GENIUS MANIFESTS

FROM GASES AND EVAPORATORS RISK ASSESSMENT
TOWARDS AN INTEGRATED MANAGEMENT OF SEA
AND LAND POLLUTION INCIDENTS

# PROJECT TOOLS

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# MANIFEST Genius

## PROJECT TOOLS

## INDEX


Introduction....2
Niovelius – Serious Game....4
Exercise Tool....6
Exercise Tool Lite - Collaborative Version....8
Mariner-Manifests Knowledge Tool....10
MOHID Model – HNS Module....12
Explosion Model....14
Fire Model....16
HNS Database....18
OSERIT HNS....20
Rising Underwater Gas Plume Model....22
Operational Field Guide - Protecting Communities From Maritime Incidents Involving Airborne Pollutants....24
COP Tool 2.0....26

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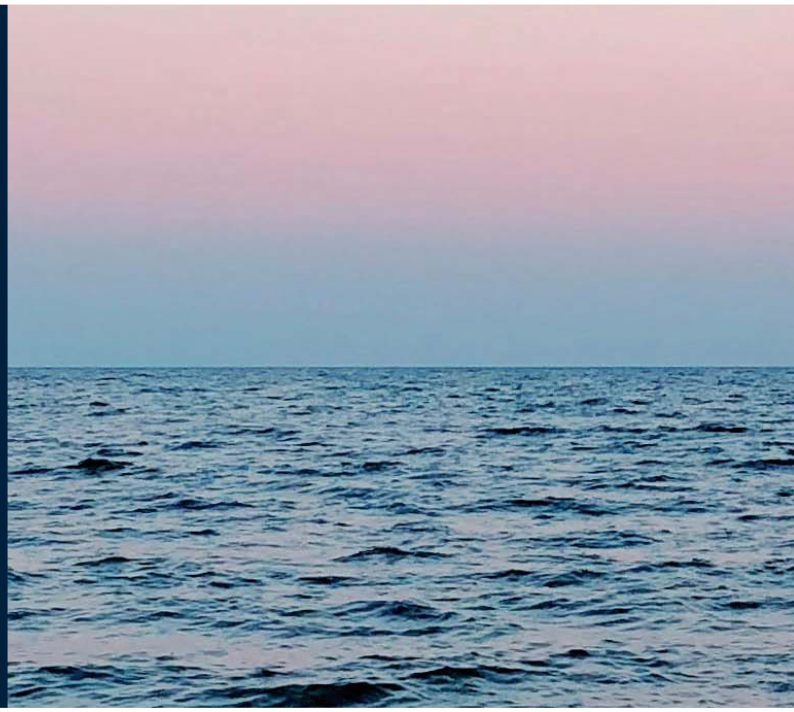


