

## Recyclable Treatment of Cyanide in the Mining Industry: The Way Forward

RO Anyasi<sup>1</sup>, HI Atagana<sup>2</sup>, JO Raymond Anyasi<sup>3</sup>, CS Ajah<sup>4</sup>

<sup>1,2,3,4</sup> University of South Africa

Pretoria, South Africa

eanyasro@unisa.ac.za; atagahi@unisa.ac.za; 215713512@tut4life.ac.za; 41525981@mylife.unisa.ac.za

**Abstract** - Cyanide is any chemical compound that contains monovalent combining group of carbon and nitrogen (CN). It breaks down some group of heavy metals resulting in the formation of complexes with such metals. The complexes that are formed are usually very stable even under mildly acidic conditions. Cyanide has been preferred in gold and silver mining worldwide, but its potential toxicity and environmental impact has been of health concern. Although cyanide can be recovered or degraded by several processes, it is still widely discussed and examined. Biological treatment of cyanide is a well-established environmental friendly alternative and has been commercially used at gold mining operations to complement the existing physical and chemical processes. Biological treatment techniques facilitate growth of microorganisms that are essential for the treatment procedures. The present study describes the environmental challenges of cyanide in the mining industry and provided an alternative use of biological processes to treat the chemical.

**Keywords:** Cyanide, Mining Industry, Environmental challenges, Biological treatment, microorganisms.