

Cadmium contamination in farmland soil and water near zinc mining site

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Abstrak

Penelitian ini merupakan penelitian potong lintang yang dilakukan di Kecamatan Phatadpaeng, Kota Mae Sod, Provinsi Tak, Thailand. Penelitian ini bertujuan untuk mengetahui konsentrasi kadmium pada air dan tanah pertanian serta pada pemukiman petani dan rumah tangga. Konsentrasi kadmium pada 48 sampel tanah dan air pemukiman petani, 12 sampel rumah tangga, enam sampel tanah pertanian, dan delapan sampel air pertanian ditelusuri menggunakan Graphite Furnace Atomic Absorption Spectrophotometer. Uji Mann-Whitney U digunakan untuk analisis perbedaan perbedaan konsentrasi kadmium antara tanah pertanian dan tanah pemukiman, air pertanian dan air pemukiman. Hasil penelitian menunjukkan tidak terdapat perbedaan secara statistik pada seluruh matriks, namun air dan tanah pertanian menunjukkan konsentrasi tertinggi dibandingkan pemukiman petani dan rumah tangga. Konsentrasi kadmium pada seluruh sampel jauh di bawah nilai batas. Penelitian ini secara jelas memperlihatkan bahwa kondisi tempat bekerja menunjukkan level kadmium yang lebih tinggi dibandingkan kondisi tempat tinggal. Penyebab pencemaran ini dapat berasal dari aktivitas di sekitar industri. Oleh karena itu, petani sebaiknya mempertimbangkan pajanan kadmium saat bekerja.

<hr>This study was a cross-sectional study conducted in Phatadpadaeng Subdistrict, Mae Sod District, Tak Province, Thailand. This study aimed to determine cadmium concentration in farmland soil and water as well as at the residence of farmers and households. As many as 48 samples of farmers' residence soil and water, twelve samples of households and six samples of farmland soil and eight samples of farmland water were investigated for cadmium concentration using Graphite Furnace Atomic Absorption Spectrophotometer. The Mann-Whitney U test was used for the analysis of the difference of cadmium concentration between farmland soil and residence soil, farmland water and residence water. The results showed no statistically difference among all matrixes, however, farmland soil and farmland water showed highest concentration compared to those of resident farmers and households. The cadmium concentrations in all samples were far below the limit values. This study clearly showed that working conditions of farmers demonstrated higher level of cadmium compared to the living conditions. The cause of this contamination might be from the activities of the surroundings industry. Therefore, it would be recommended that farmers should consider for cadmium exposure while working in farm.