Alfonso Scarpato, Giulia Romanelli, Francois Galgani, Bruno Andral, Marina Amici, Pierpaolo Giordano, Josep Caixach, Monica Calvo, Juan Antonio Campillo, José Benedicto Albadalejo, Alessandro Cento, Samir BenBrahim, Cherif Sammari, Salud Deudero, Mostefa Boulahdid and Franco Giovanardi, (2010). Western Mediterranean coastal waters—Monitoring PCBs and pesticides accumulation in Mytilus galloprovincialis by active mussel watching: the Mytilos project . J. Environ. Monit., 2010, 12, 924 - 935.

Abstract: In order to evaluate the contamination levels in the Western Mediterranean basin, the active mussel watch methodology has been applied. This methodology consists of mussel transplantation (Mytilus galloprovincialis) from non impacted areas to selected coastal areas, characterised by potential impact from the continent due to contaminating sources. The areas of interest were selected along the entire coastal development of the Western Mediterranean sea, 122 sites in total. The time of mussel caging exposure was 12 weeks. The project was co-financed in the frame of the Interreg IIIB Meddoc Programme, aimed at determining the overall chemical quality of the Mediterranean sea, consistent with the Water Framework Directive 2000/60. Several partners representative of the coastal Mediterranean Countries were involved in the Project, with the purpose of building up a common surveillance network, adopting shared methodologies. In this paper we present the results of three yearly monitoring campaigns (2004, 2005, 2006) carried out along the coasts of Italy, France, Spain, Morocco, Algeria and Tunisia, including the coastal environment of Baleares, Sicily, Sardinia and Corsica. The contamination levels of Pesticides (DDT and its metabolites, Hexachlorocyclohexane isomers and) and Polychlorinated biphenyls, are reported and discussed. Statistical elaborations performed on the original data set were mainly aimed at validating the raw sample distributions, by means of the Johnson method. Both DD and PCB species frequency distributions have been approximated to appropriate theoretical distributions, belonging to the Log-normal and Bounded families. By integrating the related Probability Density Functions (p.d.f.), different accumulation values for DDT, DDD and DDE and PCB species have been estimated, corresponding to fixed percentage points of the area under the respective curves. By choosing appropriate probability level boundaries (33rd and 66th percentile), different regional zones have been ranked in terms of low, medium and high accumulation for Pesticides and PCBs.