A selection of resources dealing with Risk Analysis.

Using the MARINER Knowledge Tool

MAKING THE MOST OF THE EXISTENT KNOWLEDGE

MARINER

ENHANCING HNS PREPAREDNESS
THROUGH TRAINING AND EXERCISING

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INTRODUCTION

The aim of MARINER, a DG ECHO funded project, is to improve planning, preparedness and response to HNS spills by harnessing and capitalising existing HNS knowledge and resources, improving tools for decision making, reinforcing training and exercise capabilities, and increasing awareness and information exchange.

Aligned with its objectives, one of the MARINER tasks was the identification and compilation of existing HNS preparedness and response knowledge generated by EU funded public research, as well as other HNS related resources produced by international organisations dealing with maritime pollution, and make them easily available through a user friendly publicly available database: the MARINER knowledge tool. This online database allows users to search for resources by major HNS theme, organisation, projects, type of output, and funding source. Through a combination of simple and advanced queries, users can have direct access to resources or when appropriate, to the author's website. It currently stores information on 110 research projects and 28 organisations and contains 467 resources with relevance for HNS matters such as contingency planning, response protocols and equipment, environmental monitoring, impact and recovery, HNS characterisation, modelling, risk analysis, and training and exercising among others. The compiled resources include thematic reports, scientific publications, prototypes, software and modelling tools, books, guidelines, databases, services and tools, multimedia and training activities and materials.

With the help of the MARINER Knowledge Tool, and based on a criterion guided selection of HNS resources, this booklet provides an example on how the knowledge generated by expert organisations and EU projects have addressed HNS related issues relevant for "Risk analysis".

A total of 26 resources have been selected keeping in mind the considerations mentioned earlier and the following criteria:

- Free online availability
- No confidentiality restrictions
- Development completed
- No limits in the geographic scope of application or easy adaptability to other areas

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- Prioritisation of operational materials vs scientific publications

The selection of resources in this area of knowledge comprises a selection of risk assessment studies and reports, services and tools for risk prioritisation, dynamic risk tools and databases, maps of environmental sensitivity and vulnerability, review of case studies and best practices, and guidelines on chemical risk assessment and potential risk on human health.

To facilitate the reading of the booklet, resources have been listed in chronological order (most recent resources appear first) and grouped into 5 different categories according to resource types: guidelines and standards, reports, books and reviews, services and tools, and software and modelling tools. For each resource, a basic description (title, description, source, year of publication, and link to resource) is provided.

MARINER booklets are intended to demonstrate how knowledge can be compiled and clustered to facilitate its uptake. Nevertheless, to get a comprehensive overview of all the resources potentially relevant for the different thematic areas, readers are kindly invited to explore the full content and search functionalities of the MARINER knowledge tool.

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GUIDELINES / STANDARDS

WHO Human Health Risk Assessment Toolkit: Chemical Hazards

Summary: The purpose of the WHO Human Health Risk Assessment Toolkit is to provide its users with guidance to identify, acquire and use the information needed to assess chemical hazards, exposures and the corresponding health risks in their given health risk assessment contexts at local and/or national levels

Organisations: WHO, World Health Organization

Publication year: 2010

Language: English

Link

Concise International Chemical Assessment Documents

Summary: Concise International Chemical Assessment Documents (CICADs) are similar to Environmental Health Criteria (EHC) documents in providing internationally accepted reviews on the effects on human health and the environment of chemicals or combinations of chemicals. They aim to characterize the hazard and dose-response of exposure to chemicals and to provide examples of exposure estimation and risk characterisations for application at the national or local level. They summarise the information considered critical for risk characterisation in sufficient detail to allow independent assessment, but are concise not repeating all the information available on a particular chemical.

Organisations: ILO, International Labour Organisation and WHO, World Health Organization

Publication year: The first documents were published in 1998

Language: English

Link

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REPORTS

Report on current and future traffic densities and uses of the maritime space in the region

Summary: This report studies maritime traffic patterns and densities in the Baltic Sea to establish the risk of pollution. This was undertaken by using AIS data to review shipping density and then defining a route net that identified the most likely routes through the Bonn-Agreement area. The resulting traffic model was essentially a database table containing all identified route passages combined with information about passage direction and vessel characteristics.

