



Task D6.6 - Upgraded and updated HNS Knowledge Tool



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1. Introduction

Accidental release of volatile Hazard Noxious Substances (HNS) at sea can lead to the formation of toxic, flammable or explosive gas clouds potentially hazardous for nearby populations and the environment. The MANIFESTS project (**MAN**aging risks and **I**mpacts **F**rom **E**vaporating and gaseous **S**ubstances **T**o population **S**afety) addressed the lack in response guidance on dealing with airborne releases and in decision-making over sheltering or evacuation of the crew, responders and the coastal population in such incidents. Response capacities of marine pollution responders have been improved through the development of innovative decision support tools and operational guidelines and by facilitating access to relevant knowledge and databases, particularly on volatile HNS spills.

MANIFESTS built on the results generated by MARINER ([Mariner - Enhancing HNS preparedness through training and exercising \(mariner-project.eu\)](http://mariner-project.eu)) and HNS-MS ([Improving Member States preparedness to face an HNS pollution of the Marine System \(HNS-MS\)](#)) projects, both funded by the EU in the framework of the Union Civil Protection Mechanism (DG-ECHO).

Specifically, the MARINER project focused on improving planning, preparedness and response to HNS spills in Europe by:

- Capitalizing and translating relevant HNS R&D outcomes into operational resources applicable by planners and responders;
- Improving training and exercise capabilities;
- Upgrading and/or improving tools to support decision making and response;
- Increasing awareness and encouraging information exchange.

In the framework of MARINER, an online database, the MARINER Knowledge tool, was created to facilitate the access to HNS response relevant results generated by EU and national projects and expert organizations. In the MANIFESTS project, the MARINER knowledge tool was updated and upgraded, with special focus on resources that could be useful to plan and develop exercises. For that purpose, an ongoing review was performed during the total period of the project, searching for updates, new resources produced and projects launched, taking into consideration the geographic and linguistic diversity of the existing projects and organisations of interest, not only in the European Union but also abroad.



2. MARINER-MANIFESTS Knowledge Tool

There are several EU R&D projects that have focused on HNS maritime spills in the past, however their research outputs are often dispersed and not easily accessible. Moreover, there is a number of specialised organisations that have developed useful resources and guidance too. Improving the availability and the dissemination of these resources can significantly enhance the capabilities to cope with HNS spills. The MARINER-MANIFESTS Knowledge Tool intends to address this issue by identifying existing knowledge and resources and providing user-friendly access to this information.

The Knowledge Tool is an online repository that includes a comprehensive compilation of marine research and technical resources specifically focused on the preparedness and response to HNS spills. It is available through <http://knowledgetool.mariner-project.eu/>

The Resources included in this database were carefully extracted from two main types of sources:

- EU and national research and cooperation projects addressing maritime pollution and chemical spills.
- Key organisations working on the fields of maritime pollution and health and environmental protection.



HOME | ABOUT | PROJECTS | ORGANISATIONS | RESOURCES

MARINER-MANIFESTS KNOWLEDGE TOOL

Welcome to MARINER-MANIFESTS Knowledge Tool

User-friendly access to an inventory of HNS preparedness and response resources generated in the frame of research projects (i.e. Knowledge Outputs) or by specialised organisations. [Read more...](#)



Projects

Inventory of relevant research and cooperation projects on HNS and their Knowledge Outputs



Organisations

Inventory of key organisations working on maritime pollution and their main Resources



Resources

Inventory of all the Knowledge Outputs - compiled from projects- and the Resources -from organisations- dealing with HNS

Contact

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The tool allows users to search for relevant knowledge and resources classified by major HNS themes and resource types, organisations and projects. Through a combination of simple and advanced queries, users can have direct access to resources or when appropriate, to the author's website.

This online database can be accessed by using tailor-made search engines that help browsing the list of projects and organisations considered during the collection process (click on "Projects" or on "Organisations") or selecting the resources of interest from a list of more than 700 records (click on "Resources").

The resources were initially classified according to 12 areas of knowledge: 1) Case studies, 2) Contingency planning, 3) Environmental monitoring, impact & recovery, 4) Exercising, 5) Harbour, Shipping & Industrial facilities, 6) HNS characterisation, 7) Human health, 8) Liability and compensation, 9) Modelling, 10) Response protocols and equipment, 11) Risk analysis, 12) Training.



For the MANIFESTS project purpose of updating and upgrading the Knowledge Tool, the former area of knowledge "Training and Exercising" was divided in two separated areas. The compilations of resources carried out as part of task 3.4 of the MANIFESTS project "*Methodology for compiling, reviewing and classifying resources dealing with exercising*" were stored in the "Exercising" area of knowledge .

2.1. Collection of HNS-relevant resources

To identify and collect HNS-relevant resources, the following sources of information were used:

- Projects: EU and national projects dealing with HNS preparedness and response. These were taken from extensive searches performed in major online repositories of European research: CORDIS, DG ECHO, KEEP Database, ENPI CBC, Marine Knowledge Gate, etc.



- Organisations: Those working on the field of maritime safety, dealing with HNS pollution, environmental or human health protection, and on response to emergencies.

Considering Projects, the collection of HNS-relevant resources focuses on Knowledge Outputs in the form of exploitable results. This methodology is based on the one developed by AquaTT in the frame of MarineTT project, which in turn was upgraded under the umbrella of STAGES and COLUMBUS projects.

For the knowledge tool purposes, and as proposed by AquaTT, a Knowledge Output was defined as: “Unit of knowledge that has been generated out of a research project. It is not limited to de-novo or pioneering discoveries but may also include new methodologies/processes, adaptations, insights, alternative applications of prior know-how/knowledge”.

A number of International, EU and national organisations working on the field of maritime safety or marine protection have developed relevant materials and resources that can be helpful in all phases of preparedness and response to an HNS spill. Some of the most relevant Organisations are listed on the following table (Table 1).

Organization	Geographical scope	Website
IMO	International	http://www.imo.org/
REMPEC	International	http://www.rempec.org/
ITOPF	International	http://www.itopf.com/
IPIECA	International	http://www.ipieca.org/
UNEP-GESAMP	International	http://www.gesamp.org/
WHO	International	http://www.who.int/en/
EMSA	EU	http://www.emsa.europa.eu/
OSPAR	EU	http://www.ospar.org/
HELCOM	EU	http://www.helcom.fi/
Barcelona Convention	EU	http://www.unepmap.org/index.php
Black Sea Convention	EU	http://www.blacksea-commission.org/main.asp
Bonn Agreement	EU	http://www.bonnagreement.org/
RAMOGE Agreement	EU	www.ramoge.org
NOAA	USA	http://www.noaa.gov/
ADEC	USA	https://dec.alaska.gov/
FEMA	USA	https://www.fema.gov/
NOWPAP MERRAC	Pacific area	http://merrac.nowpap.org/
CEDRE	France	http://wwz.cedre.fr/
Transport Canada	Canada	https://www.tc.gc.ca/eng/menu.htm
Oil Spill Response	International	http://www.oilspillresponse.com/

Table 1. List of key organisations related to the HNS preparedness and response.

The Projects and Organisations selected were included in the database and further investigated for the identification and extraction of the Knowledge Outputs (from Projects) and Resources (from Organisations) that specifically tackled HNS-issues. For the sake of simplicity, all the items selected from Projects (i.e. Knowledge Outputs) and Organisations (i.e. Resources) were integrated into a single list under the denomination of Resources. All these Resources were described, classified and linked to their source (project or organisation).

2.1.1. Collection criteria

After a first selection of sources of information (key organisations and European Funding Programmes that include research priorities pertaining to HNS preparedness and response), a deeper look was carried out to pick out the projects and sections/departments on organisations' websites that offer knowledge and tools related to HNS preparedness and response.