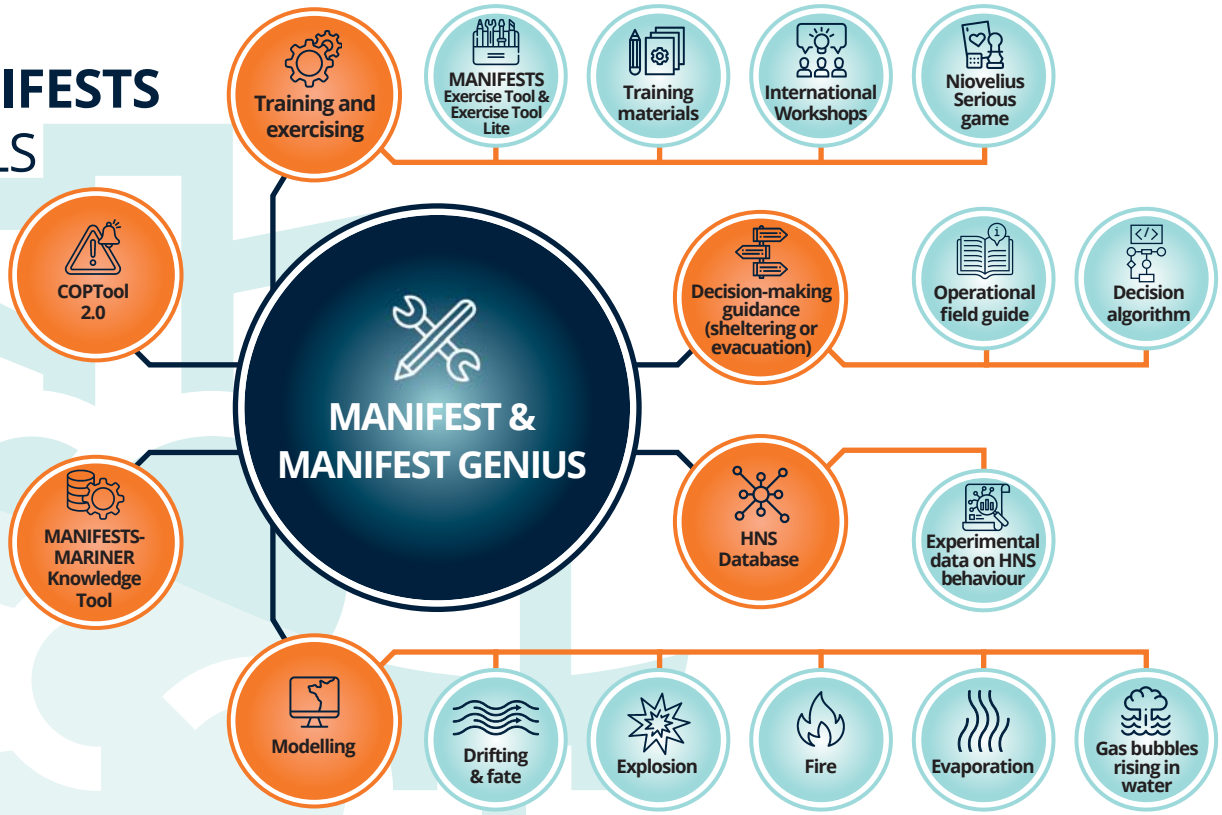
# **MANIFESTS GENIUS** IN A NUTSHELL

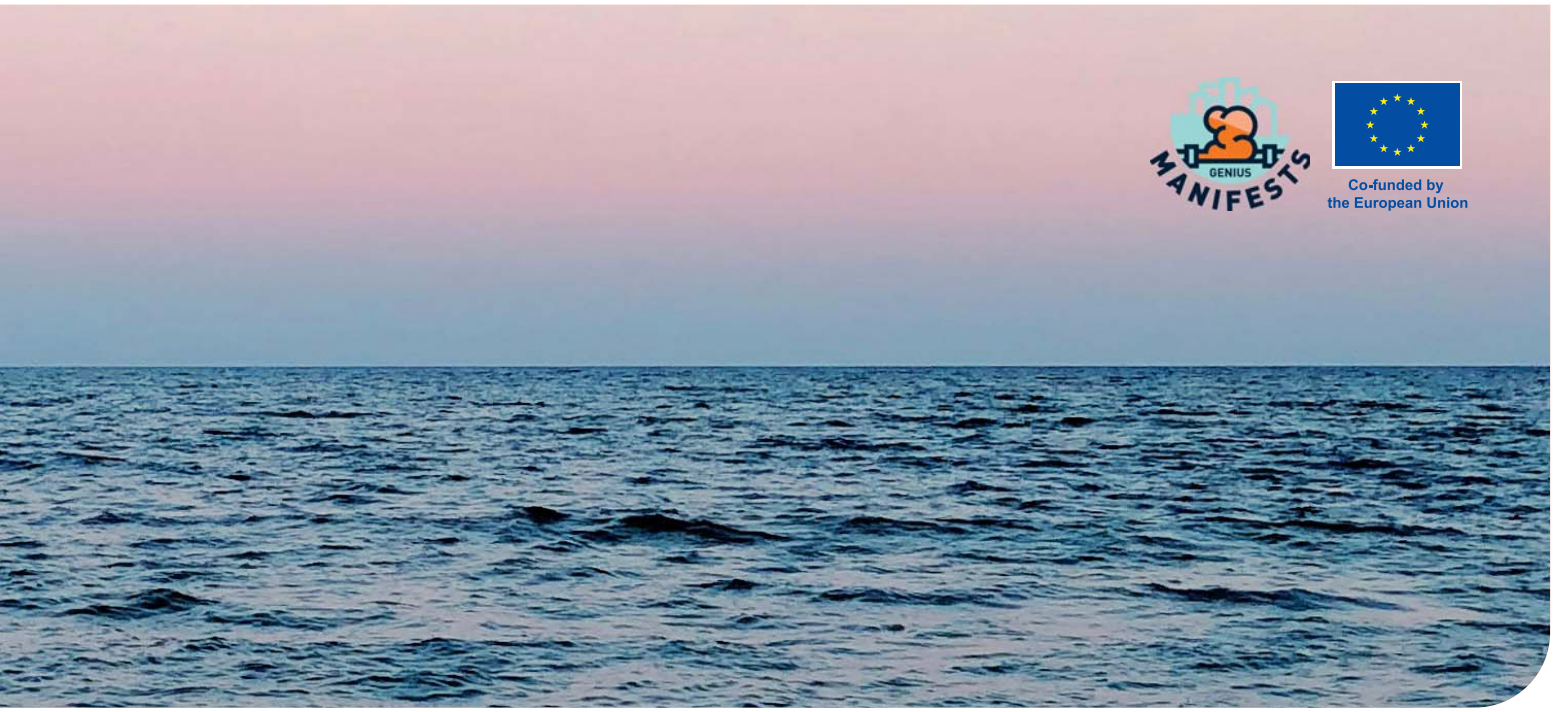
Building on the MANIFESTS project outcomes, the MANIFESTS Genius project (Dec 2023 - Nov 2025) aims to strengthen preparedness and response capabilities for integrated management of coastal water pollution.

