

Environmental Pollution Through Bioaccumulation of Chromium and Nickel in Meconium Samples

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Abstract : A serious threat to environmental sustainability are the emissions of heavy metals from anthropogenic activities such as industrial and coal burning power plants, foundries, smelters, uncontrolled disposal of solid waste, industrial and municipal wastewaters as well as vehicle exhausts. Metals are not biodegradable, remain a permanent participant in natural biogeochemical cycles can accumulate in plants and animals, entering the food chain through the contaminated air, food and water. Bioaccumulative metals can interfere with metabolic processes, accumulate in tissues and may cause serious health threats. Chromium and nickel are metals whose presence in the environment is of particular concern because of their well-documented adverse effects, both being among priority pollutants. Main sources of anthropogenic chromium and nickel emissions are industrial production of steel, iron, ferrous alloys, waste incinerations, pigments as well as municipal landfills. The objective of this study has been to determine the effect of environmental pollution on the bioaccumulation of chromium and nickel in the human body. The content of these metals are studied in 182 samples of meconium of new-borns whose mothers live in the Split-Dalmatian County. Chromium has been found even in 99,3% samples and nickel in 95,3% samples with maximal concentrations of 1180.05 ng/g for chromium and 2233.90 ng/g for nickel respectively. Results are related with locations sociodemographic characteristic and mothers' lifestyles. The analysis obtained uniform distribution of these metals in the environment with significant increase in concentrations related to ferrochrome production plant. Results are compared with other countries worldwide and this investigation has included highest number of examined parameter and number of examined samples.

Keywords : chromium, nickel, bioaccumulation, meconium

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