

## CALCIOVOLBORTHITE



A rare, usually supergene vanadate. Northern Peninsula.

**Keweenaw County:** At the manganese mine near Lake Manganese. Identified by S. A. Williams (written communication, 1987) by X-ray diffraction and X-ray emission spectroscopy (to verify V) in a specimen submitted by Richard Whiteman of Hubbell. It occurs as powdery green patches and granular-to-fibrous microcrystals along fractures cutting calcite in various manganese species (braunite, hollandite, orientite, macfallite). Some specimens from this occurrence have been labeled “kempite,” but all such specimens when checked have proven to be calciovolborthite. Williams has found that the Lake Manganese ores are very rich in As, V, and Cu. Except for a few isolated occurrences, vanadium minerals are relatively uncommon in Michigan.

**FROM: Robinson, G.W., 2004 Mineralogy of Michigan by E.W. Heinrich updated and revised: published by A.E. Seaman Mineral Museum, Houghton, MI, 252p.**