

Effect of sodium azide (NaN₃) onto Dissolved Organic Carbon mobility during laboratory resuspension experiment

N. LAYGLON^{1*}, B. MISSON², V. LENOBLE³, S. MOUNIER⁴, D. OMANOVIC⁵, C. GARNIER⁶.

¹Universite de Toulon, aix marseille univ, CNRS, IRD, M.I.O, France (*nicolas.layglon@univ-tln.fr)

²Ruder Boskovic Institute, Zagreb, Croatia; omanovic@irb.hr

When sediment, which is represent a huge reservoir of Organic Matter [1], is resuspended (tides, waves, wind, dredging activities...), it releases OM which can eventually be degraded by marine bacteria. In order to evaluate the biotic and abiotic contributions in this remobilization processes, a microbial community inhibitor which does not contaminate in OM, not modify it, is needed. In this context, a well-known strong poison (NaN₃), often used to prepare abiotic controls in sediment resuspension experiments [2] was studied because its intrinsic effect onto OM was never considered.

Sediment was autoclaved and seawater was filtered on 0.2 µm in order to sterilize both media and inhibit biotically-mediated transfers then placed into trace-metal clean Teflon bottles. NaN₃ was added to seawater at concentrations ranging from 1 to 50 mM along with a NaN₃-free control. The mixture was submitted to head-over-shaking for 2 weeks.

Samples were collected after 1 day and 2 weeks of contact times. They were filtered using 0.2 µm syringe filters (Sartorius) before being analyzed. Dissolved organic carbon (DOC) concentration was measured with a TOC-VCSH (Shimadzu). Furthermore, pH and Eh were measured at the beginning and end of sampling.

The obtained results demonstrated an evident influence of NaN₃ on the transfers of compounds between water and sediment, with the amplitude of the impact linked to NaN₃ concentration.

[1] Burdige, D.J. (2007), Chemical Reviews 107, 467–485.

[2] Cabrol, L., Quéméneur, M., Misson, B. (2017), Journal of Microbiological Methods 133, 62–65.