



Management of Maritime Pollutants in European Ports

Ports are closed or semi-closed coastal systems with limited water circulation, poor flushing, and weak tidal exchange. Consequently, they are characterized as pollution hotspots or areas of stagnation with a variety of maritime pollutants, found in the air, water column, and sediments, and characterized by long residence times and high concentrations. The ubiquitous problem of TBT and its long-term legacy is a notable example. During the last decade, ports around the world have grown at an extremely high rate. Fortunately, many shipping and port managers are striving to develop suitable environmental management systems and environmental policies to minimize and prevent these effects.

This project is intended to provide performance and quality indicators based on physical and biogeochemical environmental parameters required to monitor and audit the effectiveness of environmental management systems and environmental policies applied in European ports. Parameters include the following:

1. Sediment parameters consisting of grain-size surficial sediments, redox potentials along the vertical profile and heavy metal content, including metals like, As, Cd, Cr, Cu, Fe, Hg, Pb and Zn. Higher hydrodynamics are associated with a greater presence of coarse silt and fine sand while lower flow competence is correlated to a larger clay and fine silt deposition. Redox potential is a result of sediment diagenesis, implying dissolved oxygen consumption in surface sediments and the use of other electron acceptor species in deeper

sediments leading to decreasing redox values.

2. Water parameters comprising water circulation, dissolved oxygen, ammonia, cyanide, phenol, and metals like Cd, Cu, Fe, Pb and Zn. In general, the more intense water circulation corresponds to less anoxia, less reduced sediment conditions, coarser particle content, and lower organic matter amounts. Enrichment in finer particles and organic matter corresponds to favorable conditions for pollutant accumulation, leading to environmental degradation.
3. Biological parameters including occurrence of particular species, species richness and diversity as well as microbial biomarkers to identify certain genes that convey resistance to toxic metals (as for example the well characterized in the literature genes that convey arsenic resistance) or ability to degrade toxic organic compounds.

These indicators will be used to strengthen decisionmaking when developing, shaping, and evaluating national and local environmental management systems and environmental policies. In addition, the project will supply a list of guidelines as well as a protocol for effective maritime pollutants management. The outcome can be used by regulatory and management authorities.

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 www.iupac.org/web/ins/2010-028-3-600

Impact of Scientific Developments on the Chemical Weapons Convention

In early 2011, IUPAC was approached by the Organization for the Prohibition of Chemical Weapons (OPCW) and asked to prepare the basic scientific document required to carry out the third revision of the Chemical Weapons Convention (CWC), which is due to be finalized in April/May 2013. The Union agreed to take on this task, and a task group was quickly established with Leiv K. Sydnes from Norway as chair.

The work is now well under way in close cooperation with an International Advisory Board, which has members from several IUPAC divisions. A major part of the work is the planning and execution of a work-

shop on recent advances in chemistry and chemical technology of relevance to CWC and its implementation. At the workshop, which will take place in Spiez, Switzerland, at the end of February 2012, leading experts in relevant fields of the chemical sciences have been invited as lecturers. The material they present will be discussed in a CWC-context by invited scientists familiar with the convention. All the material and the conclusions that are drawn will constitute the platform for the written report that the task group is going to deliver to OPCW by mid year.

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 www.iupac.org/web/ins/2011-036-1-020