

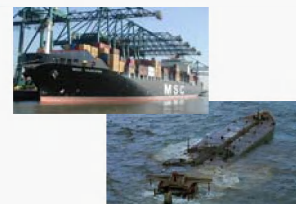
Marine incidents management cluster (MIMAC): technical and organizational measures related to marine incidents in the North Sea

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Introduction and aims

Several shipping accidents in Belgian territorial waters made the various government agencies involved aware of the need to develop integrated tools to assess the risks & environmental impact of accidental spills of hazardous compounds. The MIMAC project, funded by the Belgian Science Policy, aimed to integrate the results of 2 projects related to marine incidents management: DIMAS (Development of an Integrated Database for the Management of Accidental Spills) & RAMA (Risk Analysis of Marine Activities in the Belgian part of the North Sea).



DIMAS data collection: 250 compounds

MIMAC

Risk assessment (RAMA)

Physico-chemical properties

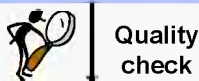
Ecotoxicology

- ✓ Water / sediment
- ✓ Saltwater / freshwater
- ✓ Acute / chronic effects
- ✓ trophic levels (fish, algae, plants, invertebrates, microorganisms, ...)
- ✓ endpoints (mortality, growth, reproduction, ...)

Human effects

- ✓ Risk & safety phrases

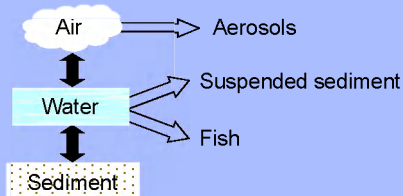
GESAMP hazard profiles



Relational database & modelling

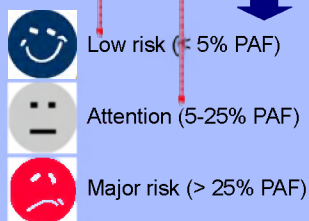
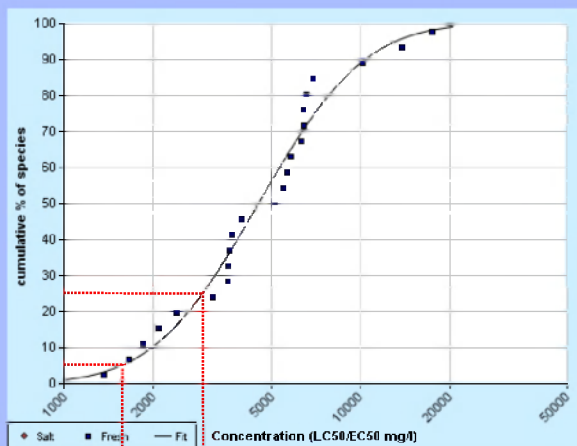
Exposure modelling

Environmental partitioning modelling in marine specific environment, based on MacKay level I model

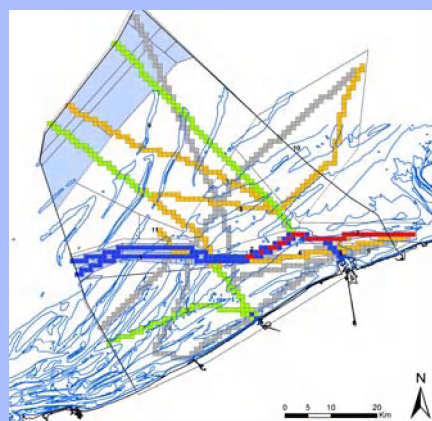


Effect modelling

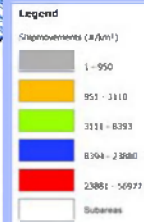
Expressed as potentially affected fraction (PAF), based on SSD (species sensitivity distribution) approach



Identification of hazardous activities in the Belgian part of the North Sea

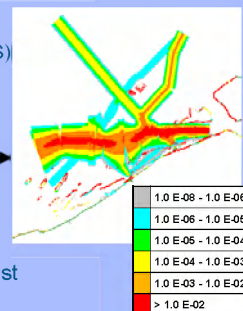


- ✓ Total 57.791 voyages (or ± 320.000 ship mov.)
- ✓ 40% dangerous goods (DG)
- ✓ 60% of DG in packaged form; 40% in bulk
- ✓ 74% with oil tankers, RoRo/ car carriers, containers



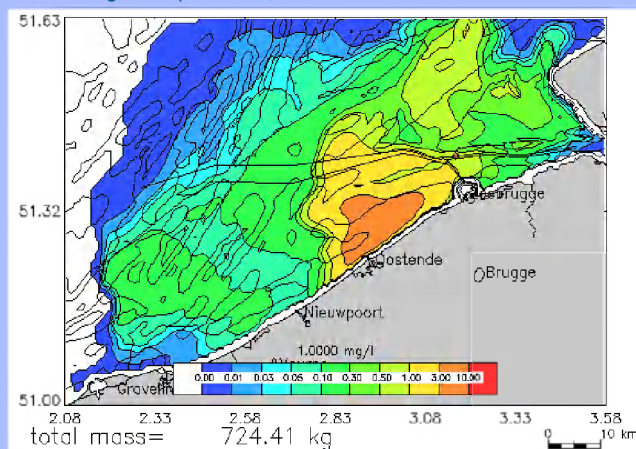
Release assessment

- ✓ Marine Accident Risk Assessment System (MARCS)
- ✓ Accident frequency (accidents / year)
- ✓ Accident spill frequency (accidents with environmental spill / year)
- ✓ Spatial cargo spill risk (tonnes spilled / year)



Description of effects of incidents

- ✓ Sensitivity analysis
- ✓ Effect analysis
 - o Worst case simulation of HNS spill near coast
 - o 75 simulation days
 - o Maximum concentration
 - o Ecological impact area, based on 5% effect from PAF



Conclusion

Both the results of RAMA and DIMAS as well as the outcome of the MIMAC symposium of October 2006 are ready to be used in contingency planning. The risk analysis of RAMA forms a basis for the evaluation of the degree of preparedness (products, equipment, response) while the database developed within the DIMAS project forms an operational tool that can be readily used during pollution combating operations at sea.

<http://www.vliz.be/projects/mimac>

