as a condition of the operating permit.

3. The complete incinerator and associated equipment shall be inspected at least daily for leaks, spills, and fugitive emissions, and all emergency shutdown controls and system alarms shall be checked to assure proper operation.

(d) At closure, the owner or operator shall remove all hazardous waste and hazardous waste residues from the incinerator including but not limited to ash, scrubber waters, and scrubber sludges.

(e) The Department intends to propose modifications to this rule concerning hazardous waste incinerators, after evaluation of EPA's interim final amendments published in the Federal Register (Vol. 47, No. 122, pg. 27520).

(D.) N.J.A.C. 7:26-12; Hazardous Waste Facility Permit Requirements

The language of N.J.A.C. 7:26-12 has been modified so as to remain consistent with the definition of hazardous waste incinerator adopted today at N.J.A.C. 7:26-1.4. The amended language follows:

N.J.A.C. 7:26-12.1(b) The following persons are not required to obtain a permit pursuant to this subchapter to conduct the following activities or construct or operate the following hazardous waste facilities:

1. through 6. - (No Change)

7. The owner or operator of a device burning hazardous waste provided the following conditions are met (see N.J.A.C. 7:26-9.1(c) 9:

i. The waste to be burned in the device are limited to on-site wastes or specific wastes between intra-company and intra-site facilities under the control of the same person. Said wastes to be burned pursuant to this authorization shall be fully classified in accordance with the requirements of N.J.A.C. 7:26-8, and shipped using N.J. DEP manifests in accordance with the requirements of N.J.A.C. 7:26-7.

ii. A "Permit to Construct, Install or Alter Control Apparatus or Equipment" has been issued in accordance with the provisions of N.J.A.C. 7:27-8. Such permit description must include a listing of each specific waste, the composition of each waste, and the process from which each waste was generated.

iii. The rate gross heat input the device is greater than 20 million British Thermal Units (BTU) per hour.

iv. The device has a minimum combustion efficiency of at least 99.9% as determined by the following formula where carbon dioxide (CO_2) and carbon monoxide (CO) are measured in concentration by volume:

$$\text{Combustion efficiency} = CO_2/(CO_2+CO) \times 100\%$$

v. The device is continuously monitored for O_2 and either CO or total hydrocarbons, and the levels are continuously recorded.

vi. A full-time operator is present when the waste is burned. If the device is a boiler, the engineer-in-charge must possess a current, 1-C "blue-seal" third class engineers license.

vii. The device is located in an area zoned for industrial use, and shall not be located in a residential building.

N.J.A.C. 7:26-10.3(a), seismic considerations for the siting of new hazardous waste facilities, was deleted from proposed subchapter 10 in response to public comment, as well as documentation provided by the federal

EPA. The following amendments are being made to N.J.A.C. 7:26-12, to remain consistent with the adopted language of subchapter 10.

N.J.A.C. 7:26-12.2(e) All applicants shall provide the following information in Part B of the permit application:

1. through 13. - (No Change)

14. (Reserved)

15. Identification of whether a facility is located within a 100 yeaar floodplain.

i. through ii. - (No Change)

iii. Owners and operators of facilities located in the 100-year floodplain shall provide the following information:

(1) through (3)(D) - (No Change)

(E) Existing facilities not in compliance with N.J.A.C. 7:26-10.3 (a) shall provide a plan shown how the facility will be brought into compliance and a schedule for compliance.

16. through 21. - (No Change)

The following citation change is made to correct a typographical error.

N.J.A.C. 7:26-12.2(f). The following additional information is required from an owner or operator of specific types of hazardous waste management facilities that are used or to be used for storage or treatment:

1. through 3.i. - (No change)

ii. Detailed drawings of the structure which is or will be provided to immediately stop flow into the impoundment to comply with N.J.A.C. 7:26-10.6 (h) or, if no structure is needed to comply with N.J.A.C. 7:26-10.6(h), a description of the means by which waste additions will be stopped.

iii. through xii. - (No Change)

4. through 5. - (No Change)

ADDITIONS AND MODIFICATIONS TO
THE NEW JERSEY HAZARDOUS WASTE MANAGEMENT REGULATIONS

Proposed: September 10, 1981
Adopted: September 8, 1982
Effective: October 4, 1982

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SUBCHAPTER 10

Additional Operational and Design Standards
for Hazardous Waste Facilities

Effective October 4, 1982

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New Jersey Lead SIP

APPENDIX V-10

New Jersey Administrative Code
Title 7, Chapter 27, Subchapter 13
Ambient Air Quality Standards

NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION

NEW JERSEY ADMINISTRATIVE CODE

TITLE 7, CHAPTER 27

SUBCHAPTER 13

AMBIENT AIR QUALITY STANDARDS

Promulgated: October 23, 1969
Effective: December 22, 1969

Revision Promulgated: January 4, 1973
Revision Effective: March 5, 1973

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7:27-13.1 DEFINITIONS

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

"Air contaminant" means solid particles, liquid particles, vapors or gases which are discharged into the outdoor atmosphere.

"Ambient air quality standard" means a limit on the concentration of a contaminant in the general outdoor atmosphere, which cannot be exceeded without causing or tending to cause injury to human health, welfare, animal or plant life or property, or unreasonably interfering with the enjoyment of life and property, excluding all aspects of employer-employee relationship as to health and safety hazards.

"Carbon monoxide (CO)" means a colorless, odorless, tasteless gas at standard conditions, having a molecular composition of one carbon atom and one oxygen atom and which, for purposes of this Subchapter, shall be collected and analyzed by procedures adopted and published by the Department.

"Department" means the Department of Environmental Protection.

"Hydrocarbons" means gas phase organic compounds consisting of carbon and hydrogen and the oxidation products of such compounds which serve as precursors of photochemical oxidants and which, for purposes of this Subchapter, shall be collected and analyzed by procedures adopted and published by the Department.

"Nitrogen dioxide (NO_2)" means a gaseous compound at standard conditions, having a molecular composition of one nitrogen atom and two oxygen atoms and which, for purposes of this Subchapter, shall be collected and analyzed by procedures published and adopted by the Department.

