

BLOOD LEAD CONCENTRATIONS IN SCHOOL CHILDREN OF UPPER SILESIAN INDUSTRIAL ZONE, POLAND

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SUMMARY

Upper Silesian Industrial Zone (Katowice Voivodship, Poland); the country most industrialized and densely populated region is well recognized for the magnitude of environmental problems. Due to local lead mining and processing environmental exposure to lead is considered one of the most important hazards to the health of children. In the past, clinically confirmed cases of lead intoxication in children have been found and recent blood lead monitoring in major point source impact areas have documented increased blood lead concentration in children. However, much less is known about blood lead concentrations in general population of children who are exposed to increased levels of lead in ambient air and soil.

The study was undertaken in order to estimate the mean blood lead concentration (PbB) and its range in children aged seven years residing in urban non-point source impact area of Katowice Voivodship, and to examine potential determinants of increased blood lead concentration in these children. In a systematic sample of 431 children aged 7 years (208 girls and 223 boys), living in two large cities in the centre of Upper Silesian Industrial Zone the geometric mean and standard deviation of PbB was 7.94 ± 1.48 $\mu\text{g/dl}$ (range 4.0-38.0 $\mu\text{g/dl}$) and did not depend on sex or the city of residence. PbB equal to or larger than 15 $\mu\text{g/dl}$ was found in 8.1 % of children and PbB equal to or larger than 10 $\mu\text{g/dl}$ in 27.4 % of children.

Blood lead concentration was associated with a number of factors that could be classified as family factors, housing and environmental factors. The identified risk factors add credibility to suggested directions of preventive measures that should extend beyond already implemented lead emission control in the industry and involve increased use of unleaded gasoline, upgrading of housing conditions and promotion of proper hygienic standards on a household level.

The findings of the study indicate that children living in urban area of Upper Silesian Industrial Zone are at risk of overexposure to lead in environment, and justify the implementation of population-based screening program targeting children in younger age groups in the region.

Key words: blood lead levels, children, environmental risk factors

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