E2-20 Removal of excess metal ions in polluted water

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Industrial development, urbanisation and uncontrolled agricultural practices have resulted in severe environmental problems in Sri Lanka. Many rivers, water streams and lakes in the country are already polluted with organic and inorganic pollutants. Thus, it is of great significance to monitor levels of pollution, and to introduce preventive measures by treating polluted waters using suitable methods.

Metal ions such as Ca, Mg, Cr, Mn, Fe, Co, Cu, Zn, Cd and Pb can be effectively removed using brick-clay packed glass columns. Efficiency of removal is further enhanced by optimisation of experimental parameters such as particle size, length of packing and flow rate. Systematic investigation of standard solutions and mixtures of these metal ions within the working concentration range shows that brick-clay is highly efficient in removing Co, Cd and Pb (> 90%) indicating the preferential adsorption of these ions over the other metal ions. Although about 90% removal is achieved for Cr, Mn, Fe, Cu and Zn, main group metals (Ca and Mg) are removed with an efficiency of less than 50%.

This study shows that brick-clay is appropirate for removal of metal ions from polluted water samples. The proposed method is economical and environment-friendly.