

LEAD CONCENTRATIONS IN THE VENOUS BLOOD OF PREGNANT WOMEN AND IN THE CORD BLOOD AND SOME RESULTS OF A BENEFICIAL INTERVENTION (THE MIDDLE URALS EXPERIENCE)

Larisa I. Privalova, *Federal State Institution of Sciences Medical Research Center for Prophylaxis and Health Protection in Industrial Workers, Russia*

Boris A. Katsnelson, *Federal State Institution of Sciences Medical Research Center for Prophylaxis and Health Protection in Industrial Workers, Russia*

Olga L. Malykh, *Sverdlovsk Regional Rospotrebnadzor Office, Russia*

Vladimir B. Gurvic., *Federal State Institution of Sciences Medical Research Center for Prophylaxis and Health Protection in Industrial Workers, Russia*

Sergey V. Kuzmin, *Sverdlovsk Regional Rospotrebnadzor Office, Russia*

Svetlana V. Gnezdilova., *Sverdlovsk Regional Rospotrebnadzor Office, Russia*

Ekaterina P. Kireyeva., *Federal State Institution of Sciences Medical Research Center for Prophylaxis and Health Protection in Industrial Workers, Russia*

Galina V. Matyukhina, *Federal State Institution of Public Health Center for Hygiene and Epidemiology in the Sverdlovsk Region, Russia*

Background and Aims: Nonferrous metallurgical factories widespread across the Middle Urals, cause substantial environmental pollution with lead, posing a hazard to the health of their employees and to the residents of the cities where they are situated. Earlier we showed that in some of the urban areas lead concentrations in cord blood may exceed 1 µg/dl, or even 10 µg/dl, and that association could be established between these concentrations and adverse impacts on baby's health during the first year of life. Hence follows the challenge of identifying pregnant women with alarming blood lead levels for the purpose of lowering them.

Methods: In 2007-2008, we determined lead concentrations in the venous blood (PbB) by the atomic adsorption method in 1419 residents of 10 industrial cities at 20-24th week of pregnancy. Those with PbB > 2 µg/dl were provided with a set of bioprotectors that had been successfully tested in a toxicological experiment. PbB was again measured at 32 to 34th week of pregnancy. For some of these women, lead concentrations were also measured in cord blood (PbB-cord).

Results: A statistically significant positive correlation is shown to be present between PbB at 32-34th weeks and PbB-cord (Pearson's coefficient = 0.56, Spearman's coefficient = 0.48, P < 0.001) with no statistically significant difference between them. Following the course of bio-protectors, the average PbB levels went down to 1.99 ± 0.21 µg/dl from the initial 4.84 ± 0.30 µg/dl (P < 0.001). After the course, women also demonstrated a statistically significant reduction in the excretion of •-ALA and a rise in blood haemoglobin.

Conclusions: Environmentally conditioned lead body-burden of pregnant women creates the risk of a toxic impact on both the woman and the foetus, but this burden may be substantially reduced with the help of a complex of bioprotectors promoting the elimination of lead and enhancing the organism's resistance to its effect.