

## CONTAMINATION OF CEREAL PRODUCTS WITH LEAD AND CADMIUM AS A FACTOR OF A HEALTH RISK FOR PEOPLE IN PODLASKIE VOIVODSHIP

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**Abstract.** Due to a major threat to human health, the content of Pb (lead) and Cd (cadmium) in food products has been limited by EU (European Union) standards that are binding in Poland. Food contamination with these metals is an etiological factor of civilization diseases. The knowledge of the degree of environmental pollution with Pb and Cd, reflected in the level of these metals in food products, is extremely important from the point of view of prophylaxis. The determination of Pb and Cd in food products allows assessment of exposure to their toxic action and thus evaluation of a threat to health in the respective human population. The aim of the study was to assess the health threat in the population of Podlaskie Voivodship according to Pb and Cd contamination of cereal products.

The specimen's materials were: flour, groats, and bread, pasta, rice, bran and soya products collected in 13 administrative districts of Podlaskie Province. Pb and Cd concentrations were estimated by using AAS (atomic absorption spectroscopy) method. The contents of Pb and Cd were analyzed depending on product type and sampling period; health threat was assessed by current Polish requirements. The results were statistically analyzed using the Statistica 7.1 software.

The highest Cd level was noted in pastas ( $0.058 \pm 0.0330$  mg/kg) and the highest Pb level was in couscous ( $0.120 \pm 0.0899$  mg/kg). The lowest average Pb concentration was noted in groats ( $0.042 \pm 0.0306$  mg/kg) and Cd in wholemeal bread ( $0.016 \pm 0.0106$  mg/kg).

Average concentration of Pb and Cd in the examined cereal products did not exceed the permissible limits established by the MH (Minister of Health). The permissible level of Pb was exceeded in the 90th percentile (in couscous and soya products). The average intake Pb and Cd was within the norm of tolerable intake and it comes to be 10% PTWI (provisional tolerable weekly intake) and 12% PTWI respectively and should not threaten the health of the population in the Podlaskie Province.

**Keywords:** lead, cadmium, cereal products, atomic absorption spectroscopy.