

An analysis of mercury, cadmium, and Lead in stream water of various land use patterns at the Sakaerat Environmental Research Station (SERS).

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ABSTRACT

An analysis of three heavy metals of mercury, cadmium, and lead was determined in stream water and sediments of natural dry-evergreen forest (Huay Wnansart) , shifting area (Huay Tayoo) and cultivated area (Huay Namkhem) in the area of Sakaerat Environmental Research Station, Amphoe Pakthongchai, Nakhonratchasima Province. The investigation was conducted during one year period, beginning from June 1979 through May 1980. The stream water and sediment samples was collected at the outlet of each watershed on every third week of the month. Both samples, stream water and sediment were digested in laboratory and detected by Atomic Absorption Spectrophotometer Perkin Elmer Model 373 with Heated Graphite Atomizer, and Heated Graphite Controller Model HGA-2200.

The results indicated that the average annual concentration of mercury in stream water of Huay Mankhem was the highest (0.117 ppb) Huay Tayoo the second (0.093 ppb) and Huay Wanasart the least (0.092 ppb) . In contrary, the mercury in sediment found the highest quantity at Huay Wanasart (108 ppb) , Huay Tayoo the second (61 ppb) and the lowest at Huay Namkhem (42 ppb).

In the same conclusion, it was found the annual average of lead in the stream water as the highest quantity at Huay Namkhem (7 ppb) the second at Huay Wanasart (2.75 ppb) and the least at Huay Tayoo (1.5 ppb). In the opposite way, the annual average of lead in sediment found the highest value at Huay Wanasart (54 ppb) , the second at Huay Tayoo (32 ppb) , and the least at Huay Namkhem (24 ppb).

It summary the quantity of mercury, cadmium, and lead in both the stream water and sediment of three various types of land use at Sakaerat Environmental Research Station seemed very low by comparison with the Standard valuse of the wold Health Organization. Also, the findings were still lower than the results which found in the important rivers in Thailand, even in some other countries in all parts of the world. This would bring the conclusion that mercury, cadmium, and lead contamination in the stream water would be rather natural contribution than the impact of existing land use activities. In the land use planing basis, clearing the dry-evergreen forest for cultivation would not be impacted the contamination of mercury, and lead on water and sediment. However, pesticides and fertilizers may be applied for increasing the products, but they must not contain the mercury, cadmium, and lead.