Poster

STUDY OF WATER QUALITY THROUGH MICROBIOLOGICAL AND PHYSICO-CHEMICAL ANALYSIS OF THE GUADAIRA RIVER.

Gallardo RodrÍguez, José Antonio; Otero Cifuentes, Inmaculada; Canosa Perez-Fragero, Ines.

(2) Empresa AGQ Labs España, Kilómetro 20, 8, a-8013, 41220, Burguillos, Sevilla. España.

Tutor académico:

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ABSTRACT

Water is one of the most abundant and used resources in the world since ancient times, necessary for life on Earth (Díaz Peña, D. 2019). Its main purpose is to cover the basic needs of all living beings, and it is sometimes thought that this resource is unlimited, but it must be remembered that we are dealing with a limited and valuable resource that must be managed efficiently and prudently (Pardo, C.F. 2004). The problem of water and wastewater management is a global problem that has been around for a long time. (Satyendra, et al. 2023). The problem of water and wastewater management is a long-standing global problem, and with population growth and human modifications causing pollution of natural waters, water quality is getting worse and worse (Prato-Moreno, J.G., et al. 2020). The Guadaira River is a local river that runs through important towns in the province of Seville, such as Morón, Alcalá de Guadaira and Seville itself. The high number of inhabitants in these towns means that the wastewater treatment plants are sometimes very stressed and their sewage treatment capacity is limited. We have performed microbiological and physicochemical analyses at two critical locations in the Guadaira river to study water quality. The first sampling point is upstream of the treatment bridge at the discharge of the Dos Hermanas ETAP and the other downstream in the Arroyo Culebras in Bellavista. Samples collected in plastic bottles with thiosulphate were plated on different culture media depending on the microorganism to be studied. In addition, physicochemical analyses were carried out on samples collected in unsterilised plastic jars for further analysis in the laboratory equipment. The microbiological analysis was carried out in accordance with Royal Decree 817/2015, and showed high levels of contamination, both from a microbiological point of view and in terms of ammonium and phosphate levels in the water. The study concludes that the river Guadaíra is polluted but within the limits of the legislation, so that the problem of pollution of the river could be solved by means of a filtration mesh at the water outlet of the ETAP or by avoiding the dumping of solid urban waste into the river. We can include that the sampling and analysis of the waters of the Guadaíra river can be carried out again after the rainy season, in this way, we check if the level of contamination increases or decreases.

REFERENCES

Díaz Peña, D. (2019). Análisis morfodinámico de la desembocadura del río Guadiana.

Pardo, C. F. (2004). Agua y desarrollo humano. Ars Medica, 1, 12-30.

Satyendra, Asoria, S. K., & Vijay, R. (2023). In-situ drain treatment types and technologies for flowing wastewater: A comprehensive review. Process Safety and Environmental Protection, 170, 449-463. https://doi.org/10.1016/j.psep.2022.12.035.

Prato-Moreno, J. G., et al. (2020). Caracterización fisicoquímica y microbiológica de aguas subterráneas de un sector rural a baja altitud en Los Andes venezolanos. Kasmera, 48(1). https://doi.org/10.5281/zenodo.3861081.