REMOVAL OF HEAVY METALS (COPPER, LEAD, AND CADMIUM) FROM MALIHAO RIVER, VICTORIAS CITY, NEGROS OCCIDENTAL USING TUWAY (*Polymesoda erosa*) SHELLS

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ABSTRACT

This study examines the potential of tuway (*Polymesoda erosa*) to remove copper, lead, and cadmium pollutants from the surface water of five sampling stations from Malihao River, Victorias City, Negros Occidental. The experiment was conducted using a fixed bed column where the shells were packed as an adsorbent. The optimum pH (pH 6) and flow rate (7 mL min^{-1}) of the column was determined to get maximum adsorption of the heavy metals. Adsorption isotherms for Langmuir and Freundlich models were generated to identify the removal process and mechanism of the adsorbent. The correlation constant, R^2, fit both Langmuir and Freundlich models. Copper has a better fit in Langmuir model while lead isotherm has a better fit with the Freundlich model. The removal efficiency for the heavy metals is 97.45% and 78.27% for copper and lead, respectively. Cadmium has a high removal efficiency that results in a concentration lower than the limit of detection after the adsorption treatment. The concentration of the heavy metals in surface water of Malihao River exceeds the guidelines set by DENR which are 0.02, 0.01, and 0.005 for copper, lead, and cadmium, respectively. The removal efficiency of the heavy metals varies for each sampling locations due to the difference in the surface water composition and characteristics.