

FACT SHEET
DECISION
NATIONAL AMBIENT AIR QUALITY STANDARDS FOR LEAD

SUMMARY OF ACTION

- On September 16, 2016, EPA announced its decision to retain, without revision, the national ambient air quality standards (NAAQS) for lead of 0.15 ug/m³, in terms of a 3-month average concentration. The existing primary (health based) standard provides health protection for at-risk groups, especially children, and the existing secondary (welfare based) standard provides protection against adverse effects to public welfare, including harm to aquatic and terrestrial ecosystems.
- 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.
- In the prior review of the standard, which was completed in 2008, EPA significantly strengthened the standards based on a dramatic expansion of the scientific evidence about lead and health that had occurred since EPA issued the initial standard in 1978 (1.5 ug/m³, as a calendar quarter average in total suspended particles). The evidence from health studies available in the 2008 review showed that adverse effects occur at much lower levels of lead in blood than had been previously thought.
- The evidence available in this review is consistent with the EPA Administrator's conclusions in the last review. The health effects evidence continues to support the conclusion that lead damages developing nervous systems in young children. In addition, lead can damage cardiovascular and reproductive systems and red blood cell production.
- The scientific evidence also supports the Administrator's conclusion that the current standard continues to meet the Clean Air Act's requirement for the primary standard to be set at a level that, based on the scientific evidence "and allowing an adequate margin of safety", is "requisite to protect the public health."
- The welfare effects evidence available in this review of the lead standards continues to demonstrate adverse effects on terrestrial and aquatic organisms from exposure to lead pollution. Based on the scientific evidence that is available in this review, the Administrator concludes that the current secondary standard provides the requisite protection of public welfare from adverse effects.
- Based on their review of draft documents in this review, EPA's independent science advisors, the Clean Air Scientific Advisory Committee (CASAC), concluded that the newly available evidence supports retaining the current primary and secondary standards of 0.15 ug/m³ (as a 3-month average in total suspended particles) without revision.

DECISION ON THE STANDARDS

Primary (Health) Standard

- Based on a review of the full body of evidence, EPA is retaining the current primary standard of 0.15 $\mu\text{g}/\text{m}^3$ (as a 3-month average in total suspended particles). The EPA concludes that the current standard provides the requisite protection of public health with an adequate margin of safety. The standard provides protection for children and other at-risk populations against a variety of adverse health effects, most notably effects on the developing nervous system.

Secondary (Welfare) Standard

- Based on a review of the fully body of evidence, EPA is retaining the current secondary standard which is identical to the existing primary standard. The EPA concludes that the current standard provides the requisite protection from adverse environmental effects to public welfare, including effects on aquatic and terrestrial ecosystems.

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, and red blood cells.
- 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.
- Effects in children include:
 - Effects on the developing nervous system including the brain. This can include adverse effects on cognitive function, such as IQ loss and reduced academic achievement, and decreased attention, and increased hyperactivity. Some of these effects may persist into adulthood and can affect lifetime education and achievement.
 - Damage to red blood cells
- Effects in adults include:
 - Increased blood pressure
 - Cardiovascular disease

PROGRESS IN REDUCING EMISSIONS AND EXPOSURE

- 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 more than 90 percent since 1980.

- 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 1 $\mu\text{g}/\text{dL}$.
- There are 21 nonattainment areas for the current lead standards due primarily to emissions from the particular stationary sources. Air agencies are responsible for preparing and implementing control plans to reduce these emissions to achieve attainment of the standards. EPA expects that most of the areas previously designated as nonattainment either will have attained or are on track to attain by the end of 2016. All but one of the areas that have not attained are implementing specific plans to address the main sources of concern. The remaining area, Hayden, AZ, is working on a plan to demonstrate attainment.

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 nitrogen oxides, ozone and other photochemical oxidants, carbon monoxide, sulfur oxides, and particulate matter. The law also requires EPA to periodically review the relevant scientific information and the standards and revise them, if appropriate, to ensure that the standards provide the requisite protection for human health and the environment.
- Lead is a metal found naturally in the environment and is 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.
 - EPA is conducting analyses to evaluate whether emissions of lead from piston-engine aircraft operating on leaded fuel cause or contribute to air pollution that may reasonably be anticipated to endanger public health or welfare. For more information on EPA’s activities related to aircraft lead emissions see: <https://www3.epa.gov/otaq/aviation.htm#lead>.
- Larger industrial sources of lead emissions currently include metals processing, particularly lead smelters. Lead is also emitted from industries such as iron and steel foundries, primary and secondary copper smelting, and some boilers used for generating electricity, process steam, and/or heat.

FOR MORE INFORMATION

- To download a copy of the final rules, go to EPA's Web site at: <https://www.epa.gov/lead-air-pollution/national-ambient-air-quality-standards-naaqs-lead-pb>.
- Today's decision 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 action can be accessed using Docket ID No. EPA-HQ-OAR-2010-0108.