

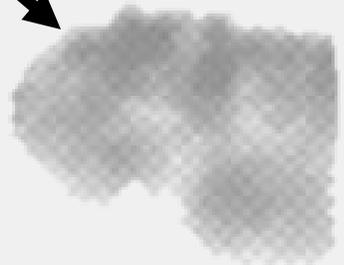
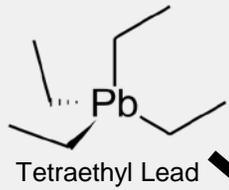
Measured Atmospheric Change In Lead Particulate Matter From UL94 Fuel Switch by Major Aerospace College

Alex Mendez

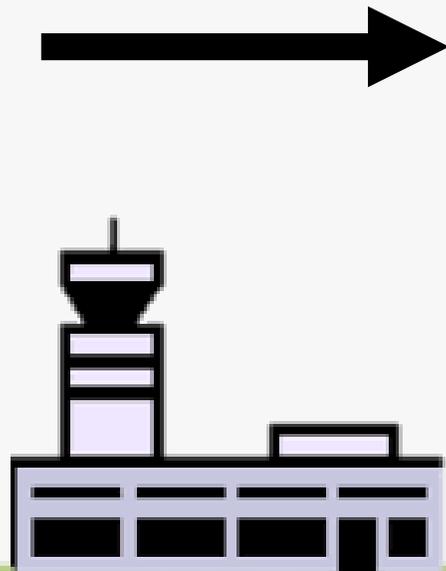
Advisor: David J. Delene, PhD



Why is lead emission important?



Pb^{2+}



Children:

- Behavior and Learning Problems
- Lower IQ and Hyperactivity
- Slowed Growth
- Hearing Problems
- Anemia

Adults:

- Cardiovascular effects
- Hypertension
- Decreased Kidney Function
- Reproductive Issues (Men and Women)

Current State Of Research

Lack of quantification of the amount of lead pollutants within local, airport environment.

**94 Octane Rated,
Unleaded Aviation Fuel**



<https://www.faa.gov>

**100 Octane Rated,
Unleaded Aviation Fuel**



Approach



University of North Dakota Aerospace College

- Aerospace college will switch from 100 Octane Low Lead Fuel (100LL) to 94 Octane Rated, Unleaded Aviation Fuel (UL94).
- Aerospace college has placed for UL94 fuel on May 24th and will start using as soon as the current supplies are exhausted (2-4 weeks).

Aerosol Measurements Using Filter Samples



Figure 1. High Volume Filter sample.
Located in Clifford Hall.



Figure 2. High Volume Filter sample.
Located at Grand Forks International
Airport.



Figure 3. Sample collected from high
volume filter sample. Located at Grand
Forks International Airport.

- Doing 24-hour filter samples with high volume filter samples. (Figure 1 and Figure 2)
- Using two different locations to measure lead concentrations (GFK and Clifford Hall) to compare concentrations of lead.
- We will use X-Ray Fluorescence to measure amount of concentration of lead in each sample.

Acknowledgments

Funding:

We would like to acknowledge support from the National Science Foundation (NSF) under the IREC REU program CHE-2244530. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the NSF.



Dr. David J. Delene

I would like to thank University of North Dakota Aerospace for allowing us to collect aerosol samples to help further our project.