

**Certification of the new drinking water reference material AQUA-1 (NRC-CNRC): Preliminary results for major and trace elements concentrations and isotopic ratios**

Yeghicheyan D.<sup>1</sup> and the CNRS Isotrace workshop,  
Grinberg P.<sup>10</sup>, Mester Z<sup>10</sup>

<sup>1</sup> Service d'Analyse des Roches et des Minéraux (SARM), CNRS-CRPG, 15, rue Notre Dame des Pauvres, BP 20, 54501 Vandoeuvre-lès-Nancy, France.  
e-mail: yeghi@crpg.cnrs-nancy.fr

<sup>2</sup> National Research Council (NRC), 1200, Montreal Rd., M12,G5, Ottawa, ON, K1A 0R6, Canada.  
e-mail: Zoltan.Mester@nrc-cnrc.gc.ca

A new water reference material named AQUA-1, is being certified: it is a drinking water sampled in the same watershed as the river water reference material SLRS-6 (NRC-CNRC) from the Ottawa river in Canada. Sampling consisted of pumping through 0.45 µm porosity filters and immediately acidified with ultrapur HNO<sub>3</sub> to pH = 1.6. The water was later refiltered through 0.2 µm porosity filters. It was subsequently blended and bottled in precleaned polyethylene containers. The bottled water was gamma irradiated to a minimum dose of 25 kGy and stored at +4 °C temperature.

Randomly selected bottles (250 ml) were distributed and twenty independent measurements were performed by the 10 laboratories. Certified values are determined by robust statistics based on at least two independent methods (ICP-MS, MC-ICP-MS, TIMS, ICP-AES).

Major elements (Si, Al, Fe, Mg, Ca, Na, K), minor elements (Ti, Mn, P) and 46 trace elements (As, Ba, REEs...etc) concentrations are certified according to the ISO/IEC 17025. The associated expanded uncertainties are the combined standard uncertainties calculated according to the JCGM Guide. Isotopic ratios of lead and strontium are also proposed.

This new reference material is, thus, intended for calibration procedures and development of assay methods in water but also by tracing natural water masses according with hydrological isotopic signatures.