"Photochemical oxidants" means compounds resulting from atmospheric reactions between reactive organic substances and nitrogen oxides in the presence of sunlight and ozone and which, for purposes of this Subchapter, shall be collected and analyzed by procedures published and adopted by the Department.

"Primary air quality standard" means an ambient air quality standard intended to protect the public health.

"Secondary air quality standard" means an ambient air quality standard intended to protect the public welfare.

"Standard conditions" shall be 70 degrees Fahrenheit and one atmosphere pressure (14.7 psia or 760 mm Hg).

"Sulfur dioxide (SO_2)" means a colorless gas at standard conditions, having a molecular composition of one sulfur atom and two oxygen atoms and which, for purposes of this Subchapter, shall be collected and analyzed by procedures adopted and published by the Department.

"Suspended particulate matter" means any solid or liquid matter dispersed in the outdoor atmosphere which, for purposes of this Subchapter, shall mean the material collected and analyzed by procedures adopted and published by the Department.

7:27-13.2 GENERAL AMBIENT AIR QUALITY STANDARDS

(a) Whereas air is vital to life and contamination of it to any degree is a condition to be endured reluctantly; and whereas our knowledge of the long-term harmful effects of low levels of contamination is incomplete and uncertain; therefore, it is the air quality objective of the Department to assure, at all times and throughout the territory of the State, ambient air of the highest purity achievable by the installation and diligent operation and maintenance of pollution source control devices and methods consistent with the lawful application of the most advanced state of the art.

(b) Furthermore, it is the objective of the Department, by prevention and correction, so to enhance the quality of our outdoor air that as a minimum, and throughout the State, air quality will be in accord at least with the numerical air quality standards for specific pollutants set forth in subsequent Sections of this Subchapter.

(c) An implementation plan of action to meet air quality standards will be adopted by the Department and, from time to time, amended as necessary. The plan will incorporate all pertinent air pollution control regulations which limit or prevent the emission into the atmosphere of air contaminants for which air quality standards have been adopted. The plan also will include interim air quality objectives whose achievement through rigorous enforcement can then be predicted.

7:27-13.3 AMBIENT AIR QUALITY STANDARDS FOR SUSPENDED PARTICULATE MATTER

(a) Primary air quality standards are:

1. During any 12-consecutive months, the geometric mean value of all 24-hour averages of suspended particulate matter concentrations in ambient air shall not exceed 75 micrograms per cubic meter; and

2. During any 12-consecutive months, 24-hour average concentrations may exceed 260 micrograms per cubic meter no more than once.

(b) Secondary air quality standards are:

1. During any 12-consecutive months, the geometric mean value of all 24-hour averages of suspended particulate matter concentrations in ambient air shall not exceed 60 micrograms per cubic meter; and

2. During any 12-consecutive months, 24-hour average concentrations may exceed 150 micrograms per cubic meter no more than once.

7:27-13.4 AMBIENT AIR QUALITY STANDARDS FOR SULFUR DIOXIDE

(a) The primary air quality standards are:

1. During any 12-consecutive months, the arithmetic mean concentration of sulfur dioxide in ambient air shall not exceed 80 micrograms per cubic meter (0.03 ppm): and

2. During any 12-consecutive months, 24-hour average concentrations may exceed 365 micrograms per cubic meter (0.14 ppm) no more than once.

(b) The secondary air quality standards are:

1. During any 12-consecutive months, the arithmetic mean concentration of sulfur dioxide in ambient air shall not exceed 60 micrograms per cubic meter (0.02 ppm); and

2. During any 12-consecutive months, 24-hour average concentrations may exceed 260 micrograms per cubic meter (0.1 ppm) no more than once; and

3. During any 12-consecutive months, three-hour average concentrations may exceed 1,300 micrograms per cubic meter (0.5 ppm) no more than once.

7:27-13.5 AMBIENT AIR QUALITY STANDARDS FOR CARBON MONOXIDE

(a) The primary and secondary air quality standards are:

1. ~~During~~ any ~~12~~-consecutive months, the eight-hour average concentration of carbon monoxide in ambient air may exceed ten milligrams per cubic meter (9 ppm) no more than once; and

2. During any 12-consecutive months, one-hour average concentrations may exceed 40 milligrams per cubic meter (35 ppm) no more than once.

7:27-13.6 AMBIENT AIR QUALITY STANDARD FOR PHOTOCHEMICAL OXIDANTS

During any 12-consecutive months, the one-hour average concentration of photochemical oxidants in ambient air may exceed 160 micrograms per cubic meter (0.08 ppm) no more than once.

7:27-13.7 AMBIENT AIR QUALITY STANDARD FOR HYDROCARBONS

During any 12-consecutive months, the average concentration of hydrocarbons, except methane, in ambient air during the three-hour period from 6:00 A.M. to 9:00 A.M. may exceed 160 micrograms per cubic meter (0.24 ppm) no more than once.

7:27-13.8 AMBIENT AIR QUALITY STANDARD FOR NITROGEN DIOXIDE

During any 12-consecutive months, the arithmetic mean concentration of nitrogen dioxide in ambient air shall not exceed 100 micrograms per cubic meter (0.05 ppm).