In addition to that, the following criteria were also considered:

	Timeline	Geographical scope	Target environment	Resources
Projects	Projects starting from 2002.	Priority was given to EU and international projects, but also national projects were included.	Priority to marine projects, but also continental water and terrestrial projects.	Knowledge Outputs (KOs).
Organisations	Selection of the latest version of resources.	Priority was given to EU and International organisations, but national institutions were also considered.	Priority to organisations working on the marine and coastal environments, but also entities on the scope of continental water, terrestrial ecosystems, and human health protection.	Tools, manuals, guidelines, infographics, posters, videos, e-learning courses, etc. developed by the organisations targeted.

Keywords to perform searches were: HNS, Hazardous and Noxious Substances, chemicals, shipping, maritime incident, modelling, monitoring, training, e-learning, spill, environmental impact, response protocols, exercises, etc.

2.1.2. Classification of Resources

The Resources compiled were classified according to the following criteria:

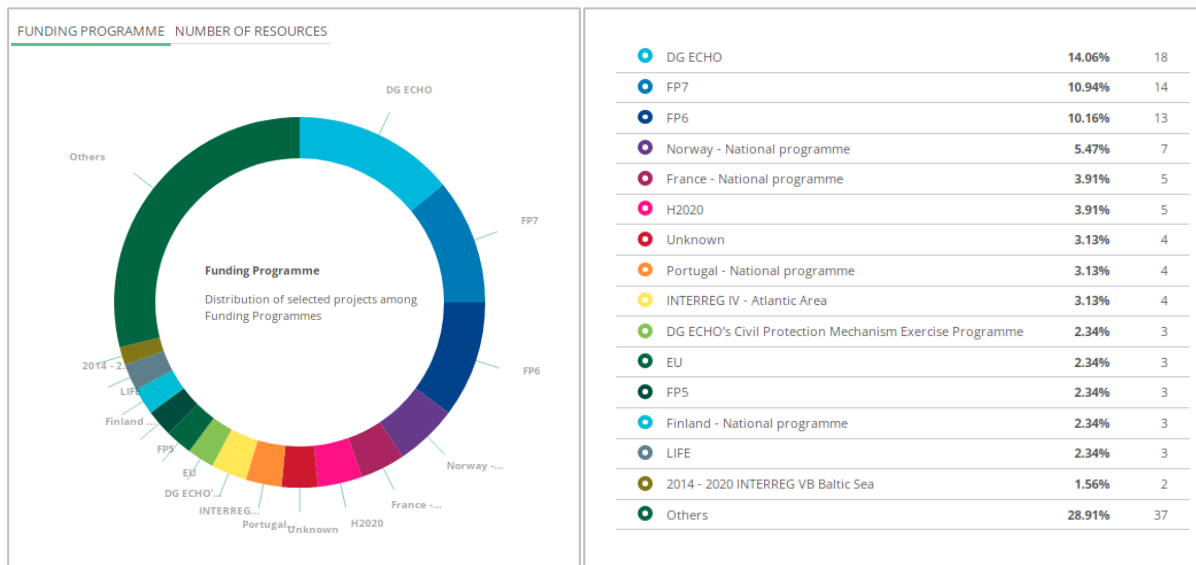


Target environment	HNS areas of knowledge:	Type of resource:	Geographical area:
Marine/coastal environments. Continental ecosystems. Fluvial ecosystems. Air. Human health protection.	Case studies. Contingency planning. Environmental monitoring, impact & recovery. Harbour, Shipping & Industrial facilities. HNS characterisation. Human health. Liability and compensation. Modelling. Response protocols and equipment. Risk analysis. Training. Exercising.	Book/review. Database. Dissemination materials. Guidelines/ Standards. Multimedia. Prototypes. Reports. Scientific publications. Services/Tools. Software/modelling tool. Training activity /Learning module. Other.	The resources were assigned to the country or region that funded the production of that resource.

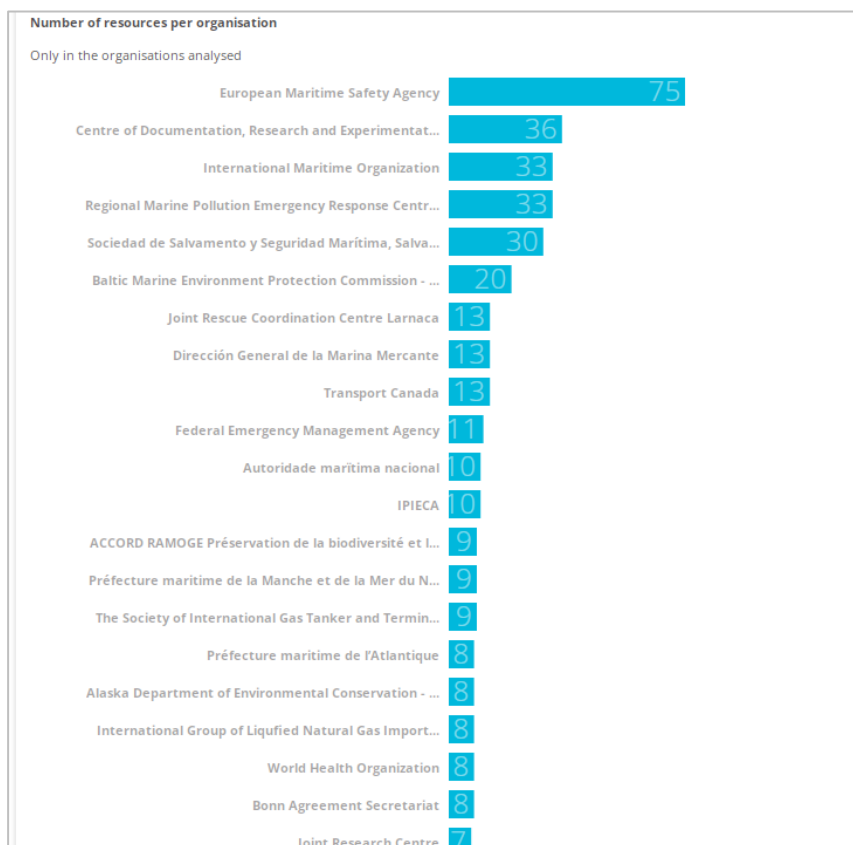
The resources were assigned to the country or region that funded the production of that resource.

3. Results of the updating process

Within the frame of the MANIFESTS project, an update in the number and availability of resources was performed. **Special focus was set in capturing resources relevant for exercising.** All results gathered are accessible from this [link](#). The inventory of projects includes now 130 Projects (from the 109 that were before the actualisation) addressing aspects related to maritime pollution and/or HNS preparedness and response. According to the publicly available information, most of the projects were funded by European Union Funds (i.e. DG ECHO, Framework Programmes FP6, FP7, H2020...) or national programmes (i.e. Norway, France National programmes, etc.).