The main focus is on the release of Hazardous & Noxious Substances (HNS), including alternative fuels such as ammonia, methanol and Liquefied Natural Gas (LNG), and lithium-ion batteries, as they have the potential to form a toxic gas cloud, which could potentially drift towards the shoreline and impact local communities. It considers two scenarios: subsurface pipeline leaks and surface leaks from coastal facilities.

**This document highlights the project outputs available publicly. To learn more about the project please visit the project website.**

# THE **MANIFESTS** TOOLS





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Over the years, numerous decision-support tools—such as prediction models, decision charts, and data platforms—have been developed to assist Pollution response Authorities in managing marine pollution incidents. However, these tools often risk being underused or forgotten after a project ends due to information overload, lack of awareness about their existence, or uncertainty about how to access and apply them effectively in real-world situations.

This is why training is crucial. It ensures that users not only know where to find these tools but also understand how to extract meaningful, operational information from them. To address this, dedicated training and dissemination materials that clearly demonstrate the practical use of the MANIFESTS Genius decision-making tools were developed. These resources are designed to guide users, promote active engagement, and encourage feedback.

As part of each training session or workshop, participants will receive this booklet containing concise factsheets that describe each tool of the MANIFESTS Genius Decision Support System (DSS). The aim is to ensure the tools are clearly understood, widely promoted, and confidently used by stakeholders well beyond the duration of the project.

## THE **SPECIFIC OBJECTIVES** OF THE MANIFESTS GENIUS PROJECT ARE:

**01.** Assess the behaviour and impacts of gaseous HNS released in coastal waters and in a subsurface leak.

**02.** Provide information to assist stakeholders in developing emergency plans for pipelines ammonia-based refrigeration systems.

**03.** Strengthen information sharing for coordinated land-sea responses.

**04.** Train stakeholders on decision-making tools from MANIFESTS Genius and related projects.

# NIOVELIUS – Serious Game

## AUTHORS

Bony-Dandrieux Aurélia, Bouillet Philippe, Tixier Jérôme, Secheppet Mélanie

## ACCESS/DOWNLOAD AT

https://github.com/MANIFESTS-SG-Niovelius/1.0/


IMT Mines Alès
École Mines-Télécom

## APPLICATION AND USE

### Purpose/objective of the tool

The **Niovelius serious game** has been developed to help crisis managers deal with accidental HNS pollution. Trainees apply to become investigators in a team specialised in the fight against pollu-criminals responsible for serious crimes against the seas and oceans. The aim is to understand the issues related to pollutants spilled in the maritime environment and to learn the different phases of crisis management, by working in a collaborative manner.

### Applications of this tool

- Characterisation and knowledge of HNS
- Management of crisis and decision making
- Contingency planning and guidance
- Training and exercising

### Key features and functionalities

Niovelius is a serious game to help crisis managers deal with accidental HNS pollution (develop knowledge on the behavior of HNS accidentally spilled at sea, discover phases of marine pollution management and its main actors). Niovelius is an hybrid game based on both physical elements and a digital application designed to multiply learning methods and encourage playfulness.

