U.S. Environmental Protection Agency
Pacific Southwest / Region 9

Monitoring the Air for Lead Near the McClellan-Palomar Airport and Gillespie Field

Air Division
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EPA National Study: Air Monitoring for Lead at Airports

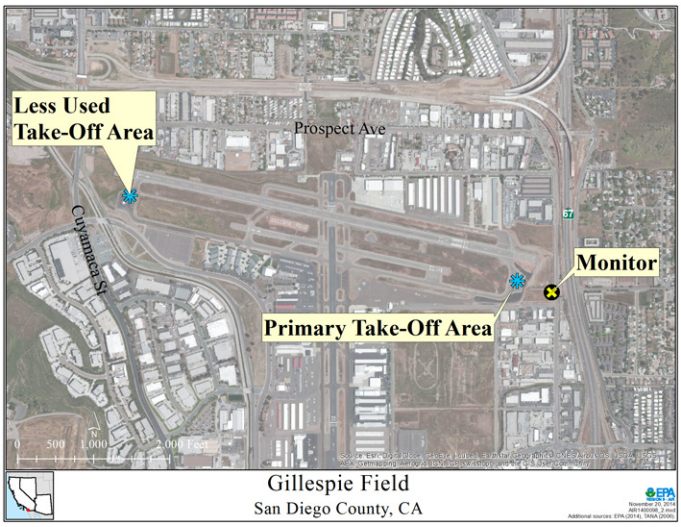
In December 2008, EPA strengthened the health-based National Ambient Air Quality Standard (NAAQS) for lead based on new scientific evidence about lead and health. EPA revised the standard from the level of 1.5 micrograms per cubic meter (µg/m3) averaged over a calendar quarter established in 1978, to 0.15 µg/m3 averaged over three consecutive months. In December 2010, EPA also revised air monitoring requirements for this lead standard. State and local air quality agencies are now required to monitor near industrial facilities with estimated lead emissions of 0.5 tons or more per year and at airports with estimated emissions of 1.0 tons or more per year. EPA also required a 1-year monitoring study of 15 airports with estimated lead emissions between 0.5 and 1.0 tons per year in an effort to better understand how these emissions affect the air near airports. The study will help EPA determine whether airports that emit less than 1.0 tons per year have the potential to cause the surrounding areas to exceed the lead standard.

The data from this 1-year monitoring study and other airport studies are helping EPA better understand the potential impacts of leaded aviation gasoline usage on and around airport property. The Federal Aviation Administration (FAA) is responsible for overall regulation of aircraft fuels (see section below titled, "FAA's Actions to Reduce Lead Concentrations at Airports"). EPA is responsible for setting emission standards from aircraft engines (see section below titled, "How Data from McClellan-Palomar and Gillespie Field May Be Used").

Monitoring at McClellan-Palomar Airport and Gillespie Field

Airports for the 1-year monitoring study were selected based on factors such as the level of piston-engine aircraft activity and the predominant use of one runway due to wind patterns. With 2008 lead emissions estimated at 0.90 tons per year at Gillespie Field and 0.59 tons per year at McClellan-Palomar, these two airports in San Diego County were chosen for the study.

In February 2012, EPA worked in partnership with the San Diego County Air Pollution Control District (San Diego APCD) to install a monitor by the primary runway of each airport to gather data for this study. The McClellan-Palomar Airport and the Gillespie Field monitors were sited at locations representative of the highest expected airborne lead particulate concentration in areas the public can access. Data indicate that concentrations of lead at the specific McClellan-Palomar Airport monitor location measured a maximum three-month average of 0.17 µg/m3, which exceeds the national ambient air quality standard for lead that EPA revised in 2008). The San Diego APCD has installed a new lead monitor at McClellan-Palomar to allow for sustained monitoring. Concentrations at the Gillespie Field monitor measured a maximum three-month average of 0.07 µg/m3, which is below the national standard. As this monitor showed no three-month averages over half of the standard, the monitoring at Gillespie Field was discontinued in October 2013. The San Diego APCD also measures lead for the National Core (NCore) program at its El Cajon station, approximately 4.2 kilometers southeast of Gillespie Field.



This monitor shows a maximum three-month average of 0.01 µg/m3, well below the national standard. This monitor is representative of average levels across the city of El Cajon. In August 2014, this station was temporarily relocated to a site 4 kilometers away (approximately 1 kilometer from the old Gillespie Field lead monitoring site), while construction at the original El Cajon site occurs. During the temporary move, lead data will continue to be collected and reported to fulfill NCore requirements.

Information from other airports that have been studied in greater detail indicates that air lead concentrations decrease within short distances from the take-off areas. In 2013, the San Diego APCD undertook a short-term study to investigate localized impacts near the McClellan-Palomar Airport and determine how quickly lead concentrations decrease as one moves away from the take-off area. Results from this additional short-term sampling effort show levels decreasing by one to two orders of magnitude from the take-off area to the edge of the airport property.