New Jersey Lead SIP

APPENDIX V-11

New Jersey Administrative Code
Title 7, Chapter 27, Subchapter 15
Control And Prohibition of Air Pollution From
Light Duty Gasoline-Fueled Motor Vehicles

Draft Of Proposed Revisions

PROPOSED DRAFT

NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION

NEW JERSEY ADMINISTRATIVE CODE

TITLE 7, CHAPTER 27

SUBCHAPTER 15

CONTROL AND PROHIBITION OF AIR POLLUTION FROM [LIGHT-DUTY] GASOLINE-FUELED MOTOR VEHICLES

Filed: January 6, 1972
Effective: July 5, 1972

Amendment Promulgated June 22, 1973; Effective Date: July 1, 1973
Amendment Promulgated June 28, 1974; Effective Date: July 1, 1974
Amendment Promulgated January 31, 1975; Effective Date: February 1, 1975
Amendment Promulgated April 1, 1975; Effective Date: April 1, 1975
Amendment Promulgated January 7, 1976; Effective Date: February 1, 1976
Amendment Promulgated ; Effective Date:

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7:27-15.1 Definitions

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

"Approved exhaust gas analytical system" means a device for sensing the amount of air contaminants in the exhaust emissions of a motor vehicle. For purposes of this Subchapter, this shall mean analyzing devices of the nondispersive infrared type sensitized to measure carbon monoxide at the 4.74 micron band expressed as percent carbon monoxide in air and to measure hydrocarbons as hexane at the 3.41 micron band expressed as parts per million of hydrocarbons (hexane) in air. [The device shall be of a design meeting "SPECIFICATIONS FOR EXHAUST GAS ANALYTICAL SYSTEM" on file with the Commissioner of Environmental Protection and approved for use in accordance with the manufacturer's recommended procedures for calibration and maintenance.] <u>The device shall be approved by the Department as one which is in accordance with specifications contained in "Operational Procedures for Motor Vehicle Emission Inspection", prepared and distributed by the Department.</u>

"Carbon monoxide <u>(CO)</u>" means a [non-irritating] colorless, odorless, <u>tasteless</u> gas [at standard conditions which has the molecular form of CO] <u>having a molecular composition of one carbon atom and one oxygen atom.</u>

<u>"Commissioner" means the Commissioner of the Department of Environmental Protection.</u>

"Crankcase emissions" means [substances] smoke emitted into the atmosphere from any portion of the engine crankcase ventilation or lubrication systems.

<u>"Department" means the Department of Environmental Protection.</u>

"Emission control apparatus" means any device employed by the vehicle manufacturer which prevents or controls the emission of any air contaminant.

"Exhaust emissions" means substances emitted into the atmosphere from any opening downstream from the exhaust ports of a motor vehicle engine.

"Gasoline fueled motor vehicle" means any motor vehicle originally equipped or modified to be powered by a hydrocarbon fuel other than diesel fuel.

"Heavy-Duty" means any motor vehicle designed primarily for transportation of persons or property and registered as exceeding 6,000 pounds gross weight.

"Hydrocarbons (HC)" means compounds whose [molecular] molecules consist of atoms of hydrogen and carbon only.

"Idle" means the vehicle test mode of the prescribed inspection test procedure, consisting of a non-loaded, throttled engine speed at the revolutions per minute specified by the manufacturer.

"Light-Duty" means any motor vehicle designed primarily for transportation of persons or property and registered at 6,000 pounds gross weight or less.

"Model year of vehicle" means the production period of new motor vehicles or new motor vehicle engines designated by the calendar year in which such period ends. If the manufacturer does not designate a production period, the model year with respect to such vehicles or engines shall mean the 12-month period beginning January of the year in which production begins.

"Motorized Bicycle" means a pedal bicycle having a helper motor characterized in that either the maximum piston displacement is less than 50 cc. or said motor is rated at no more than 1.5 brake horsepower and said bicycle is capable of a maximum speed of no more than 25 miles per hour on a flat surface.

"Motor vehicle" means all vehicles propelled otherwise than by muscular power, excepting such vehicles as run only upon rails or tracks and motorized bicycles.

"New motor vehicle" means a newly-manufactured motor vehicle registered in New Jersey, prior to delivery to the ultimate purchaser.

"New motor vehicle dealer" means a sales agency, his employees, and/or agents licensed pursuant to N.J.S.A. 39:10-19 to sell new motor vehicles.

"Person" means corporations, companies, associations, societies, firms, partnerships, and joint stock companies as well as individuals, and shall also include all political subdivisions of this State or any agencies or instrumentalities thereof.

"Predelivery checklist" means a schedule of items and procedures which a new motor vehicle dealer is required or requested by a manufacturer to check or follow prior to delivery of a new motor vehicle to the ultimate purchaser.

"Prescribed inspection test procedure" means a method as prescribed by the Department for testing exhaust emissions from light and heavy-duty vehicles.

"Smoke" means small gasborne and airborne particles, exclusive of water vapor, arising from a process of combustion in sufficient number to be observable.

"Ultimate purchaser" means any person, other than a motor vehicle dealer purchasing in his capacity as a motor vehicle dealer, who in good faith purchases a motor vehicle for purposes other than for resale as a motor vehicle dealer.

7:27-15.2 PUBLIC HIGHWAY STANDARD

(a) No person shall [operate] cause, suffer, allow or permit the operation of any [light-duty] gasoline-fueled motor vehicle [or permit such vehicle which he owns to be operated] upon the public highways of the State if the vehicle emits visible smoke in the exhaust emissions or in the crankcase emissions for a period in excess of three (3) consecutive seconds.

[(b) The provisions of this subsection shall become effective July 1, 1972.]

(b) No person shall cause, suffer, allow or permit the operation of any light-duty gasoline-fueled motor vehicle upon the public highways of the State if the vehicle emits hydrocarbons (HC) or carbon monoxide (CO) in the exhaust emissions in excess of standards as set forth in Table 1 when measured using an approved exhaust gas analytical system and the prescribed inspection test procedure for light-duty, gasoline fueled motor vehicles.

(c) No person shall cause, suffer, allow or permit the operation of any heavy-duty gasoline-fueled motor vehicle upon the public highways of the State if the vehicle emits hydrocarbons (HC) or carbon monoxide (CO) in the exhaust emissions in excess of standards as set forth in Table 2 when measured using an approved exhaust gas analytical system and the prescribed inspection test procedure for heavy-duty, gasoline fueled motor vehicles.

7:27-15.3 NEW MOTOR VEHICLE DEALER INSPECTION COMPLIANCE STANDARD

(a) Any light-duty, gasoline-fueled new motor vehicle subject to inspection by any new motor vehicle dealer in accordance with regulations promulgated by the New Jersey Division of Motor Vehicles shall, prior to delivery by the new motor vehicle dealer to the ultimate purchaser, conform to the emission specifications prescribed by the manufacturer and/or such specifications as may be prescribed by the manufacturer in the new motor vehicle predelivery check list to assure proper functioning of [emission control devices] the vehicle emission control apparatus.