### Results or outputs produced

The Niovielus tool is a serious training game for managing pollution at sea.



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# NIOVELIUS – Serious Game

## TECHNICAL REQUIREMENTS

### Operating system required

Microsoft Windows

### Devices the tool can run on

- PC
- Tablet

### Hardware requirements

Basic computer

## TARGET AUDIENCE

### End-users

- Authorities and companies with the legal responsibility of implementing contingency plans
- Port and maritime authorities
- Consultancies
- Education and training professionals
- Emergency responders (Civil protection, firefighters, army, police officers, etc.)
- Students
- Civil society

### Knowledge background required

The game is aimed at people who are interested in accidental releases of chemicals at sea (HNS) and who want to gain a better understanding of the operational and crisis management of such events. Few prerequisites are required. The aim is to gain a better understanding of the behaviour of products accidentally discharged at sea and to identify the different phases in the management of this type of event.

## ACCESS

### Permissions required

The tool is open to the public.

## USER GUIDANCE

### User guides or manuals available

All information concerning use of the game and installation of the Niovelius software in the «Facilitation Booklet» file (https://github.com/MANIFESTS-SG-Niovelius/1.0/ ).
Printable documents in different files: Printable materials, SEBC, Hazards pictograms, Timeline, badge documents.
The facilitator is supported in organising the game with the Facilitation booklet, the Solutions Booklet and the Briefing documents.

## FEEDBACK

### Support email

aurelia.bony-dandrieux@mines-ales.fr
Philippe.bouillet@mines-ales.fr

# EXERCISE TOOL


## AUTHORS

Marisa Fernández, Raquel Diez, Rula Domínguez (CETMAR), Garbiñe Ayensa, Pedro Montero, Silvia Allen-Perkins (INTECMAR), Centro Jovellanos


## ACCESS/DOWNLOAD AT

https://exercisetool.cetmar.org


## APPLICATION AND USE

### Purpose/objective of the tool

The main objective of the **MANIFESTS Exercise Tool** is to strengthen training and exercise capacities of response organisations by providing knowledge, guidance and resources to prepare, develop and evaluate marine pollution response exercises. It also facilitates the creation of exercise programs, enabling replication, lesson learning and collaboration with other organisations.

### Applications of this tool

- Contingency planning and guidance
- Operational response
- Training and exercising

### How to use it

Each function is accessible on the website from its specific section.

While the Basic principles and Database are completely open and downloadable, the Exercise formulation tools and Agenda are available under three modalities:

1. Create user account: you will be able to create, save and manage your exercises and upload related documentation.
2. Enter as guest user: you will be able to use all functionalities of the tool and download reports created during the session, but data will be deleted within the next 24 hours.
3. Set-up the tool in a local server: contact **manifeststool@cetmar.org**. In this case the user would not receive the updates made in the Database or any other section.

### Key features and functionalities

The exercise tool consists of four functionalities:

1. Basic principles of exercising, describing the fundamentals of this topic and other support information, including definition of terms, exercise typology and classifications proposed by relevant organizations in the field of marine pollution. It also contains checklists, templates and examples of the documents required for formulation of exercises, as well as links to reference manuals and relevant information on HNS.
2. The Exercises Database, an online repository providing easy access to information from more than 150 exercises and to the associated documentation extracted from international, EU and national organisations working in the field of maritime pollution and chemical spills.
3. An Agenda, for users to plan their programme of exercises and create customized alerts for each task.
4. The Exercise Formulation Tools, where the user can produce customised documentation including checklists, formularies for injects, briefing and debriefing reports, and evaluation forms that can be downloaded.

The Tool is available in four languages: English, French, Portuguese and Spanish.

### Results or outputs produced

The user can produce, store, send or download their own exercise reports, checklists, feedback forms, and any other exercise documentation with private information as material lists, pictures, etc.



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# EXERCISE TOOL

## TECHNICAL REQUIREMENTS

### Devices the tool can run on

- PC
- Tablet
- Mobile devices

### Hardware requirements

A regular server

## TARGET AUDIENCE

- Authorities and companies with legal responsibility of implementing contingency plans
- Port and maritime authorities
- Coastguards
- Scientific Community
- Consultancies
- Education and training professionals
- Emergency responders (Civil protection, firefighters, army, police officers, etc.)
- Environmental managers
- Industry
- Environmental associations and NGOs
- Students
- Civil society

## ACCESS

### Permissions required

The tool is open to the public.