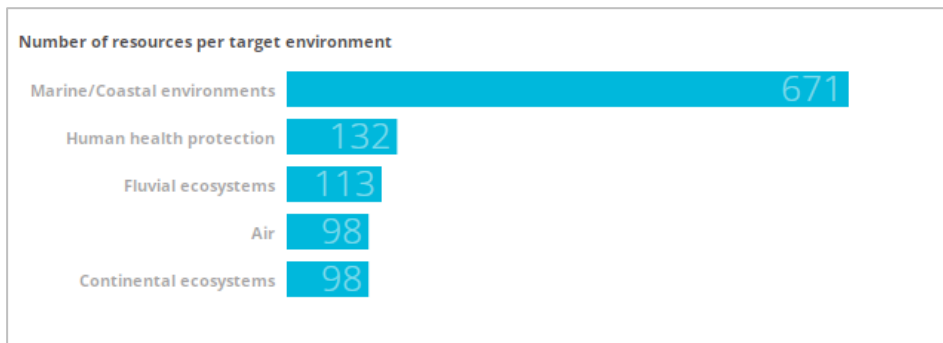


Considering Organisations, 70 entities were included in the inventory as sources of online public information related to HNS pollution. Before the actualisation, there were 28 Organisations in the MARINER Knowledge Tool. The organisation with a larger contribution is EMSA with 75 resources each, followed by CEDRE, IMO, REMPEC, SASEMAR and HELCOM. The rest of the listed organisations contributed with a number of resources that ranged between 1 and 13 resources each.

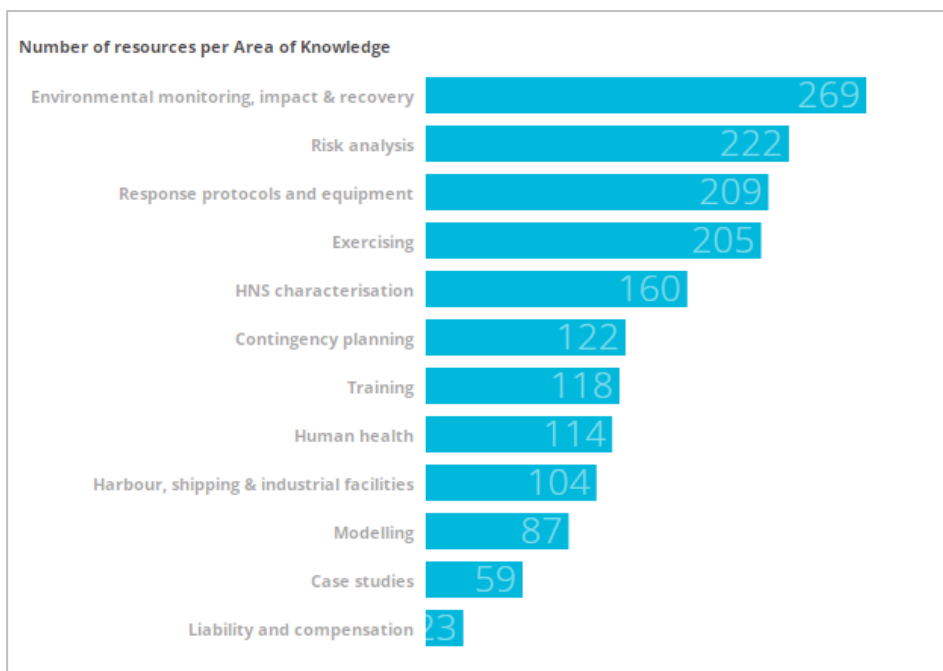


A total number of 741 Resources (from near 500 before the actualisation) were identified and validated to be included in the database.

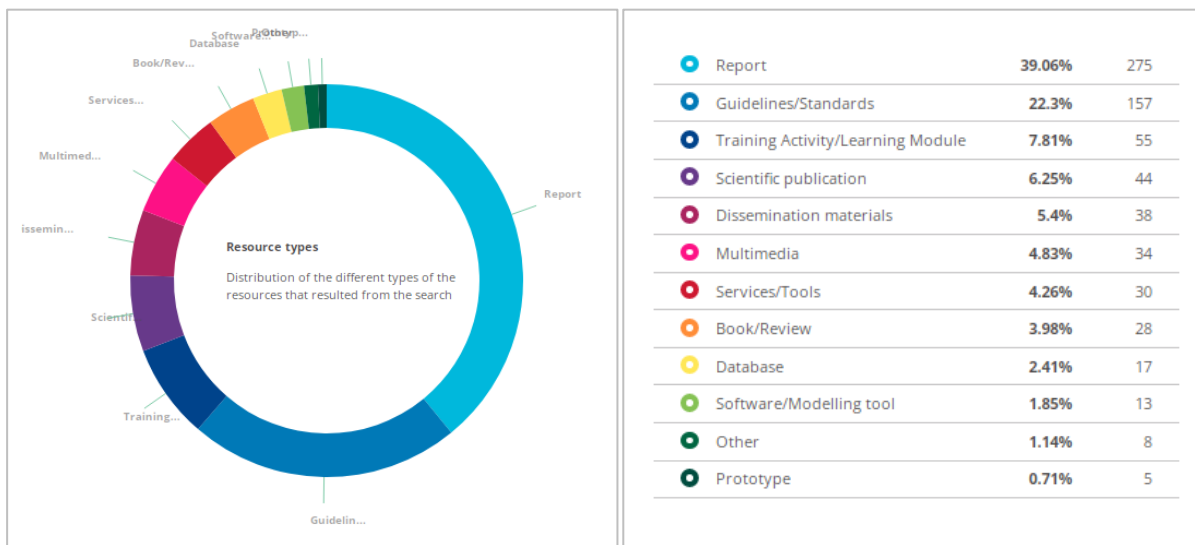
The main target environment of the Resources, by far, are the marine and coastal environments.



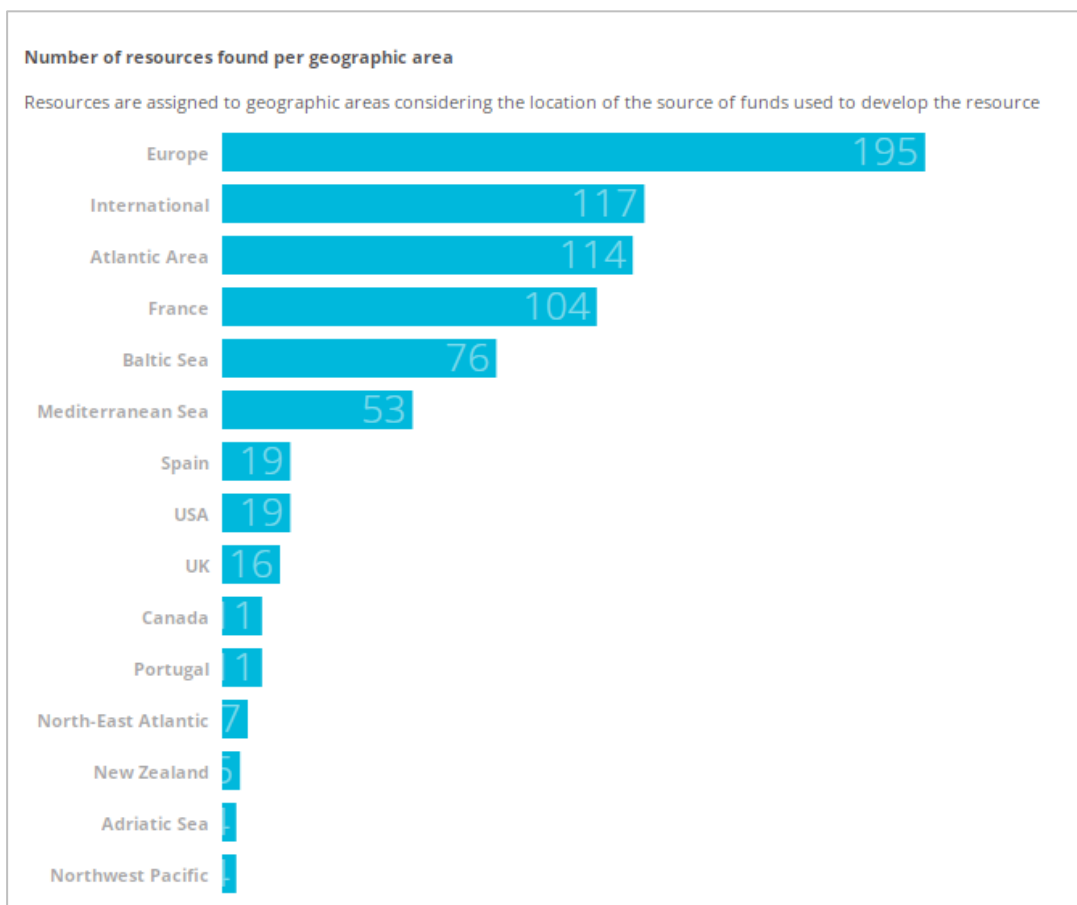
The main area of knowledge of the resources is Environmental monitoring, impact & recovery, followed by Risk analysis, Response protocols and equipment and Exercising.











