

FACT SHEET
PROPOSED REVISIONS TO THE
NATIONAL AMBIENT AIR QUALITY STANDARDS FOR LEAD

SUMMARY OF ACTION

- On May 1, 2008, EPA proposed to substantially strengthen the national ambient air quality standards (NAAQS) for lead. The proposed revisions would improve health protection for at-risk groups, especially children.
- EPA is proposing to revise the level of the primary (health-based) standard from 1.5 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$), to within the range of 0.10 $\mu\text{g}/\text{m}^3$ to 0.30 $\mu\text{g}/\text{m}^3$, measured as total suspended particulates (TSP). The Agency is taking comment on alternative levels up to 0.50 $\mu\text{g}/\text{m}^3$ and down below 0.10 $\mu\text{g}/\text{m}^3$. EPA proposes to revise the secondary (welfare-based) standard to be identical in all respects to the primary standard.
- Lead that is emitted into the air can be inhaled or, after it settles out of the air, can be ingested. Ingestion is the main route of human exposure. Once in the body, lead is rapidly absorbed into the bloodstream and can affect many organ systems.
- Exposure to lead is associated with a broad range of health effects, including effects on the blood, central nervous system, cardiovascular system, kidneys, and immune system.
- Children are particularly vulnerable to the effects of lead. Exposures to low levels of lead early in life have been linked to effects on IQ, learning, memory, and behavior. There is no known safe level of lead in the body.
- Scientific evidence about lead and health has expanded dramatically since EPA issued the initial standard of 1.5 $\mu\text{g}/\text{m}^3$ in 1978. More than 6,000 new studies on lead health effects, environmental effects and lead in the air have been published since 1990. Evidence from health studies shows that adverse effects occur at much lower levels of lead in blood than previously thought.
- In conjunction with proposing to strengthen the lead NAAQS, EPA is proposing to improve the existing lead monitoring network by requiring monitors to be placed near large sources of lead emissions and in urban areas with more than 1 million people.
- In addition, the Agency is seeking comment on shifting from measuring lead in TSP, to lead in particles 10 micrometers or less in diameter (PM_{10}).
- Also as part of this notice, EPA is proposing an approach for implementing any revisions to the lead standards.

- EPA will accept comments for 60 days after the proposed rule is published in the Federal Register.
- The Agency will hold two public hearings on the proposed standards on June 12, 2008, in Baltimore and St. Louis.

PROPOSED REVISION TO THE STANDARDS

Primary (Health) Standard

- Based on a review of the full body of evidence, EPA is proposing that the current standard of $1.5\mu\text{g}/\text{m}^3$ is not sufficient to protect public health with an adequate margin of safety. A revised standard would provide increased protection for children and other at-risk populations against a variety of adverse health effects, most notably effects on the developing nervous system.
- EPA is proposing to revise the level of the standard to within the range of $0.10\mu\text{g}/\text{m}^3$ to $0.30\mu\text{g}/\text{m}^3$ based on the concentration of lead in TSP. EPA's traditional approach of measuring lead in TSP reflects evidence that all lead particles, regardless of size, pose potential health risks.
- EPA is considering whether to allow the use of PM_{10} monitoring data to determine compliance with the proposed TSP standard. PM_{10} monitors, by design, do not capture particles larger than 10 micrometers in diameter. However, many of the lead particles measured in TSP are 10 micrometers or less in diameter, and PM_{10} monitors are more precise than TSP monitors.
 - EPA is considering whether it would be appropriate to adjust lead PM_{10} data for use in comparison to a TSP-based standard, and if so, how to make those adjustments.
 - EPA is proposing to allow states to establish site-specific scaling factors for purposes of adjusting PM_{10} data based on data from co-located monitors.
 - EPA is taking comment on establishing default scaling factors.
- EPA is seeking comment on the alternative approach of basing the level of the standard on the concentration of lead in PM_{10} .
- The Agency is taking comment on alternative levels up to $0.50\mu\text{g}/\text{m}^3$ and down below $0.10\mu\text{g}/\text{m}^3$ for either lead in TSP or lead in PM_{10} .

- The Agency also invites comment on when, if ever, it would be appropriate to set a NAAQS for lead at a level of zero.

