Air and Blood Lead Levels In Lead Acid Battery Recycling and Manufacturing Plants In Kenya. (2012)

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Abstract

The concentration of airborne and blood lead (Pb) was assessed in a Pb acid battery recycling plant and in a Pb acid battery manufacturing plant in Kenya. In the recycling plant, full-shift area samples taken across 5 days in several production sections showed a mean value ± standard deviation (SD) of 427 ± 124 µg/m3, while area samples in the office area had a mean ± SD of 59.2 ± 22.7 µg/m3. In the battery manufacturing plant, full-shift area samples taken across 5 days in several production areas showed a mean value ± SD of 349 ± 107 µg/m3, while area samples in the office area had a mean ± SD of 55.2 ± 33.2 µg/m3. All these mean values exceed the U.S. Occupational Safety and Health Administration's permissible exposure limit of 50 µg/m3 as an 8-hr time-weighted average. In the battery recycling plant, production workers had a mean blood Pb level ± SD of 62.2 ± 12.7 µg/dL, and office workers had a mean blood Pb level ± SD of 43.4 ± 6.6 µg/dL. In the battery manufacturing plant, production workers had a mean blood Pb level ± SD of 59.5 ± 10.1 µg/dL, and office workers had a mean blood Pb level ± SD of 41.6 ± 7.4 µg/dL. All the measured blood Pb levels exceeded 30 µg/dL, which is the maximum blood Pb level recommended by the ACGIH®. Observations made in these facilities revealed numerous sources of Pb exposure due to inadequacies in engineering controls, work practices, respirator use, and personal hygiene.

Keywords: airborne lead, battery manufacturing, battery recycling, blood lead level

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