The **MANIFESTS Exercise Tool** offers the possibility to be registered as permanent user or not.

- Registered users will be able to create a program of exercises in the AGENDA, set-up alarms that will be received by email, develop new exercises using the online TOOL, and save their data so they can retrieve it to create new exercises. Besides, they will be able to upload, save and edit data and documentation.
- Unregistered users will be able to use all functionalities of the TOOL and download reports created during the session; however, their data will be deleted within the next 24 hours.

Both types of users and the general public can access the BASIC PRINCIPLES and DATABASE without any restriction.

On the website, when accessing the TOOL or AGENDA, the user has the option to log in as guest user or to create a permanent user account, related to an email address.

## UPDATES AND NEW FUNCTIONALITIES

Updates of information in the DATABASE section are periodically conducted.

## USER GUIDANCE

### User guides or manuals available

Each section on the website has explanatory text for the users.

## FEEDBACK

### Support email

manifeststool@cetmar.org

# EXERCISE TOOL LITE - COLLABORATIVE VERSION


## AUTHORS

Marisa Fernández, Raquel Diez, Rula Domínguez (CETMAR), Garbiñe Ayensa, Pedro Montero, Silvia Allen-Perkins (INTECMAR)


## ACCESS/DOWNLOAD AT

https://exercisetool.cetmar.org/


## APPLICATION AND USE

### Purpose/objective of the tool

The Exercise Tool Lite is an optimized and streamlined tool derived from the **MANIFESTS Exercise Tool**. As a lite, simplified, and user-friendly version, it offers selected key features of the Exercise tool module and provides a collaborative platform for coordinating the formulation of exercises by responsible organisations.

### Applications of this tool

- Training and exercising
- Contingency planning and guidance
- Operational response

### How to use it

The tool guides users in the formulation of exercises through a series of steps and associated forms in which information can be entered regarding location, background, scenario, resources, equipment used, etc. Once exercises have been performed, users will be able to evaluate the different aspects of the exercise. Key information and resources from previous exercises can be stored and used in the formulation of new ones.

### Key features and functionalities

The **Exercise Tool Lite** has the following functionalities:

1. Design, preparation and evaluation of exercises
2. Multiple users: the tool allows multi-agency collaboration. It facilitates information sharing to support coordination during the development of exercises.
3. Customizable outputs: it generates reports using the information provided in the tailor-made forms.
4. The Tool is available in two languages: English and Spanish

### Results or outputs produced

Collaborative environment to create and evaluate exercises.
Full record of all the steps of the exercises created.
Users will be able to create and share briefing and debriefing reports based on the information included in the different sections of forms of the tool.



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# EXERCISE TOOL LITE – COLLABORATIVE VERSION

## TECHNICAL REQUIREMENTS

### Devices the tool can run on

- PC
- Tablet
- Mobile devices

### Hardware requirements

A regular server

## TARGET AUDIENCE

- Authorities and companies with legal responsibility of implementing contingency plans
- Port and maritime authorities
- Coastguards
- Scientific Community
- Consultancies
- Education and training professionals
- Emergency responders (Civil protection, firefighters, army, police officers, etc.)
- Environmental managers
- Industry
- Environmental associations and NGOs
- Students
- Civil society

## ACCESS

The Exercise Tools allows users either to register as permanent users or to access it as guest users:

- Registered users can save their exercises and reports, replicate exercises based on previous records, and upload, save, and edit data and documentation.
- Guest users can use all the tool's functionalities and download the reports created during their session, but their data will be deleted within 24 hours.

Additionally, organisations interested in deploying the tool in their local server may contact manifeststool@cetmar.org to request a portable version for their internal use.

## USER GUIDANCE

### User guides or manuals available

Information explaining how the tool works and outlining its functionalities is available in the About section.

## FEEDBACK

### Support email

manifeststool@cetmar.org

# MARINER-MANIFESTS KNOWLEDGE TOOL

## AUTHORS

Marisa Fernández, Raquel Diez (CETMAR)

## ACCESS/DOWNLOAD AT

https://knowledgetool.mariner-project.eu/


CETMAR

## APPLICATION AND USE

### Purpose/objective of the tool

The **MMKT** is an online repository that allows access to a comprehensive compilation of marine research and technical resources specifically focused on the preparedness and response to HNS spills.

