

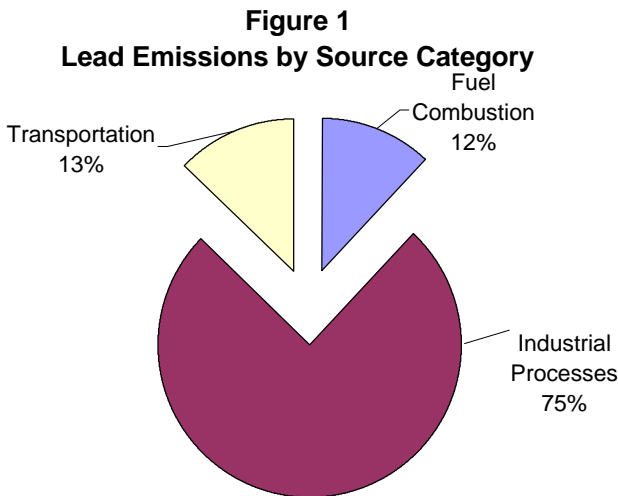


2001 Lead Summary

New Jersey Department of Environmental Protection

NATURE AND SOURCES

Lead (Pb) is a metal that occurs naturally in the environment as well as being produced by a variety of human activities. Historically, the major sources of lead in the air have been motor vehicles and industrial facilities. With the phase out of lead in gasoline, however, the industrial sources now predominate. Because of the reductions in lead emissions from cars and trucks, levels in the air have decreased dramatically. When high levels do occur they are usually near industrial sources like lead smelters. Other industrial sources include lead-acid battery manufacturers and waste incinerators. A pie chart showing the distribution of lead sources nationally is shown below (Figure 1).



Source: USEPA National Air Quality and Emissions Trends Report, 1999

HEALTH AND ENVIRONMENTAL EFFECTS

Lead accumulates in the blood, bones, muscles, and fat. People are mainly exposed to lead by breathing it from the air or by ingesting food, water, soil, or dust that had been contaminated with lead. Infants and small children are especially sensitive to lead, even at low levels. Lead can

damage the kidneys, liver, brain, and nerves and very high exposures can result in mental retardation, behavioral disorders, memory problems, and seizures. Lower levels of lead can damage the brain and nerves in fetuses and young children, resulting in learning disabilities. Lead can also cause high blood pressure and increase the risk of heart disease.

Animals can ingest lead while grazing and may experience health effects similar to those seen in humans. Lead can enter water systems through runoff and from sewage and industrial waste streams. Elevated levels of lead in water can cause reproductive damage in aquatic life and may cause changes in the blood and nerves of fish.

AMBIENT AIR QUALITY STANDARDS FOR LEAD

The primary (health based) and secondary (welfare based) standards for lead are the same. The national standards are set at a maximum quarterly average concentration of 1.5 micrograms per cubic meter (ug/m3). The table below shows the National and New Jersey Ambient Air Quality Standards for lead. The difference between the national and state standards is that the national standards are based on calendar quarters (Jan-Mar, Apr-Jun, Jul-Sep, Oct-Dec) while the state standards are based on concentrations recorded over any three consecutive month period during the year.

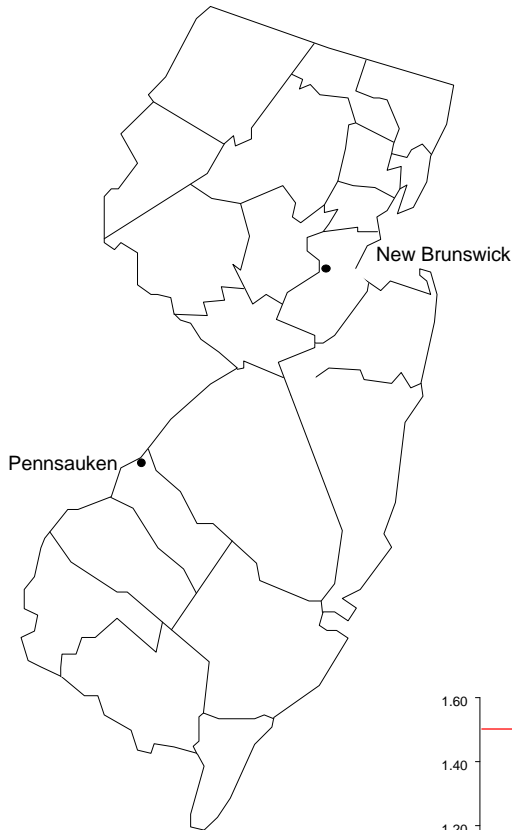
Table 1
Ambient Air Quality Standards for Lead
Micrograms Per Cubic Meter (ug/m3)

