# Using Bivalve Mollusks to Detect Water Contaminates

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Based on the study conducted at Poznan water treatment plant in Warsaw, which uses freshwater mussels as an early warning system for heavy metal contamination in their water. This study aims to discover how efficiently the common blue mussel can detect water contaminants. The blue mussels' reactions to copper, iron and lead over the course of 90 minutes will be the focus of this experiment. The contaminant measurements are taken directly from the EPA's water safety guidelines and will be kept the same for the entire experiment. Post experimentation t-tests were run on all datasets in comparison to the control group. A majority of the p-values came out to be $p<.05$, meaning that each contaminant had a significant impact on the mussels movements during the 90 minute test phase. The averages taken for the control group were 5-7% lower than expected, and copper trial averages generally were higher than expected by about 15%. While the data did not turn out perfectly, the p-values determined that there was a significant difference between the data sets meaning that the common blue mussel can detect contaminants in water efficiently. Further work needs to be done on the project as there are many areas that call improvement, and anomalies that need to be researched. The hope for this project is that an early warning system similar to the one in Warsaw can be established in areas where freshwater mussels cannot survive. The system would likely prevent a large amount of heavy metals from being introduced into oceans and other bodies of saltwater

**Awards Won:**