(b) Whenever emission specifications are not prescribed, the inspection standards as set forth in Section 4(b) [(Motor vehicle inspection standard)] of this Subchapter shall apply to such new motor vehicles.

[(c) The provisions of this subsection shall become effective July 5, 1972.]

(c) Any new motor vehicle dealer, upon the sale of each new light-duty, gasoline fueled motor vehicle, shall furnish to the ultimate purchaser a written summary of federal warranty regulations and their significance to the motorist.

7:27-15.4 LIGHT-DUTY MOTOR VEHICLE INSPECTION STANDARDS

(a) Any light-duty, gasoline-fueled motor vehicle which is subject to inspection by the Division of Motor Vehicles in accordance with the provisions of N.J.S.A. 39:8-1 et seq., as a condition of compliance with said inspection, shall not emit visible smoke in the exhaust emissions or in the crankcase emissions for a period in excess of three (3) consecutive seconds when using the prescribed inspection test procedure for light-duty, gasoline fueled motor vehicles.

(b) Any light-duty, gasoline-fueled motor vehicle which is subject to inspection by the Division of Motor Vehicles in accordance with the provisions of N.J.S.A. 39:8-1 et seq., as a condition of compliance with said inspection, shall not emit carbon monoxide (CO) [and] or hydrocarbons (HC) in the exhaust emissions in excess of standards set forth in Table 1, when measured using an approved exhaust gas analytical system and the prescribed inspection test procedure for light-duty, gasoline fueled motor vehicles.

[(c) The provisions of this subsection shall become effective July 5, 1972, subject to the exception set forth in Section 5 (Exceptions) of this Subchapter.]

(c) Any light-duty, gasoline-fueled motor vehicle which is subject to inspection by the Division of Motor Vehicler in accordance with the provision of N.J.A.C. 39:8-1 et seq., as a condition of compliance with said inspection, shall have a properly functioning and maintained emission control system as determined by an examination of the emission control system failure and service indicators on the interior driver control panel using the following examination procedure:

The motor vehicle examiner shall enter the vehicle prior to the brake test and examine the interior driver control panel for emission control system failure and service indicators.

[TABLE 1

INSPECTION STANDARDS

VEHICLES SUBJECT TO INSPECTION
BY THE DIVISION OF MOTOR VEHICLES
(reference N.J.S.A. Titles 39:8-1)

MODEL YEAR OF VEHICLE	EFFECTIVE July 5, 1972		EFFECTIVE August 1, 1975		EFFECTIVE	
	CO(%)	HC(PPM)	CO(%)	HC(PPM)	CO(%)	HC(PPM)
Up to and including 1967	10.0	1600	8.5	1400	7.5	1200
1968-1969	8.0	800	7.0	700	5.0	600
1970-1974	6.0	600	5.0	500	4.0	400
1975-1976			*3.0	*300	2.0	200
1977 and later					**	

* Effective date October 1, 1976
** To be promulgated by amendment at a later date

PRESCRIBED INSPECTION TEST PROCEDURE

STEP 1: With the vehicle in neutral gear, all accessories off, handbrake secured, accelerate engine and observe for visible smoke in the exhaust emissions and crankcase emissions.

STEP 2: With the engine running at idle, insert sampling probe of gas analytical system into the engine exhaust outlet. The steady state levels measured as per cent carbon monoxide and part per million of hydrocarbons in the exhaust gas shall be the inspection test result.

NOTE: All measurements are to be made after engine has been operating a sufficient period of time to attain normal operating temperature.]

TABLE 1

EXHAUST EMISSION STANDARDS FOR LIGHT-DUTY, GASOLINE FUELED VEHICLES SUBJECT TO INSPECTION BY THE DIVISION OF MOTOR VEHICLES

MODEL YEAR	IDLE CO(%)	IDLE HC (ppm as hexane)
Pre-1968	8.5	1400
1968-1970	7.0	700
1971-1974	5.0	500
1975-1980	3.0	300
1981 & Later	1.2	220

Prescribed Inspection Test Procedure For

Light-Duty, Gasoline Fueled Motor Vehicles

STEP 1: Smoke Test: With the vehicle in neutral gear, all accessories off, handbrake secured, accelerate the engine to approximately 2500 R.P.M. and hold for about ten (10) seconds. Observe for visible continuous smoke in the exhaust emissions and/or crankcase emissions. Visible smoke in the exhaust emissions and/or crankcase emissions for a period in excess of three (3) consecutive seconds shall be cause for rejection.

STEP 2: Idle Emissions Test: Engines shall be at normal operating temperature and not overheating (as indicated by gauge warning light or boiling radiator) with all accessories off. With engine idling and transmission in neutral, the sample probe shall be inserted into the tailpipe at least six inches. Record exhaust concentrations measured as percent carbon monoxide and parts per million hydrocarbons after stabilized readings are obtained or at the end of 30 seconds, whichever occurs first. These exhaust concentrations shall be the inspection test result.

7:27-15.5 HEAVY-DUTY MOTOR VEHICLE INSPECTION STANDARDS

(a) Any heavy-duty, gasoline-fueled motor vehicle which is subject to inspection by the Division of Motor Vehicles in accordance with the provisions of N.J.S.A. 39:8.1 et seq., as a condition of compliance with said inspection, shall not emit visible smoke in the exhaust emissions or in the crankcase emissions for a period in excess of three (3) consecutive seconds when using the prescribed inspection test procedure for heavy-duty, gasoline fueled motor vehicles.

(b) Any heavy-duty, gasoline-fueled motor vehicle which is subject to inspection by the Division of Motor Vehicles in accordance with the provisions of N.J.S.A. 39:8-1 et seq., as a condition of compliance with said inspection, shall not emit carbon monoxide (CO) or hydrocarbons (HC) in the exhaust emissions in excess of standards set forth in Table 2, when measured using an approved exhaust gas analytical system and the prescribed inspection test procedure for heavy-duty, gasoline fueled motor vehicles.

