# THE EFFECT OF CONSTRUCTED WETLAND USING AZOLLA (*Azolla microphylla*) IN REMOVING METAL LEAD (Pb) AND COPPER (Cu) IN METAL CRAFT WASTEWATER

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## ABSTRACT

Constructed wetland using *Azolla* plant is one of many ways to reduce lead and copper in metal craft wastewater. The purpose of this study was to determine the effect of the constructed wetland on the reduction of lead (Pb) and copper (Cu) in metal craft wastewater, distribution of lead (Pb) and copper (Cu) in water, soil and plant, and also the appropriate concentration of waste produced. so that Azolla (*Azolla microphylla*) plant can reduce lead (Pb) and copper (Cu) optimally. This study used a single factor completely randomized design method, namely the concentration of wastewater 0%, 30%, 60% and 100%. Each treatment was repeated 3 times. Water parameters include pH, Cu concentration and Pb concentration. Soil parameters included pH, Cu concentration, Pb concentration, CEC and soil organic C. Plant parameters included biomass, Cu concentration and plant Pb concentration. The data obtained were then compared between treatments to determine whether there was a significant difference or not using Analysis of Variances (ANOVA), if they were significantly different, then Duncan's multiple range test (DMRT) was followed. This study showed that the constructed wetland using *Azolla* plant was proven to be able to reduce the concentration of lead in water by 96,83% and copper concentration by 98,97%. The distribution of lead concentrations is concentrated in the soil and plant, while the distribution of copper concentrations is centered in the soil. Research has also shown that 30% effluent concentration is the right concentration to reduce lead and copper optimally.

**Keywords :** Metal craft waste, lead, copper, constructed wetland, *azolla microphylla*