



Mining Applications...

Bioremediation and TPH Analysis at Equinox - Lumwana Mining Company in Zambia

Equinox Minerals operates the biggest copper mine in Africa located at Lumwana in Northwest province Zambia. Open pit mining methods are used to access the ore which is hauled to the process plant where it is crushed and processed into final concentrate. The mine operates a large fleet of equipment, including 27 EH4500 dump trucks, 5 shovels, 4 excavators and more than 100 light vehicles to achieve it's voluminous through put of 20 million tons per year. This fleet consumes in excess of 1.5 million liters of diesel and 15,000 liters oil per month. As a result, spillage and leakage of diesel and oil at the site is inevitable during storage, refueling, equipment breakdown and equipment servicing.

“ This kit has proven useful and we have used it reliably for monitoring purposes. The TD-500D is easy-to-use and analysis results are obtained in real time right there in the field thus allowing numerous samples to be analyzed within a short period of time and getting our results instantly. I really appreciate your presence; it has made a difference in supporting us towards a greener environment. ”

Hamilton Dovorogwa, Environmental Officer, Lumwana Mining Company

As an environmentally aware company, it is a site rule that any hydrocarbon spillage must be treated with importance whereby the spilled product must be contained, the spillage controlled and the contaminated area cleaned up. All the waste generated during clean up, which is mostly contaminated soil, is taken to an on-site bioremediation treatment facility.

The soil is treated using bioremediation techniques to reduce the concentration of the TPH contaminants in the soil to internationally acceptable levels of <1,000 ppm. TPH levels are measured before treatment of the soil to estimate the amount of nutrients required (nitrates & phosphates) for the process and thereafter weekly to monitor progress of the remediation process.

To monitor the progress, Sitalab's TD-500D analyzer and soil test kits are used to measure the levels of TPH in soil under treatment. After concentrations are below the 1,000 ppm action level, the soil is either used for rehabilitation of disturbed areas or is used for pot filling and the nursery. To date 32 tons of 120 tons of stockpiled contaminated soil have been treated and the soil has been used at the nursery and in rehabilitation programs.

Sitalab test kits in use at Lumwana...



Contaminated soil before treatment



Soil 4 months after treatment

Indigenous tree nursery at Lumwana



Bioremediated soil being used at the nursery successfully