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PHYSICO-CHEMICAL CHARACTERISTICS AND DYNAMICS OF THE WELLS WATER IN GALATI COUNTY (ROMANIA)

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Abstract

The availability of good quality water is an indispensable condition for preventing diseases and improving the quality of life. Water is one of the most important renewable resources, which must be prevented from deterioration in quality. Various physico-chemical parameters like pH, alkalinity, total hardness, total dissolved solids, calcium, magnesium, nitrate, have a significant role in determining the potability of drinking water.

In this study, samples were collected from wells situated in villages located in the northern part of Galati (Tulucesti, Vanatori and Costi) in order to analyze the quality of water wells.

Investigations on physico-chemical parameters such as temperature, pH, salinity, dissolved oxygen(DO), chemical oxygen demand (COD), biochemical oxygen demand (BOD₅), hardness, total dissolved solids (TDS), conductivity (COND), turbidity (Turb), alkalinity, salinity, redox potential (E) including dissolved nutrients (Ca²⁺, Mg²⁺, Fe²⁺, Al³⁺, Mn²⁺, Cl⁻, PO₄-P, NO₂-N,) were carried out in the water wells, during the summer season in 2010. The results of the physico-chemical analysis were obtained are in the following range: pH (6.7-7.8), alkalinity (1.11-2.97 mg/L), total hardness (190.4-1864.8 mg/L), COD (oxidisability): 15.8-79 mg/L, BOD₅ (0.168-7.279 mg/L), TDS (850-3790 mg/L), conductivity (1435-6250 μS/cm), redox potential, E (-72mV-1mV), Ca²⁺ (48-520 mg/L), Mg²⁺ (43.2-46.8 mg/L) Fe²⁺ (0.13-0.67 mg/L), Al³⁺ (0.001-0.071 mg/L), NO₂⁻ (0-6.649 mg/L), Cl⁻ (56.8-317.17 mg/L), PO₄³⁻ (0.358-4.026 mg/L) O₂ (0.335-8.88 mg/L).

Key words: physico-chemical parameters, principal component analysis, wells water

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