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Several studies have shown the interest of Zinc (Zn) and lead (Pb) isotopic compositions to track anthropogenic pollutions in surface water and groundwater [1-2]. However, given the low content in Pb and Zn in natural waters, several litres are needed to perform a single isotopic analysis by MC-ICPMS. One solution is to use passive DGT (diffusive gradients in thin films) samplers for in-situ pre-concentration of these metals. In these devices, metals are immobilized in a layer of chelex resin after diffusion through a 0.76 mm polyacrylamide gel. These DGT passive samplers are already commonly used to determine the concentration of metals in surface waters [3]. The goal of this study is to validate the use of DGT samplers to determine also the isotopic signature of dissolved metals. We focused our work on Zn and Pb isotopic systems. This development was tested under laboratory conditions using mineral water (Volvic) spiked in Zn and Pb and natural groundwater. In this study we validate a protocol of extraction of Pb and Zn from Chelex resin with a yield close to 100% [4]. For Zn isotopes, a fractionation of 0.06‰ between dissolved and adsorbed metal is measured, likely related to diffusion processes. In the case of Pb, no measurable fractionation could be observed within the reported precision of MC-ICPMS measurements. However, in agreement with systematics of diffusion-driven fractionation in solution, this Zn fractionation is systematic, and can therefore be corrected [5].

These fist results suggest that DGT samplers are suitable for studies of the Zn and Pb isotopic composition in natural water. However, to test the applicability of passive samplers in groundwater, on going tests will be performed in an experimental system simulating a piezometer system.

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