

Cu, Pb and Fe release from sulfide-containing mine tailings in seawater: A laboratory simulation

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Metal release from the deposition of sulfide-containing tailings in seawater was investigated using a batch reaction experiment. Tailings from a porphyry Cu-Au and a sediment-hosted Cu deposit were submerged in 1.8 L synthetic seawater. Pore water and overlying seawater samples were collected and analyzed for pH, redox potential and trace metals (Cu, Pb and Fe) concentration. Results from this study show that there is very low Cu (10-40 $\mu\text{g/L}$), Pb (2-10 $\mu\text{g/L}$) and Fe (5-50 $\mu\text{g/L}$) released into solution throughout the course of 87 days. Trace metal concentration was generally very stable (Cu, Fe) or declined (Pb) through time. The release of acid into solution was also very low due to the high buffering capacity of seawater. Long-term trace metal release from tailings in seawater is therefore theorized to be low and is a slow process.