TABLE 2

EXHAUST EMISSION STANDARDS FOR HEAVY-DUTY, GASOLINE FUELED VEHICLES SUBJECT TO INSPECTION BY THE DIVISION OF MOTOR VEHICLES

MODEL YEAR	IDLE CO(%)	IDLE HC (PPM AS HEXANE)
Pre-1970	8.5	1200
1970-1973	6.0	700
1974-1978	4.0	500
1979-1982	3.0	300
1983 & Later	1.5	250

PRESCRIBED INSPECTION TEST PROCEDURE FOR HEAVY-DUTY, GASOLINE FUELED MOTOR VEHICLES

STEP 1: Smoke Test: With the vehicle in neutral gear, all accessories off, handbrake secured, accelerate the engine to approximately 2500 R.P.M. and hold for about ten (10) seconds. Observe for visible continuous smoke in the exhaust emissions and/or crankcase emissions. Visible smoke in the exhaust emissions and/or crankcase emissions for a period in excess of three (3) consecutive seconds shall be cause for rejection.

STEP 2: Idle Emissions Test: Engines shall be at normal operating temperature and not overheating (as indicated by gauge warning light or boiling radiator) with all accessories off. With engine idling and transmission in neutral, the sample probe shall be inserted into the tailpipe at least six inches. Record exhaust concentrations measured as percent carbon monoxide and parts per million hydrocarbons after stabilized readings are obtained or at the end of 30 seconds, whichever occurs first. These exhaust concentrations shall be the inspection test result.

7:27-15.6 OPERATION OF EMISSION CONTROL SYSTEMS

(a) No person shall cause, suffer, allow or permit, any air pollution control apparatus which has been installed on any motor vehicle to be disconnected, detached, deactivated, or in any other way rendered less effective or inoperable (except temporarily for the purpose of maintenance, repair or replacement.)

(b) No person shall cause, suffer, allow or permit the operation on the public highways of any motor vehicle in which an air pollution control apparatus installed on such vehicle has been disconnected, detached, deactivated, or in any other way rendered less effective or inoperable.

(c) No person shall cause, suffer, allow or permit the sale of any motor vehicle in which an air pollution control apparatus installed on such vehicle has been disconnected, detached, deactivated, or in any other way rendered less effective or inoperable.

7:27-[15.5] 15.7 EXCEPTIONS

[(a) Noncompliance with standards set forth in Section 4, of this Subchapter by any motor vehicle during the period July 5, 1972, to June 30, 1973, shall not be cause for rejection or reinspection.]

[(b)] (a) The provisions of [Section 3 and Section 4 of] this Subchapter shall not apply to motorcycles or to motor vehicles with an engine displacement of less than 50 cubic inches (819 cubic centimeters).

[(c)] (b) Nothing in this Subchapter is intended to limit or deny the inspection of motor vehicles for exhaust systems in accordance with regulations established pursuant to N.J.S.A. 39:8-1, 39:8-2, 39:3-70, 39:3-76, and 39:10-26.

7:27-[15.6] 15.8 VARIANCES

[Whenever the Director, Division of Motor Vehicles, has reason to believe that any model year of vehicle (or classification of light-duty gasoline-fueled vehicles) up to and including 1967 cannot comply with the emission standards as set forth in Section 4 of this Subchapter, he shall so advise the Commissioner, Department of Environmental Protection, stating the manufacturer, model, year and classification of such vehicles. After consultation with the Commissioner, Department of Environmental Protection, the Director, Division of Motor Vehicles, may waive any inspection standards for such motor vehicles.]

<u>Whenever either the Commissioner or the Director, Division of Motor Vehicles, has reason to believe that any vehicle or any vehicle class cannot comply with the provisions of Subsection 15.4(b) or 15.5(b) of this Subchapter, the Director, with the concurrence of the Commissioner, may prescribe alternative emission inspection standards for such vehicle or vehicle class.</u>

New Jersey Lead SIP

APPENDIX V-12

New Jersey Administrative Code

Title 7, Chapter 27, Subchapter 18

Control And Prohibition Of Air Pollution From New Or Altered Sources Affecting Ambient Air Quality In Nonattainment Areas (Emission Offset Rule)

NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION

NEW JERSEY ADMINISTRATIVE CODE

TITLE 7, CHAPTER 27

SUBCHAPTER 18

CONTROL AND PROHIBITION OF AIR POLLUTION FROM NEW OR ALTERED SOURCES AFFECTING AMBIENT AIR QUALITY IN NONATTAINMENT AREAS (EMISSION OFFSET RULE)

Promulgated: July 3, 1980
Effective: September 8, 1980

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18.1 DEFINITIONS

"Air contaminant" means solid particles, liquid particles, vapors or gases which are discharged into the outdoor atmosphere.

"Air quality simulation model" means a mathematical procedure for predicting the ambient air contamination resulting from the dispersive properties of the atmosphere.

"Allowable emission" means the rate at which an air contaminant may be emitted into the outdoor atmosphere. For the purposes of this Subchapter, the allowable emissions shall be based on the maximum rated capacity of the equipment or on enforceable permit conditions which limit the operating rate, hours of operations, or both, and on the most stringent of the following:

1. Applicable new source performance standards as set forth in 40 CFR Part 60.

2. Applicable standards for hazardous pollutants as set forth in 40 CFR Part 61.

3. Applicable emission, equipment, and operating standards as set forth in this Chapter; and

4. The maximum emission rate specified as a condition of the last applicable permit in effect prior to an emission reduction approved by the Department for an emission offset or for banking.

"Alteration" means any change made to equipment or control apparatus or the use thereof, or in a process, including, but not limited to, any physical change, change in material being processed, or a change in the rate of production except where such a production rate change does not increase the quantity of air contaminants emitted or does not change the quality or nature of the air contaminant emitted.

"Attainment area" means any area determined by the Department as one in which the ambient air concentration for a criteria pollutant does not exceed a primary or secondary NAAQS.

"Banking" means reserving approved emission reductions for future use as emission offsets.

"Control apparatus" means any device which prevents or controls the emissions of any air contaminant.

