DISTRIBUTION OF ARSENIC IN SPRING WATERS FROM TWO BASINS ASSOCIATED TO MESSEJANA PLASENCIA DYKE (AMBLÉS AND CORNEJA VALLEYS, SPAIN)

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The Central Iberic Zone (Central System, Spain) is principally composed of schists, greywackes, and granitoides and it is a geotectonic area with significant mineralization. In the northern sector the mountains of the Central System are in contact with Tertiary sediments of the Duero basin and other smaller basins, where high concentrations of arsenic are known to occur (Sahún et al. 2004, García-Sánchez et al. 2005, Giménez et al. 2010). Forty-seven spring waters have been sampled in two pull-apart basins associated to Messejana Plasencia Dyke: Amblés and Corneja Valleys. Electrical conductivity, pH, ORP, and temperature were determined in the field. Major and some minor (As, B, F, Li, Sr) ions, and SiO_2 have been analyzed in the laboratory. Most of the waters have been classified as bicarbonate (80%). Chloride waters represent only 15% of total. Nitrate concentrations reach very high values in some samples. For cations there are no significant differences. Results demonstrate that spring waters from Amblés have higher levels of salinity than those collected in Corneja Valleys, but in both cases arsenic levels are generally low. Most of the samples have levels below 5 µg/L, and samples with arsenic levels higher than this value have been found in only two points of Corneja Valley. In two points from Amblés Valley hydrogeotoxicity by arsenic is higher than 1 (HGTAs>1, Giménez et al. 2010). Waters are usually oxic waters with pH levels around 7. Dissolved arsenic concentrations could be explained by silicate weathering processes and the influence of deep groundwaters. Further study will be necessary to determine whether the arsenic occurrences are linked mainly to water-rock interactions, structural features or anthropogenic contamination.

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Keywords: arsenic, hydrogeotoxicity, Central System (Spain)