

## CHILDHOOD LEAD AND CADMIUM EXPOSURE IN A COAL MINING AREA IN YATAGAN, TURKEY

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### ABSTRACT

**Goal and Background:** The Centers for Disease Control and Prevention considers lead poisoning the number one preventable pediatric environmental health problem facing children today. The children studied are exposed not only to the most common source of exposure, lead based paint, but also to soil and dust from lead-mining waste.

The study was designed to determine the asymptomatic lead poisoning prevalence and cadmium exposure of preschool children living in a coal mining area in Yatagan, Mugla, Turkey.

**Methods:** Present research was administered in May - June 2002. Study included 236 children who were identified among the children between the ages of 6 months and 6 years, using a systematic sampling method, from the records of local medical center of Yatagan. Assessments of the levels of blood lead and cadmium were performed on atomic absorption spectrophotometer, in the Cerrahpasa Medical Faculty of Department of Biophysics.

**Results and Discussion:** The study included a total of 236 healthy children between the ages of 6 months and 6 years. Of those 53,4 % were female, and 46,6 % were male. Mean age of females was 49±18 months, of males 43±19 months. Mean blood lead level was 36,27±16,16 µg/dl. Blood lead level of the males was significantly higher than that of females (p<0,05). Correlation analysis showed a statistically significant negative correlation between blood lead level and age (r =-0,367, p<0,001). The level of blood lead of 95,7 % of children was found to be >10 µg/dl with, 85,5 % of the children having a level of >20µg/dl. The mean blood cadmium level was 1.31±0.72 µg/dl. The cadmium level in blood for 85 % of children was determined to be >0.5 µg/dl. The difference between sexes is not determined. Statistically significant negative correlation between blood cadmium level and age (r= -0,382 , p<0,001).

**Conclusion:** It is not possible to determine from this study what proportion of the biological lead and cadmium burden results from mining waste and what proportion comes from other sources such as paint and gasoline residue deposited in soil and air. But these results do indicate that childhood asymptomatic lead poisoning and cadmium exposure are significant problem for the Yatagan area.

**Recommendations:** It is a requirement that environmental lead assessments on such as dust in the house, soil, drinking water and air must be performed and the results be compared to the limits and precautions must be taken accordingly. Future public health research efforts focus on reducing airborne lead emissions from industrial point sources. Combine education with remedial activities are taking the right steps toward prevention of lead exposure.