# Environmental compliance assessment for the desulfurization of sulfide mine waste tailings: A case study of Ok Tedi Mine, Papua New Guinea

W. Kiwingima, A.Gormleya, R.Douglasa, and J.Arnscheidta

**aSchool of Geography and Environmental Sciences, University of Ulster, Coleraine, UK**

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# ABSTRACT

The effective management of sulfide mine waste tailings is a complex task because of the potential for acid rock drainage to harm aquatic ecosystems. Although previous research has explored the environmental consequences of sulfide mine waste tailings and the potential advantages of [desulfurization](https://www.sciencedirect.com/topics/earth-and-planetary-sciences/desulphurisation) method, there is a lack of studies examining the environmental compliance of desulfurization efforts. To bridge this knowledge gap, a study was conducted at the Ok Ted Mine to evaluate the environmental compliance of the implemented desulfurization process. Ninety samples of sulfide tailing, desulfurized tailing, and sulfide concentrate were collected and analyzed for geochemical and physical properties. The acid-generating capacities were assessed using the Sobek's static test, whereas the particle size, pH, and recovery were evaluated for the overall performance of the desulfurization process. These findings indicated that the desulfurization process significantly reduced the acid-generating capacity and heavy metal concentrations of the sulfide tailings below the regulatory threshold levels. Therefore, the desulfurization approach employed at the Ok Ted Mine comply with the environmental regulatory requirements. For further assessment, a study is recommended to evaluate the impact of desulfurization on the ecosystem to predict full extent of biodiversity recovery after mine life.

**Reference**

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