

Heavy metals content in low-priced toys

ABSTRACT

This study determines the level of selected heavy metals in 42 toy samples and its health risk to children obtained from various convenience shops in the urban area of central region Peninsular Malaysia. High Definition X-ray Fluorescence (HDXRF®) technique (Model 800701-01) was used to analyse the sample and the health risk was calculated using the USEPA method. Most of the samples in this study were detected with Zn (97%, N = 41), Sr (90%, N = 38) and Cu (79%, N = 33) and half of the samples were detected with Ni (64%, N = 27), Cr (59%, N=25), Ba (57%, N = 24) and Pb (50%, N = 21). The highest element detected in toys was Bain materials of polymer (2255.00 ppm), printed ink (1698.00±758.02 ppm), plastic (1160.82±898.06 ppm) and textile (1284.00 ppm). Plastic and metal toys contained the most heavy metals. Based on the level detected, Co and Ni pose carcinogenic health risk while Hg, Sb and Sn pose noncarcinogenic health risks in this study. Heavy metals in toys are varies by its material and bring a significant health risk to children.

Keyword: Heavy metals; Toys; Materials; Health risk; Children