



**CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY**

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Project Title Gravimetric Analysis: Removing Lead from Soil	
Abstract Objectives/Goals Contaminated soil can present harm to an ecosystem. Pollutants, such as lead, can accumulate in the soil due to the mixing of chips of lead based paint. Additionally, the exhaust from automobiles running on leaded gasoline deposits lead onto the soil, leading to relatively high and potentially toxic levels. Once lead accumulates in the soil, it can be transported via the surfaces of leafy plants, and can cause harm through biological magnification. Additionally, lead can leech into groundwater and contaminate vital resources. The effects of lead pollution reach wildlife as well as humans and have harmful effects. Through a process of gravimetric analysis, we hypothesized that lead could be removed from soil in a manner efficient enough to be expanded upon and used widely as a viable technique of lead removal. Methods/Materials The method was to introduce sodium chloride to soil laced with lead (II) nitrate and separate the resulting white precipitate via centrifugation. The separated white precipitate, in the form of lead (II) chloride, was weighed. Results The results were compared to the original amounts of lead in the soil, determining how efficient the method was. The white precipitate was proven to be lead (II) chloride after adding sodium chromate and watching the mixture turn yellow. Ultimately, it was shown that using gravimetric analysis and ion precipitation, lead ions were removed from the soil. Conclusions/Discussion The results showed that gravimetric analysis was, in fact, a viable technique to remove lead from soil. With a combination of chemical reactions and centrifugation, it was possible to rid soil of toxic chemicals, specifically lead.	
Summary Statement Using gravimetric analysis and ion precipitation to remove lead from soil.	
Help Received Used lab equipment at Ferrahian High School under the supervision of Dr. S. Relle.	