Evaluation of health risk caused by chloroform in drinking water

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ABSTRACT

In this paper, the results of cancer risk evaluation for chloroform in tap water at Cracow city (Poland) are presented. Cracow is a large city which is mostly supplied with surface water. The raw water seasonally has a high content of organic matter. Since chlorine is the basic disinfectant, organic compounds react with chlorine which results in the disinfection byproducts formation, such as trihalomethanes, in delivered water. Calculations were made, separately in male and female, for average chloroform concentration in the whole city as well as with respect to the season and supply zone. The study is based on the multipathway method which takes into account three ways in which chloroform contained in the tap water enters the human body (oral ingestion, dermal absorption, and inhalation exposure). The total cancer risk is at the acceptable level (between $10^{-6}$ and $10^{-5}$) because the chloroform concentration in water supply system only incidentally exceeds the maximum allowable concentration regulated by Polish Ministry of Health, i.e. 30 µg/L.

Keywords: Cancer risk; Chloroform; Trihalomethanes; Water supply system; Tap water

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