



INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

Air Quality: Lead (Pb)www.idem.IN.gov*Mitchell E. Daniels, Jr.*
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Phone: (317) 233-0178 Toll Free: (800) 451-6027**Description:**

- Lead is a soft, dense, naturally-occurring metal that has long been used in a wide variety of applications. It is toxic to humans and animals, with young children being at the highest risk for lead poisoning.
- Common uses for lead include the manufacture of building materials, lead-acid batteries, ammunition, weights, medical equipment and coatings for high-voltage power cables.
- Sources of lead in ambient air include smelters, mining operations, waste incinerators, battery recycling, and the production of lead shot and fishing sinkers. Lead is also released by the burning of coal, oil, solid waste and the use of leaded aviation fuel in piston engine powered aircraft. Prior to the phase-out of leaded gasoline between 1973 and 1996, motor vehicles were the largest source of lead in the atmosphere.
- The U.S. Environmental Protection Agency (USEPA) sets National Ambient Air Quality Standards (NAAQS), for six "criteria" pollutants, including lead, to protect public health and the environment.

National Ambient Air Quality Standards for Lead:

- In October 2008, USEPA revised the NAAQS for lead. Levels of lead must not exceed 0.15 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$), measured as total suspended particles.
 - USEPA will use a maximum rolling three-month average evaluated over a three-year period to determine compliance with the new lead standard. Any three-month average exceeding $0.15 \mu\text{g}/\text{m}^3$ within a three-year period will be considered a violation of the NAAQS.
 - In January 2010, four source-oriented monitors were added to Indiana's lead monitoring network to comply with new monitoring requirements set by USEPA.

Environmental Impacts:

- Exposure to airborne lead typically occurs when a person breathes in or swallows lead dust or other lead-containing particles such as contaminated soil.
- High levels of lead are most often found near roads, older homes, old orchards, power plants, factories, mining areas, landfills and hazardous waste sites. Older buildings are of particular concern because they often feature surfaces coated with lead-based paint. If not maintained or properly removed, this paint can produce lead dust.
- Children and people who work with lead constitute the two highest-risk groups for lead exposure. Because of children's smaller size and unique metabolism their bodies absorb proportionately more lead than those of adults. People whose jobs include metalworking, rubber and plastic molding, construction, home remodeling, or other activities involving lead-containing materials are also at high risk. The most common route of exposure for these workers is inhalation.
- Once in the body, lead accumulates in the soft tissues and especially in the skeleton, where it may continue to enter the blood stream over a period of years. Studies indicate that long-term exposure to lead can cause muscle weakness and loss of coordination, and also permanently lower IQ in children. Exposure to high levels of lead can result in severe brain damage and death.
- Other symptoms and effects of lead poisoning include abdominal pain, anemia, decreased appetite and weight loss, hypertension, muscle twitches, and reproductive problems for both men and women.

IDEM's Role:

- The Indiana Department of Environmental Management (IDEM) is responsible for protecting human health and the environment while providing for safe industrial, agricultural, commercial and governmental operations vital to a prosperous economy.



- IDEM's Office of Air Quality is responsible for protecting air quality in Indiana through the implementation of federal, regional and state control measures, regulations and ambient monitoring.
- For areas not achieving (attaining) the air quality standard for lead, IDEM will work to help communities implement programs to achieve the standard as quickly as possible.
 - All of Indiana meets the former 1978 lead NAAQS of 1.5 $\mu\text{g}/\text{m}^3$.
 - Based on 2007-2009 monitoring data, only the City of Muncie, Indiana, in Delaware County has monitors that exceed the revised lead NAAQS of 0.15 $\mu\text{g}/\text{m}^3$.

More Information:

- For more information concerning the revised lead NAAQS and attainment areas, please visit IDEM's website at <http://www.in.gov/ide/4654.htm>.
- For air quality questions and concerns, please call IDEM's Office of Air Quality at (317) 233-0178 or (800) 451-6027 extension 3-0178.