

Drinking water studies: a review on heavy metal, application of biomarker and health risk assessment (a special focus in Malaysia)

ABSTRACT

Malaysia has abundant sources of drinking water from river and groundwater. However, rapid developments have deteriorated quality of drinking water sources in Malaysia. Heavy metal studies in terms of drinking water, applications of health risk assessment and bio-monitoring in Malaysia were reviewed from 2003 to 2013. Studies on heavy metal in drinking water showed the levels are under the permissible limits as suggested by World Health Organization and Malaysian Ministry of Health. Future studies on the applications of health risk assessment are crucial in order to understand the risk of heavy metal exposure through drinking water to Malaysian population. Among the biomarkers that have been reviewed, toenail is the most useful tool to evaluate body burden of heavy metal. Toenails are easy to collect, store, transport and analysed. This review will give a clear guidance for future studies of Malaysian drinking water. In this way, it will help risk managers to minimize the exposure at optimum level as well as the government to formulate policies in safe guarding the population.

Keyword: Biomarker; Drinking water; Health risk assessment; Heavy metal; Exposure