### Applications of this tool

- Characterisation and knowledge of HNS
- Management of crisis and decision making
- Contingency planning and guidance
- Operational response
- Modelling
- Risk assessment
- Training and exercising

### How to use it

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 800 records (click on “Resources").

To download the list of searched results the user can select the formats (XLS, CSV, RTF, PDF) and the fields to be shown. Some and statistics are also downloadable as PNG file.

Besides, in each section, the user can add a new resource, which will be validated by the administrators.

### Key features and functionalities

User-friendly online database with search functions to access an inventory of HNS preparedness and response resources generated in the frame of research projects (i.e. Knowledge Outputs) or by specialised organisations.

List of searched results can be downloaded in different formats (XLS, CSV, RTF, PDF), with the possibility to select the fields to be shown. Also, some and statistics are downloadable as PNG file.

Function for the user to add new resources.



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# MARINER-MANIFESTS KNOWLEDGE TOOL

## TECHNICAL REQUIREMENTS

**Devices the tool can run on**

- PC
- Tablet
- Mobile devices

## TARGET AUDIENCE

- Authorities and companies with legal responsibility of implementing contingency plans
- Port and maritime authorities
- Coastguards
- Scientific Community
- Consultancies
- Education and training professionals
- Emergency responders (Civil protection, firefighters, army, police officers, etc.)
- Environmental managers
- Industry
- Environmental associations and NGOs
- Students
- Civil society

## ACCESS

**Permissions required**

The tool is open to the public.

## UPDATES AND NEW FUNCTIONALITIES

Updates of information about ORGANIZATIONS, PROJECTS or RESOURCES are periodically conducted by two means. One is active search for new information published online, and the other is the review of information sent by users using the functionality "+Add new" in the web, which is validated and published.

## FEEDBACK

**Support email**

manifeststool@cetmar.org

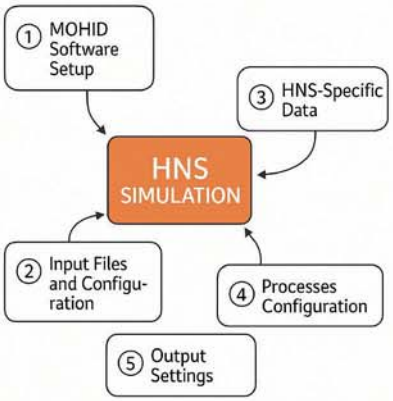
# MOHID MODEL – HNS MODULE

## AUTHORS

Ligia Pinto e Ramiro Neves (MARETEC)

## ACCESS/DOWNLOAD AT

https://github.com/Mohid-Water-Modelling-System/Mohid




## APPLICATION AND USE

### Purpose/objective of the tool

Predict and analyze the behavior of hazardous and noxious substances (HNS) in aquatic and atmospheric environments.

### Applications of this tool

- Operational response
- Modelling
- Training and exercising

### How to use it

1. Input Prep: Gather spill details (location, chemical type, volume) and environmental data (currents, winds, bathymetry).
2. Model Setup: Configure in Mohid - select HNS module, define domain & resolution.
3. Substance Properties: Choose from database or input custom chemical parameters.
4. Run Simulation: Execute with hydrodynamic forcing (waves/currents).

### Key features and functionalities

**Mohid HNS** simulates chemical spills (oils, dissolved/sinking substances) using Lagrangian particle tracking. It models advection, diffusion, evaporation, dissolution, emulsification, and sedimentation. Integrates with 3D hydrodynamics (currents, wind, waves) for accurate spill behavior.

### Practical examples where this tool can be used

Simulation of toxic cloud generation in ports due to atmospheric releases of HNS (e.g. methanol, methane, ammonia)

### Results or outputs produced

Numerical data with information about particles position over time; concentration fields (pollutant levels in water column; mass balance (% evaporated/dissolved/sedimented).

# MOHID MODEL – HNS MODULE

## TECHNICAL REQUIREMENTS

### Operating system required

- Microsoft Windows
- Linux OS
- Android OS
- Apple iOS

### Devices the tool can run on

- PC
- Tablet
- Mobile devices

### Hardware requirements

A regular server

### Integration with other software / systems / project tools

This tool integrates seamlessly with other project components such as the Knowledge Tool and the Exercise Tool. It has also demonstrated its ability to exchange information with external systems like Cedre's ARGEPOL, ensuring interoperability and enhancing coordination across platforms during contingency planning and response operations.

