Biohydrometallurgy

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In many of the countries involved in extraction processes, most of the pollution problems are usually mining related. Normally, a huge amount of material is dug from the ground and then crushed and processed to obtain the desired metals. This has led to reduction in deposits of high-grade ores (ores which contain a high concentration of valuable metals) due to increased mining activities by large mining firms. To cope with the high demand of metals for various uses, mining companies are increasingly looking for better ways to initiate their practices. This is where the term “Bioleaching” comes in. Bioleaching is a process that deals with the extraction of metals from their ores using naturally occurring and living microorganisms, such as bacteria, instead of using chemical solutions. It involves the use of Acidithiobacillus bacteria and Sulfolobus bacteria which work on the minerals in the metals hence separating them from the ore. The main objectives of our research were; firstly, to culture the Acidithiobacillus bacteria and the Sulfolobus bacteria. Secondly, we used the cultured bacteria to find out whether they can be used in the process of extracting metals from low-grade ores (ores which contain a lower concentration of the valuable metal).Thirdly, we wanted to identify which of the two bacteria used gave a higher output. The results we obtained showed that the Acidithiobacillus bacteria and the Sulfolobus bacteria could efficiently be cultured and the cultures obtained could efficiently be used in the extraction process. The results also showed that the Acidithiobacillus bacteria gave a higher output of metals (90%) compared to the Sulfolobus bacteria (61%), when used in the extraction process.

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