EXPOSURE ASSESSMENT OF INDOOR FINE PARTICULATE MATTER 2.5 ($PM_{2.5}$) IN BOUND TO HEAVY METAL AMONG SHOP IN URBAN AREA OF KUANTAN

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ABSTRACT

Heavy metals may come from many different sources to the urbanized area. One of the most important heavy metals source is vehicle emission. The concentrations of several types of heavy metals were measured in indoor dust from five different shop vendors at two different roads which is *Jalan Mahkota* and *Jalan Besar* in urban area at Kuantan to illustrate their concentration and their characterization which is chemically and physically. The levels of five types heavy metals in indoor environment shows that Lead (Pb) was the highest concentration compared to four heavy metals which is Cadmium (Cd), Chromium (Cr), Copper (Cu) and Zinc (Zn). Moreover, the study of heavy metals in indoor is important due to their critical effects on human specifically in indoor because 90% most of times people spend in indoor. Furthermore, potential determinants factors of indoor air quality in shops vendors along an urban street also was determined which is air velocity, temperature and relative humidity using instrument which is *Anaemometer*. The samples collection, preparation and analysis were carried out using standard procedures. Inductively Coupled Plasma Mass Spectrometry (ICP-MS) was used to determine the concentration of heavy metals at the surface of Teflon filter paper. The average of concentration value of Cd, Cr, Cu, Pb and Zn are 0.35 ppb, 19.03 ppb, 6.79 ppb, 36.53 ppb and 0.37 ppb respectively.

ABSTRAK

Kewujudan logam berat boleh diperolehi daripada pelbagai sumber di bandar. Salah satu sumber penyebaran logam berat ialah daripada asap kenderaan. Kepekatan beberapa jenis logam berat diukur dalam debu dalaman dari lima vendor kedai yang berlainan di dua jalan yang berbeza iaitu Jalan Mahkota dan Jalan Besar di kawasan bandar di Kuantan untuk menggambarkan kepekatan mereka dan penciriannya yang secara kimia dan fizikal. Kepekatan lima jenis logam berat di persekitaran dalaman menunjukkan bahawa Plumbum (Pb) adalah berpekatan tertinggi berbanding empat logam berat yang lain iaitu Cadmium (Cd), Chromium (Cr), Tembaga (Cu) dan Zink (Zn). Selain itu, kajian logam berat yang terdapat di persekitaran dalaman adalah penting kerana kesan kritikal terhadap manusia khususnya di dalam bangunan kerana 90% kebanyakannya menghabiskan masa di dalam bangunan. Selain itu, faktor penentu potensi kualiti udara dalaman di kedai-kedai di sepanjang jalan bandar juga ditentukan iaitu halaju udara, suhu dan kelembapan relatif menggunakan instrumen iaitu Anaemometer. Pengumpulan, penyediaan dan analisis sampel dijalankan menggunakan prosedur standard. *Inductively Coupled Plasma Mass Spectrometry (ICP-MS)* yang digunakan secara induktif digunakan untuk mengukur kepekatan logam berat pada permukaan kertas penapis Teflon. Nilai purata kepekatan Cd, Cr, Cu, Pb dan Zn adalah 0.35 ppb, 19.03 ppb, 6.79 ppb, 36.53 ppb dan 0.37 ppb masing-masing.