

Case Study

Customized Kinetic Testing Programs for Complex Sulfur Speciation

Copiapó
Chile

> Challenge

Acid and metalliferous drainage risk assessment is based on sulfur and carbon contents. High sulfur epithermal deposits have complex sulfur speciation, with both sulfide and sulfate minerals present. Static acid base accounting programs on these deposits can over-estimate reactivity and acidity production, and therefore a site's risk profile.

> Approach

Okane's Advanced Customizable Leach Columns (ALCL) measure the reactivity of materials through the direct monitoring of oxygen consumption. Columns were operated under site conditions to mimic the spring snowmelt flush through a freely oxidizing toe of a mine rock stockpile. Leachate was analyzed to assess the mobilization of contaminants. The kinetic program was complemented by an extensive pre and post static characterization program and an understanding of the deposit's mineralogy.

> Client Benefit

The acid and metalliferous drainage risk profile for each lithology was fully demonstrated. Direct measurement of oxidation rates was used to model the long-term water quality for mine landforms reducing the need for scaling factors.

ALCLs provide a real-time assessment of a material's reactivity to site specific environmental conditions.

**Integrated Mine Closure
and Relinquishment Solutions**

