

## Fiche analytique – Mémoire de Master MUSE

A rendre au secrétariat lors de l'inscription à la soutenance du mémoire

\* champs obligatoires

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<b>TITRE MEMOIRE*</b>	Response of marine biofilm to metals in the lagoon of Venice.		
<b>NUMERO MEMOIRE</b>	220		
<b>DATE SOUTENANCE</b>	31 mai 2016	Salle: B003	Heure: 11h00
<b>THEMATIQUE* (AFFILIATION)</b>	Sciences de l'eau		
<b>VOLEE MUSE*</b>	2013		
<b>TITRE ACADEMIQUE* (par ex.: licencié en biologie)</b>	Licencié en sciences de l'environnement		
<b>DIRECTION* / EVALUATION</b>	Directeur de mémoire* Vera Slaveykova	Co-directeur de mémoire* Severine Le Faucheur	Nom(s) du ou des juré(s)* - Vera Slaveykova - Séverine Le Faucheur - Jean-Luc Loiseau
<b>STAGE (éventuel)</b>	Organisme d'accueil	Maître de stage	
<b>Projet de l'ISE (éventuel) auquel le mémoire est rattaché</b>			
<b>Bourse (éventuelle) reçue par l'étudiant</b>	Bourse Lombard		
<b>COLLATION*</b>	Nb de pages : 69	Nb de figures : 19	Nb de tableaux : 5
<b>TERRAIN D'ETUDE OU D'APPLICATION</b>	Venice Lagoon		
<b>MOTS-CLES* (entre 5 et 10)</b>	Seawater, Biofilm, Mercury, Metals, ecotoxicology		
<b>RESUME* (max 1500 car)</b>			
<b>SUMMARY* (en anglais)</b>	<p>Biofilm are microorganisms aggregate embedded within an extracellular polymeric substance matrix (EPS) which allow them to adhere to each other and to hard substrata. They are good and relevant bioindicators because they are ubiquitous, sessile, easy to collect and respond sensibly to their ambient environment.</p> <p>The aim of our study was to evaluate the extent of metal pollution (Cu, Zn, Pb, As, Co, Ni, Cr, Hg) and of their bioavailability in the lagoon of Venice water, using marine biofilms, and to examine if long-term exposure to Hg in their ambient water induces a tolerance in marine biofilms.</p> <p>To that end, colonisation boxes containing 140 microscope slides were</p>		

	<p>immersed in water at 1.50 m depth at six different sampling sites representing a gradient of pollution, i.e. two low-impacted sites, two industrial impacted sites and two urban sites. Samples of water were taken at each site to measure metals and Hg concentrations in water. Specific Hg Diffusive Gradient in Thin film (DGTs<sup>®</sup>) were fixed 7 days at the same place and depth as the colonization set-ups to quantify labile Hg concentrations at each site. The colonized slides were collected after 40 days of immersion and analysed for their concentrations in total and intracellular metals, Hg and Methlymercury (MeHg) as well as their chlorophyll <i>a</i> content and ash-free dry mass (AFDM). Biofilm composition was further analysed by epifluorescent microscopy with DAPI staining to quantify the biotic fraction. To assess the tolerance acquired by biofilms exposed chronically to high Hg concentration, a short-term exposure to biofilms grown at different sites was performed, with seawater spiked with 40 and 400 ng/L Hg, during 24 hours.</p> <p>Biofilm collected at the low impacted sites (St Maria del Mare) contained more algae (<math>0.75 \pm 0.09</math> g chl<i>a</i>/g dw) than those collected in the channel of Venice city (<math>0.02 \pm 0.01</math> g chl<i>a</i>/g dw). The inorganic fraction was very high in biofilms from the most polluted sites such as Murano (<math>81 \pm 2</math> %) and the industrial zone (<math>75 \pm 3</math> %). A higher concentration of dissolved lead, copper and arsenic was measured in the urban sites, which could be reflected in their accumulation in marine biofilms. In contrast, no relationship was found between the dissolved mercury or its labile species concentrations with Hg bioaccumulation in marine biofilms, suggesting that other parameters than water chemistry control Hg accumulation in biofilms.</p> <p>The present study demonstrated the usefulness of marine biofilms to assess metal pollution in coastal waters.</p>
REMARQUES	