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TRIHALOMETHANES VARIATION IN URINE UNDER DIFFERENT CONDITIONS OF HUMAN EXPOSURE

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Abstract

Known as the most important byproducts of water disinfection with chlorigen chemicals, trihalomethanes (THMs) are incriminated in causing severe effects upon human health. The exposure pathways that can lead to potentially significant uptake of THMs include for adults ingestion of tap water and inhalation of THMs in vapor phase resulting from bathing, showering and washing. The purpose of this paper is the exposure assessment to THMs through ingestion, inhalation and dermal absorption in a group of people and to measure THMs in urine as biomarker of exposure for a group of volunteer subjects, under different condition of exposure. The subjects were investigated based on a questionnaire that included questions about drinking water consumption, lifestyle or other exposures to water. Along with the collection of urine samples, cold and hot tap water was taken from the subjects residences. The THMs from water and urine were measured by gas-chromatography technique. The results showed that the only THMs compound measured in urine of the subjects exposed to THMs (chloroform, bromodichloromethane and dibromochloromethane) from water was chloroform. It's identification in urine showed that the frequency and duration of exposure could be more important than the concentration of the xenobiotic in water. The route of exposure having a decisive contribution to the daily intake of THMs was related to ingestion and secondary to inhalation for chloroform, or dermal absorption for bromodichloromethane. The presence of THMs in urine in different concentrations may be linked to the individual particularities of metabolism and elimination specific to each organism.

Key words: daily intake, drinking water, human exposure, trihalomethanes, urine

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