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Abstract Details

Abstract Title

EVALUATION OF TAP WATER QUALITY IN LARGE COMMUNITIES FROM ROMANIA REGARDING METAL CONCENTRATIONS

Abstract Text

Safe and good quality of drinking water is a basic concern for human health. Tap water from the municipal supply system is the source of drinking water for majority of consumers in Romania. The main sources of drinking water in Romania include rivers (about 60%), drillings, and less lake. Drinking water quality is routinely monitored in the distribution network but not inside households at the point of consumption. The aim of the study was to identify issues that may affect public health and the risk prevalence of relevant metals in in-building installation systems, in five important municipalities from Romania. In order to get an overview of the overall current contamination levels of drinking water at the point of consumption in the period 2009-2013 were collected and analyzed more than 800 samples from five important municipalities from Romania: Bucharest, Timisoara, Targu Mures, Ploiesti and Brasov using three different sampling procedures [1, 2]: first draw sampling (from kitchen); fully flushed sampling procedure after flushing five minutes same tap; random daytime procedure (within office hour, without previous flushing of the tap). The investigated parameters were Al, As, Cd, Cu, Cr, Fe, Mn, Ni, Pb, Se, Sb and Zn, parameters included in Romania Legislation in accordance with European Drinking Water Directive 98/83/EC. The quality of drinking water provided by the Water Companies was situated in the limits imposed by the national regulation for all tested parameters, but the monitoring data show important influences of the material used in the internal distribution system within the customer buildings to the tap water quality. Around 55% of random daytime samples indicated a pollution of drinking water with Cu, Fe, Mn and Pb and in first draw samples were recorded high contents of Al, Cu, Fe, Mn, Ni and Pb in some monitoring points in investigated municipalities. The metal concentrations recorded in tap waters collected with tap flushing procedure were situated in the limit values in almost studied cases. Intermittently use and stagnation of drinking water in residential installation can produce the deterioration of the chemical quality by increasing the metal concentrations. Water volume and time of stationary are the most important parameters that determine the concentration of metallic elements released from the materials of consumer distribution installations. Washing the tap for 5 minutes (depending on the length of the inner pipe route and distance from branch pipe) can improve the quality of tap water. The customers were advised not to consume stagnated water for cooking and drinking purpose and to replace the pipes (copper, lead and cast iron) from domestic distribution systems. The present study demonstrate that materials used in water supply domestic installations have a major contribution in deterioration of water quality provided by the local distribution network, due to the processes of water stagnation and lack of maintenance of the internal distribution materials. [1] Hayes R.C., (2009), Computational modeling to investigate the sampling of lead in drinking water, Water Research, 43, 2647-2656. [2] Hayes R.C., Aertgeerts R., Barrott L., Becker A., Benoliel M. J., Croll B., (2010), Best Practice Guide on the Control of Lead in Drinking Water, Hayes R.C. (Ed), IWA Publishing, London, 13-23.

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Presentation

Contribution proposed for: oral presentation

