

Title: **Evaluation of procedures for the destruction of organic matter in the on-line analysis of phosphates in water.**

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Phosphorus is one of the main pollutants in wastewater in high population areas. It causes ecosystems to be called eutrophication, which negatively affects aquatic species and can even cause their death. This is why effective analytical methods are needed to monitor the phosphate content in water in order to protect the environment and the population from adverse effects. Phosphorus can be found in the form of phosphate, pyrophosphates, and soluble organic phosphorus species. There are several established methods of phosphorus analysis. These are based first on a sample treatment in order to convert all phosphorus present in the form of phosphate with the help of oxidizing reagents and acid medium, and later determination of phosphate by UV spectrophotometry. This is valid for laboratory measurements but not for on-line and remote monitoring where the use of reagents is a drawback. As consequence, initially the aim of the work was to experimentally evaluate strategies based on the use of ozone and UV radiation to make the sample treatment, the degradation of organic matter, but due to Covid-19 the objective was adapted to a bibliographically research. Therefore, the information (theoretical and technical) about the degradation of organic compounds through these innovative strategies have been studied through a bibliographic research and the extraction of information from the most relevant articles. The main findings obtained has been that the UV radiation at 254 nm has no capacity to destroy organic matter, the radiation at 172 nm is efficient but has little penetration and depends on hydrodynamics and the combined use of strategies (O₃ and UV) improves results. It has been observed that there is commercial equipment capable of making the treatment online even though they use reagents, such as classical methods. Finally, an experimental design has been established of what would be done in order to get a device to do the innovative treatment online without the use of reagents.

Keywords: Phosphate, UV radiation, organic matter, degradation, organic phosphorous, water treatment, ozone, oxidants.