"Criteria Pollutant" means ozone (O_3), total suspended particulate matter (TSP), sulfur oxides measured as sulfur dioxide (SO_2), nitrogen dioxide (NO_2), volatile organic substances (VOS) measured as non-methane hydrocarbons, carbon monoxide (CO), or lead (Pb), or any other air contaminant for which national ambient air quality standards have been adopted.

"Department" means the Department of Environmental Protection.

"Emission offset" means a legally enforceable reduction, approved by the Department, in the rate of actual emissions from an existing facility to offset the increase in the allowable emissions of air contaminants from a new or altered facility.

"Employee commuter travel control measures" means methods used by an employer to reduce the amount of air contaminant emissions due to travel of his employees getting to and from the place of employment. Such methods may include, but are not limited to, ride sharing programs (car pooling or van pooling), preferential parking programs, employee incentives to use mass transportation, staggered work hours, and vehicle emission control programs.

"Employer business travel control measures" means methods used by an employer to reduce the amount of air contaminant emissions due to company related travel. Such methods may include, but are not limited to, ride sharing programs, optimization of delivery schedules, staggered work hours, vehicle emission control programs, alternative fuel and alternative propulsion systems.

"Equipment" means any device capable of causing the emission of an air contaminant into the open air and any stack, chimney, conduit, flue, duct, vent or similar device connected or attached to, or serving the equipment.

"Facility" means the combination of all structures, buildings, equipment, and other operations located on one or more contiguous or adjacent properties owned or operated by the same person.

"Fugitive emissions" means any emissions of an air contaminant into the open air other than through any stack, chimney, conduit, flue or other device.

"Lowest Achievable Emission Rate" (LAER) means that rate of emission from any equipment, facility, or control apparatus which incorporates advances in the art of air pollution control developed for the kind and amount of air contaminant emitted by the equipment or facility. For the purposes of this Subchapter, advances in the art of air pollution control shall result in an emission limitation at least as stringent as:

1. The most stringent emission limitation which is contained in the implementation plan of any State for such class or category of equipment or facility, unless the owner or operator of the proposed equipment or facility demonstrates that such limitations are not achievable; or

2. The most stringent emission limitation which is achieved in practice by such class or category of equipment or facility;

whichever is more stringent. In no event shall the application of this term permit proposed new or altered equipment or facilities to emit any pollutant in excess of the amount allowable under applicable federal new source standards of performance.

"Minimum offset ratio" means the minimum acceptable ratio of emission offsets from an existing facility to increases in allowable emissions from a new or altered facility.

"NAAQS" means national ambient air quality standard.

"Nonattainment area" means any area determined by the Department as one in which the ambient air concentration of a criteria pollutant exceeds a NAAQS.

"Permit" means a "Permit to Construct, Install, or Alter Control Apparatus or Equipment" as required in accordance with the provisions of the Air Pollution Control Act (N.J.S.A. 26:2C-1 _et seq._) and Subchapter 8 (Permits and Certificates) of this Chapter.

"Person" includes corporations, companies, associations, societies, firms, partnerships and joint stock companies as well as individuals, and shall also include all political subdivisions of this State or any agencies or instrumentalities thereof.

"Reasonable further progress" means annual incremental reductions in emissions to the outdoor atmosphere of a criteria pollutant which are sufficient, in the judgment of the Department, to provide for attainment of the NAAQS as required by the Clean Air Act, as amended August, 1977 (42 U.S.C. 7401 _et seq._).

"Resource recovery source" means any equipment used for processing solid waste (including refuse-derived fuel and sewage sludge) for the purpose of extracting, converting to energy, or otherwise separating and preparing solid waste for reuse. For the purposes of this Subchapter, energy conversion equipment must use solid waste to provide more than 50% of the heat input to be considered a resource recovery source.

"Secondary emissions" means emissions to the outdoor atmosphere which occur as a result of the construction or operation of a new or altered facility and which affect the same general area for the purposes of this Subchapter as emissions resulting from the new or altered equipment within the facility. Emissions resulting from motor vehicle or aircraft traffic generated by the new or altered facility are not secondary emissions for the purposes of this Subchapter. Secondary emissions include, but are not limited to:

1. Emissions from marine vessels or from vehicles running upon rails or tracks where such vessels or vehicles are associated with the construction or operation of the facility; and

2. Emissions from off-site support facilities which would be constructed or whose rate of emissions would otherwise increase as a result of the construction or operation of the primary facility.

"Significant emission increase" means an increase, since December 21, 1976, in the rate of allowable emissions, including fugitive emissions, at a facility of any criteria pollutant greater than or equal to 100 tons per year, 1,000 pounds per day, or 100 pounds per hour, not including decreases in the rates of allowable emissions except where such decreases are contemporaneous with emission increases. The increase in the rates of allowable emissions shall be the cumulative total of increases from all new or altered equipment for which permits have been issued on or after December 21, 1976 and for which permit applications have been received by the Department, and the fugitive emissions associated with that equipment. The hourly and daily rates shall apply only with respect to a pollutant for which a national ambient air quality standard for a period not exceeding 24 hours has been established.

18.2 GENERAL PROVISIONS

(a) No person shall cause, suffer, allow, or permit an emission increase in any area of the State, which will cause a threshold increase in a nonattainment area, of a criteria pollutant, not including volatile organic substances, for which the area is nonattainment, as determined by the air quality impact review required by Section 18.3 of this Subchapter, unless compliance with subsection (c) of this Section is demonstrated.

(b) No person shall cause, suffer, allow or permit a significant emission increase, in a nonattainment area, of a criteria pollutant for which that area is nonattainment, unless compliance with subsection (c) of this Section is demonstrated.

