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Abstract

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Major: Biology

Faculty Mentor: Victoria Livingston

Trace Metal Analysis in Freshwater Systems

Paige Bradshaw

Trace metals exist naturally in water bodies across the globe. These metals enter waterways through sediment and erosion, as well as human activities such as agriculture, industry, and waste production. Historically, background levels of trace metals were documented in various locations based on geology and water systems. These historical levels are now several decades old. Activities such as heavy industry have been shown to increase trace metal contamination, and may have altered ecosystems since these background levels were measured and documented. This research will help update our knowledge of background trace metal levels, to better identify changes in contamination and the possible side-effects. Water samples from 5 freshwater systems were taken and analyzed for trace metals that are known to cause physiological problems in vertebrates: copper, cadmium, and lead. An atomic absorption machine was utilized to determine the concentrations for the previously listed trace metals in each sample. Each of these trace metals has various effects on a vertebrate's body, ranging from mild irritation to damaging brain function. The experimental concentrations were then compared to historic levels. Having updated water quality readings in terms of trace metals is needed to ensure proper environmental and human health. Background levels are used for comparison and should be updated as environmental changes occur.