# Investigation of the Bioaccumulation of Pb, Zn and Cu in Different Organs of Common Reed (*Phragmites australis*) in Gelerood River

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**Abstract**

Heavy metals have ecological importance due to enter into food chain. In this study, in order to investigate the heavy metal pollution status and the effect of the dominant plant in Gelerood river, the concentrations of heavy metals Pb, Zn and Cu were investigated in sediment and plant species of *Phragmites australis*. Then, the Bioconcentration Factor (BCF) and the Translocation Factor (TF) were used to investigate the phytoremediation potential. Samples were collected from sediment, root and leaf in five stations with three replications in autumn of 2014. The results showed that the mean concentrations of Cu, Pb and Zn in aboveground organs of plants were 7.4, 11.17 and 11.87 (in µg/g of dry mass), respectively, and in the underground organs of the plant were 6.71, 9.29 and 17.81 (in µg/g of dry mass), respectively. In addition, the mean concentrations of Cu, Pb and Zn in sediment samples were 16.2, 7.5, and 41.77 (µg/g), respectively, that the concentrations of heavy metal in sediment were relatively lower than toxicity level. The result indicates that the heavy metals are not serious contamination for the living organisms of the region. Based on the results, the mean BCF of underground organs were 1.32 (Pb), 0.41 (Cu), and 0.42 (Zn), respectively, and for the aboveground organs were 1.49 (Pb), 0.45 (Cu), and 0.28, respectively. According to BCF result, *P. australis* is known as a hyper-accumulator plant for Pb, and the plant is known as an accumulator plant for Cu and Zn. In addition, the mean TF for Pb, Cu, and Zn were 1.2, 1.11, and 0.66, respectively. The results show that the value of the TF in relation to Pb and Cu is greater than 1, which indicaes the effective role of roots in transferring these metals to different parts of the plant. According to the coefficients of indexs, Phragmites australis are recommended for the phytoextraction of Pb and Cu, and the phytostabilization in relation to Zn metal in the study area.

**Keywords:** Heavy metals, Bioconcentration Factor, Super absorbent, Translocation Factor, Phragmites australis, Sediment.