



SIQUIMAR

XIX SEMINARIO IBÉRICO DE QUÍMICA MARINA

XIX SEMINARIO IBÉRICO DE QUÍMICA MARINA

M VI INTERNATIONAL SYMPOSIUM
ON MARINE SCIENCES 2018



SIQUIMAR

XIX SEMINARIO IBÉRICO DE QUÍMICA MARINA

Organizing Committee:

Cobelo, A., Nieto, O., Viñas L., Álvarez-Salgado, X. A.

Scientific Committee:

Antonio Cobelo García, Óscar Nieto Palmeiro, Lucía Viñas Dieguez, Xosé Antón Álvarez Salgado, Abelardo Gómez Parra, Antonio Tovar Sánchez, Jesús Forja Pajares, Teodora Ortega Díaz, Juana Magdalena Santana Casiano, María Dolores Gelado Caballero, Aridane González González, Alexandra Cravo, María Joao Bebiano, Miguel Caetano, Julián Blasco Moreno, Armando Duarte, Juan Santos Echeandía, Nestor Etxebarria Loizate, Víctor Manuel León León.

Editors:

Cobelo, A., Nieto, O., Viñas L., Álvarez-Salgado, X. A.

Volumen de resúmenes XIX Seminario Ibérico de Química Marina, June 2018

ISBN: 978-84-8158-790-6

Universidade de Vigo

HIGH-FREQUENCY MEASUREMENTS OF METAL CONTAMINATION IN A SPANISH ESTUARY: STEPS TOWARDS THE ACCEPTANCE OF PASSIVE SAMPLERS FOR REGULATORY MONITORING

MJ Belzunce-Segarra^{*1}, N Montero^{1,2}, M Schintu³, B Marras³, A Cobelo⁴, L Reim^{1,5}, I Menchaca¹, J Franco¹, J Larreta¹

¹ Marine Research Division, AZTI Foundation, Pasaia, Spain. jbelzunce@azti.es

² Ikerbasque, Basque Foundation for Science, Bilbao, Spain. natalia.montero.ruiz@gmail.com

³ Department of Public Health, Clinical and Molecular Medicine, University of Cagliari, Cagliari, Italy. schintu@unica.it

⁴ Research Marine Institute, CSIC, Vigo, Spain. acobelo@iim.csic.es

⁵ Science and Technology Faculty of the Basque Coast, University of Pau and Pays de l'Adour, Anglet, France. lounariem@gmail.com

Abstract: The main driver of this study is to respond to European Directive demands for the assessment of the chemical status of transitional and coastal waters. *Diffusive Gradient in Thin Films* (DGT) and passive samplers (PS), in general, are already widely used in investigative monitoring and there is an increasing interest in their use for the environmental assessment of water bodies, within European policies requirements. The main barrier hindering the regulatory acceptance of PS for compliance checking is the lack of appropriate Environmental Quality Standards (EQSs). EQSs for metals are defined in the dissolved fraction, preventing the use of DGT-labile concentrations for the establishment of the chemical status of water bodies. Thus, adaptation of already existing EQSs for DGTs would allow their use for regulatory monitoring. The specific objectives of this study are: (1) to investigate the relationship between dissolved metal concentrations from spot sampling with DGT-labile metal concentrations, (2) to evaluate the reliability of the techniques used for the measurement of metal concentrations in estuaries and (3) to provide recommendations for the use of DGTs to develop environmental guidelines. Hence, one station was selected at the mouth of the Oiartzun estuary, which has been classified as highly impacted. At this station, 12 DGTs were deployed simultaneously and triplicates were retrieved after 3, 6, 9 and 12 days. Concurrently, spot water samples were collected every day, at the same depth than DGTs, at low and high tide during the DGT deployment period. Water samples were filtered on site by syringe filters for the posterior analysis of metals, dissolved organic carbon and the quantification of SPM. The metals under study were Cd, Cu, Ni, Pb and Zn. Hydrographic parameters were measured at each sampling time. The relationships between dissolved and labile metal concentrations and the environmental factors influencing such correlations were analysed. First results show that dissolved Ni and Cd appear mostly labile and available for uptake by DGTs, while most of the dissolved Cu, Pb and Zn are forming

organic complexes no detected by DGTs. Based on the information obtained, an approach to define quality objectives for DGT-labile metal concentrations is being developed in the MONITOOL project.

Key words: Passive samplers, DGT, Environmental Quality Standards, metals, marine waters

Acknowledgments: This research was supported by the INTERREG Atlantic Area Programme (MONITOOL project, grant agreement no. EAPA_565/2016).