The main type of resources are Reports and Guidelines.



Most of the resources selected are circumscribed to Europe, are result of international collaboration or from the Atlantic area.



Regarding exercising, 205 resources were included, from which more than a half were Exercise Reports (see table below). These new results also feed the exercise database that is a component of the exercise package and a summary of the collected resources can be shown in the booklet *A selection of resources dealing with Exercising using the MARINER - MANIFESTS Knowledge tool* that is an Annex of this report and provides an example on how the knowledge generated by expert organisations and EU projects have addressed HNS related issues relevant for exercising.

 Report	57.07%	117
 Multimedia	11.71%	24
 Guidelines/Standards	9.76%	20
 Dissemination materials	8.78%	18
 Training Activity/Learning Module	6.83%	14
 Services/Tools	3.41%	7
 Other	1.95%	4
 Scientific publication	0.49%	1



A selection of resources dealing with Exercising using the MARINER - MANIFESTS Knowledge tool

WP3: Application of response tools, *in-situ training and
Table-Top Exercises*

WP6: *Dissemination strategy, capitalisation and visibility*



Centro Tecnológico del Mar – Fundación CETMAR



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Introduction

Marine pollution accidents involving Potentially Hazardous and Noxious Substances (SNPP or HNS) can give rise to the formation of toxic, flammable and even explosive clouds that can put in risk the crew, those responsible for the response, the coastal civilian population and the environment.

The objective of the MANIFESTS Project (funded by the Directorate-General for European Civil Protection and Humanitarian Aid Operations, or DG-ECHO) is to address this type of incidents and strengthen response capacities by creating decision support tools and operational guidelines, as well as facilitating access to existing knowledge on this type of substances.

Specifically, work package 3 aims to enhance training capabilities and develop a tool to support the formulation of exercises, which provides the key resources and methodologies for the development of exercises of different scale, complexity and intervention phases.

Marine pollution exercises are organised activities through which personnel can practise their response capacities and check contingency plans and their procedures. They can encompass incident assessment and decision making, cooperation among organizations, communication, mobilization or deployment of equipment and the development of personnel competence through continual improvement.

With the help of the [MARINER-MANIFESTS 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 exercising.

A total of 57 resources with 98 links to different contents had 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
- Prioritisation of operational materials vs scientific publications



To facilitate the reading of the booklet, resources have been listed in chronological order (most recent resources appear first) and grouped into 6 different categories according to resource types: guidelines and standards, books and reviews, training activities and learning modules, services and tools, dissemination materials and multimedia. For each resource, a basic description (title, summary, organisations, year of publication, language and link to resource) is provided.



Guidelines /Standards

Preparing Scotland Exercise Guidance

Summary: The guidance sets out the factors involved in the exercise process and incorporates a set of templates that can be used across the diverse area of civil contingencies, from individual agency internal exercises to multi-agency live play exercises.

Organisations: Scottish Government's Resilience Division

Publication year: 2022

Language: English

[Link to guide](#)

[Link to website](#)

Mass Rescue Operations Guidance

Summary. The IMRF's mass rescue operations (MRO) guidance is provided in 30 separate chapters. The information is grouped into five primary subject areas: 'Philosophy & Focus', 'Planning', 'Resources', 'Command, Control, Coordination, Communication', and 'Training, Exercises and Drills, and Learning from Experience'.

Organisations: International Maritime Rescue Federation (IMRF)

Publication year: 2022

Language: English

[Link to website](#)

[Link to guide](#)



HELCOM Manual on Co-operation in Response to Marine Pollution

Summary: This Manual is intended for Response Commanders and Supreme On-Scene Commanders leading the multinational response operations at sea and on the shore. It is also meant for personnel participating in the multinational response operations and for authorities dealing with national contingency planning and strategic development. It also gives a framework for exercises.

Organisations: Baltic Marine Environment Protection Commission - Helsinki Commission (HELCOM)

Publication year: 2021

Language: English

[Link to website](#)

[Link to manual](#)

Marine HNS Response Manual

Summary: The objective of the Marine HNS Response Manual is to provide operational guidance for first responders and decision-makers during a maritime incident at sea or in port involving HNS. The manual does not cover all aspects of an incident involving HNS, but specifically addresses relevant offshore and onshore spill response techniques (but excludes topics such as search and rescue, salvage, medical treatment).

Organisations: Multi-regional Bonn Agreement, Helsinki Commission (HELCOM), Regional Marine Pollution Emergency Response Centre for the Mediterranean Sea (REMPEC)

Project: WestMOPoCo

Publication year: 2021

Language: English

[Link HELCOM](#)

[Link REMPEC](#)



Safe exercise best practices

Summary: Safe exercise best practices guide is part of the Exercise and Preparedness tools to help organizations and jurisdictions maintain safety protocols for in-person exercises. This guide is organized by exercise phase: pre-exercise, conduct, and post-exercise. It addresses safety and security, venue access and validation, health and real-world incident considerations for each phase.

Organisations: Federal Emergency Management Agency (FEMA)

Publication year: 2021

Language: English

[Link to guide](#)

[Link to website](#)

Virtual exercise best practices

Summary: When the COVID-19 pandemic restricted travel and in-person meetings, many federal and state, local, tribal, and territorial (SLTT) organizations continued their preparedness efforts through virtual exercises. The Federal Emergency Management Agency (FEMA) National Exercise Division (NED) developed this collection of virtual exercise best practices from across all levels of stakeholders. These approaches help organizations effectively use virtual exercises to validate capabilities and drive continuous improvement. This guide provides:

- Benefits and challenges to conducting a virtual exercise
- Considerations for platform testing and pre-conduct logistics; and
- Actions to take before, during and after a virtual exercise.

Organisations: Federal Emergency Management Agency (FEMA)

Publication year: 2021

Language: English

[Links](#)

[Link to workbook](#)



Technical guide for UCPM Full-scale exercises

Summary: This manual is addressed to all the people and organizations involved in the preparation, development and implementation of civil protection exercise projects framed in the Union Civil Protection Mechanism (UCPM) and presented to the different call for proposals that the European Commission, more specifically DG ECHO, announces on an annual basis (<https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/home>). This document aims to provide practical advice and common terminology about the particulars of exercising under the UCPM framework to facilitate the process of applying for a call for proposals.

Organisations: Directorate-General for European Civil Protection and Humanitarian Aid Operations (DG-ECHO)

Publication year: 2021

Language: English

[Link](#)

The Bonn Agreement Counter Pollution Manual: Chapter 1.14: Exercises

Summary: The Bonn Agreement Counter Pollution Manual contains the decisions to facilitate joint operations to combat pollution or to put the Bonn Agreement into practice. Chapter 1.14 outlines the types of joint exercises (BONNEX) for co-operation in combating spillages into the sea.

