Municipality of Anchorage
Department of Health and Human Services
February 2013

Fact Sheet – Merrill Field Airborne Lead Monitoring Study

Why did the Municipal Department of Health and Human Services (DHHS) monitor airborne lead levels?

DHHS performed the monitoring at Merrill Field on behalf of the U.S. EPA. Merrill Field was selected by EPA as one of 15 airports nationwide for inclusion in a one-year monitoring study to determine whether airports serving large numbers of piston aircraft are in compliance with the national ambient air quality standard for lead. Although lead additive was phased out of the gasoline used by cars and trucks in 1980's, fuel used by piston aircraft still contains some lead additive. The EPA estimates piston aircraft are responsible for about half of the lead emitted into the air each year, nationwide. There is no lead in jet fuel.

The EPA will use the monitoring data collected from the 15 airports in the study along with other information to determine whether lead emissions from piston aircraft are a danger to human health and whether these emissions need to be reduced.

Why is lead a concern?

Depending on the level of exposure, lead can adversely affect the nervous system, kidney function, immune system, reproductive and developmental systems and the cardiovascular system. Neurological effects in children and cardiovascular effects (e.g., high blood pressure and heart disease) in adults are a particular concern. Infants and young children are especially sensitive to even low levels of lead, which may contribute to behavioral problems, learning deficits and lowered IQ.

In 2008 the EPA lowered the air quality standard for lead from 1.5 to 0.15 micrograms per cubic meter after reviewing health studies showing that adverse effects occur at much lower levels of lead in blood than previously thought.

Where and how was the lead monitoring done at Merrill Field?

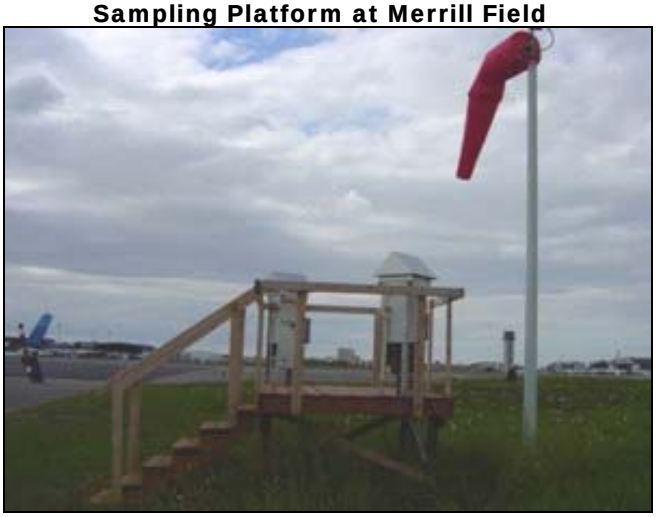
Because EPA was interested in measuring lead where the highest concentrations were expected, samplers were setup at the east end of Runway 25 at Merrill Field where the majority of pre-takeoff run-ups occur.

Aerial View of Merrill Field Lead Monitoring Site

Monitoring was conducted at "A"

Air sampling was performed every six days over a 24-hour period between October 2011 and October 2012. Air samples collected by DHHS were sent to the State Environmental Health Laboratory for lead analysis.

Sampling Platform at Merrill Field



How high were the lead concentrations at Merrill Field?

The federal air quality standard for lead is set at 0.15 micrograms per cubic meter measured as a rolling three-month average. The highest three-month average measured at Merrill Field was 0.07 micrograms per cubic meter, about half the federal standard. Lead concentrations were highest on days when airport activity was highest.

Why does the aviation fuel used by piston aircraft still contain lead?

Many piston aircraft engines still require leaded fuel for operation. Lead is added in the form of tetraethyl lead (TEL). This lead additive helps boost fuel octane, prevents knock, and prevents valve seat recession and subsequent loss of compression for engines without hardened valves. Most aviation fuel used today is 100 octane low lead (100LL). It may contain up to 2.12 grams of lead per gallon.

When does EPA expect to make a decision on whether the lead emissions from piston aircraft need to be reduced?

EPA estimates that it will take until mid-to late 2015 to issue a final determination on whether lead emissions from piston aircraft pose a danger to public health. Before they do this, they will examine air quality monitoring data collected at Merrill Field and other airports, perform modeling to estimate lead exposures to the public and review other pertinent information to evaluate health impacts. The EPA will then release their proposed determination on whether these lead emissions pose a danger to health and solicit public comment before a final determination is made.

If EPA determines that these emissions pose a danger, they would begin the process of setting lead emission standards for piston aircraft. The Federal Aviation Administration would then be responsible for establishing new standards on the composition of fuels used in these aircraft.

Are there plans to monitor in Fairview and other neighborhoods in close proximity to Merrill Field?

There are no plans for additional monitoring; however EPA is developing a computer model that can characterize the levels of lead in the ambient air at and around airports. The model will be able to estimate airborne lead concentrations experienced by those exposed in close proximity to aircraft emissions as well as lower exposures at greater distances from airports. Nationwide, the EPA estimates that 16 million people live and 3 million children attend school within one kilometer of an airport.

Where can I find more information?

Our project report on the Merrill Field Lead Monitoring study is available at: http://www.AnchorageAir.info

More information on EPA's evaluation of lead emissions from aircraft is available on this webpage:

http://www.epa.gov/otaq/aviation.htm

See section titled Lead Emissions from Piston-Engine Aircraft Using Leaded Aviation Gasoline

The page contains information on actions leading up to EPA's review of lead emissions.

It also includes a link to EPA's Advance Notice of Proposed Rulemaking on Lead Emissions from Piston-Engine Aircraft Using Leaded Aviation Gasoline and EPA's approach to selection of airports for study and subsequent modeling to quantify lead emissions from piston-engine aircraft.

Questions?

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