

Advanced analytical techniques based on chromatography for the identification and quantification of organic micropollutants in aquatic environments

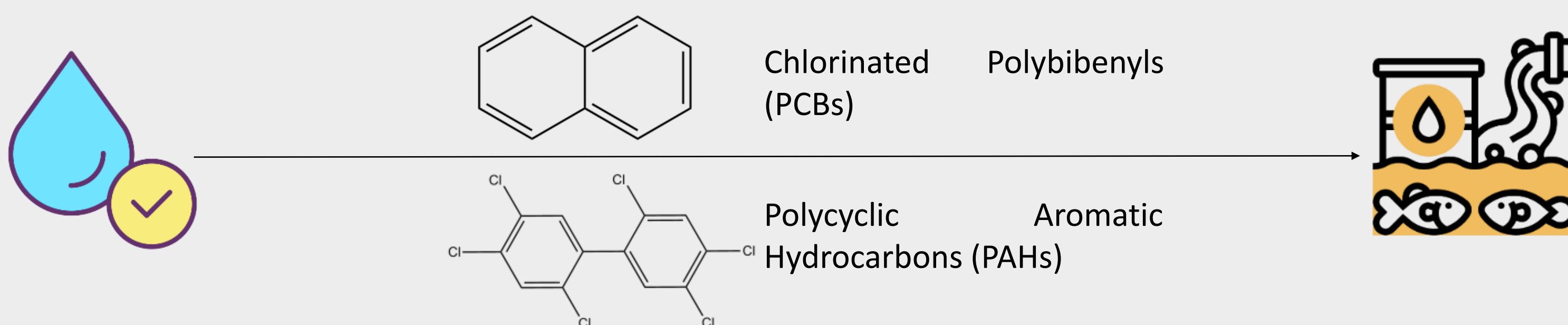
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INTRODUCTION

The abundance of organic micropollutants in aquatic environments poses an environmental and public health threat. Despite the notable advances in analytical chemistry, the identification of organic contaminants in water continues to be a challenge today [1]. This problem gives rise to the need to develop analytical methodologies that allow these contaminants to be detected at ng/L levels [2].



MATERIALS AND METHODS

Extraction

EPA Methods

Identification and quantification

Liquid Chromatography (LC)

Gas Chromatography (GC)

Mass Spectrometry (MS)



RESULTS

LC/GC-MS are capable of unequivocally identifying and quantifying the presence of organic micropollutants in aquatic samples at ng/L levels.

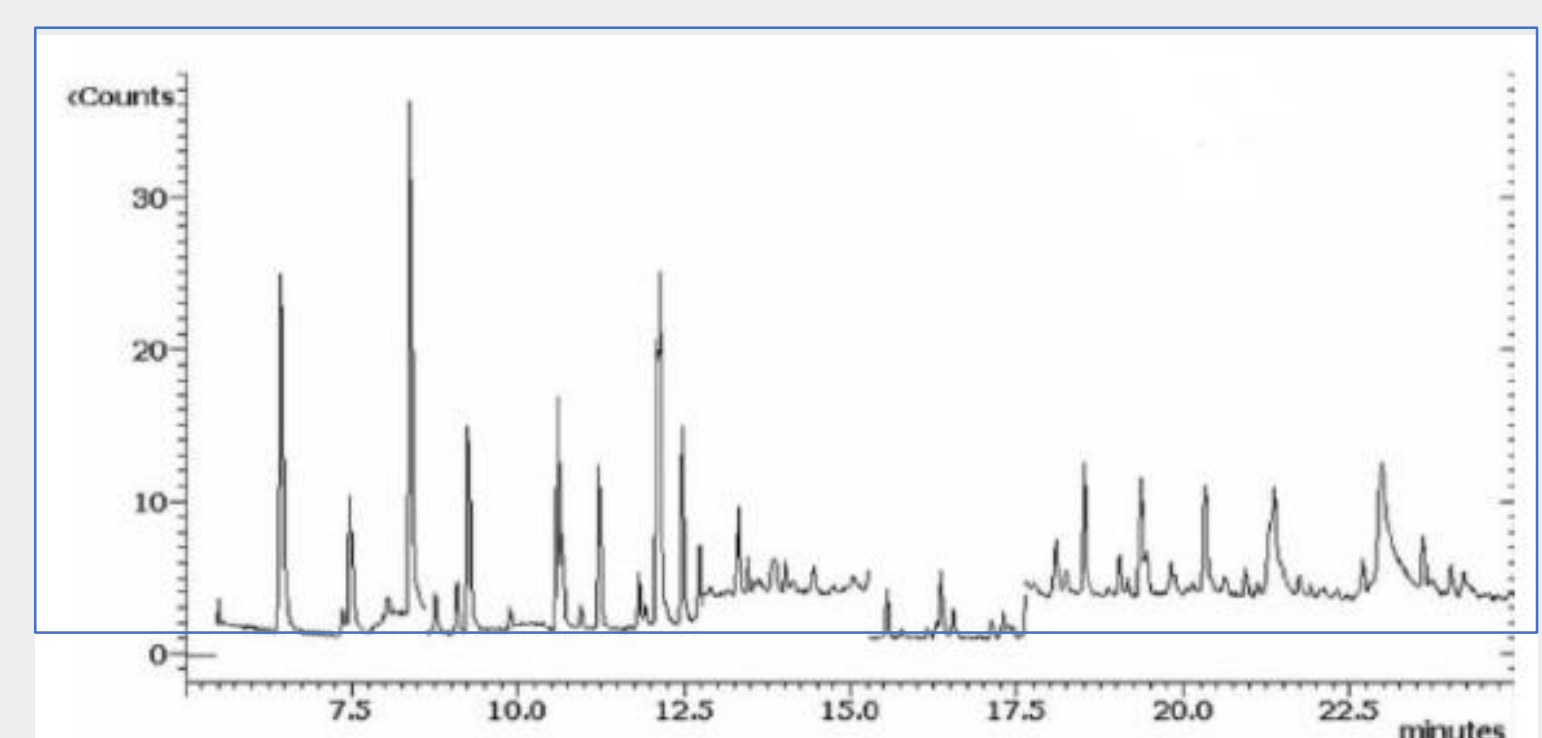


Figure 1. GC/MS chromatogram of water sample with internal standard of PCBs mixture.

CONCLUSIONS

These analytical techniques allows the monitoring and evaluation of organic micropollutants in aquatic samples based on what is marked by Royal Decree 817/2015, of September 11 [3].

There is a need to develop analytical methodologies that are capable of identifying and quantifying a long list of contaminants in a single analytical technique.

REFERENCES

- [1]Hernández, F., Ibáñez, M., Portolés, T., Cervera, M. I., Sancho, J. V., & López, F. J. (2015). Advancing towards universal screening for organic pollutants in waters. *Journal of Hazardous Materials*, 282, 86–95. <https://doi.org/10.1016/j.jhazmat.2014.08.006>
- [2]Muter, O., & Bartkevics, V. (2020). Advanced analytical techniques based on high-resolution mass spectrometry for the detection of micropollutants and their toxicity in aquatic environments. In *Current Opinion in Environmental Science and Health* (Vol. 18, pp. 1–6). Elsevier B.V. <https://doi.org/10.1016/j.coesh.2020.05.002>
- [3]Real Decreto 817/2015, de 11 de septiembre, por el que se establecen los criterios de seguimiento y evaluación del estado de las aguas superficiales y las normas de calidad ambiental.