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Study of impact of a wild dump on the water quality of "Hillil River" North-West of Algeria

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n North West of Algeria, wastes represent a serious problem for environment and a potential risk for the population health. In this region, wastes are generally deposed in wild dumps located on the banks of rivers, which represent a real risk of contamination for ground and surface waters. The aim of this study is to evaluate the impact of a dumpsite on the water quality of the "HILLIL RIVER", one of the secondary tributaries of the "CHELIFF RIVER" which is the largest permanent Algerian river. Four sampling campaigns were carried out according to the seasons (April, August, December 2015 and February 2016) and some parameters were measured in situ (temperature, pH, conductivity, turbidity and salinity). Water samples were carried out in the watercourse upstream and downstream of the dumpsite and leachates have been sampled within the dumpsite. Samples were transported to the laboratory and conserved over there in the dark at 4°C before analysis. In both waters and leachates samples, firstly the physicochemical analyses (COD, BOD₄, Cl-, NO²⁻, NO³⁻, PO₄³⁻, SO₄²⁻, total suspended mater ...) were realized and secondly metallic trace elements (Pb, Cd, Zn, Cu, Cr, Ni, Rb, Sr, Mn, Fe, Al, Ba, As, Li ...) were analyzed. Urban pollution was also measured along the watercourse. In water samples, highest concentrations of chlorides, nitrites and nitrates were measured in summer, while the highest concentrations of sulphates, phosphates and COD were obtained in the spring's water samples. For autumn and winter water samples the values of chemical oxygen demand were visibly decreased as well as those of the sulphates. In leachates concentrations of nitrites and nitrates were highest in winter, while sulfate and phosphates concentrations were higher in spring. In waters, the concentrations of Ru, Ni, Ba, Li, Mn, Sr and Zn were higher than those of other metals for all seasons, but Fe and Ag concentrations were much lower in spring than other seasons. Leachates were characterized by high concentrations of Sr, Ba, Rb, Mn, Fe, Al and Ni in spring and by high concentration of Fe, Al, Zn, Sr, Rb and Ba in both autumn and winter. The results of this study have contributed to evaluate the contamination from the dumpsite to this watercourse.

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