Organisations: Bonn Agreement Secretariat

Publication year: 2020

Language: English

[Link](#)



Homeland Security Exercise and Evaluation Program (HSEEP)

Summary. The Homeland Security Exercise and Evaluation Program (HSEEP) provides a set of fundamental principles for exercise programs, as well as a common approach to program management, design and development, conduct, evaluation, and improvement planning.

Organisations: Federal Emergency Management Agency (FEMA)

Publication year: 2020

Language: English

[Link](#)

Oil Spill Response Exercise Guidance: A Manual for Planning, Conducting, and Evaluating Exercises

Summary: The Guidance is part of a dedicated effort to improve DEC's Oil Spill Response Exercise Program to better serve the needs of regulated oil operators, response action contractors, state and federal agencies, and other exercise stakeholders, while improving oil spill response readiness within the State of Alaska.

Organisations: Alaska Department of Environmental Conservation (ADEC) - Division of Spill Prevention and Response

Publication year: 2018

Language: English

[Link](#)

[Link to website](#)



Medical facilities assessment. Checklist for medical professionals in the oil and gas industry

Summary: Oil and gas operations occur in different countries and locations across the world, where the quality of medical infrastructure, available treatments and specialities may differ greatly. It is therefore important for companies to assess the medical facilities available, to ensure that they can provide optimal health care for their workers. This checklist provides a series of Yes/No, sliding scale and open answer questions to help company health professionals when making these assessments, and aid in company decision making when selecting a medical facility.

Organisations: IPIECA, International Association of Oil & Gas Producers

Publication year: 2017

Language: English

[Link](#)

Multiple casualty planning and preparation. Checklist for medical emergency response planning for the oil and gas industry

Summary: The *Multiple casualty planning and preparation checklist* provides a practical form of guidance which aids medical and operational personnel to assess and improve preparedness to manage multiple casualty events. Through a series of Yes/No answers, the checklist guides the user through the key elements which need to be considered when developing a medical emergency response plan, such as communications, on and off-site facilities, training and drills and risk assessment.

Organisations: IPIECA, International Association of Oil & Gas Producers

Publication year: 2017

Language: English

[Link](#)



Preparedness to maritime chemical accidents in the Baltic Sea Region

Summary: The aim of this report is to give an overview on the level of information and competence related to preparedness of maritime HNS incidents in different in Baltic Sea region countries. The report contains selected results of two surveys that were connected with WP2 (“Operational plans and standard operational procedures for SAR operations”) and WP4 (“Chemical data bank for joint use for maritime and environmental authorities and shipping companies”). Besides the survey data, publicly available information has been used.

Project: ChemSAR

Publication year: 2017

Language: English

[Link](#)

Development of the Manual on Conduction of Oil Spill Response Operational Exercise (NOWPAP DELTA)

Summary: This manual was developed to assist the NOWPAP members to more efficiently unify the process of preparing and conducting exercises and based on the experience of conducting the exercises of the NOWPAP members in accordance with the agreement of the 15th NOWPAP MERRAC FPM (May 2012).

Organisations: NOWPAP-MERRAC (Northwest Pacific Action Plan - Marine Environmental Emergency Preparedness and Response Regional Activity Centre)

Publication year: 2016

Language: English

[Link](#)



Oil spill exercises- Good practice guidelines for the development of an effective exercise programme

Summary: This document provides guidance on constructing an exercise programme that is suitable for meeting an organization's or facility's requirements. This guidance is aimed at those persons responsible for ensuring oil spill contingency plans are practised and verified.

Organisations: IPIECA

Publication year: 2016

Language: English

[Link](#)

Public Health Toolkit for Shoreline Response to Maritime Chemical Incidents

Summary: The manual is aimed at emergency responders, planners and public health professionals and aims to provide an overview of key aspects of shoreline incident response, particularly in respect of incidents involving hazardous chemicals (HNS). The manual also provides a collation of usable documents relevant to planning for such events, as well as links to additional reference materials.

Organisations: ARCOPOL Plus project Consortium, Public Health England (PHE)

Project: Atlantic Regions' Coastal Pollution Response (ARCOPOLplus)

Publication year: 2014

Language: English

[Link](#)



Checklists for use in planning, responding and recovery phases

Summary: A series of 14 quick reference checklists for use in planning, responding and recovery phases of shoreline incidents involving hazardous and noxious substances (HNS) and oils. These include: public health management, response plans, toxicological datasheets, Standard Operating Procedures (SOPs), detection and alert, exercise and training, response, public health countermeasures, Personal Protective Equipment (PPE), decontamination, environmental sampling and monitoring, risk communication, recovery and audits.

Organisations: ARCOPOL Plus project Consortium, Public Health England (PHE)

Project: Atlantic Regions' Coastal Pollution Response (ARCOPOLplus)

Publication year: 2013

Language: English

[Link](#)

A Guide to Emergency Planning Arrangements in Northern Ireland

Summary: This is the second edition of the guidance and replaces the version published in 1998. It is intended to act as a framework on which plans can be built in a structured manner so that plans are compatible and easy to build together into an effective response to any emergency, whatever the cause and circumstances.

Organisations: Department of Health, Northern Ireland Health Service

Publication year: 2011

Language: English

[Link](#)

[Link to website](#)



The Exercise Planners Guide

Summary: This publication provides guidance to those who have to design and carry out emergency exercises. Experienced emergency planning officers and safety officers may wish to use it as a check list.

Organisations: Maritime & Coastguard Agency UK

Publication year: 2006

Language: English

[Link](#)

Hazardous Materials Tabletop Exercises Manual

Summary: These tabletop exercises are intended to provide an opportunity for communities to test their ability to respond to hazardous materials (HazMat) incidents. The exercises provide the opportunity to identify the response and coordination issues that could arise during a variety of hazardous materials scenarios and make the decisions to resolve those issues.

Organisations: Federal Emergency Management Agency (FEMA)

Publication year: 2006

Language: English

[Link to manual](#)



Reports

Exercise series PLAN RIBERA

Summary: Full-scale exercises to combat sea pollution, promoted by the Spanish National Authority in the frame of the “Plan Estatal de Protección de la Ribera del Mar contra la Contaminación”, with the implication of the relevant national, regional and local authorities.

Organisations: MITECO (TRAGSA), SASEMAR, DGMM.

Publication years: 2013-2022

Language: Spanish

[Link to website](#)

[Link to Report Exercise Gran Canaria 2018](#)

[Link to Report Exercise Cádiz 2013](#)

[Link to Report Exercise Murcia 2018](#)

[Link to Report Exercise Pontevedra 2014](#)

[Link to Report Exercise Pontevedra 2019](#)

[Link to Report Exercise Tarragona 2014](#)

[Link to Report Exercise Bilbao 2019](#)

[Link to Report Exercise Granada 2015](#)

[Link to Report Exercise Tenerife 2021](#)

[Link to Report Exercise Mallorca 2016](#)

[Link to Report Exercise Cádiz 2021](#)

[Link to Report Exercise Asturias 2016](#)

[Link to Report Exercise Santander 2021](#)

[Link to Report Exercise Valencia 2016](#)

[Link to Report Exercise Mallorca 2021](#)

[Link to Report Exercise Tenerife 2017](#)

[Link to Report Exercise Sálvora 2022](#)

[Link to Report Exercise Huelva 2017](#)

[Link to Report Exercise Cádiz 2022](#)



Exercise series ATLANTIC POLEX

Summary: Full-scale exercises to combat sea pollution, promoted by the Direção de Combate à Poluição of the Portuguese National Maritime Authority.

