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Medical implications of reduction of blood lead levels in children after polluted site remediation in Meza valley, Slovenia

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The Meza valley, Slovenia has long been contaminated by lead smelting, resulting in widespread lead poisoning in childhood. Due to behavioral and physiologic characteristics, young children are most at risk of exposure and long-term negative effects of lead poisoning. Blood lead levels below the action threshold of 10 µg/dl (Slovenian legislation) or even 5 µg/dl (CDC recommended) are proven to be in correlation with a reduction of IQ, behavioral and academic problems, hormonal imbalances, growth retardation, arterial hypertension and cumulative cardiovascular risk as well as nephrotoxicity in vulnerable individuals. As these consequences of lead exposure are usually permanent and long-term detrimental effects are present even after an isolated exposure event due to the accumulation of lead in the body, the only feasible way of preventing lead-associated morbidity is to reduce environmental lead values. The potential of mitigating the risk of lead poisoning by remediation of soil with EDTA has been investigated by applying the Integrated Exposure Uptake Bio-Kinetic (IUBK) model. The IUBK model predicted that soil remediation would successfully decrease the number of locations at which the predicted blood lead level exceeds the stipulated of 10 µg/dl by 90, 38 and 91% respectively, in the towns of Mezica, Crna and Zerjav. The mean blood lead level in 3-year old children was predicted to decrease by approximately a half. This reduction is particularly important in the case of Zerjav, where in some areas the values of BLL reach levels over 30 µg/dl that can be associated with clinically overt lead poisoning.

Biography

Zala Lestan has graduated from the Medical Faculty of the University of Ljubljana in 2014. She has obtained her Medical License in 2015. She is currently involved in research at the Department of Pulmonary Disease and Allergy of the University Medical Center Ljubljana.

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