Mineral composition in rhizosphere of plants grown in the vicinity of a Zn-Pb ore flotation tailings pond. Preliminary study

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9 Figs, 2 table.

In this study, mineral forms in rhizosphere and bulk substrate were examined for selected plant species (Cardaminopsis arenosa, Calamagrostis epigeios, Deschampsia caespitosa, Festuca ovina, Silene vulgaris, Viola tricolor), which grow spontaneously in the close vicinity of tailings pond as well as the zone of eolian transmission of waste particles. Samples of substrates and plant roots were taken at sites in the Bolesław orefield near Olkusz. The substrates together with roots of the plants were studied by environmental scanning electron microscopy coupled with energy dispersive spectroscopy. Apart from quartz and carbonates, the most frequent mineral phases found were crystalline and amorphous Fe oxides as well as primary Fe, Zn, and Pb sulphides (marcasite, pyrite, sphalerite, and galena). Hydrated Ca, Mg, and Fe sulphates (gypsum, epsomite, and melanterite), and other secondary minerals (smithsonite, cerussite, otavite and Fe, K, Mg aluminosilicates) were found at larger concentrations in the rhizosphere compared to bulk soil suggesting that plant roots can change mineral composition of soil.

Key words: Flotation tailings pond, mineral components, rhizosphere, bulk soil, hyperaccumulator and nonaccumulator plants.

REFERENCES


