TITTLE: Water pollution

**ABSTRACT:**

Water pollution is becoming a greater threat to the environment, especially as populations and industrial economies expand. There are studies to suggest that several plant species may be useful in reducing the migration of such pollution further down the soil column or perhaps even into the ground water. Given its widespread natural habitat, dandelions (Taraxacum officinale) are an appealing prospect for such soil remediation. The bentgrass family (genus Agrostis) is also an attractive candidate for study, as some species of this group have also been studied for metal uptake. Uptake of metals by a plant is when the plant takes the metals out of the soil and somehow stabilizes it away from the rest of the soil matrix.

This experiment will examine the ability of dandelion and a native-Alaskan strain of bentgrass to uptake metal contaminants from its growth medium, which is most often soil. For purposes of the control of extraneous variables, the soil will be replaced by a hydroponic nutrient solution and glass wool for stabilization.

Research of this nature is necessary for the Alaskan landscape: since this state has a colder climate than the other areas in which phytoremediation has been studied, cold-tolerant plants have rarely been studied for this ability. In addition, invasive species need to be excluded from this type of study in Alaska, as the preservation of wild flora is important to our state ecosystem. If a native species of plant with phytoremediation abilities can be found, this plant can be planted along the roadsides of Alaska to lessen the detrimental impact of pollution from vehicular traffic. Depending on the approximate location of the isolated metals, it may also be possible to harvest these plants and process them to extract the metals.

**INTRODUCTION:**

With an ever-increasing population and expanding industrial economies, there is a corresponding increase in environmental pollution. Contaminants in roadside soil can easily be found in many areas of the world, and these contaminants, some of which are metals, can be identified and quantified.

Studies have been performed on roadside soils and dust to analyze anthropogenic sources of metal contamination (Jaradat & Momani, 1999; Nouri & Naghipour, 2002; Ayodele & Oluyomi, 2011; Zhu, Bian & Li, 2008; Duong & Lee, 2011; Cervantes, 2005; Amusan, Bada & Salami, 2003). Other sources of other metals have been attributed to vehicles and industry, such as copper, iron, and manganese from vehicle break pad use and general engine wear.

Some metals, such as lead and manganese, are not biologically useful. Even if metal has biological functions, they can exist in too high of concentrations so as to be toxic, such as the case with iron, zinc and copper. This toxicity leaves plants struggling to live in such polluted soils. The contamination can also leach through the soil strata and eventually into the local water supply, a resource essential to every land-dwelling organism.

To decrease the detrimental impact of this pollution, some changes to the environment can be made. Phytoremediation, or the rehabilitation of soils by use of plants, can be easily utilized: by planting certain species of plants, contaminants in the soil can be isolated by various means in different parts of the plant. Phytoremediation can be more specifically categorized any of the following:

• phytoextraction, the concentration of contaminants in the plant and subsequent removal of the plant;

• phytodegradation, using the plants and associated organisms to degrade the contaminants into nontoxic substances;

• rhizofiltration, the root system absorbing and isolating the contaminants;

• phytostabilization, the use of plants to limit the bioavailability of contaminants; and

• phytovolatilization, where the plant removes contaminants from the soil and volatilizes

them into the air (Salt, Smith & Raskin, 1998).

Many plants have been identified as candidates for each of the aforementioned remediation methods.

Chelators like ethylenediaminetetraacetic acid (EDTA) have proven to be helpful in making metals more bioavailable, allowing more of the contaminants to be isolated from the soil (Cooper, Sims, Cunningham, Huang, & Berti, 1999; Epelde, Hernandez-Allica, Becerril, Blanco, & Garbisu, 2008). EDTA can have negative consequences though, as its application to plants can also lead to sickly or underdeveloped plants (Alkorta, Hernandez-Allica, Becerril, Amezaga, Onaindia & Garbisu, 2004; Thayalakumaran, Robinson, Vogeler, Scotter, Clothier & Percival, 2003).

Several plants have been studied for this ability, including several grasse s like bentgrass (genus Agrostis) (Humphreys & Nicholls, 1984; Wu & Antonovics, 1975). One particular species of bentgrass that is native to the state of Alaska, rough bentgrass (Agrostis scabra) is an option for phytoremediation in an area with a grazing wildlife population. If grazing animals eat plants that are used for phytoremediation, they too will be accumulating the toxic metals. Rough bentgrass has low palatability and low nutritional value, so it is less likely to be eaten by grazing animals (Matthews, 1992).

The ubiquity of the common dandelion makes it another candidate for phytoremediation.

**LITERATURE SURVEY:**

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Department of Earth Science, Faculty of Science, Benghazi University, Libya 2Institute of Environmental Studies and Research, Ain Shams University, Egypt 3Department of Geography, Faculty of Arts, Benghazi University, Libya 4Institute of Geosciences, Federal University of Rio Grande do Norte, Brazil ABSTRACT Soil pollution refers to the presence of toxic chemicals (pollutants or contaminants) in soil, in high enough concentrations to pose a risk to human health and/or the ecosystem. All soils, whether polluted or unpolluted, contain a variety of compounds (contaminants) which are naturally present. Such contaminants include metals, inorganic ions and salts, and many organic compounds. These compounds are mainly formed through soil microbial activity and decomposition of organisms. Additionally, various compounds get into the soil from the atmosphere, for instance with precipitation water, as well as by wind activity or other types of soil disturbances, and from surface water bodies and shallow groundwater flowing through the soil. When the amounts of soil contaminants exceed natural levels, pollution is generated. There are two main causes through which soil pollution is generated: anthropogenic causes and natural causes. Keywords: Soil Pollution, Environment and Health. 1. Introduction Soil pollution as part of land degradation is caused by the presence of xenobiotics chemicals or other alteration in the natural soil environment. It is typically caused by industrial activity, agricultural chemicals or improper disposal of waste. The most common chemicals involved are petroleum hydrocarbons, polynuclear aromatic hydrocarbons, solvents, pesticides, lead, and other heavy metals. Contamination is correlated with the degree of industrialization and intensity of chemical substance. The concern over soil contamination stems primarily from health risks, from direct contact with the contaminated soil, vapors from the contaminants, or from secondary contamination of water supplies within and underlying the soil. Mapping of contaminated soil sites and the resulting cleanups are time-consuming and expensive tasks, requiring extensive amounts of geology, hydrology, chemistry, computer modeling skills, and GIS in Environmental Contamination, as well as an appreciation of the history of industrial chemistry

**ADVANTAGES :**

1.Permanent of elimination of waste

2.Bio logical systems are cheaper

3.Minimum site discruption

**DIADVANTAGES:**

1. Some chemicals cant be bioremediated

2.Toxicity of contaminants

3.Scitentific intensive

**Conclusion:**

Water pollution is physical, chemical, biological, or radiological modification of the surface layer of the earth's crust by accumulation of a large quantity of natural materials or occurrence of new synthetic materials that disturb the composition of the soil, influence the natural balance of the ecological system, and disable the purification process (self-cleaning) of the soil. The consequences of soil pollution depend on the kind, quantity, and dynamics of disposal of harmful materials, and also on soil composition, structure, and its physical and chemical characteristics.

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