INVESTIGATION OF THE EFFECT OF ADDING NATURAL ZEOLITE TO SOLID WASTE LANDFILL CLAY LINER FOR ADSORPTION OF MN AND ZN IONS IN LEACHATE

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Penetration of landfill leachate into subsurface due to various pollutants is one of the most problematic issues for soil and water in the environment. Generally, solid waste landfills consist of a compacted clay liner (CCL) for prevention of groundwaters pollution with leachate. The capability of CCL for pollution control and the enhancement of its characteristics for better performance have been investigated by a number of researchers, recently. A study has been conducted to investigate the influence of zeolite in combination with kaolinite for Zinc (Zn) and Manganese (Mn) removal from leachate and the possibility of reduction of clay layer thickness. Laboratory experiments have been conducted in a plexy glass column with inside diameter and height, 15 and 50 cm, respectively. Synthetic leachate has been synthesized by distilled water and Zn and Mn salts. Combination of zeolite and Kaolinite could increase heavy metals removal more than 90 percent. The results exhibit that by addition of 3-9% of zeolite to Kaolinite, the required thickness of the CCL can be reduced significantly.

Keywords: zeolite, kaolinite, heavy metal