Project: BE-AWARE I, Bonn Agreement: Area-wide Assessment of Risk Evaluations

Publication year: 2014

Language: English

Link

HNS risks evaluation report

Summary: Desk-top study of marine pollution risks related to the transport of HNS in the Bonn Agreement area (HNS transported in bulk and as packaged goods), based on a qualitative risk assessment approach. It drew on data from existing HNS risk assessment studies, historical HNS incident reports and the regional resource database. The reports includes a general description of the potential impact of, and damage caused by identified HNS spillages and identify knowledge/data gaps and possible methodologies for a comprehensive quantitative HNS risk assessment approach in the future.

Project: BE-AWARE I, Bonn Agreement: Area-wide Assessment of Risk Evaluations

Publication year: 2014

Language: English

Link

Existing and decided risk reducing measures

Summary: This technical report deals with risk reduction measures (RRMs) of various kind that are already established in the wider North Sea Area and those that most likely will be implemented by 2020.

Project: BE-AWARE I, Bonn Agreement: Area-wide Assessment of Risk Evaluations

Publication year: 2014

Language: English

Link

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BRISK Project: Risk assessment of HNS and oil spills in the Baltic Sea

Summary: The main objective of the BRISK project (Sub-regional risk of spill of oil and hazardous substances in the Baltic Sea) was the identification of hot spots of oil and HNS spills in the Baltic Sea, to optimize prevention and response and minimize the damage to the environment. The risk analysis also included the effects of oil spill response capacity. The project has elaborated a series of reports for conducting the Risk assessment. These are listed as follows:

Method for conducting the Baltic Sea risk assessment to oil and HNS spills

Summary: First overall risk assessment based on the common methodology to cover oil and hazardous substances pollution caused by shipping accidents throughout the Baltic Sea.

Publication year: 2012

Language: English

Link

Data collection report

Summary: This data collection report describes the amount of data that was collected during the BRISK project to form the basis of the project work dealing with risk of spills analysis in the Baltic Sea.

Publication year: 2010

Language: English

Link

Modelling reports: Introduction to modelling report

Summary: The present method note is part of the Project on sub-regional risk of spill of oil and hazardous substances in the Baltic Sea (BRISK). In this project, it serves as a documentation of method definition. It includes the adaptations that were necessary to model the risk assessment of oil and HNS spills in the entire Baltic Sea.

Publication year: 2012

Language: English

Link

Risk assessment model report for oil and HNS in the Baltic Sea

Summary: Risk assessment model report for oil in the Baltic Sea. The model report consists of 7 parts dealing with different aspects: 1) ship traffic model, 2) transport of oil and HNS, 3) environmental vulnerability, 4) frequency and quantification of spills, 5)

spreading and containment, 6) numerical calculation, 7) model modifications. There is an additional report produced by this project that describes the scenarios that were selected within the project BRISK and the reason why they were selected.

Publication year: 2012

Language: English

Model report Part 1) Ship traffic
Model report Part 2) Transport of oil and HNS
Model report Part 3) Environmental vulnerability
Model report Part 4) Frequency and quantity of spills
Model report Part 5) Spreading and containment
Model report Part 6) Numerical calculations
Model report Part 7) Model modifications
Model scenarios

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BOOK / REVIEW

Review of case studies on the human and environmental risk assessment of chemical mixtures

Summary: This review searched published peer reviewed literature on case studies showing human and environmental risk assessments for chemical mixtures. The aim was to find examples of mixture assessments in order to identify chemical mixtures of potential concern, methodologies used, factors hampering mixture risk assessments, data gaps, and future perspectives. Twenty-one case studies were identified, which included human and environmental risk assessments.

