



GOLD MILL OPERATION-REMOVAL OF MERCURY - GUATEMALA

THE CHALLENGE

A Gold mining operation in Central America employs the cyanidation process to extract gold from gold-bearing ore. After leaching, spent cyanide solution becomes waste that must be treated prior to discharge. The mill employs the INCO process for the decommissioning of spent cyanide solution where cyanide is oxidized to cyanate using SO₂ and air in the presence of copper sulfate as a catalyst.



Lime is added to neutralize the resulting sulfuric acid and the effluent discharged into a tailing pond where sedimentation of solids and further degradation of cyanide, free and WAD, take place prior to discharge to the environment.

THE PROBLEM

The wastewater at the end of the tailing pond still has high levels of metals, in the form of cyanide complexes, especially those of mercury and copper that needed to be reduced to meet discharge requirements.

THE SOLUTION

After a treatability study, an AQUASIL® product was selected for this application. This treatment generates clear effluent and meets local discharge requirements as shown in the Table below.

Parameter	Discharge Limits (mg/L)	Before (mg/L)	After (mg/L)
Silver	---	0.050	0.005
Iron	2.0	1.99	1.13
Copper	0.3	0.750	0.005
Mercury	0.002	0.0134	0.0002
Cyanide Total	1.0	3.01	1.68
Cyanide WAD	0.50	0.876	0.315

Furthermore, the AQUASIL® product lowered the concentrations of silver, iron, total and WAD cyanide in the effluent.

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