Organisations: DCPM-AMN (Direção de Combate à Poluição do Mar, Autoridade Marítima Nacional)

Publication years: 2016-2022

Language: Portuguese

[Link to exercise 2016](#)

[Link to exercise 2021](#)

[Link to exercise 2017](#)

[Link to exercise 2022](#)

[Link to exercise 2018](#)

Drills & Exercises EMSA Annual Reports

Summary: To achieve the level of performance for pollution response required by the EMSA, the agency performs regular training, drills, Equipment Condition Tests (ECTs) and exercises. These reports summarise the drills and exercises carried out from 2013.

Organisations: European Maritime Safety Agency (EMSA)

Publication years: 2013- 2022

Language: English

[Link to website](#)

[Link Report 2016](#)

[Link Report 2021](#)

[Link Report 2015](#)

[Link Report 2020](#)

[Link Report 2014](#)

[Link Report 2019](#)

[Link Annex Report 2014](#)

[Link Report 2018](#)

[Link Report 2013](#)

[Link Report 2017](#)



Notification exercises EMSA (2013-2021)

Summary: Notification exercises are usually conducted in conjunction with operational exercises. In addition, 'standalone' notification exercises are occasionally carried out. The aim of these exercises is to test and implement agreed procedures and lines of communication for reporting incidents and for requesting and providing assistance. These exercises are usually launched by the Member States.

Organisations: European Maritime Safety Agency (EMSA)

Publication year: 2013- 2021

Language: English

[Link to Annual Reports](#)

BALEX Delta exercises (2022- 1990)

Summary: HELCOM BALEX exercises aim to test the procedures documented in the HELCOM Response Manual and response capability of the Contracting Parties in case of a major accident and an international response operation.

Organisations: HELCOM (Baltic Marine Environment Protection Commission – Helsinki Commission)

Publication year: 1990- Present

Language: English

[Link to full list](#)

[Link to Balex Delta 2012](#)

[Link to Balex Delta 2013](#)

[Link to Balex Delta 2014](#)

[Link to Balex Delta 2018](#)



Joint industry/government IMS 300 training and exercise

Summary: A national training on Incident Management Systems 300 (IMS 300) was organized for Remote Online Delivery from Tuesday 20th to Wednesday 22nd July 2021. It was followed by a one-day exercise facilitated by Shell and Total Energies. The training and exercise gathered the key stakeholders in the National Oil Spill Contingency Plan from different government ministries, agencies and authorities, as well as non-government organizations and Industry.

Organisations: Global Initiative West Africa Coastal Areas Framework (GIWACAF)

Publication year: 2021

Language: English

[Link](#)

Exercises ANED-POLMAR

Summary: Exercises of assistance to vessel in difficulty (ANED) and maritime pollution (POLMAR) organized by the French maritime prefectures. This exercises were implemented as part of the annual training planned by the civil security response organization (ORSEC) at sea.

Organisations: Premar de la Manche et de la mer du Nord, Premar Atlantique, Premar Méditerranée.

Publication year: 2021- 2006

Language: French

[Link of exercises Premar-Atlantique](#)

[Link to exercise POLHARBOR 2021](#)

[Link to exercise ANED POLMAR 2019](#)

[Link to exercise Atlantique 2017](#)

[Link to exercise Antipol 2017](#)

[Link to exercise Polmar 2017](#)

[Link to exercise Gascogne 2016](#)

[Link to exercise ANED-POLMAR 2016](#)

[Link to exercise POLMAR 2015](#)

[Link to exercise Roches-Douvres 2015](#)

[Link to exercise MANCHEX 2014](#)

[Link to exercise ORSEC POLMAR 2012](#)

[Link to exercise POLLUX 2006](#)



Exercises RAMOGEPOL

Summary: The RAMOGE Agreement is an intergovernmental cooperation agreement between the French, Italian and Monegasque States for the conservation of the marine environment. Every year, coordinated RAMOGEPOL exercises are organized to simulate accidental pollution with the aim of optimizing the use of the means of intervention mobilized by the three countries to combat marine pollution.

Organisations:

Publication year: 2022- 1993

Language: French, Italian

[Link to project website](#)

POLMAR WORKSHOP 2021

Summary: Tuesday October 5, 2021, anti-pollution experts from the French Navy and fishermen from La Turballe took part in a workshop organized jointly by the maritime prefecture of the Atlantic and the delegation to the sea and at the coast (DML) of the Departmental Directorate of Territories and the Sea (DDTM) of Loire-Atlantique.

Organisations: Préfecture maritime de l'Atlantique

Publication year: 2021

Language: French

[Link to newsletter](#)



ARRT Table top exercise 2020

Summary: Exercise simulation a discharge from Trans Alaska Pipeline System to Yukon River.

Organisations: Alaska Regional Response Team (ARRT)

Publication year: 2020

Language: English

[Link](#)

[Link to player manual](#)

UK National Contingency plan exercises: CELTIC DEEP (2020), SHEN (2018), GREY SEAL (2016), DRAGON (2014).

Summary: Multi-agency exercises to test the United Kingdom's (UK) response to a major shipping incident within the UK Exclusive Economic Zone (EEZ).

Organisations: Maritime & Coastguard Agency UK

Publication years: 2020- 2014

Language: English

[Link to exercise Celtic Deep](#)

[Link to exercise Shen](#)

[Link to exercise Grey Seal](#)

[Link to exercise Dragon](#)



Exercise MASE POLMAR 2019

Summary: The MASE POLMAR 2019 exercise is a pilot regional action led by the Indian Ocean Commission through the European Union-funded Regional Maritime Safety Programme.

Organisations: Indian Ocean Commission

Publication year: 2019

Language: English

[Link](#)

Table Top Exercise on the EU Operational Guidelines - Places of Refuge (2013- 2019)

Summary: Reports on the Table Top Exercises - Places of refuge from 2013 to 2019.

Organisations: European Maritime Safety Agency (EMSA)

Publication years: 2013- 2019

Language: English

[Link Report Exercise Rotterdam 2013](#)

[Link Report Exercise Malta 2015](#)

[Link Report Exercise Norway 2017](#)

[Link Report Exercise Gran Canaria 2019](#)



Real scale exercise in Senegal (SAMAREX 2019)

Summary: The “SAMAREX 2019” oil spill deployment exercise is organized by the Senegalese authorities with the objective to test their National Oil Spill Contingency Plan in line with the recommendations edited by the International Maritime Organization.

Organisations: Global Initiative West Africa Coastal Areas Framework (GIWACAF)

Publication year: 2019

Language: English

[Link](#)

Transboundary oil spill response exercise between Angola and Namibia (2019)

Summary: This workshop and table top exercise was held simultaneously in Luanda and Walvis Bay from 6th to 9th August 2019, with the intention to test key issues related to trans-boundary spill incidents such as communication between Angola and Namibia, assistance mechanisms, the mobilization of international resources and the provisions of respective national plans that would be activated in the case of trans-boundary oil spill incidents.

Organisations: Global Initiative West Africa Coastal Areas Framework (GIWACAF)

Publication year: 2019

Language: English

[Link](#)



List of exercises carried out - REMPEC (2018-1999)

Summary: Reports on the exercises from 1999 to 2018. Including links to:

- Regional Alert Exercise, "MEDIPOLEX 99", December 1999.
- Communication Exercise (Sophisticated Test) between REMPEC and SET/Porto Marghera, Italy, June 2003.
- Exercise SYREX 2003: Syrian National Oil Spill Response Exercise, December 2003.
- Communication Exercise (Sophisticated Test) between REMPEC and the Spanish ICE Center (Civil Protection Unit), June 2004.
- Regional Alert/Communication Exercise, "MEDIPOLEX 04", December 2004.
- Communication Exercise (Sophisticated Test) between the (MEPD, Greece), REMPEC (liaison centre) and the German ICE Center (BASF), December 2006.
- Communication Exercise (Sophisticated Test) between the (EEAA, Egypt), REMPEC (liaison centre) and the UK ICE Center (NCEC), October 2008.
- Coordinated Surveillance Operation in the Western Mediterranean (OSCAR-MED) organized by REMPEC in cooperation with Italy, France and Spain, October 2009.
- Communication Exercise for the activation of the Mediterranean Assistance Unit (MAU), carried out between Israel, REMPEC and Federchimica, December 2009.
- MALTEX 2012, Malta, September 2012.
- RAMOGEPOL HAVEN 2011, Italy, October 2011.
- Istanbul Oil Spill National Exercise, Istanbul Turkey, September 2011.

