

CHAPTER 5

CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

The study of distribution of cadmium, copper, iron, nickel and lead in the Gulf of Thailand and East Coast of Malay Peninsula showed that, these trace metals concentrations were within the range found in coastal sea water elsewhere. Distribution of cadmium, copper, nickel and lead were mostly presented as dissolved form, for iron found high concentration in suspended particulate form especially at bottom layer. Horizontal distribution of cadmium, copper, iron and lead indicated the important of land-based sources. Higher concentration of trace metals were observed in the coastal area than off-shore area. Cadmium in water which has little effect from fresh water has a nutrient-like distribution, A correlation of dissolved cadmium and phosphate were observed. No pattern of distribution can be concluded for copper, iron, nickel and lead.

Source of cadmium, copper and nickel in the Gulf of Thailand were mainly from the river input. There was also a source of from bottom water of South China Sea into the Gulf. Removal of trace metals from the water in the Gulf of Thailand are sedimentation and out flow with surface water to South China Sea. The budget calculation indicated that there are other unknown sources of Cd, Cu, Fe, Ni and Pb were 6%, 54%, 77%, 24% and 55%, respectively. These unknown sources may be from other small rivers, streams, canals and also some other point sources which were not taken into account in the calculation. There is also a possible of underestimating of river input of some trace metals since the concentration of trace metal in river were data from the surface layer only. The unknown sources of iron and lead are higher than cadmium, copper and nickel. The behavior of iron and lead are different from the other three. Concentrations of iron and lead near the coast were mostly present in suspended particulate form. A resuspension of bed sediment can be a significant input of these metals to the water column. Atmospheric input is also another important source.

From data available, the residence time of Cd, Cu, Fe, Ni and Pb in the Gulf of Thailand can be calculated. The estimate residence time of cadmium, copper, iron, nickel and lead in the Gulf of Thailand, were 1.23, 0.76, 0.14, 0.73, 0.52 years, respectively.

5.2 Recommendations.

The budget calculation of trace metals in the Gulf of Thailand indicated that there are other unknown sources of 6%, 54%, 77%, 24% and 55% for Cd, Cu, Fe, Ni and Pb, respectively to balance the budget. The model suggested that transport of metals across the mouth of the Gulf is an important process in controlling concentration of trace metals in the Gulf of Thailand and need to be confirmed. There is also no data available for atmospheric fluxes of trace metals in this area. In such a shallow bay like the Gulf of Thailand, resuspension of bed sediment can affect the budget of trace metals especially for those easily associated with particles such as iron and lead. A study of fluxes of these metals from the sediment should be carried.



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