

IDENTIFICATION OF HEAVY METAL CHROMIUM (CR) IN THREE RIVERS CROSSING THE CITY OF YOGYAKARTA AND THEIR POTENTIAL PHYTOREMEDIATION

by Tien Aminatun, Anna Rahmawati, Kun Sri Budiasih, Baso Samsu Rijal, Abdullah Nasih Amin, David Meilana Nur Arifin, Ajeng Septiana Putri

ABSTRACT

Various studies have been carried out to see the phytoremediation potential of heavy metals, but generally for heavy metal content in industrial wastewater, not in direct waters or rivers. Therefore, the purpose of this study was to identify the heavy metal Cr in the waters of Yogyakarta, especially in three rivers namely Winongo, Gajah Wong, and Code; and to know the potential of its processing by phytoremediation.

*The study was conducted on water and sediment from upstream, middle, and downstream of the three rivers. Water and sediment samples collected from each sampling point were then analyzed for heavy metal content of Cr using the AAS technique. To see the phytoremediation potential, phytoremediation experiments were carried out with 2 types of aquatic weeds, namely water hyacinth (*Eichornia crassipes*) and apu wood (*Pistia stratiotes*). Heavy metal Cr analysis and phytoremediation experiments were carried out at the Chemistry Laboratory of the Faculty of Mathematics and Natural Sciences, Yogyakarta State University. The measurement of water quality parameters was tested at the BBTKL-PP Laboratory.*

The results of the study can be concluded that; (1) In the Code River, Winongo and Gajah Wong, it was identified that there were chromium heavy metal but still below the quality standard threshold according to the Regulation of the Governor of DIY Number 20 of 2008 concerning Water Quality Standards in DIY Province Class 1 (for drinking water raw water); and (2) the potential of water hyacinth and apu wood as phytoremediator of river water contaminated with chromium heavy metal is not clear because the concentration of chromium in the water in the three rivers is still low below the quality standard threshold (<0.05 mg/L), but seen from the performance plants, these two weeds have the potential to become phytoremediators in rivers contaminated with chromium heavy metal.

Kata Kunci: *Identification, Cr, phytoremediation, river, Yogyakarta*