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HEAVY METALS IN THE SOILS OF RODNA MINING AREA, ROMANIA AND ZEOLITE EFFICIENCY FOR REMEDIATION

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Abstract

The present study was carried out to highlight the areas where heavy metal content in the soils from Rodna mining perimeter exceeds normal limits and to attempt to reduce the concentration of free heavy metal ions by using natural zeolite from the Dej tuff. In order to emphasize the heavy metal content and their accumulation in soil in Rodna region, 35 soil samples were collected from the upper and deeper layer (about 0-10 and 10-20 cm depth) and analyzed to determine total and free Cu, Pb and Zn concentrations. These investigations showed a heavy metal accumulation area downstream of Izvoru Rosu brook and Valea Vinului locality, where there is a large number of galleries. The aqueous solutions of soils collected from the previously mentioned area were treated with natural zeolite, with results emphasizing not only the efficiency of zeolites for heavy metal retention, but also their selectivity and behaviour, as the immobilization potential depends on initial concentration of the contaminants. Zinc sorption was much lower than lead retention, while copper was affected by the opposite process, of desorption.

Key words: heavy metal, natural zeolite, remediation

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