

MAN_01 - The challenges of VTC-WWTP management while meeting legal requirements in times of COVID-19 pandemic

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Introduction: In pharmaceutical industries, good manufacturing practices aim to achieve effective and safe products that meet strict quality standards. However, they generate effluents on a large scale, which must be treated to minimize their environmental impact. In this context, in 2018 a Wastewater Treatment Plant (WWTP) was built at Bio-Manguinhos to treat all effluents produced at the Vaccine Technology Complex (VTC). The challenge for managing it in times of pandemic is to operate it efficiently while meeting an increased demand for treatment capacity due to new production processes implemented to supply the SUS with new vaccines and testing kits for COVID-19. Meanwhile, the physicochemical characteristics of the treated wastewater must conform to legal limits established by environmental agencies.

Objective: This study aims to analyze: a) if the VTC-WWTP performance was affected by the aforementioned increased demand. b) its efficiency in the removal of organic pollutant loads. c) the compliance with legal requirements related to the discharge limits established by environmental agencies.

Methodology: This research is classified as applied and exploratory. Regarding the procedures, the research strategy comprised bibliographical, documental and field research. The following parameters were monitored through weekly collection and analysis: COD, BOD, Settleable Solids, TSS, Phosphorus, Oils & Grease, N-NH₃, Surfactants, Phenols and Toxicity. Temperature, pH, and flow rate were monitored in real time. All parameters were compared with their legal limits and then compliance indices were generated.

Results: From 2019 to 2021, a total of 2950 data referring to the parameters monitored at the WWTP were analyzed. And only 57 data represented non-compliances with the legal limits. 286.000 m³ of effluent were treated, removing in average 89% of the organic load from the affluent streams. As a result, the depletion of 29 tons of O₂ was avoided in the receiving waterbody.

Conclusion: A 98% compliance rate was achieved in the triennium analyzed. The WWTP operated properly and efficiently even with an 88% increase in the organic load in 2021. The concentrations of organic matter, solids and the main macronutrients in almost all its operation were reduced to levels allowed by legislation.

Keywords: Wastewater treatment; Legal requirements; Sustainability