(c) Any person required by subsections (a) or (b) of this Section to comply with this subsection shall demonstrate that:

1. Each new or altered equipment and facility is controlled to the degree which represents the lowest achievable emission rate (LAER) for the relevant criteria pollutant; and

2. All existing facilities owned or operated by the person (or an entity controlling, controlled by, or under common control with the person) in New Jersey are in compliance with the provisions of this Chapter and with all applicable emission limitations and standards of the federal Clean Air Act as amended August, 1977, 42 U.S.C. 7401 et seq., or are in conformance with an enforceable compliance schedule approved by the Department; and

3. Emission offsets in accordance with the provisions set forth in Section 18.4 (Emission Offset Demonstration) of this Subchapter are secured from existing facilities; and

4. All employer business travel control measures and employee commuter travel control measures have been analyzed to assess the feasibility of their use at the subject facility. Analysis of ride-sharing shall include participation in the state ride-sharing program; and

5. For a new or altered facility which would cause a significant emission increase in volatile organic substances, an analysis has been made of alternative sites, sizes, production processes, and environmental control techniques for such facility demonstrating that the benefits of the proposed facility significantly outweigh the environmental and social costs imposed as a result of its location, construction or alteration.

(d) No person shall cause, suffer, allow or permit an emission increase which has been determined, in accordance with subsection 18.3(a) of this Subchapter, to cause a new violation of a NAAQS, unless emission offsets, in accordance with the provisions of Section 18.4 of this Subchapter (Emission Offset Demonstration), have been secured to eliminate such predicted violation.

(e) Once a facility is permitted to cause a significant emission increase in a nonattainment area for a criteria pollutant for which that area is nonattainment and has complied with the requirements of this Section:

1. The requirements of subsections (c)3, (c)4, and (c)5 of this Section shall again become applicable when proposed new construction or alterations at the facility would cause the increase in the rate of allowable emissions of that criteria pollutant to again exceed 100 tons per year, 1,000 pounds per day, or 100 pounds per hour, whichever is most restrictive. The accumulation of increases in the rate of allowable emissions shall resume from zero after each application of subsections (c)3 and (c)4 of this Section; and

2. The requirements of subsections (c)1 and (c)2 of this Section shall be applicable to each subsequent construction or alteration which increases the rate of allowable emissions for the relevant criteria pollutant.

(f) Once a facility is permitted to offset a threshold increase in a nonattainment area, for a criteria pollutant for which that area is nonattainment, and has complied with the requirements of this Section:

1. The requirements of subsections (c) 3, (c) 4, and (c) 5 of this Section shall again become applicable if proposed new construction or alterations at the facility would again cause a threshold increase in a nonattainment area, for a criteria pollutant for which that area is nonattainment, as determined by the air quality impact review required by Section 18.3 of this Subchapter; and

2. The requirements of subsections (c) 1 and (c) 2 of this Section shall be applicable to each subsequent construction or alteration which increases the rate of allowable emissions for the relevant criteria pollutant.

18.3 AIR QUALITY IMPACT REVIEW

(a) Any person who proposes to cause an increase since December 21, 1976 in the rate of allowable emissions at a facility, of any criteria pollutant, not including volatile organic substances (VOS), greater than or equal to 50 tons per year, 1,000 pounds per day, or 100 pounds per hour, not including decreases in the rates of allowable emissions except where such decreases are contemporaneous with emission increases; such increase in the rates of allowable emissions to be the cumulative total of increases from all new or altered equipment, for which permits have been issued on or after December 21, 1976 and for which permit applications have been received by the Department; must determine, by use of an air quality simulation model approved by the Department, whether the emission increase would cause:

1. A threshold increase in ambient air concentration, as set forth in Table 1, to be exceeded in any nonattainment area for the criteria pollutant, not including volatile organic substances, for which that area is nonattainment; and

2. A new violation of a National Ambient Air Quality Standard (NAAQS).

TABLE 1

Threshold Increases in Ambient Air Concentrations For Nonattainment Areas

	Averaging Time				
Pollutant	Annual	24-Hour	8-Hour	3-Hour	1-Hour
SO_2	1.0 ug/m^3	5 ug/m^3		25 ug/m^3	
TSP	1.0 ug/m^3	5 ug/m^3			
NO_2	1.0 ug/m^3				
CO			0.5 mg/m^3		2 mg/m^3

(b) The determinations required by subsection (a) of this Section shall:

1. Consider all increases and contemporaneous decreases in the rate of allowable emissions since December 21, 1976 at the facility except for increases offset under the provisions of subsections 18.2 (c)3 and 18.2 (d) of this Subchapter; and

2. Be required with each permit which causes the cumulative total of increases in the rates of allowable emissions of a criteria pollutant to exceed a multiple of 50 tons per year, 1,000 pounds per day, or 100 pounds per hour, not including increases offset under the provisions of subsections 18.2 (c)3 and 18.2 (d) of this Subchapter.

18.4 EMISSION OFFSET DEMONSTRATION

(a) Any person required to secure emission offsets in accordance with the requirements of this Subchapter must achieve such offsets on or before the commencement of operation of the new or altered facility by:

1. Installing air pollution control equipment which reduces the rate of the actual emissions to less than that of the allowable emissions; or

2. Applying fugitive emission control measures which reduce the rate of the actual emissions to less than that of the allowable emissions; or

3. Reducing production rate or operating hours to less than the actual rates or hours for the year immediately preceding such reductions or for any representative year within 5 years of the reductions. For volatile organic substances (VOS), winter reductions of actual emissions may not be used to offset summer increases in allowable emissions; or

4. Establishing and supporting employer business travel control measures or employee commuter travel control measures, provided that the reductions are quantifiable and enforceable and that they are not already required by the New Jersey State Implementation Plan for attaining and maintaining national ambient air quality standards; or

5. Adopting any other measures approved by the Department for reducing the rate of the actual emissions to less than that of the allowable emissions.

(b) Emission offsets required by this Subchapter must:

1. Exceed the Minimum Offset Ratio and be within the respective distance specified in Table 2; and

2. Be of like quality and nature to the emissions being offset; and

3. Have an effective stack height no greater than that of the emissions being offset in the cases of sulfur dioxide and suspended particulates; and

4. Be provided in a manner that will not cause summer increases of allowable volatile organic substances (VOS) emissions to be offset by winter reductions of actual emissions.

