



Bioindication Assessment of Drinking Water Toxicity in Large Cities of Ukraine

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Abstract: Intense anthropogenic impact on drinking water sources contributes to the load on aquifers, which leads to deterioration of groundwater quality. Modern practice of water economy proves that the use of traditional methods of assessing the ecological status of waters does not fully reflect the real state of the biological properties of drinking water. In present study modern method of biotesting using test organisms was proposed and proved efficiency for assessing the quality of drinking water. Bioassays are toxic, mutagenic and carcinogenic properties of the aquatic environment, differentiating sources of drinking water in accordance with the requirements of water consumption. Comprehensive toxic and environmental assessment of drinking water was calculated as an average arithmetic toxicity index, determined by daphnia and onions. The drinking water quality in the city of Kherson (Ukraine) was allocated 7 functional zones with different degrees of anthropogenic load. According to the analysis it was observed that inadequate quality drinking water was observed at the industrial zone, toxic properties drinking water at residential area of multi-storey, individual buildings and transport load area and the best drinking water were in residential area of mixed development and residential area of multi-storey buildings with a local water supply system. Use of ecological and toxicological test objects in bioindication system with various levels of organization allowed assessing the ecological status of underground sources water in accordance with the requirements of drinking water supply. According to the bioindication classification, drinking water pollution scale determined an extremely high degree of anthropogenic load within the historic center test site.

Keywords: Drinking water quality, Groundwater, Test sites, Biotesting
