

## **Acid mine drainages at Mamut Copper Mine, Sabah, Malaysia**

### **Abstract**

Malaysia's only copper mine is located in Sabah, East Malaysia. The mine was started in 1975 and ceased operation in 1999. As expected acid mine drainage (AMD) pollution is gradually becoming evident at the abandoned mine area. This type of environmental problem, however, is relatively new in Malaysia. Nevertheless, Universiti Malaysia Sabah (UMS) is at the forefront of basic and applied AMD research in the country. This paper provides an overview on some of the research findings, in particular with references to the characteristics of the local AMDs and the potentials of using calcareous materials for its treatment. In general, seepages water at the mine pit area have low pH (2.90 – 3.75), high and variable total acidity (176 – 1697 mg CaCO<sub>3</sub> /L), high TDS (302 – 2673 mg/L), high sulphate (292 – 2808 mg/L) and elevated concentrations of dissolved metals (Al, Mn, Fe, Cu and Zn). By contrast, the seepages at the tailing dam is alkaline (pH > 7.0) and according to Acid Base Accounting (ABA) test the tailings have negligible AMD potential. Meanwhile, calcareous sandstone and calcareous mudstone have significant acid neutralization and heavy metal removal ability when tested on the AMD samples. The overall efficiency, however, is dependent on a number of factors, including the strength (i.e total acidity) of the AMD