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EXPOSURE TO HEAVY METALS AND THEIR EFFECT ON IMMUNOGLOBULIN LEVELS IN CHILDREN

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ABSTRACT

We conducted an environmental epidemiological study in order to investigate potential exposure to a toxic waste incinerator plant in the south of the Federal State of Hesse, Germany. Part of the study focused on heavy metals and their potential effects on the immunoglobulin levels on children. We investigated whether blood concentrations of cadmium, mercury and lead; urine concentrations of cadmium, mercury, lead, chromium and arsenic; and hair concentrations of arsenic and lead, were associated with IgA, IgE, IgM and IgG, calcium and CRP levels in blood.
Blood, urine and hair concentration information and questionnaire data were available for 343 children 7-10 years of age.
We applied linear regression analysis and controlled for the potential confounding effects of age, gender, and environmental tobacco smoke (ETS).
We identified a linear, statistically significant positive association between the blood lead concentration and IgE. We discovered a linear, statistically significant negative association between the arsenic in urine and IgG.
There are only a few studies available regarding the effects of heavy metals on immunoglobulin levels.
The results of the study stress the need for further investigation of possible effects of heavy metals due to environmental contamination on immunoglobulin levels in the blood of children.