1. Introduction
Although the negative effects of lead (Pb) have been known for centuries, an increase in use for industrial and domestic applications occurred throughout the 18th and 19th centuries due to its versatility and abundance (Filippelli et al. 2015). Used as an additive in leaded gasoline to reduce engine knocking and as a durability and color enhancer in paints, Pb was incorporated into many lives without ever being seen. Current practices regarding the risk of exposure to soil Pb do not address and remediate high Pb exposure areas until exposure has occurred. This work aims to determine how Pb speciation relates to the source of Pb and the relationship between speciation and distribution at the neighborhood-level in an urban environment.

2. Methods
- Soil samples were collected from 82 locations throughout Akron.
- Vegetation and debris was removed to allow samples to be dried at 40°C.
- Samples were milled to a homogenous consistency.
- Samples were pressed under 20 tons of pressure into pellets for total Pb analysis.
- Total Pb was measured using X-ray fluorescence.
- Potential bioaccessible Pb was determined using two methods: a simulated gastric fluid and a nitric acid solution.
- Inductively Coupled Plasma Optical Emission Spectrometry was used to analyze extracted Pb.

3. Results
3. Total and Bioaccessible Pb
3.3 Solid Phase Characterization
3.4 Discussion
Soil analysis confirmed that Pb was present in all samples examined, with 14 samples having concentrations higher than the CDC soil Pb standard for play areas (400mg/kg). All nitric and gastric acid extractions results showed bioaccessible Pb made up less than 2% of the total Pb present within the soils. Galena was identified in scanning electron microscopy results, which could explain the bioaccessible Pb results seen. X Ray diffraction results confirm that Pb does not make up a significant portion of soil samples collected since it was undetected. Electron dispersive a ray spectroscopy results showed Sulfur associated with Pb in most samples examined. This could explain the bioaccessible Pb concentrations results gathered.

4. Conclusions/Implications
The findings from this study conclude that Pb is present within the residential soils of Akron, with amount of bioaccessible Pb being low compared to other old, industrial cities. The low bioaccessible Pb results could be because of Pb being associated with Sulfur as galena, leading to less soluble Pb being present. Galena presence in soils could be from the importing of soil from industrial areas, or from industrial practices that occurred in Akron. The clumping of the higher total Pb results towards the center of Akron matches what other studies such as Mielke et al. 2018 show, where higher total Pb concentrations were located in the center of New Orleans and created a bulls-eye pattern of Pb decreasing as results moved outward.

Some implications that can be drawn from this study are that leaded gasoline and lead paint are not the main sources of Pb within the soils of Akron. Also, Pb testing in other cities must examine not only the total Pb present within soils, but the amount of bioaccessible Pb as well. This will give a more accurate relation to elevated blood Pb levels than total Pb results and help the remediation process. As for remediation of soils in Akron, starting with the center of Akron would be more beneficial if the removal and replacement of soils started in the center of the city and worked outward since the highest bioaccessible Pb results were seen near the more industrialized center of the city.

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6. References
Ohio Department of Transportation (2018), Ohio Transportation Information (ODOT TIMS). Available from: https://odotinfo.ohio.gov/tims/