

The Cadmium Adsorption Study by Using Seyitomer Fly Ash, Diatomite and Molasses in Wastewater

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Abstract : Fly ash is an important waste, produced in thermal power plants which causes very important environmental pollutions. For this reason the usage and evaluation the fly ash in various areas are very important. Nearly, 15 million tons/year of fly ash is produced in Turkey. In this study, usage of fly ash with diatomite and molasses for heavy metal (Cd) adsorption from wastewater is investigated. The samples of Seyitomer region fly ash were analyzed by X-ray fluorescence (XRF) and Scanning Electron Microscope (SEM) then diatomite (0 and 1% in terms of fly ash, w/w) and molasses (0-0.75 mL) were pelletized under 30 MPa of pressure for the usage of cadmium (Cd) adsorption in wastewater. After the adsorption process, samples of Seyitomer were analyzed using Optical Emission Spectroscopy (ICP-OES). As a result, it is seen that the usage of Seyitomer fly ash is proper for cadmium (Cd) adsorption and an optimum adsorption yield with 52% is found at a compound with Seyitomer fly ash (10 g), diatomite (0.5 g) and molasses (0.75 mL) at 2.5 h of reaction time, pH:4, 20°C of reaction temperature and 300 rpm of stirring rate.

Keywords : heavy metal, fly ash, molasses, diatomite, adsorption, wastewater

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