

The assessment on the heavy metal pollution and health risks in the Liujiang River under the Xijiang River region

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ABSTRACT

The research aimed to investigate on the quality of the Liujiang River in Guangxi Province. Concentrations of heavy metals, including Cu, Zn, Pb, Cd, As, Ni, Sb, and Tl, in the Liujiang River water were analyzed for studying the distribution and risks of heavy metal pollutants in this area. The methods of Nemerow comprehensive index and the risk assessment model for health were used to evaluate the water quality and the health risk severity caused by heavy metals in the Liujiang River. The results demonstrated that the water quality of each of the 9 tested points met the concentration requirement for heavy metals in the grade II. The water samples collected on tested points on the Liujiang River were clean and proved not to be polluted by heavy metals. According to the collected data, the concentrations of heavy metals As and Zn were lower than Cd, Pb, and Cu in the Liujiang River, but still lower than the maximum acceptable level of $5.0 \times 10^{-5} \text{ a}^{-1}$. The water quality in comprehensive pollution index and health risk value of heavy metals changed consistently. The quality of the upstream was much better based on the results. As, as the major pollutant of the health risk of Liujiang river, should be managed more strictly for preventing and controlling environmental risk in the Liujiang River.

Keywords: Liujiang River; Heavy metals; Nemerow comprehensive index method; Health risks

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