# Determining the Possible Detrimental Effects and Bioaccumulation in Daphnia Populations Exposed to Coal Fly Ash Leachate

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Coal Fly Ash (CFA) is a byproduct of burning coal. Only 60% of CFA is recycled with the remaining 40% potentially damaging the environment (ACAA, 2023). CFA is toxic because of heavy metals. This study investigated leachate impacts on Daphnia magna and evaluated environmental effects from exposure and subsequent bioaccumulation. Fifty grams of CFA and 100 mL of distilled water formed the test leachate. Glass tanks with 100 mL of spring water housed the organisms. Tests included: Set 1(control), Set 2(5% leachate), Set 3(10% leachate) and Set 4(20% leachate). A second series used a pH adjusted (5-6) leachate. After experimentation, all remains and live organisms were collected and prepared for ICP-OES analysis of target elements. Exposure to CFA leachates caused a reduction in Daphnia survival when compared to the control. Bioaccumulation results showed increases of toxic elements in the Daphnia tissue exposed to the leachates.

**Awards Won:**