Secondary (Welfare) Standard

- To provide increased protection against lead-related welfare effects, EPA proposes to revise the current secondary standard to be identical to the proposed primary standard.
- A significant number of new studies have been conducted since 1978 that associate lead pollution with adverse effects on organisms and ecosystems. However, there is a lack of evidence linking various effects to specific levels of lead in the air.

DETERMINING COMPLIANCE WITH THE STANDARDS

- EPA is proposing to revise the averaging time and form of the lead NAAQS. These are the air quality statistics that are compared to the level of the standards to determine whether an area attains the standards. EPA is proposing two options:
 - 1) To retain the current form of a maximum (not-to-be-exceeded) quarterly average, but evaluate whether an area meets the standards using three years (12 quarters) of data.
 - 2) To change to a monthly averaging time and evaluate whether an area meets the standards using the second highest monthly average over a three-year period.

MONITORING CONSIDERATIONS

- EPA is also proposing changes to the ambient air monitoring and reporting requirements for lead. These changes would correspond to the proposed revised standards.
- EPA is proposing to improve the lead monitoring network to better assess national compliance with the proposed revisions to the lead standards.
 - EPA proposes to require monitors to be placed near sources of lead emissions such as smelters, metallurgical operations, battery manufacturers, fugitive dust sources (e.g., mine tailings piles) and airports because they are larger emitters of lead.
 - EPA also proposes to require a small network of monitors to be placed in urban areas with populations greater than 1 million to gather information on the general population's exposure to lead in air.
- The size of the network will depend on the level of the final standard. More monitors would be required to assess compliance with a standard set at the lower end of the proposed range ($0.10 \mu\text{g}/\text{m}^3$), and fewer monitors would be required if EPA sets the standard at the upper end of the range ($0.30 \mu\text{g}/\text{m}^3$).

- EPA is proposing to require all new lead monitors to be operational by January 1, 2010, or if a very large number of new monitors are necessary, to require that half of the new monitors be operational by January 1, 2010, with the other half operational by January 1, 2011.
- EPA is also proposing changes to sampling and analysis methods, sampling schedule, data reporting, and other miscellaneous requirements.

IMPLEMENTING THE STANDARDS

- At the same time EPA is proposing to revise the lead standards, the Agency is proposing an approach and schedule for implementing the lead standards.
- For counties with violating monitors, EPA proposes to use the county boundary as the expected boundary for nonattainment areas. The Agency will take comment on using the Metropolitan Statistical Area (areas of at least 100,000 people) as the expected boundary instead.
- EPA proposes not to establish classifications for nonattainment areas based on the severity of their lead violations.
- The Agency also proposes to retain the 1978 lead NAAQS until one year after designations for the new standards, except in current nonattainment areas where it will be retained until those areas submit and EPA approves attainment demonstrations for the new standards. This will ensure continuous public health protection.

Estimated Timeline for Implementing Proposed Standards

- EPA will issue final standards in September 2008 and anticipates the following implementation schedule:
 - States would make recommendations for areas to be designated attainment, nonattainment, or unclassifiable by September 2009. If Tribes choose to submit recommendations, they must also provide them to EPA by September 2009.
 - EPA would issue final designations of attainment, nonattainment and unclassifiable areas no later than September 2011.
 - States would submit State Implementation Plans outlining how they will reduce pollution to meet the standards no later than Spring 2013.
 - States would be required to meet the standards no later than Fall 2016.
- EPA invites comment on the proposed implementation approach and schedule.

LEAD AND PUBLIC HEALTH

- Once inhaled or ingested, lead enters the bloodstream. This exposure to lead pollution can result in a broad range of health effects including damage to the central nervous system, the cardiovascular system, red blood cells and kidneys.
- Children are most vulnerable to the damaging effects of lead because they are more likely to ingest lead due to hand-to-mouth activity and their bodies are developing rapidly.
- No safe level of lead has been identified.
- Effects in children include:
 - Effects on the developing nervous system including the brain. This can lead to IQ loss, poor academic achievement, permanent learning disabilities, and delinquent behavior. The effects generally persist into early adulthood and can affect lifetime education and achievement.
 - Damage to red blood cells
 - Weakened immune system
- Effects in adults include:
 - Increased blood pressure
 - Cardiovascular disease
 - Decreased kidney function

