# BATCH AND CONTINUOUS DESORPTION KINETICS FOR NAPHTHALENE FROM SEDIMENT OF KAO-PING RIVER, TAIWAN

Chon-Lin Lee*, Ping-Chieh Hsieh and An-An Chiu

Department of Marine Environment and Engineering, National Sun Yat-sen University,
Kaohsiung, Taiwan, Republic of China
linnohc@mail.nsysu.edu.tw

Many hydrophobic organic pollutants (HOPs) are toxic because of their high bioaccumulative character. Due to their high hydrophobicity, they always tend to adsorb onto particulates in the aquatic environment. Thus, the sorption process is an important mechanism of the transportation and fate of HOPs. In this study, we used both batch and continuous kinetic experiments to describe the sorption-desorption behavior of naphthalene in aquatic environment. We changed the operational condition, such as sorption period, dilution ratio, and continuous dilution time interval to display the desorption phenomena between naphthalene and sediment particulates from Kao-Ping river, Taiwan. For the batch studies, different sorption periods didn't affect the initial desorption rate from particulate to solution. However, the desorption rate was reduced as the dilution ratio increased. Otherwise, for the continuous experiments, the desorption rate constant of pollutant from particles was decreased as the sorption period increased. Specially, there was a linear relationship between the residue sorption capacity and the square root of time. Overall, we found that the sorption period was a major factor rather then dilution ratio to control the continuous desorption rate constant. Use the results of this studies, we could calculate the variation trend model of continuous diluted desorption rate constant via any time interval by exchanging clean water. Furthermore, those results also could provide some parameters and functions for the numerical model to estimate the pollutant distribution in field.