

Hydro-chemical Analysis of Waters from Kharkov Rivers and Their Environmental Safety

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ABSTRACT

A chemical analysis was done on different points on Kharkov rivers. Samples of both ground water and surface water were taken for analysis. Kharkov is a metropolitan located almost on the confluence of two rivers (Udy and Lopan rivers) in the north east of Ukraine with a population of about 3million. She's one of the major industrialized cities that contributes greatly to the socio-economy development of the country. The hydro-chemical study was done to review and identify the state/quality of the river water using regional and national environmental standard health limit and to identify pollutants and its distribution in terms of concentration. River samples were taken in Autumn of 2013. The results obtained shows the effect and influence of anthropogenic inputs from within the region, inflow of pollutants from transboundary country (Russia) and the influence of geological baseline of this territory. The water was detected to be polluted by trace elements (Cu, Zn, Cr, Pb, and Ni) but the threshold effect was not high. At some sampling points on the Udy river the concentration of Nitrate was high, almost 2 – 2.5 times higher than the Ukrainian standard health limit. Lead and Nickel had a significant increase at the middle to the lower part of Udy river, Zinc also, but at the middle part of Lopan river of Kharkov. However, the high mineralization of the ground water reviews its hardness which shows the influence of the geological formation due to the interaction of the evaporation of clastic deposits and some anthropogenic inputs in the region, this influence the water chemistry in this city.

Keywords: hydrochemistry, water quality, pollution, water sampling, standard limit, Ukraine.