

# REGATA

## Rede Galega de Tratamento de Augas

### Research Stays 2015

Development of novel, green and automatic methods for the analysis of pesticides in sediment and alga samples

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### Objectives

The aim of this study was the optimization of novel, fast, simple, automatic and green analytical methods for the analysis of six pesticides in sediment and alga samples. One fungicide (azoxystrobin), four herbicides (atrazine, terbutylazine, bentazone and penoxsulam) and one insecticide (lambda-cyhalothrin) were selected considering their use, their occurrence in the studied area and their toxicity. Some of these compounds are well-known endocrine disrupting compounds and therefore, they can negatively affect the reproduction system of wildlife and humans.

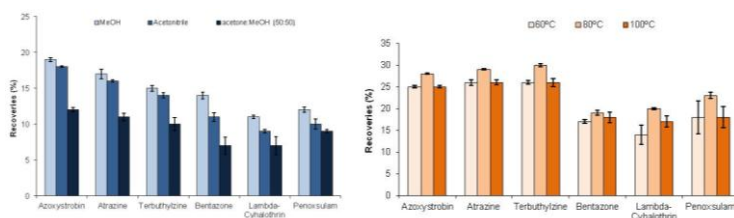
### Methodology

Methodologies were based on a pressurized liquid extraction followed by on-line solid phase extraction and ultra performance liquid chromatography tandem mass spectrometry determination (PLE-on line SPE-UPLC-MS/MS).



### Results

Different PLE parameters such as solvent extraction and temperature were tested for sediment (Figure) and alga samples. In the case of algae extraction, neutral alumina (0.5 g) was added to the cell in order to correct matrix effects. On-line SPE and UPLC-MS/MS characteristics were standardized in an internal protocol set by IAREN.



### Highlights

Satisfactory recoveries and precision were obtained for sediments and algae using methanol as a solvent extraction and temperatures of 80°C (sediments) or 40°C (algae)

These automatic methods allow the trace analysis of pesticides in less than 20 min with a minimum sample handling and in compliance with Green Chemistry principles

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