

COPPER AND COBALT RECOVERY FROM OLD FLOTATION TAILINGS

By

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ABSTRACT

The global mining industry generates millions of tons of mineral waste every year. The most common mineral waste is tailings which were accumulated in excess of 280 billion metric tonnes worldwide. These tailings, however, represent a valuable source of base, precious and critical metals with the estimated value of US\$3.4 trillion.

Apart from the tailings dam geophysical stability there are a number of barriers that currently prevent cost-effective reprocessing of tailings. The two major issues are the low content of the valuable metals and high content of fine fractions. The fines prevent effective metal recovery in heap leaching or require costly filtration in other leaching methods which does not make the operation economically viable with conventional technologies. The tailings also present environmental problems from seepage and overtopping of harmful compounds to the surrounding ecosystem.

The current study investigates a novel metal recovery technology developed by InnovEco Australia for the recovery of copper, battery metals, rare earth elements, and other valuable metals from mineral wastes. The proposed resin in moist mix (RIMM) technology is based on ion exchange and enables a cost-effective recovery of valuable metals from low grade ores and fine minerals such as tailings.

The RIMM bench top tests and drum model tests have demonstrated that near 100% of the acid soluble copper and cobalt can be recovered from the South Australian tailings tested. Further tests will include mineralogical investigation to confirm the presence of oxide and sulphide minerals.

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