

## Recommendations Using Online Water Quality Sensors for Chlorinated Drinking Water Monitoring at Drinking Water Distribution Systems Exposed to Glyphosate

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**Abstract :** Detection of anomalies due to contaminants' presence, also known as early detection systems in water treatment plants, has become a critical point that deserves an in-depth study for their improvement and adaptation to current requirements. The design of these systems requires a detailed analysis and processing of the data in real-time, so it is necessary to apply various statistical methods appropriate to the data generated, such as Spearman's Correlation, Factor Analysis, Cross-Correlation, and k-fold Cross-validation. Statistical analysis and methods allow the evaluation of large data sets to model the behavior of variables; in this sense, statistical treatment or analysis could be considered a vital step to be able to develop advanced models focused on machine learning that allows optimized data management in real-time, applied to early detection systems in water treatment processes. These techniques facilitate the development of new technologies used in advanced sensors. In this work, these methods were applied to identify the possible correlations between the measured parameters and the presence of the glyphosate contaminant in the single-pass system. The interaction between the initial concentration of glyphosate and the location of the sensors on the reading of the reported parameters was studied.

**Keywords :** glyphosate, emergent contaminants, machine learning, probes, sensors, predictive

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