A Preliminary Review of Tailings involving Sulfides in Ponds (and Dams)

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Tailings impoundments appear to be numerous in the world, e.g., at the Heath Steele mine, Newcastle, NB (Blowes et al., 1992), the Renison Bell Tin Mine, Tasmania, Australia (Gilbert et al., 2003) and in mine-waste piles at the Elizabeth Mine, Strafford, VT (Hammarstrom et al., 2005). Many tailings would have a variety of metals within sulfide minerals, including gold in pyrite and other sulfides.

One example, the Sherritt–Gordon mine at Sherridon in the U.S. operated from 1931–1932 and from 1937–1951, during which 7.7 Mt of pyritic ore grading 2.45% Cu, 2.97% Zn, 19.9 g tons⁻¹ Ag and 0.62 g tons⁻¹ Au were milled, however a Zn concentrate was not produced until 1942 (Farley, 1949). The sulfide assemblage consisted of mainly pyrite and pyrrhotite with lesser amounts of chalcopyrite, sphalerite, and minor amounts of only a few other minerals, including arsenopyrite [FeAsS], cubanite [CuFe₂S₃] and local occurrences of galena. The tailings were discharged into two impoundments, the older of the two is briefly referred to in the following; a more detailed description is in Moncur et al. (2005). This is only one mine among others that could be candidates for secondary development of sulfide tailings, some of which are currently in storage underwater. These could be similar to the tailings being recovered in the Hellyer Operations.

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