

An investigation of inorganic chemicals and heavy metals in Kırklareli Dam water, Thrace region

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ABSTRACT

This study provides a baseline for the assessment of the inorganic pollution, especially metal contamination, in the waters of the Kırklareli dam on the Ergene River basin. A survey of inorganic chemicals was performed in water samples collected from the Kırklareli dam reservoirs in 2014–2015. Water samples from five sampling sites were collected and analyzed for 12 different water quality parameters. Using these data, regional irrigation water quality was assessed via a method prescribed by the United States Department of Agriculture (USDA). Results from the application of this method indicated that the salinity of the dam water, as represented by electrical conductivity (EC_w), was at a medium level (C2: 250–750 micromhos cm⁻¹), and that the sodium adsorption ratio (SAR) ranged from medium (S2: 10–18) to high (S3: 18–26) sodicity. Therefore, the dam water from the sampling sites of 1, 3, 4, and 5 was predominantly of the C2–S2 class. Cation concentrations were found to be higher in January than in the other months. In examining the water quality classes in terms of measured physico-chemical parameters, the dam water was determined to be class I for pH, EC, TSS and cations. Furthermore, the results showed that the Pb concentrations in the Kırklareli dam water (10–200 µg L⁻¹) were of the class IV quality, which is the maximum limit of the Turkish Water Pollution Control Regulations. The Fe and Mn concentrations in the dam water were class II.

Keywords: Dam waters quality; Heavy metals; Hydrochemistry; Inorganic chemicals, Irrigation water

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