

CHEMICAL ANALYSIS AND CHEMOMETRICS FOR GREEK POTABLE WATERS CLASSIFICATION

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Mineral, spring and tap water samples from Greece have been analysed. Analytical measurements were performed for a number of parameters: pH, conductivity, cations (Na^+ , NH_4^+ , Mg^{2+} , Ca^{2+} , K^+) and anions (Cl^- , F^- , NO_2^- , NO_3^- , Br^- , PO_4^{3-} , SO_4^{2-}), by ion chromatography, and heavy metals (Ba, B, Cd, Mn, Pb, Ni, Fe, Cu, Cr by Graphite Furnace Atomic Absorption Spectroscopy and As, Hg, Sb, Se by Flow Injection Atomic Spectroscopy).

A chemometrics tool, namely LDA (Linear Discriminant Analysis) has been applied on the analytical results for the discrimination of the samples of different category and geographic origin. The purpose of this methodology was to detect the possible relationship between physical properties, chemical composition and water sampling area and to define the critical parameters for distinct characterization of individual water categories. This classification will allow the surveillance of water quality in the future and early detection of possible contamination originating from anthropogenic activities (industry, agriculture, other) or deterioration originating from water supply networks.

Key words: potable water, chemical analysis, chemometrics, Linear Discriminant Analysis