Organisations: Regional Marine Pollution Emergency Response Centre for the Mediterranean Sea (REMPEC)

Publication years: 1999- 2018

Language: English

[Link](#)



BALEX DELTA 2018 information booklet

Summary: This booklet serves as guide to the BALEX DELTA 2018 exercise that simulates a cargo ship running aground in harsh weather, causing it to loose containers with chemicals and breach its hull. It contains, a wealth of background information about the exercise. It also encompasses general information about the event and Karlskrona.

Organisations: BALEX DELTA 2018_HELCOM

Project: BALEX DELTA 2018 Project

Publication year: 2018

Language: English

[Link](#)

BALEX DELTA 2018: Main Exercise Evaluation

Summary: Report evaluating the exercise

Organisations: BALEX DELTA 2018_HELCOM

Project: BALEX DELTA 2018 Project

Publication year: 2018

Language: English

[Link](#)



Exercises NEMESIS

Summary: Full-scale multinational Exercises taken place annually within the Exclusive Economic Zone of the Republic of Cyprus, with the aim of training fight against marine pollution.

Organisations: JRCC Larnaca, EMSA.

Publication year: 2014- 2021

Language: English

[Link to Exercise Nemesis 2018](#)

[Link to Exercise Nemesis 2020](#)

[Link to Exercise Nemesis 2019](#)

[Link to Exercise Nemesis 2021](#)

SEA-PT Exercises Reports (2017- 2013)

Summary: Series of exercise report developed by the Shannon Estuary Anti-pollution Team (SEA-PT) as part of their exercise programme from 2013 to 2017. SEA-PT consists of the Port Company, Local Authorities, Offshore Industry and Oil Importers and was initiated to form a unified coordinated response to pollution incidents on the Shannon Estuary.

Organisations: Shannon Estuary Anti-pollution Team

Publication years: 2017-2013

Language: English

[Link to exercise Cathach 2013 Report](#)

[Link to exercise Deer Island 2014 Report](#)

[Link to exercise Fenit 2015 Report](#)

[Link to exercise HNS 2016 Report](#)

[Link to exercise Limerick 2016 Report](#)

[Link to exercise County Clare 2017 Report](#)



MIRG Exercises 2016

Summary: Table Top and Full Scale Exercises to test response capacities and coordination of representatives of the English, French, Belgian and Dutch MIRGs, MRCC's and the European Civil Protection organisation.

Organisations: MIRG-EU project consortium

Publication year: 2016

Language: English

[Link to Table Top Exercise information](#)

[Link to Full Scale Exercise information](#)

[Link to Full Scale Exercise Video](#)

Exercises to check efficiency of Local Contingency Plans implemented in the frame of ARCOPOL Plus: Exercises in Galicia

Summary: Several training exercises organised by INTECMAR, GardaCostas de Galicia (CMRM) and other relevant institutions for training the tools developed by ARCOPOL team, such as the dispersion models (in air and at sea), 3D Barriers models, ARCOPOL viewers, and for checking the existing HNS know how and communications. Moreover, besides these ARCOPOL exercises, others organized by NETMAR Project and SASEMAR were also used to test ARCOPOL tools. This report contains a brief description of the exercises, as well as all the documentation and debriefings when available.

Organisations: ARCOPOL project Consortium.

Project: ARCOPOLplatform

Publication year: 2015

Language: Spanish / Galician

[Link](#)



Command and control exercises for response to HNS spills.

Summary: NMCI (National Maritime College of Ireland) developed command and control exercises for response to HNS spills in the following areas:

- (1) HNS spill at sea near a special area of conservation.
- (2) Potential HNS incident in port.
- (3) HNS event at the entrance to a busy port.

These exercises have been validated by the Irish Naval Service.

Organisations: ARCOPOL project Consortium.

Project: Atlantic Regions' Coastal Pollution Response (ARCOPOL)

Publication year: 2015

Language: English

[Link](#)

Celtic Coast Exercise

Summary: The aim of the exercise was to test response arrangements/plans to maritime pollution incidents in Dyfed Powys as well as test the primacy/interaction between the MCA's National Contingency Plan & the CCA. The scenario revolved around a collision between an oil tanker and a container ship just off the Pembrokeshire Coast (Wales, UK).

Organisations: ARCOPOL project Consortium.

Project: Atlantic Regions' Coastal Pollution Response (ARCOPOL)

Publication year: 2011

Language: English

[Link](#)



Training activity /Learning module

Training Package on HNS spill Management

Summary: PowerPoint presentations and posters in pdf format covering training for responders on general aspects of HNS, incident prevention and preparedness, incident response and post-crisis actions. Topics covered include maritime transport, regulations, accident causes, chemical behaviour, and marine and shoreline response techniques for the different vessels transporting HNS, responder protection, environmental monitoring, communications and compensation funds.

Organisations: MARINER project Consortium.

Project: MARINER

Publication year: 2018

Language: English

[Link](#)

Course IS-120.C: An Introduction to Exercises

Summary: The Course Objectives include: Develop a baseline knowledge of exercise fundamentals. Identify the tasks necessary to complete each phase of the exercise process. Define how exercises complete the preparedness process. Identify the role of exercises in validating capabilities. Identify phases of exercise evaluation and the improvement planning process.

Organisations: Federal Emergency Management Agency (FEMA)

Publication year: 2018

Language: English

[Link](#)



Course I IS-130.A: How to be an Exercise Evaluator

Summary: This Independent Study course is a new offering that introduces the basics of emergency management exercise evaluation and improvement planning. It also provides the foundation for exercise evaluation concepts and practices as identified in the Homeland Security Exercise and Evaluation Program.

Organisations: Federal Emergency Management Agency (FEMA)

Publication year: 2018

Language: English

[Link](#)

Jornada: La contaminación marítima por sustancias químicas y su integración en los Planes de Contingencia en Galicia

Summary: These presentations were used in the conference organized on May 19, 2015 at the CETMAR facilities (Vigo). The objective of the seminar was to point out the dangers involved in the transport of chemical substances and to make known the tools available to improve our preparation to deal with a maritime spill of these substances.

Organisations: ARCOPOL project Consortium.

Project: Atlantic Regions' Coastal Pollution Response (ARCOPOL)

Publication year: 2015

Language: Spanish

[Link](#)



Enhancing public health awareness, preparedness and response to shoreline maritime chemical incidents

Summary: Workshops in UK, Ireland and Spain aiming to enhance working knowledge of all phases of maritime shoreline incident response with a specific focus on public health implications from oil and HNS, via interactive presentations, e-learning and exercise scenarios.

Organisations: ARCOPOL project Consortium.

Project: Atlantic Regions' Coastal Pollution Response (ARCOPOL)

Publication year: 2015

Language: English / French / Spanish

[Link](#)

Documents for exercises: Tempest series

Summary: The intention of this series of maritime exercises is to exercise and evaluate the immediate and ongoing response of emergency services, maritime agencies and public health organisations to a chemical incident of public health concern. The Tempest exercises are available in an exercise pack.

Organisations: ARCOPOLplus project Consortium.

