



Bioleaching of a natural arsenide ore

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As a cobalt arsenide, the mineral Safflorite combines the drawbacks and advantages of biohydrometallurgy. On the positive side it poses an important source of the highly valuable cobalt, which is rated as a strategic element by the European Commission. Unfortunately, the arsenic is not only a highly toxic pollutant but also a major hindrance in further metal processing.

However, we were able to use an acidophilic iron oxidising mixed culture which was not only able to cope with the arsenic but also to liberate up to 80% of both, the nickel and the cobalt. Due to ferric arsenate precipitates, which are hardly dissolvable, only 50% of the arsenic got into solution. The abiotic controls yielded <5% cobalt and <20% nickel.

Consequently, we are able to propose a possible technique not only to process cobalt bearing arsenides, but also to do so in an ecologically friendly way, and thus to provide the for the modern industry pivotal cobalt.