Period	Type	New Jersey	National
3-Month Arithmetic Means	Primary and Secondary	1.5 ug/m3	
Calendar Quarter Arithmetic Means	Primary and Secondary		1.5 ug/m3

MONITORING LOCATIONS

The state monitored lead levels at only two locations in 2001. These locations were New Brunswick (near a battery manufacturing plant) and Pennsauken, which is across the river from a former lead smelting operation. These sites are shown in the map below.

**Figure 2
2001 Lead Monitoring Network**



LEAD LEVELS IN 2001

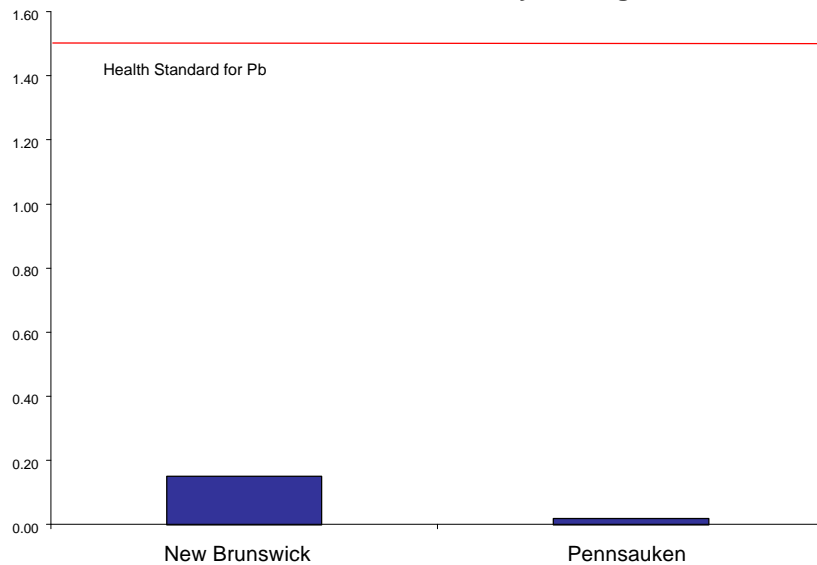
Summaries of the lead levels monitored in 2001 are provided in Table 2 and Figure 3. Neither of the monitoring sites recorded exceedances of the primary or secondary standards during 2001. The maximum 3-month average recorded was 0.230 micrograms per cubic meter (ug/m³) at the New Brunswick site. Lead concentrations in recent years have been so low that many of the monitoring sites have been discontinued.

Table 2
2001 Lead Data
3-Month and Calendar Quarter (Qtr.) Averages
Micrograms Per Cubic Meter (ug/m³)

Monitoring Site	3-Month Average		Calendar Quarter Average			
	Max.	Month ¹	1 st Qtr.	2 nd Qtr.	3 rd Qtr.	4 th Qtr.
New Brunswick	.230	Oct.	.066	.106	.150	.146
Pennsauken	.019	Mar.	.019	.007	.008	.007

