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ASSESSING THE CHEMICAL COMPOSITION OF NATURAL WATER USING ANALYTICAL CHEMISTRY TECHNIQUES. A CASE STUDY IN THE ORHEI DISTRICT, REPUBLIC OF MOLDOVA

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Abstract. This study is primarily focused on evaluating the chemical composition of natural water in the locality of Cișmea, situated in the Orhei district, at the coordinates 47°24'56.0"N 28°45'05.9"E. The study includes an ad-hoc analysis of two types of water: surface water and underground water. General parameters were evaluated, such as pH, conductivity, hardness, chloride and sulphate content, as well as the content of certain chemical elements. The study results highlights significant deviations from the maximum admissible concentrations (MAC) for a series of indicators, such as As, Pb, Cd, Na, and B. The determined concentrations of these elements exceed the limits allowed by the legislation of Republic of Moldova and European Union: for As by 1.7−1.9 times; Cd by 3.4−3.5 times; Pb by 1.2−2.3 times; Na by 1.2−4.0 times and B by 1.6−3.3 times. Deviations of conductivity and sulphate parameters indicate the presence of a high level of dissolved solids in the groundwater of the locality's wells and springs. The study also signalled the presence of significant concentrations of some heavy elements, such as Ba, Tl and Bi, which are not regulated by current legislation.

Keywords: chemical composition of water, physico-chemical investigation, ICP-OES, heavy metal.

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