

Antifouling booster biocides in sea mullet (*Mugil Cephalus*) sampled in harbours of Gran Canaria Island (Canary Islands)

Alejandro Franco-Barrios, María Esther Torres-Padrón, Zoraida Sosa-Ferrera, José Juan Santana-Rodríguez

Departamento de Química, Universidad de Las Palmas de Gran Canaria, 35017, Las Palmas de Gran Canaria, Spain.

Abstract

Biofouling is a problem for any structure placed in the aquatic environment that it can be controlled through chemical biocides like antifouling paints. According to the Biocides Directive (98/8/EC) [1], biocides are active substances or preparations that are intended to destroy, deter, render harmless and exert control or prevent the action of any other harmful organism through chemical or biological means. The widely use of booster biocides in antifouling paints represents an important source of pollution to the marine environment and the transfer of these toxic pollutants to the higher trophic levels is a topic of major concern.

This work present the monitorization of two booster biocides commonly employed, Irgarol 1051 and Diuron, in samples of muscle and liver tissues of *Mugil cephalus*. The proposed sentinel organism could be used in tropical and subtropical regions for a continuous biomonitoring of booster biocides during long time of periods. This could be a useful tool to improve the ocean and coastal management.

Samples were collected bimonthly in different harbours of Gran Canaria island (Muelle Deportivo de Las Palmas and Puerto de Mogán) and processed using a previously optimized method based on a microwave assisted extraction followed by solid phase extraction as preconcentration and clean-up step (MAE-SPE) coupled with liquid chromatography-tanden mass espectrometry (LC-MS/MS) [2, 3].

Highest levels of Irgarol ($6,9 \pm 1,03 \text{ ng g}^{-1}$) were found in the liver, whereas Diuron was not detected in this tissue. However, Diuron was found in muscle ($1,41 \pm 0,45 \text{ ng g}^{-1}$).

References

1. European Parliament. Directive DIRECTIVE 98/8/EC of the European Parliament and of the Council of 16 February 1998 concerning the placing of biocidal products on the market (1998).
2. A. Franco-Barrios, M. E. Torres-Padrón, Z. Sosa-Ferrera, J. J. Santana-Rodríguez. Journal of AOAC International 97 (2014) 197.
3. A. Sánchez-Rodríguez, Z. Sosa-Ferrera, J.J. Santana-Rodríguez. International Journal of Environmental Analytical Chemistry. 91 (2009) 1166.