¹The month indicates the last month in the 3-month period

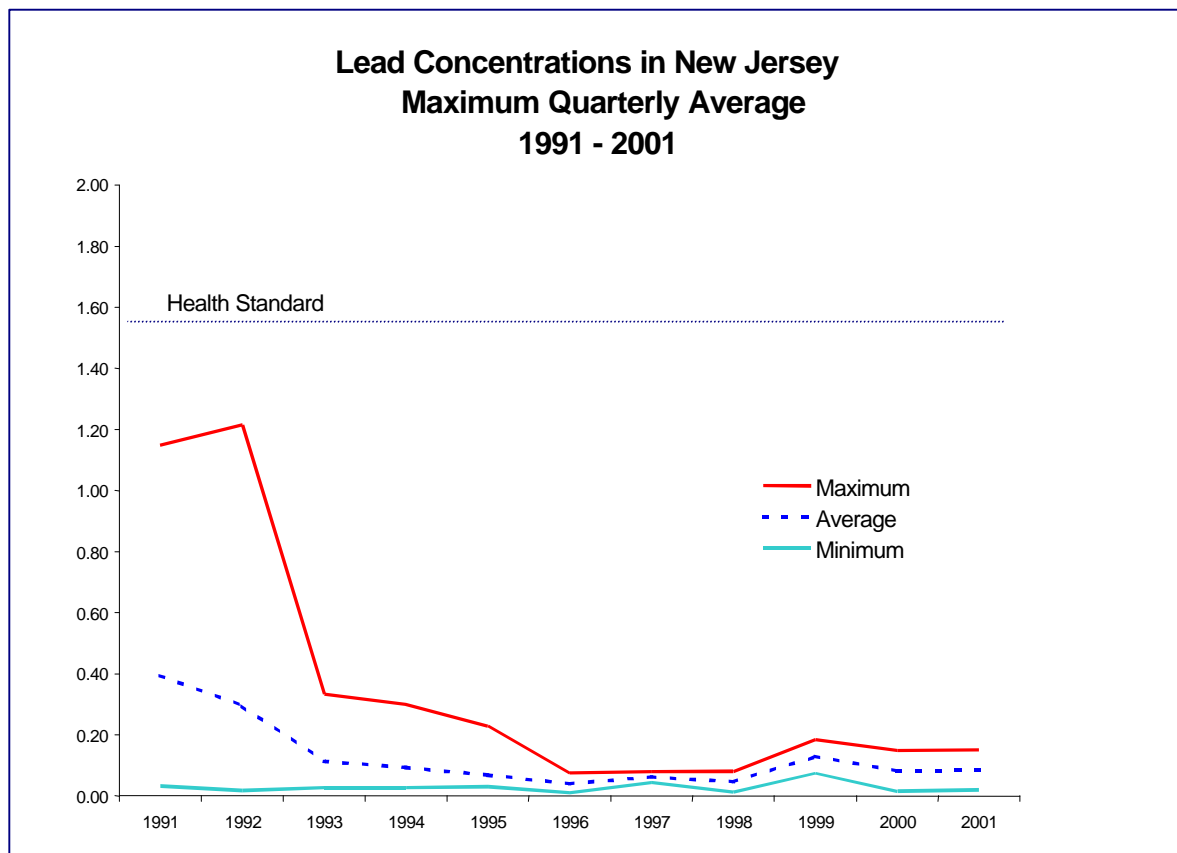
**Figure 3
2001- Lead Concentrations in New Jersey
Maximum Quarterly Averages**



TRENDS

The phase out of lead in gasoline has resulted in substantial improvements in air quality and levels in New Jersey are now well within the air quality standards. A trend graph showing the maximum, minimum and average concentrations recorded from 1991 to 2001 is provided below. These values were calculated using the maximum quarterly mean concentration recorded at each site each year. Values in more recent years are based on data from very few sites, and the slight increase that appears to have occurred may be due, at least in part, to the shut down of low reading sites. While meeting the national air quality standards for lead is no longer a major environmental issue in New Jersey, levels around specific industrial sources will continue to be monitored, and concern still exists over lead exposure via routes other than direct inhalation. Lead may have accumulated in the soil over time and children playing in such areas may ingest the lead directly.

Figure 4



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