Pharerhas Channual 2007: Heavy Metals Dynamics: A Case Study on Relationship between Heavy Metals and Sediment Qualities in Mae Klong River. Master of Science (Marine Science), Major Field: Marine Science, Department of Marine Science. Thesis Advisor: Associate Professor Shettapong Meksumpun, Ph.D. 283 pages

The Mae Klong River is one of the most important rivers in the western part of Thailand. Now a day, this river is faced to the critical environmental problem due to direct and indirect impacts from human activites such as the discharge of domestic waste, agricultural waste and industrial waste from the surrounding area. Those sources have the potential to rise the amount of heavy metals and result the wide spread contaminated in natural water. Study on relationship between haevy metals and sediment qualities in the Mae Klong River that have been continuously accumulated by these pollutants is one of the best way for helping the relational government officer to make the decision making of pollution control. Sample collection were conducted during April 2005 to February 2006 for heavy metals and sediment qualities measurements. The results showed that concentrations of cadmium, lead, copper and zinc in water bodies ranged between nd-0.04, 0.02-0.38, 0.02-0.27 and 0.17-4.02 ppm, respectively. In case of cadmium, lead, copper and zinc concentrations in sediment ranged between nd-2.31, 6.04-63.94, 1.36-228.95 and 9.05-146.38 ppm, respectively. For sediment qualities, it indicated that water content, total organic matter and acid volatile sulfides of sediment ranged between 17.63-73.63%, 7.69-126.22 and nd-0.803 mg/g-dry weight, respectively. The results of correlation analysis revealed that these heavy metals in sediment had significant correlation with water content and total organic matter 0-3 centimetre depths in the same direction included with a grain size of smaller than 63 micrometre. The heavy metals in sediment were significantly differrence among seasons and sites ($p<0.05$). Moreover, the results apparently revealed that the extreamly increased in heavy metal on middle part of the Mae Klong River. Overall results indicated that this region needs more careful management of human activities and natural resource utilization.

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