
IDENTIFICATION OF HEAVY METAL HYPER-ACCUMULATING FAUNA IN THE BUTTE MONTANA REGION THROUGH THE USE OF ICP ANALYSIS

Olivia Coguill, Montana Tech-Undergraduate Research Program, Montana Tech of the University of Montana, Butte MT. 59701

In many parts of the country human activity has contaminated soils through mining operations. One of the major contaminants from mining are heavy metals like Lead, Cadmium, Copper, and Zinc in concentrations that exceed safe human exposure. Consequently, remediation of the contaminated soil is now needed in these areas. Remediation of contaminated soils can be expensive, labor intensive, and disruptive to the native habitat. Phytoremediation is a method of remediating soils by the use of plants that accumulate high levels of contaminants from the soil into the plant's tissue. Plants that are used for the removal of soil contaminants are known as hyper-accumulators; meaning plants that can accumulate metal levels exceeding that of the soil in which they reside. Ideally native plants are to be used in the phytoremediation to reduce the risk of introducing invasive species to the area. The list of known hyper-accumulators native to Montana, or accumulators that can grow in Montana, specifically the Butte-Silver Bow area is limited. Research was done on tissue samples collected from plants growing in the un-reclaimed Butte Priority Operative Soil Unit (BPOSU) that were analyzed by means of inductively coupled plasma mass spectrometry (ICP-MS) for the levels of heavy metals in the tissue, so the plant may be determined a hyper-accumulator or not. Parameter tests included analyzing the soil at the location of the each plant, and site evaluation of the plants location.