

### **Supergene and hypogene covellite, 4,500N section, Chuquicamata Porphyry Copper Deposit, Chile**

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The presence of covellite (CuS) in drill core has been used operationally as an index mineral for supergene (secondary) mineralization within the Chuquicamata porphyry copper deposit. Supergene enrichment is a major factor in the relatively high Cu grades (by a factor of 2 to >10 over hypogene or primary grades) of the Chilean deposit, and supergene mineral assemblages dictate adjustments in the metallurgical treatment of the ores. We document the occurrence of coarse-grained covellite as part of the hypogene (primary) assemblage with

digenite, bornite, and chalcopyrite in the presence of anhydrite in the 4,500N cross-section. Continuing research characterizing the differences between supergene and hypogene covellite is currently focussed on detailed description of assemblages and sulphide mineral chemistry in selected drill core in the 4,500N cross-section. Preliminary results indicate that there is a significantly greater Fe content in the hypogene covellite and that in the supergene setting the covellite is relatively Fe-free.