Distribution of lead pollution in soil and air around a storage battery recycling plant.

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Abstract

The purpose of this study was to investigate the distribution of lead contamination in the environment (such as soil and air) near a storage battery recycling plant. All samples were collected in various seasons during the period from Oct. 1990 to June 1991, and analyzed by atomic absorption spectrometry (flame or graphite). The environmental data showed that the average value of lead in surface soil near plant "X" was >1000μg/g and decreased to less than 100μg/g in 15-30 cm deep soil about 2 Km away from the plant. In general, the concentrations of lead in soil were strongly and negative by correlated with the distance from plant "X". On the other hand, lead speciation in soil was extracted by sequential procedures using several reagents. The results reveal that lead is preferentially accumulated in the exchangeable and carbonate fractions. This suggests that the lead pollution is dominated synchthonously by the storage battery recycling plant. The average concentrations of lead of 2.58±4.17μg/m^3 (from 0.04 to 18.2μg/m^3) in the air near plant "X" were higher than those at the background stations, the mean value of which is 0.12±0.13μg/m^3. In addition, the high contents of lead (5.18±6.53μg/m^3) in air were found at midnight during a 24 hour period..