Urals VMS deposits supergene zones: geology, mineralogy, isotopes

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Urals VMS deposits belong to paleozoic volcanic-sedimentary formation. Part of them have subdivided supergene zones with variable structure and mineralogical composition. The factors influencing on formation of supergene profile are regional and local. The formation of oxidation zones was began from triassic period under tropic, more late - semiaridic and humidic conditions.

Ore bodies can be blinded and outcroped. There is two groups in the first case: linear or more complicative oxidation zone developing of tectonical zones (Alexandrinka, Zapadno-Ozernoe), and ancient oxidation zones overlaped by mesozoic sediments: Yubileynoye, Blyava.

The supergene profile upper part is exibited by gossans formed by goethite and hydrogoethite. Host rocks near gossans are bleached usually. Below gossans the jarosite subzone locate. There are jarosite, beudantite, beaverite here. More deep the leaching subzone including quartz, barite and pyrite sands are situated. There are various secondary sulphides, selenides, antimonides. In some cases native sulphur subzone present. The secondary copper enrichment subzone lies on the roof of primary ore bodies.

Mineralogical witnesses of aridic conditions are presence of specialized jarosite and opal subzones in the supergene profile, silver halogenides.

The microbes influence to supergene profile formation very significant. Bioprocesses are exibited by results of morphological and isotopical study. There is lightness of sulphur in secondary sulphides from approximately +2 ‰ in primary pyrite to –15 ‰ in secondary sulphides with accompaying heavyness of native sulphur and colloformic structeres in deep part of the profile.