BACKGROUND

- The Clean Air Act requires EPA to set national ambient air quality standards for “criteria pollutants.” Currently, lead and five other major pollutants are listed as criteria pollutants. The others are ozone, nitrogen oxides, carbon monoxide, sulfur oxides, and particulate matter. The law also requires EPA to periodically review the standards and revise them if appropriate to ensure that they provide the requisite amount of health and environmental protection and to update those standards as necessary.
- In response to a case filed by the Missouri Coalition for the Environment, the U.S. District Court for the Eastern District of Missouri issued a decision in September 2005 that EPA needed to complete the lead NAAQS review by September 1, 2008. The court agreed to extend the deadline for signature of the final rule until September 15, 2008.
- Lead is a metal found naturally in the environment and present in some manufactured products. The major sources of lead air emissions have historically been motor vehicles (such as cars and trucks) and industrial sources. Motor vehicle emissions have been dramatically reduced with the phase-out of leaded gasoline, but lead is still used as an additive in general aviation gasoline and remains a trace contaminant in other fuels.
- Larger industrial sources of lead emissions currently include metals processing, particularly primary and secondary lead smelters. Lead is also emitted from industries such as: iron and steel foundries; primary and secondary copper smelting; industrial,

commercial, and institutional boilers; waste incinerators; glass manufacturing; and cement manufacturing.

- Only two areas, the East Helena, Montana area (including Lewis and Clark County), and Herculaneum, Missouri (in Jefferson County) are designated nonattainment for the current national ambient air quality standards for lead. The industrial facility contributing to the lead problem in the East Helena area closed in 2001.
- The United States has made tremendous progress in reducing lead concentrations in the outdoor air. National average concentrations of lead in the air have dropped nearly 94 percent since 1980. Much of this dramatic improvement occurred as a result of the permanent phase-out of lead in gasoline. However, lead continues to be emitted into the air from many different types of stationary and piston engine aircraft.
- In addition to dramatically decreased airborne lead concentrations, another indicator of progress in the reduction of airborne lead in the environment is the drop in children's blood lead levels over time. Since the late 1970s, average blood lead concentration for children aged 1 to 5 have dropped significantly, from about 15 micrograms per deciliter ($\mu\text{g}/\text{dL}$) to less than 2 $\mu\text{g}/\text{dL}$. However, new studies show that health effects occur even at very low blood lead levels.

HOW TO COMMENT

- EPA will accept comment on the proposal for 60 days after publication in the Federal Register. Comments, identified by Docket ID No. EPA-HQ-OAR-2006-0735, may be submitted by one of the following methods:
 - www.regulations.gov: follow the on-line instructions for submitting comments.
 - E-mail: Comments may be sent by electronic mail (e-mail) to a-and-r-Docket@epa.gov, Attention Docket ID No. EPA-HQ-OAR-2006-0735.
 - Fax: Fax your comments to: 202-566-1741, Attention Docket ID. No. EPA-HQ-OAR-2006-0735.
 - Mail: Send your comments to: Air and Radiation Docket and Information Center, Environmental Protection Agency, Mail Code: 6102T, 1200 Pennsylvania Ave., NW, Washington, DC, 20460, Attention Docket ID No. EPA-HQ-OAR-2006-0735.
 - Hand Delivery or Courier: Deliver your comments to: EPA Docket Center, 1301 Constitution Ave., NW, Room 3334, Washington, D.C. Such deliveries are only accepted during the Docket's normal hours of operation, and special arrangements should be made for deliveries of boxed information

FOR MORE INFORMATION

- To download a copy of the final rules, go to EPA's Web site at: <http://www.epa.gov/air/lead>.
- Today's proposed rule and other background information are also available either electronically at <http://www.regulations.gov>, EPA's electronic public docket and comment system, or in hardcopy at the EPA Docket Center's Public Reading Room.
 - The Public Reading Room is located in the EPA Headquarters , Room Number 3334 in the EPA West Building, located at 1301 Constitution Avenue, NW, Washington, DC. Hours of operation are 8:30 a.m. to 4:30 p.m. eastern standard time, Monday through Friday, excluding Federal holidays.
 - Visitors are required to show photographic identification, pass through a metal detector, and sign the EPA visitor log. All visitor materials will be processed through an X-ray machine as well. Visitors will be provided a badge that must be visible at all times.
 - Materials for this proposed action can be accessed using Docket ID No. EPA-HQ-OAR-2006-0735.