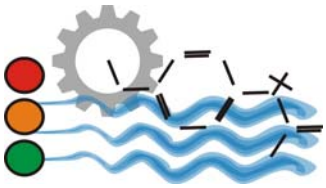

DIMAS
Development of an Integrated Database for the Management of Accidental Spills

Context

Several shipping accidents in Belgian territorial waters made the various government agencies involved aware of the need to develop tools to assess the associated risks and impact on marine resources in the case of an accidental release of hazardous substances. The choice of effective measures to abate the pollution will depend to a large extent on the direct availability of reliable and up-to-date information on the fate, hazards and risk management procedures to be taken for the spilled product (long-term effects and bioaccumulation included). Therefore, in the frame of the research action 'Global change, ecosystems and biodiversity SPSD II', this project was initiated to develop a user-friendly and easily accessible database with information for the experts involved as well as for non-experts.

Project description

- Objectives
  The North Sea is one of the most productive ecosystems in the marine environment, but significant input of toxicants from very diverse sources occurs, which may harm this ecosystem. Up till now little attention has been paid to sea-based sources of pollutions (e.g. accidental spills or leakage from platforms). Although most of the public interest has gone to oil spills and the quantity of chemicals transported is substantially less than oil, the potential harm for the marine environment from a given amount of chemicals spilled can be several orders of magnitude greater. Many of the chemicals transported by sea are highly toxic and/or persistent, can bioaccumulate or cause long-term effects. In case of an accident at sea, it is important that accurate information on environmental partitioning, bioavailability, (eco)toxicity… is immediately available. A number of databases on physical and chemical properties of chemicals have already been developed, but little attention has been paid to specific issues such as the impact on marine live, environmental fate, bioaccumulation in marine food chains. Most often the interpretation is left to the expert user of the database. This project aims at developing a database, amendable for interpretation, providing reliable, easy to interpret and up-to-date information on marine specific issues. The most important parts will be the direct and indirect effects on marine biota and the data quality assessment.

- Methodology
  The project can be divided in 4 distinct phases.
  In the first phase, 400 priority contaminants will be listed to be included in the database. Selection will be performed based on criteria such as bioaccumulation potential, toxicity, persistence, frequency of involvement in accidental spills, frequency of transport over sea and volumes transported. This list will be compared with other existing priority lists.
  In the second phase an extensive literature search will be performed to gather all information necessary for the database.
  In the third phase quality and relevance of the gathered data will be assessed. The data will be classified based on the availability of the following information: performance of the tests according to internationally accepted procedures, information on the 'control', information on the test concentration range, availability of information on

test characteristics, statistical analysis and analytic performance. Only relevant data that meet high quality standards will be used in the database. Procedures for risk management will also be included. The most important part will be the sub-module on effects for the marine environment. A broad range of organisms and endpoints will be assessed, but if no data for the marine environment are available, results from freshwater studies will be used. Further, biodegradation, metabolism, detoxification and bioaccumulation will be considered.
In the fourth phase the relational database with a graphical user interface will be developed.

- Interaction between the different partners
  The interaction between the different partners is presented in the following table.

	UGent-LETAE	EURAS	VLIZ
Fase I: Identification of chemicals			
Fase II: Data collection			
Fase III: Data evaluation and interpretation			
Fase IV: Database development			

- Expected results and/or products
  The final product will be an integrated, relational database with data on acute and chronic effects on marine biota, bioaccumulation, detoxification, occurrence, fate from contaminants and risk reduction measures for all 400 chemicals. These results will be made publicly available to national and international governments, security services, media… after consulting the users committee. Regulatory/governmental bodies will use the database to fulfil the needs of international agreements for the protection of the North Sea. Results will be discussed with the users committee and with other scientists (e.g. publications, presentations on meetings). The organisation of a workshop and the publication of project results in non-expert periodicals will aid the valorisation of the project.

Partners

- Activities
  EURAS is an environmental consultant and a leading company in the field of environmental toxicology and risk analysis studies. EURAS has a broad scientific background and has expertise in the field of risk assessment, monitoring services, ecotoxicological services and information management.
  VLIZ acts as a co-ordinating and information platform for marine sciences in Flanders. VLIZ hosts the Flanders Marine Data and Information Centre, and deploys the vessel *Zeeleeuw* for oceanographic research.
  The LETAE is internationally recognized for its ecotoxicological research, aiming at fundamental and applied aspects of aquatic and terrestrial toxicology and ecological risk evaluation. The most important area of interest is bioavailability and effects of environmental contaminants.

- Contact information
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Users committee

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Prof. Dr. Frank Maes, Ghent University, Maritime Institute
Mr. Antoine Descamps, Flemish Maritime Administration, Department Shipping Assistence Division.
Ir. Paul Gerard, Harbour of Ostend
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Mr. Luc Rombout, Crisis & Emergency Management Centre (CEMAC)