

## The Occurrence of Hg in Soil from Kindergarten Areas of Gyumri and Vanadzor Cities (Armenia): Pollution Status and Health Risk Assessment

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Mercury (Hg) contamination is a progressively noticeable issue in environmental research, especially for the most vulnerable urban population group – for children. In this relation, the potentially important exposure sites for children like kindergartens require special focus. The objectives of this study were to evaluate Hg pollution levels and assess related child health risks of 19 and 22 kindergarten soils of two young industrial cities in Armenia - the cities of Vanadzor and Gyumri, respectively.

Hg concentrations in soil samples retrieved from Vanadzor and Gyumri were significantly low constituting 0.025–0.05 mg/kg and 0.03– 0.11 mg/kg, respectively. The total concentrations of Hg were determined using XRF-spectrometry (Olympus Innov-X-5000),

In the case of Gyumri, Hg maximum content exceeds the background value (0.07mg/kg) with about 1.57 times, Hg mean content (0.046) does not exceed. Excesses vs. MAC stated in Armenia (2.1 mg/kg) were not observed for both city kindergartens.

According to the coefficient of concentration (Kc), the pollution level classified as  $Kc < 4$  indicating an allowable level in both cities. The pollution source analyses suggested comparatively high Hg concentrations only in three Gyumri kindergartens soil, possibly influenced by the impact of anthropogenic activity. In remaining 19 and all Vanadzor kindergarten soils, Hg concentrations had a natural origin.

According to the Potential Ecological Risk Index (PERI) a moderate risk level was detected only in 5 kindergartens of Gyumri.

The results of the health risk assessment indicated the absence of an adverse health effect to children associated with the Hg contents.

### Biography:

Gayane Melkonyan has her expertise in the evaluation of environmental geochemical investigations. Her academic background includes a Bachelor's and a Master's degree with honor from Yerevan State University, faculty of biology, department of Biophysics. Currently, she is a Ph.D. student in Geoecology in the Center for Ecological-Noosphere Studies NAS RA. Her research has concentrated on the assessment of Hg pollution levels and associated potential risks in different urban and mining areas of Armenia, aimed at obtaining an improved understanding of the processes controlling the biogeochemical cycling and environmental distribution of mercury, as well as the identification of vulnerable risk groups in the population.