TABLE 2

Distance of Offsets from Facility (miles)		Minimum Offset Ratio
VOS & NO_2	SO_2 TSP, CO	
0 - 100	0 - 0.5	1.00 : 1
100 - 250	0.5 - 1.0	1.5 : 1
250 - 500	1.0 - 2.0	2.0 : 1

(c) The Minimum Offset Ratios specified in Table 2 shall not apply if the Department determines that reasonable further progress toward attainment of the National Ambient Air Quality Standard (NAAQS) allows or requires that different minimum offset ratios be applied. Any person may petition the Department for the application of an emission offset different from those specified in Table 2 if it is shown by an air quality simulation model that a net air quality benefit would result from the proposed emission offset.

18.5 EMISSION OFFSET POSTPONEMENT

Any person responsible for a significant emission increase from a resource recovery source, equipment which must switch fuels because of fuel availability, or equipment altered to comply with a state or federal regulation or directive, may apply to the Department for a postponement for complying with the provisions of subsection 18.2 (c)3 of this Subchapter provided the person demonstrates that emission offsets are not immediately available. The Department may authorize such a postponement until such time as emission offsets become available at which time the person must secure such offsets without delay.

18.6 EMISSION OFFSET EXEMPTION

The provisions of subsection 18.2 (c)3 of this Subchapter shall not apply to emissions from temporary facilities including, but not limited to, portable facilities which will be relocated outside of the nonattainment area within six months of commencement of operations and pilot plants which will cease production of an experimental product within six months of commencement of operation.

18.7 BANKING OF EMISSIONS

(a) The Department may credit a person with emission reductions achieved in accordance with the provisions of subsection 18.4(a) of this Subchapter. To obtain such credit, documentation of emission reductions achieved after the effective date of this Subchapter must be submitted to the Department within 6 months after the emission reduction occurs. Such emission reductions, if approved by the Department, shall become an enforceable operating restriction for the facility. Such banked emission reductions will be adjusted in accordance with the allowable emission rates in effect at the time when the banked emission reductions are offered to offset emissions from new or altered facilities.

(b) The provisions of subsection (a) of this Section shall not apply to emission reductions ocurring:

1. before August 7, 1977; or

2. between August 7, 1977 and the effective date of this Subchapter unless documentation of the emission reductions is submitted to the Department within six months of the effective date of this Subchapter.

18.8 SECONDARY EMISSIONS

(a) Any person who, as a result of the construction of or alteration to a facility, is required to meet the provisions of Section 18.2 must certify that any sources of secondary emission increases which are:

1. Under his control and which are associated with the facility, will meet all the provisions of Section 18.2 of this Subchapter as well; and

2. Not under his control and which are associated with the facility, will meet the provisions of subsection 18.2 (c)3 of this Subchapter as well.

18.9 EXEMPTION FOR ALTERNATIVE FUEL

Where a person has demonstrated that the use of alternative fuels in existing fuel burning equipment will not cause a threshold increase, in a nonattainment area, of a criteria pollutant for which that area is nonattainment for a primary National Ambient Air Quality Standard (NAAQS) and will not prevent reasonable further progress toward attaining any secondary NAAQS, the Department may, in its discretion, exempt a person from compliance with the provisions of this Subchapter upon a further demonstration that:

(a) The equipment was capable of burning such fuel before December 21, 1976; or

(b) The equipment must use such fuel by reason of an order in effect under Sections 2(a) and (b) of the Energy Supply and Environmental Coordination Act of 1974 (15 U.S.C. 792 et seq.) or under any superseding legislation, or by reason of a natural gas curtailment plan in effect pursuant to the Federal Power Act of 1978 (16 U.S.C. 791a et seq.); or

(c) The alternative fuel is derived from municipal solid waste; or

(d) The alternative fuel is to be used by reason of an order or rule issued under the provisions of Section 125 of the Clean Air Act as amended August, 1977 (42 U.S.C. 7425).

18.10 APPLICABILITY

(a) Whenever persons, facilities, equipment, control apparatus, or air contaminants subject to the provisions of this Subchapter are also subject to the provisions of any other Subchapters of this Chapter, the requirements of the relevant provisions of this Subchapter and all Subchapters of this Chapter shall apply.

N.J. Department of Environmental Protection
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NEW JERSEY LEAD SIP

APPENDIX V-13

Dispersion Modeling Procedures

Dispersion Modeling Procedures

Screening modeling should first be performed to estimate ambient air impacts of a new source of lead emissions. The screening models PTDIS or PTMTP may be used for this purpose. Receptors should be separated by no less than 0.5 kilometers up to a distance of 2.5 kilometers from the source. Receptors may be separated by larger intervals at further distances. If screening indicates that ambient impacts of the source will be equal to or greater than 0.1 ug/m^3 on a 24-hour average, refined modeling is to be performed.

Emission rates shall be adjusted to reflect actual hours of operation and to reflect elemental lead emissions only. Expected fugitive emissions shall be included in all modeling. Fugitive emission factors for several sources are contained in Appendix III-1, Attachment B. Efficiencies of control measures should be applied to these emission factors. Calculations of all emission rates shall be included in the final report of modeling results.

Either the Industrial Source Complex (ISC) Short Term or Long Term, or the Climatological Dispersion Model (CDM) or any model approved by EPA for the same use, should be used for refined modeling of lead emisisons to determine compliance with the NAAQS. For CDM and ISC Long Term, stability wind rose data may be used for wind frequency distribution input; other necessary meteorological input may obtained from "Local Climatological Data", a yearly publication of National Oceanic and Atmospheric Administration, National Climatic Center, Asheville, North Carolina and from "Mixing Heights, Wind Speeds, and Potential for Urban Air Pollution Throughout the Contiguous United States", EPA Publication AP-101, Research Triangle Park, North Carolina, 1972. For ISC Short Term, five years of hourly meteorological data are required.

Significant terrain features shall be accounted for in the refined modeling. If such features are present, ISC should be used, since CDM does not account for topographical variations.

Background concentrations are to be obtained by on-site measurements or from a site with characteristics similar to a project site. The Bureau of Air Quality Management and Surveillance may be consulted regarding the selection of appropriate background data.

All input data should be included in the presentation of results. A narrative should be included in a final report describing any options or modifications that were utilized. All model output should be contained in the the report.