

Coal mine site investigation of wastewater quality in Australia

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ABSTRACT

As the coal industry in Australia continues to grow and expand, there are increasing concerns about its environmental impacts, especially due to water pollution. In order to devise new and effective methodologies in handling and treatment of mine water, a mine site investigation was undertaken in understanding the characteristics of wastewater from coal mines across Queensland (QLD) and New South Wales (NSW). Three representative mines, two from NSW and one mine from QLD, were chosen for the study. Wastewater quality was evaluated from the tests carried out onsite as well from the detailed analysis of various parameters of the water collected from the mine sites. From the mine water survey, it was identified that the major water quality parameters of concern associated with coal mining are salinity, and acidity or alkalinity. In terms of existing treatment procedures, mines generally adopt lime neutralisation and precipitation, flocculation and settling, and membrane filtration. More efficient and cost effective mine wastewater treatment methods are required, so as to maximise the amount of water reused for various onsite purposes and any excess water be safely discharged into the receiving waters. A general overview of conventional wastewater treatment processes adopted by the mining industry was also discussed.

Keywords: Coal mining; Wastewater management; Water quality; Salinity; Mine water reuse

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