Abstract

The study on the relationship between the concentrations of manganese, lead and cadmium in water and sediment was carried out. Water and sediment samples were collected from 10 stations along Pasak river during the period of high flow (September 2004), low flow (February 2005) and medium flow (June 2005). The overall concentrations of manganese, lead and cadmium from water sample showed the range of < 0.01 – 1.80, <0.02 – 0.39, and <0.002 mg/l, respectively. While, the samples from sediment showed the range of 167.65 – 2,335.84, 3.99 – 194.98, and 0.19 – 6.41 mg/kg (dry weight), respectively. The manganese concentrations in water (Y) and sediments (X) was indicated the highly statistically significant related with $Y = 0.0006 X - 0.0997$ ($r^2 = 0.6180$). Moreover, manganese concentrations in water (Y) was indicated highly statistically significant related with water pH (X) with $Y = 3(10^{13}) X^{16.229}$ ($r^2 = 0.8331$). The concentrations of manganese in water (Y) showed statistically significant with suspended solids (X) with $Y = 0.0007 X + 0.1079$ ($r^2 = 0.4184$). Together with the concentrations of manganese in sediment (Y) showed statistically significant related with water pH (X) with $Y = -592.7500 X + 5155.5000$ ($r^2 = 0.4912$). The study, also, showed the relationship between lead concentration in sediment (X) with conductivity (Y) when $Y = 1.6107X + 238.7500$ ($r^2 = 0.4555$).

Since, the concentration of manganese was highly statistically significant with pH, therefore, if the water pH is less than 6.7 which will caused in increasing manganese in water. Moreover, manganese concentrations in water showed statistically significant with suspended solids, thus the protection of soil erosion program will be needed.