

Pacharaporn Somtrong 2009: Development of Diatomite Mixed Ceramic Filter for Heavy Metals Adsorption. Master of Science (Environmental Technology and Management), Major Field: Environmental Technology and Management, Department of Environmental Science. Thesis Advisor: Assistant Professor Jukkrit Mahujchariyawong, Ph.D. 84 pages.

Diatomite was used in producing ceramic filter, due to the adsorption characteristics and abundance in Lampang province. The good mixing ratio of diatomite and Lampang kaolin was 1:1 followed by heating at 500 °C for 3 hours. Within 10 minutes contact time, the adsorption efficiency in 4 heavy metal solution, cadmium, copper, nickel and zinc were 66.90, 81.65, 44.30 and 76.63%, respectively. Adsorption efficiency of grained filter was decrease more than 65% after recovered with acid. In the case study of ceramic filters, two types of filters were designed; outside-feed filter and inside-feed filter. The carbon mixing ratios showed the different weight of filters passed heat treatment processes. Ratio of 35% carbon was the lightest ceramic filter and 25, 15 and 0% carbon, respectively. Charcoal powder mixing in clay composition, increased the pores inside ceramic filters, and promoted the efficiency of adsorption. Copper adsorption testing indicated that the higher carbon mixing ratio was, the more effective filter was. In this case, the ceramic filter with 35% carbon was the highest performance according to the number and size of pores enhanced permeability and surface area. The proper combination of clay composition for forming two types of filters, Diatomite : Lampang kaolin : Aluminium oxide : Dolomite : Charcoal powder was 29.25 : 3.25 : 22.75 : 9.75 : 35, respectively.

---

Student's signature

---

Thesis Advisor's signature

/ /