

Biomonitoring of coastal marine waters subject to anthropogenic use: development and application of the biosensor Mosselmonitor®

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Abstract. The overall objective of this study was to develop a biological early warning system (Mosselmonitor®) on offshore platform to detect critical environmental situations. The experiment was conducted on oil off-shore platform called Rospo Mare B. This structure is located in the area in front of Molise coast line (Italy, Adriatic Sea), characterized by a depth of about 77 m and a bathymetry between 65 and 80 m. The Mosselmonitor® works with eight mussels connected via specific sensors to PC for recording opening values of valves. A probe was installed inside the instrument to daily control of water pH, dissolved oxygen, salinity and temperature. Water samples are weekly analyzed for heavy metals, organochlorine pesticide and suspended matter. During the entire observation period, closure alarms were predominantly detected (99.9%) and a decrease of 65% in alarms maximum duration was recorded from the fifth week. During the first month, none changes in water physico-chemical parameters were observed so that affect the bivalves behavior. The only chemical parameter steadily detected in water was copper; its average concentrations were of 10 ppb. Detected alarms were not comparable to those recorded in the first month: this observation could be explained considering that mussels will be adapted to copper constant presence.

Keywords: Mosselmonitor®, biomonitoring, biosensor, mussel, anthropogenic areas, offshore platform.

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