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Mobility of Metallic Trace Elements (MTE) in Water and Sediment of the Rivers: Case of Nil River, North-Eastern Algerian

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Abstract : The metallic trace elements (MTE) are present in water and sediments of the rivers with weak concentrations. Several physicochemical parameters (Eh, pH and oxygen dissolved) and chemical processes (adsorption, absorption, complexation and precipitation) as well as nature of the sediments control their mobility. In order to determine the effect of these factors on the mobility of some MTE (Cd, Cr, Cu, Fe, Pb and Zn) in water of the rivers, a two-monthly monitoring of the physicochemical parameters and chemistry of water and sediments of the Nil wadi (Algeria) was carried out during the period from November 2013 to January 2015. The results show that each MTE has its own conditions of mobility and generally are very influence by the variations of the pH and Eh. Under the natural conditions, neutral pH with basic and medium oxidizing, only the lead presented in water with raised values, indicating its solubility in water and its salting out of the sediments. The other MTE present raised concentrations in the sediments, indicating their trapping by adsorption and/or chemical precipitation. The chemical form of each ETM was given by Eh-pH diagrams. The spatio-temporal monitoring of these ETM shows the effect of the rains, the dry periods and the rejects in the variation of their concentrations.

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