

Biogeochemical studies of the Sungun porphyry deposit, Iran

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Sungun porphyry deposit is one of the largest copper deposits, which is located in east Azerbaijan, NW of Iran. There are widespread plants species. Using biogeochemical and geobotanical methods to introduced index planet for accumulation of heavy metal [1,2]. Geochemical prospecting has been carried out on distribution of Zn, Pb,Cu, As, Cd and Mo in the plant species and soil of the Sungun Cu-Mo deposit. *Anthemis nobilis*, *Crepissancta*, *Picnomon acarna* species are the main plant species which are belong to the Asteraceae family and *Hedysarum alpinum* and *Officinalis melilotus* species are from Papilionaceae families. Geochemical studies on the soil samples of the Sungun deposit indicated that all the samples enriched by heavy metals. *Anthemis nobilis*, *Crepissancta* and *Picnomon acarna* species have been enriched by heavy metals more than other species. Commonly, biological absorption coefficient of molybdenum in the most of species is greater than 1. The average biological absorption coefficient of As is 0.753, however the highest value of arsenic absorption coefficient is 2.7 which belongs to the *Anthemis* species, so it could be introduced as an arsenic accumulator. Cadmium is the only heavy metal which show highest value absorption coefficient (2.36). Transfer coefficient of the *Officinalis melilotus* species show the highest amount belongs to cadmium (1.36). On the basis of biogeochemical studies, Cu, As, Cd, Mo are enriched in the studied plants; *Anthemis nobilis* has been shown the greatest capability for accumulating Cu and Mo in its tissues through soil so it could be used as a bioindicator for mineral exploration.

[1] Brooks, R.R. (1983) *Biological Methods of Prospecting for Minerals*, Wiley, New York. [2] Davies BE (1997) *Deficiencies and toxicities of trace elements and micronutrients in tropical soils: Limitations of knowledge and future research needs*. *Environ Toxicol Chem* 16: 75–83