Assessment of chemical contamination of french coastal lagoons using passive sampling techniques

Munaron D. 1, Hubert M. 1, Tapie N. 2, Budzinski H. 2, Guyomarch J. 3, Andral B. 4, Gonzalez J.L. 5

1. IFREMER, Laboratoire Environnement et Ressources du Languedoc-Roussillon, Sète, France
dmunaron@ifremer.fr
2. EPOC UMR 5805, Université Bordeaux 1, Talence, France
3. CEDRE, Service recherche & développement, Brest, France
4. IFREMER, Laboratoire Environnement et Ressources Provence Alpes et Cote d’Azur, La Seyne/mer, France
5. IFREMER, Département Biogéochimie et Ecotoxicologie, La Seyne/mer, France

Objectives of the PEPSSLAG Project

- Investigate the utility of passive samplers (DGT, POCIS and SBSE) for sampling trace levels contaminants present in marine coastal waters,
- Realize a first assessment of the contamination within the French Mediterranean lagoons.

Materials and Methods

Passive samplers were set up in water during one (DGT) or 3/4 weeks (POCIS), between June and July 2010. During this exposure period, a water sample was also collected for SBSE extraction. 141 contaminants from various chemical families (9 trace metals, 73 pesticides, 21 pharmaceuticals, 6 alkylphenols, 20 PAHs, 12 PCBs...) were investigated and their concentrations were compared to Environmental Quality Standard (EQS) defined until now. Field use of passive samplers, extraction protocols, quantification and calibration data used, were previously described in: Roy et al, 2005; Togola and Budzinski, 2007; Tapie et al, 2011 and Munaron et al, 2012.

Insecticides, Σ lindanes (BHC) and Σ cyclodienes, via SBSE

Conclusions and prospects

- Ubiquitous chemical contamination in lagoons due to high anthropogenic pressure
- Wide range of dissolved chemicals often detected at low concentrations
- Some chemicals overstep their EQS (lindane, endosulfan, cyclodienes, insecticides, copper...)
- Passive samplers are useful tools to better characterize the chemical status of transitional water-bodies
- Quid of mixture effects of various chemicals on marine organisms?

WFD Chemical Status of the french lagoons

More details on the PEPS LAG Project : http://archimer.ifremer.fr/