

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 \pm standard deviation (SD) of $427 \pm 124 \mu\text{g}/\text{m}^3$, while area samples in the office area had a mean \pm SD of $59.2 \pm 22.7 \mu\text{g}/\text{m}^3$. In the battery manufacturing plant, full-shift area samples taken across 5 days in several production areas showed a mean value \pm SD of $349 \pm 107 \mu\text{g}/\text{m}^3$, while area samples in the office area had a mean \pm SD of $55.2 \pm 33.2 \mu\text{g}/\text{m}^3$. All these mean values exceed the U.S. Occupational Safety and Health Administration's permissible exposure limit of $50 \mu\text{g}/\text{m}^3$ as an 8-hr time-weighted average. In the battery recycling plant, production workers had a mean blood Pb level \pm SD of $62.2 \pm 12.7 \mu\text{g}/\text{dL}$, and office workers had a mean blood Pb level \pm SD of $43.4 \pm 6.6 \mu\text{g}/\text{dL}$. In the battery manufacturing plant, production workers had a mean blood Pb level \pm SD of $59.5 \pm 10.1 \mu\text{g}/\text{dL}$, and office workers had a mean blood Pb level \pm SD of $41.6 \pm 7.4 \mu\text{g}/\text{dL}$. All the measured blood Pb levels exceeded $30 \mu\text{g}/\text{dL}$, 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.

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