Organisations: JRC, Joint Research Centre

Publication year: 2016

Language: English

Link

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SERVICES / TOOLS

MARINER modelling Platform – Common Operating Picture

Summary: The MARINER modelling platform comprises the software (3D HNS spill model) and interface (Common Operating Picture - COP) for predicting the fate, behaviour and environmental / public health risks from a chemical spilled in the European Atlantic area and whether it may potentially affect the marine or coastal environment. In addition to this, the following reports and resources were developed by the MARINER consortium to provide support in the use of this platform: 1) two reports concerning the modelling of HNS hazards to the environments explaining the choice of toxicological parameters and the rationale of the environmental impact module, 2) an OGC GML Schema for HNS spills to assure the interoperability among different agencies when they share information about HNS spill events.

Project: MARINER, Enhancing HNS preparedness through training and exercising

Publication year: 2017

Language: English

Link

Support resources:

Modelling of HNS hazards to the environment:
Link 1 and Link 2

OGC GML schema for HNS Spills

MARPOCS web-based Common Operating Picture (COP)

Summary: MARPOCS Common Operating Picture (COP) is an integrated web-based and mobile-friendly decision support system that provides MARPOCS stakeholders (mainly marine pollution managers from national, regional and local authorities) a better maritime situational awareness, improving their preparedness to face oil or chemical incidents.

Project: MARPOCS, Multinational Response and Preparedness to Oil and Chemical Spills

Publication year: 2017

Language: English

Link

Maps of environmental and socioeconomic sensitivity

Summary: A database of GIS layers for environmental and socioeconomic HNS sensitive resources. These vulnerability maps provide a summary of coastal resources that are at risk if a spill occurs nearby and can help authorities and responders to reduce the environmental consequences of the spill and the cleanup efforts.

Project: HNS-MS, Improving preparedness to face HNS pollution of the marine system

Publication year: 2017

Language: English

Link

HNS prioritisation tool

Summary: Risk Prioritisation database for Hazardous & Noxious Substances for Public Health in access format. The purpose of this software is to provide users with a tool to produce risk based prioritisation of HNS transported within their region/port, based upon chemical and toxicological data (pre-loaded and/or user defined) and user defined local shipping information.

Project: ARCOPOL, Atlantic Regions' Coastal Pollution Response and Preparedness

Publication year: 2010

Language: English and Spanish

Link 1 and **Link 2**

Support resources:

Video: Risk prioritisation methodology for hazardous and noxious substances for public health

Summary: This video presents in 2 minutes the HNS prioritisation tool elaborated in the frame of ARCOPOL project. The purpose of this software is to provide users with a tool to produce risk based prioritisation of HNS transported within their region / port, based upon chemical and toxicological data (pre-loaded and / or user defined) and user defined local shipping information.

Project: ARCOPOLplus, Improving maritime safety and pollution response through technology transfer, training & innovation

Publication year: 2013

Language: English, Portuguese and Spanish

Link 1, Link 2 and Link 3

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SOFTWARE / MODELLING TOOL

Dynamic Risk Tool

Summary: The Dynamic Risk Tool is a software framework integrated in MOHID Studio, providing real-time and historic shoreline risk maps and levels, risk of accidents for each vessel (with Coastal Risk plugin), and also fast, reliable, easy and user-friendly on-demand 3D simulations of oil, HNS, inert and atmospheric pollutants (with Lagrangian Wizard plugin). An explanatory document reports the major developments performed in upgrading the Dynamic Risk Tool previously released in ARCOPOLplus project. A manual and installation guide are also included as well as the implementation methodology to be potentially used by other interested regions. Download and installation is free, but a license needs to be requested to use (send email to arcopol@maretec.org).

Project: ARCOPOLplatform, Platform for improving maritime coastal pollution preparedness and response in Atlantic regions

Publication year: 2015

Language: English

Link

Chemical Aquatic Fate and Effects (CAFE) Database

Summary: The Chemical Aquatic Fate and Effects (CAFE) database is a software program available to estimate the fate and effects of thousands of chemicals, oils, and dispersants. CAFE serves as a tool to help responders in their assessment of environmental impacts from chemical or oil spills into an aquatic environment.

Organisations: NOAA, National Oceanic and Atmospheric Administration - US Department of Commerce

Publication year: 2015

Language: English

Link

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