

ABSTRACT

A range of materials from the weathered zone of the New Cobar deposit (145° 51'19" E, 31°31' 4"S) have been identified and assembled into an atlas to assist recognition and description of these materials during mining of oxide ore. The dominant minerals present are hematite, goethite, quartz (both relict primary and secondary), kaolinite and relict muscovite. Lithiophorite and coronadite are widespread manganese minerals in the oxide zone. Malachite occurs as vein fillings in the oxide zone and chalcantite has been detected at depth. Other minor oxide zone minerals detected include: anglesite, hinsdalite, hollandite, santaclarite, plumbogummite and pyromorphite. Covellite and native copper are present in the upper part of the supergene zone. A sooty or dusty type of magnetite has been found in partly weathered material and care should be taken not to confuse this with chalcocite. Some sulfides, particularly pyrite, persist up into the oxidised zone in relict unweathered material.

Supergene gold has been isolated from high-grade oxide material 10 m below surface. There are high levels of Pb associated with some oxide material. Lead and Cu are hosted in hematite, goethite, coronadite and lithiophorite. Some coronadite is also associated with high levels of Cu, Co and Ni, these elements possibly occurring in a separate intergrown phase. Concentrations of Ce in small areas of the weathered zone are related to a separate Ce mineral, probably bastnaesite or cerianite. Zinc appears to have been strongly leached from the oxide zone and no secondary Zn minerals have been detected.