How Data from McClellan-Palomar and Gillespie Field May Be Used

The 1-year airport air monitoring study is helping EPA to better understand impacts from the use of leaded aviation gasoline and to inform future airport monitoring needs. EPA is currently collecting and evaluating information nationwide regarding lead emissions and air concentrations of lead resulting from aviation gasoline (avgas) combustion by piston-engine aircraft. The information, along with information from McClellan-Palomar and Gillespie Field will be used to determine whether there is potential for "endangerment" from aircraft engine emissions due to the use of leaded avgas. Endangerment refers to the potential for these aircraft engine emissions of lead to cause or contribute to concentrations of lead air pollution that may reasonably be anticipated to endanger public health or welfare. If EPA finds that there is potential for endangerment, EPA would establish lead emission standards from this source and the FAA would establish standards for the composition of aircraft fuel to control lead emissions. More information about this evaluation is available at: http://www.epa.gov/otaq/aviation.htm

FAA's Actions to Reduce Lead Concentrations at Airports

Aircraft that use leaded fuel are used for many purposes including business and personal travel, aerial surveys, agriculture, firefighting, law enforcement, medical emergencies, express freight, and instructional flying. The collective, continued service of aircraft that use leaded fuel in an operationally safe manner is essential.

The FAA has been actively working with the aviation industry to develop an unleaded fuel replacement by 2018. In the interim, the FAA is working with airport sponsors to promote the use of currently available reduced-lead and unleaded fuel formulations, to identify and consider operational changes at the airports, and implementation of vapor controls for airport fuel storage and dispensing systems that would mitigate lead emissions. In consultation with airport operators and EPA, the FAA is working to develop lead emission mitigation measures for the airports of concern. For more information, please visit the FAA websites listed in the "Other Resources" section below.

Health Effects of Lead

Lead can impact human health in several ways, including effects on the nervous system, red blood cells and cardiovascular and immune systems. Infants and young children are especially sensitive to even low levels of lead, which may contribute to behavioral and learning problems and lower IQ. Infants and young children can also be

more highly exposed to lead because they often put their hands and other objects into their mouths that may be contaminated with lead from dust or soil. Children have increased sensitivity due to their developing nervous systems.

Health Protective Standards for Lead in Outside Air

To protect the public from harmful levels of lead in outside air, EPA established a National Ambient Air Quality Standard (NAAQS) for lead. In late 2008, EPA substantially strengthened this standard by revising it to be 10 times tighter than the previous standard. This standard is particularly important for improving health protection, particularly for children. Outdoor concentrations of lead have greatly declined over the past few decades, in large part due to regulations that removed lead from fuels used in cars and trucks. However, lead continues to be emitted into the air from sources such as aircraft that depend on leaded fuel. These aircraft include certain small airplanes used for activities, including business and personal travel, aerial surveys, agriculture, firefighting, law enforcement, medical emergencies, express freight and instructional flying. Lead is not contained in kerosene-based jet fuel which is used by most commercial aircraft with turbine or turbo propeller engines.

Where Lead is Found

Lead can be found in the air, soil, water, consumer products and inside our homes. Much of the lead in the environment comes from past use of leaded gasoline in cars and trucks, some types of industrial facilities and past use of lead-based paint in homes. To learn more about lead, where it is found and its health effects, please refer to the websites listed below.

Concerns About Lead Exposure

To learn more about lead exposure, please visit:

California Department of Public Health's Childhood Lead Poisoning Prevention Branch
http://www.cdph.ca.gov/programs/CLPPB/Pages/default.aspx
http://www.cdph.ca.gov/programs/CLPPB/Documents/CLPPB-LearnAboutLead(E).pdf

San Diego County, Childhood Lead Poisoning Prevention Program
http://www.sdcounty.ca.gov/hhsa/programs/phs/child_lead_poisoning_prevention_program

U.S. EPA Lead Program
http://www.epa.gov/lead

Other Resources

For more information on the FAA's activities, please visit:
http://www.faa.gov/about/initiatives/avgas
http://www.faa.gov/news
http://www.faa.gov/airports/environmental

For more information on lead in air, please visit:
http://www.epa.gov/airquality/lead

Contact Information

For questions regarding the study, contact Niloufar Nazmi Glosson, U.S. EPA Region 9, at glosson.niloufar@epa.gov or (415) 972-3684. For questions regarding San Diego APCD's program, contact Robert J. Kard, Air Pollution Control Officer, or Mahmood Hossain, Chief, Monitoring and Technical Services, San Diego APCD, at (858) 586-2600.