

MULTIMETAL EXPOSURE IN ADOLESCENTS FROM A SMELTER COMMUNITY IN NORTHERN MEXICO

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Background and Aims: The city of Torreon Coahuila, located in north central Mexico, is home to the largest Pb-Zn-Ag smelter complex in Latin America. The smelter has caused high concentrations of Pb in blood (PbB) in city residents. We examined environmental exposure to eight metals in adolescents in Torreon using exposure biomarkers.

Methods: Cross-sectional study conducted in 512 adolescents (age 12-15 years) who were under epidemiological surveillance due to environmental exposure to Pb and other metals. We measured PbB using atomic absorption spectrometry and the urinary concentrations of As, Cd, Mo, Sb, Tl, W, and U using ICP-MS.

Results: The median PbB (range) was 3.97 µg/dL (0.97 - 21.92). For urine metals, the medians (range; both in µg/L) were 40.8 for As (1.6 - 667.8), 0.24 for Cd (0.0 - 3.49), 73.15 for Mo (2.63 - 508.04), 0.13 for Sb (0.0 - 0.96), 0.33 for Tl (0.0 - 1.52), 0.16 for W (0.0 - 2.62), and 0.04 for U (0.0 - 1.74). The following metals were correlated: PbB and urine Cd; urine As and U; and urine Sb with PbB, urine Cd and As.

Conclusions: Children in Torreon showed a complex pattern of metal exposure. Urine uranium levels were high compared to the general US population. Uranium may have been introduced by re-suspension or dissolution of soil, but also by release of uranium from mining and milling activities, or by burning coal.