

Haveri tailings –Environmental threat or potential for reprocessing

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The Haveri Cu-Au mine in SW Finland operated from 1942 to 1961 producing a total of 4440 kg Au and 6085 t Cu. The ore processing left behind 1.559 Mt of tailings that were deposited in a bay of a nearby lake. The tailings oxidation and subsequent environmental impacts were studied half a century after mine closure [1,2,3,4,5], and currently the mine waste facilities are being remediated.

These mine wastes were revalorized in the early 1980's by the Outokumpu Oy mining company (165 drill cores with 1201 samples), though at that time the tailings were not considered profitable for reprocessing [6]. Additionally, 40 drill cores with 190 samples were sampled in 2006-2007 [3,5]. Based on the revalorization, the Haveri tailings still host an estimated 1.8 t of Au, 1493 t Cu (1329 t [3]), 272 t Zn (224 t), 209 t Ni (126 t), 227 t Co (184 t), 251 t As (253 t) and 29 t Pb (16 t) among other trace metals. Gold exhibits a heterogeneous distribution throughout tailings and is associated to sulfides and Co-Ni-Fe sulpharsenides, whereas Cu appears in chalcopyrite. The environmental studies revealed the oxidation and subsequent redistribution of metals in the uppermost tailings layer (50-140 cm from the surface). This has an implication on the selection of ore enrichment method for potential reprocessing of the tailings.

Reuse of the Haveri tailings in its current form, for instance in construction or back filling, is not recommended for its sulfide content (mean 2.9 wt.% of S) and subsequent potential generation of acid drainage [1,3].

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[2] Parviainen, A. et al., 2012. Journal of Geochemical Exploration 114, 46-56.

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[6] Kokkola, M., 1986. Outokumpu Oy Ore Exploration reports, pp. 83.