Paper P12

Study of water quality and heavy metals in soil & water of ex-mining area Bestari Jaya, Peninsular Malaysia

Muhammad Aqeel Ashraf[1]*, Mohd. Jamil Maah[1] & Ismail Yusuff[2]

[1]Department of Chemistry, University of Malaya, 50603 Kuala Lumpur
[2]Department of Geology, University of Malaya, 50603 Kuala Lumpur
*Email Address: chemaqeel@gmail.com

Tin mining was one of the leading mining industries in Malaysia in 19th century before the world tin crisis in 1985. Most Malaysian tin comes from two states Perak (63%) and Selangor (22%) and is richest in the Kinta, Batang Padang, Bestari Jaya (Batang Berjuntai) and Klang Valley. These mining activities have resulted in about 113,700 hectars of tin tailings throughout the peninsula that created numerous environmental problems such as threat to natural reserves due to landscape changes, damage to natural drainage, pollution and destruction of natural habitats The present study was carried out in old tin mining area Bestari Jaya (Batang Berjuntai old name), Kuala Selangor District in Selangor state. The purpose of this study is to get the ground information about environmental and contamination characteristics and also planning for future work. The mined out catchment covers an area of 323.74 hectars. Initially 92.61 hectors of downstream catchment were investigated which includes two mined out water ponds. These ponds flo downstream to Ayer Hitam River that ultimately ends up with River Selangor, 5 km upstream of Batang Berjunti Water Treatment Plants SSP1 and SSP2 which are major water distributors to federal territory (Kuala Lumpur and Putrajaya) and Selangor state as well. Samples of soil and water were taken separately from fiftee locations of downstream catchment using Global Positioning System. In preliminary studies physio-chemical parameters and concentration of heavy metals Pb^{2+}, Zn^{2+}, Ni^{2+}, Co^{2+}, As^{3+}, Cu^{2+}, Fe^{2+}, Mn^{2+}, Sn^{2+} were anlyzed. The metals were extracted by nitric acid and hydrogen peroxide in a closed vessel microwave digestion system and analysed by using atomic absorption spectroscopy. The method was validated by using standard reference material (NIST SRM 4354, 1643e) and results were compared with interim national water quality standards for Malaysia and found that most of physio-chemical parameters and metals concentration exceeds the permissible limits set by interim national water quality standards for Malaysia. So it is concluded that Bestari Jaya ex-mining catchment has a high pollution potential due to mining activities and Ayer Hitam River, recipient of catchment water is a highly polluted river. Therefore extensive research needs to be carried out in order to evaluate possible environmental risk factors in the area. Different environmental aspects have also discussed in this paper for the future research during this project.

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