Project: Atlantic Regions' Coastal Pollution Response (ARCOPOLplus)

Publication year: 2014

Language: English

[Link](#)



E-learning: Management of Maritime Shoreline Incident Response

Summary: This course offers an overview of chemical incidents, the potential health and environmental consequences of shoreline incidents; how such risks can be reduced through co-ordinated planning and preparedness, and the impact mitigated through effective response.

Organisations: ARCOPOLplus project Consortium.

Project: Atlantic Regions' Coastal Pollution Response (ARCOPOLplus)

Publication year: 2014

Language: English /Portuguese

[Link English \(CardiffMet\)](#)

[Link Portuguese \(CIIMAR\)](#)

Case studies

Summary: These are 8 case studies to illustrate approaches adopted in incident management, including the “Exercise Celtic Coast” case study.

Organisations: ARCOPOLplus project Consortium.

Project: Atlantic Regions' Coastal Pollution Response (ARCOPOLplus)

Publication year: 2014

Language: English

[Link](#)



Course IS-5.A: An Introduction to Hazardous Materials

Summary: This Independent Study course is intended to provide a general introduction to hazardous materials that can serve as a foundation for more specific studies in the future.

Organisations: Federal Emergency Management Agency (FEMA)

Publication year: 2013

Language: English

[Link](#)

HNS Training Manual

Summary: This Manual consists of three volumes: Vol. 1 is the introductory level of the training course and it has the purpose of giving sufficient preparedness for and response to marine HNS incidents to the participating trainees; Vol. 2 aims to bring trainees to managerial level, and to provide them with the capacity to function as administrators and/or senior managers that can deal with incidents involving HNS promptly, properly, effectively, and successfully. Vol. 3 focuses on the operational level and aims to train students to acquire skills and knowledge for responding to and handling HNS incidents.

Organisations: Northwest Pacific Action Plan - Marine Environmental Emergency Preparedness and Response - Regional Activity Centre (NOWPAP-MERRAC)

Publication year: 2011

Language: English

[Link](#)



Scientific publications

UUV's in Maritime Spill Response Exercise Cathach

Summary: Exercise Cathach was a large training exercise which utilised and evaluated the use of Unmanned Underwater Vehicles (UUV's) and sensors in a maritime spill Incident involving oil and harmful and noxious substances (HNS). The exercise was a first in terms of the level of robotic systems deployed to assist in survey, surveillance and inspection roles, assessing the scene in real-time before committing first responders for respond and recover operations. The evaluation showed the effectiveness of these technologies to operate in harsh conditions and the efficiency and usability of the real-time data from operations in the field.

Organisations: Shannon Estuary Anti-pollution Team

Publication year: 2015

Language: English

[Link](#)

Services /Tools

Exercise Simulation System Document (ESSD)

Summary: The ESSD is a compilation of information and resources that would typically be available in any community as they respond to and manage an emergency or disaster. The ESSD provides support for exercises ranging from the very simple to increasingly complex with participation of all levels of government (i.e., Federal, State, territorial, Indian, county, and local). When combined with scenarios, the ESSD facilitates the Incident Action Planning process and allows students to practice the on-scene and off-scene coordination required by the National Incident Management System (NIMS) within the structure of an Emergency Operations Center (EOC).

Organisations: Federal Emergency Management Agency (FEMA)

Publication year: 2020

Language: English

[Links](#)



ChemSAR eLearning environment and materials

Summary: ChemSAR presents operational plan (OP) and standard operational procedures (SOPs), learning materials, chemical data portal, simulation game, and other supporting links on hazardous and noxious substances (HNS) incidents at sea. These eLearning materials are supplementary to already existing SAR materials, e.g., national guidelines, SAR education and training as well as the International Aeronautical and Maritime Search and Rescue Manual by the International Maritime Organization.

Organisations: ChemSAR project Consortium, Baltic Sea Region.

Project: ChemSAR- Operational plans and procedures for maritime search and rescue in hazardous and noxious substances (HNS) incidents

Publication year: 2019

Language: English

[Link](#)

ARCOPOL Web tool

Summary: Web viewer based on an open client built by INTECMAR for Galicia (NW Spain) that shows over a map all the information needed by the response manager during the emergency operations. This viewer is able to display static data (coastline, ESI line, special protected areas, etc), model results (winds, currents, spills) and observations (drifter tracks, pictures, spill observations etc.). This web is fed by several OGC services as WMS and WFS and other as THREDDS or Opendap and obtain data from different geodata bases and servers of Galician agencies (INTECMAR, MeteoGalicia). The last upgrades include two new functionalities: the visualization of the atmospheric plume dispersion modelled with ALOHA (for accidents producing toxic clouds) and a search tool for places' names (beaches, capes, towns etc).

Organisations: ARCOPOL project Consortium.

Project: Atlantic Regions' Coastal Pollution Response (ARCOPOL)

Publication year: 2015

Language: Spanish

[Link](#)



Dissemination materials

HSEEP Video Series

Summary: FEMA has developed a series of short videos that provide a brief overview of topics related to the design, development, conduct, and evaluation of exercises.

Organisations: Federal Emergency Management Agency (FEMA)

Publication year: 2021

Language: English

[Link](#)

Multimedia

BALEX Delta exercises video series

Summary: Video series with an insight of one of the world's largest Maritime Response exercise taking place in the Baltic Sea and preparing for major oil and chemical spills.

Organisations: HELCOM

Publication year: 2005- present

Language: English

[Link to full list](#)

[Link Exercise Sweeden 2005](#)

[Link Eexercise Poland 2006](#)

[Link Exercise Estonia 2007](#)

[Link Exercise Lithuania 2010](#)

[Link Exercise Latvia 2014](#)

[Link Exercise Poland 2015](#)

[Link Exercise Sweeden 2018](#)

[Link Exercise Estonia 2020](#)

[Link Exercise Finland 2021](#)

[Link Exercise Germany 2022](#)



Video Exercise ANED POLMAR POLHARBOR 2021

Summary: On Wednesday September 29 and Thursday September 30, 2021, an “Assistance to Vessel in Trouble (ANED) and Pollution Response at Sea (POLMAR)” exercise took place off Le Havre. Organized jointly by the maritime prefecture of the Channel and the North Sea, the prefecture of Seine-Maritime and HAROPA PORT, in connection with the prefecture of the Western defense and security zone.

Organisations: Préfecture maritime de la Manche et de la mer du Nord, Préfecture de la Seine-Maritime & HAROPA PORT

Publication year: 2021

Language: French, English

[Link](#)

Video: Dealing with HNS spills at sea

Summary: This video highlights the main aspects to consider when dealing with HNS spills at sea. It shows in a friendly way different techniques that can be used when a HNS spill takes place. The video contains animated frames combined with real images from the field exercises organised in the frame of MARINER project and also during the international exercise SCOPE 2017 and the Spanish national exercise HUELVA 2017.

Organisations: MARINER project Consortium

Project: MARINER

Publication year: 2018

Language: English

[Link](#)



BONNEX Delta 2013 exercise video

Summary: The Bonn Agreement held its main counter pollution response exercise BONNEX Delta in Cherbourg in 2013. This video outlines the full exercise from briefing to completion.

Organisations: Bonn Agreement Secretariat

Publication year: 2014

Language: English

[Link](#)

Video explaining the experiments and use of drifters to follow slicks

Summary: The aim of this video is to warn fishermen and other sectors about the use of drifters and their importance in combatting marine pollution.

Organisations: DRIFTER Project consortium

Project: DRIFTER, DRIFTER: HNS, Oil and Inert Pollution: Trajectory Modelling and Monitoring

Publication year: 2010

Language: Spanish

[Link](#)