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A SUSTAINALBLE APPROACH TO TREATING HIGH ARSENIC CONCENTRATES USING THE TOOWONG PROCESS™ AND THE GLASSLOCK PROCESS™

By

[1]Lachlan MacDonald, [2]Jean-Philippe Mai

[1]Core Resources, Australia
[2]Dundee Sustainable Technologies, Canada

Presenter and Corresponding Author

Lachlan MacDonald

ABSTRACT

Arsenic contamination in base metal and precious metal concentrates is a global issue facing the mining industry on health, environmental, and commercial fronts. This issue is expected to get worse considering:

- Ore deposits are becoming more complex, resulting in higher impurity to target metal ratios
- Country import restrictions for dirty concentrates are tightening
- Environmental concerns about the toxicity and safe handling of arsenic are increasing

There is the need for a sustainable approach to managing arsenic within the concentrate-smelter business model, while also improving value from high arsenic bearing ores and concentrates.

The Toowong Process™ and the GlassLock Process™ were developed for arsenic bearing concentrates and offer a cost-effective, environmentally superior, and sustainable means to managing arsenic in the mining industry. The Toowong Process™ selectively removes arsenic from dirty concentrates, producing a marketable clean concentrate that is shipped to the smelter. The GlassLock Process™ stabilises the arsenic into a vitrified glass product with a world-class environmental stability.

Recently, the Core Group and Dundee Sustainable Technologies collaborated on a pilot testwork study, treating a high arsenic concentrate from an operating mine to produce a clean concentrate, and a stabilised arsenic bearing glass product. We present the findings from this work in this paper.

Keywords: Toowong Process, GlassLock Process, arsenic, dirty concentrates, base metal concentrates, precious metal concentrates, alkaline leaching, vitrification, piloting