Adsorption of Cadmium(II) Ions from Industrial Wastewater by Low Moor Peat Occurring in the Overburden of Brown Coal Deposits – Joanna Kyzioł-Komosińska, Irena Twardowska, Aneta Kocela

Summary

The adsorption of cadmium(II) ions by low moor alder peat occurring in the overburden of brown coal deposits in Bełchatów Brown Coal Mine was investigated under dynamic conditions. Cadmium(II) ions were applied to the column in aqueous solutions containing either cadmium sulfate or cadmium chloride. Solutions were also prepared containing cadmium ions alone or in combination with zinc(II) and copper(II) ions. The peat used as the adsorbent in this study had a high capacity for adsorbing the ions tested. The cadmium adsorbing capacity of the peat was significantly affected by pH, the anions present in the solution, and other cations present in the solution. The cadmium adsorbing capacity of the peat was significantly lower in the presence of other metal cations such as zinc(II) and copper(II), because these cations effectively compete with cadmium ions for binding sites on the peat. Peat can be recommended for purification processes designed to remove cadmium ions. Because cadmium ions are predominantly loosely bound to the peat, they are easily extracted. This means that the cadmium adsorbing capacity of the peat is regenerated so that it can be used in further purification cycles.