



Evaluation of physico-chemical quality and metallic contamination level of epikarstic seepage waters in forest zone

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ABSTRACT

The present study is based on a quantification by Atomic Absorption Spectrometry (AAS), of metallic trace elements (MTE) in karstic water collected in a subhumid cavity following the wet deposition corresponding to the leaching of the atmosphere by rainwater. Our choice focused on a forest site located in mid-mountain, at the level of the forest of Hafir, located 15 Km in the south west of the city of Tlemcen (Algeria) and near a road traffic. In the light of the analytical results obtained, the presence in high concentrations of certain heavy metals such as cadmium Cd and nickel Ni in the rainwater, lead Pb and cadmium Cd in snow is reported in high concentrations. These waters loaded by these MTE, were able to infiltrate in the walls of the cavity and contaminate the water of the karst. All-in the rainwater and snow were collected on the exterior surface of the cavity. However, after rainfall and runoff, the infiltration water loads in Pb (0.15 mg/l), and Ni (0.044 mg/l).

For the other MTE: Mn, Co, Cu, Cd, Cr, Ag and Fe, they were detected in karstic water, but at levels below WHO recommended standards. These contents may reflect the release of these elements from the sediments of the cavity, remitted in suspension during the precipitation occurring in this period.

1. Introduction

During rainfall, rainwater loads in pollutants present in the atmosphere before leaching surfaces by runoff. The proportion of pollution contained in runoff derived from the polluted atmosphere is estimated between 15 and 25% [1]. Many authors Were interested in the quality of the runoff on the road, studies are numerous and diversified. Include among others [2, 3, 4, 5, 6]. Lead in road runoff is usually encountered in particulate form, or

fixed to suspended solids, while zinc is predominantly present in dissolved form [7].

With reference to the quality of seepage water, the study carried out by [6] revealed a contamination of these waters by zinc and lead, particularly marked close to the edge of the roadway. According to the study of Legret et al (1994) of the Bègles rainwater infiltration site, has allowed to put in evidence the presence of metallic pollutants in significant quantities in the solids matter entrained by rainwater, in particular lead and zinc [8].

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