

ecological risk assessment of TOXIC METALS in water of PERAI RIVER, MALAYSIA

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October 31, 2022

Abstract

Perai River has been recognized as an additional raw water resource for Penang state. Inadequate waste management can lead to river pollution. River water contamination with metals such as light and heavy metals and metalloid is a global concern that negatively impacts human, plant and aquatic life. Therefore, this paper aims to evaluate the potential sources and impacts of toxic metals at downstream of the Perai River basin. There were 15 sampling points located at possible pollution sources and a sample at the river outfall. In the dry season, samples were taken in two different tidal: low and high tide. According to spatial distribution analysis, Al and Hg levels were observed to be higher than the standard limits during low tide. Meanwhile, Al, As, Hg and Se were significant during high tide. Significant contamination of Al was noticeable upstream during low and even high tide. Pollution of Al and Hg may have started beyond the research zone, as the concentrations were highest upstream during low tide. As was high in certain areas and Se started high at the outfall during high tide. The concentrations gradually decreased to upstream. It concluded that Al, Hg, and As pollution comes from anthropogenic and Se from seawater intrusion. Al and As highest concentrations exceeded the chronic value for aquatic life. Yet, Hg gave a threatening concentration value to plants and aquatic life. Government authorities must take steps to resolve this issue in order to protect the river ecosystem and prevent human health problems.

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