



Pressure Oxidation of Enargite Concentrates

Kimberly D. Connor and Corby G. Anderson

Summary: A method to separate copper and arsenic at moderate temperatures and pressures

Description: Most of the copper produced worldwide comes from sulfide minerals. The concentrates from these sulfide contain various impurities, like arsenic, in copper minerals such as enargite. Conventional smelting/converting technologies have limited capabilities to treat arsenic contaminated concentrates because of the risk of atmospheric pollution and copper cathode quality. This invention reports a process that uses moderate temperatures and pressures with controlled oxygen addition for the separation of copper and arsenic. The transition of enargite to covellite along with the copper mass balance indicates copper increases in the solid and arsenic was leached, reducing the arsenic content in the concentrate. Products from the process include an upgraded copper concentrate containing precious metals and a stabilized arsenic precipitate for disposal.

Main Advantages of this Invention

- Reduction of the arsenic penalty at a smelter
- Operation works at a low temperature
- Separation happens with lower oxygen pressure or oxygen consumption than existing pressure oxidation processes

Potential Areas of Application

- Industrial separation of arsenic and copper
- Preliminary treatment of ore

ID number: 14011

Intellectual Property Status: US utility patent pending (application #14/531,770)

Opportunity: We are seeking an exclusive or non-exclusive licensee for marketing, manufacturing, and sale of this technology.

For more information contact:

William Vaughan, Director of Technology Transfer
Colorado School of Mines, 1500 Illinois Street, Guggenheim Hall Suite 314, Golden, CO 80401
Phone: 303-384-2555; e-mail: wvaughan@mines.edu