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APPROACH FOR COMPREHENSIVE SUPERVISION OF THE WORKPLACE EXPOSURE TO LEAD AND ITS COMPOUNDS

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Abstract

This paper presents an interdisciplinary methodology for handling the exposure of workers to lead and its compounds in a systematic way by connecting different disciplines, and thus enabling the comprehensive supervision of the workplace exposure. The exposure of workers to lead and its compounds was studied in the Republic of Slovenia. The research comprised 1079 employers being exposed to the lead concentrations between 0.01 and 0.9 mg/m³, which exceeded the limit value by 9 times. Workers in the production of lead-acid batteries were exposed to the highest concentrations; however, the employers have already introduced the technological measures for the concentration reduction. The glazier's trade has already decreased the concentrations by even 90 % in the grinding process of crystal glass. According to the biological monitoring the highest lead values amounting up to 226 µg/L were present in the blood of workers who recycle lead-acid batteries, followed by the production of lead-acid batteries and glass production with 165 µg/L. The average values have not been exceeded; however, some individuals in these branches (above all smokers) have the exceeded values above 400 µg/L. Moreover, the research showed that workers are exposed to lead compounds which are authorized. The proposed methodology provides algorithmic flow charts of the implementation procedures, and can serve as a guide for analysing the exposure to other dangerous substances.

Key words: lead, methodological approach, risk assessment, safety, workplaces

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