## TARGET AUDIENCE

### Target audience

- Scientific Community
- Consultancies
- Education and training professionals
- Environmental managers
- Students

### Type of knowledge background required to use this tool/output

Some experience in using numerical models

## ACCESS

### Permissions required

The tool is open to the public.

## USER GUIDANCE

### User guides or manuals available

https://www.mohid.com/

### Support documentation

Publications can be found at:
https://wiki.mohid.com/index.php?title=Mohid_Bibliography

### Dissemination materials available for this tool, or materials in which this tool is featured

User manuals & technical guides on
https://mohid.com/

## FREQUENTLY ASKED QUESTIONS

### What types of chemicals can MOHID HNS simulate?

It models oils, dissolved toxics (e.g., ammonia), and sinking chemicals (e.g., heavy metals).

### How accurate are the spill predictions?

Accuracy depends on input data quality (currents, wind, chemical properties) and model calibration.

### Can it run real-time spill forecasts?

Yes, if linked to real-time hydrodynamic data (e.g., from sensors or operational ocean models).

### Is coding expertise required to use it?

Basic runs need no coding, but advanced users can modify Fortran scripts. Python/MATLAB helps post-process results.

## FEEDBACK

### Support email

support@mohid.com (or check **mohid.com** for updated contacts).

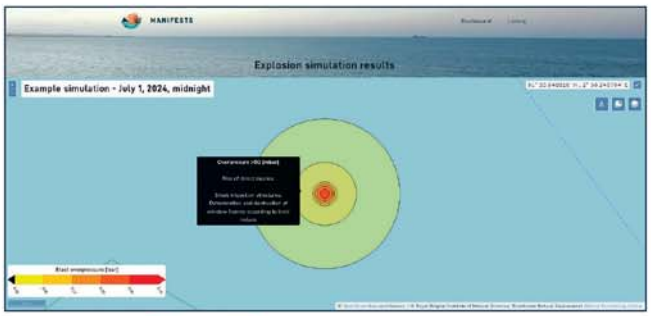
# EXPLOTION MODEL

## AUTHORS

Ludovic Lepers (RBINS), Samuël Orsi (RBINS),
Laurent Aprin (IMT Mines Alès), Sébastien Legrand (RBINS)

## ACCESS/DOWNLOAD AT

https://odnature.naturalsciences.be/oserit/

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IMT Mines Alès
École Mines-Télécom

## APPLICATION AND USE

### Purpose/objective of the tool

Estimate the effects at various distances in the event of an explosion of an HNS gas cloud in an open environment.

### Applications of this tool

- Contingency planning and guidance
- Modelling
- Risk assessment

### How to use it

The user fills out an online form with simulation metadata, event location and time, environmental data, and HNS properties (can be auto-filled from the HNS database). After waiting a few seconds, the simulation results are displayed in the online web interface.

### Key features and functionalities

The model estimates overpressure as a function of distance in case of the explosion of an HNS gas cloud and assesses its impact on humans and buildings.

### Practical examples where this tool can be used

In the event of a vessel transporting explosive HNS in distress, the tool can provide a safety radius for coastguard operations following the vessel.

### Results or outputs produced

The interface provides a map with ellipses indicating the expected impact on responders or structures within the ellipses.



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# EXPLOTION MODEL

## TECHNICAL REQUIREMENTS

**Operating system required**

- Apple macOS
- Microsoft Windows
- Linux OS

**Devices the tool can run on**

- PC

**Hardware requirements**

An internet connection and a computer capable of running a recent version of a modern web browser.

## TARGET AUDIENCE

**Target audience**

- Authorities and companies with legal responsibility of implementing contingency plans
- Port and maritime authorities
- Coastguards
- Emergency responders (Civil protection, firefighters, army, police officers, etc.)

**Type of knowledge background required to use this tool**

Users should have completed a training session on the tool.

## ACCESS

**Permissions required**

The tool requires a login and is not open to the public.

**Obtain permissions**

https://odnature.naturalsciences.be/oserit/

## USER GUIDANCE

**User guides or manuals available**

MANIFESTS DSS User guides: https://manifests-project.eu/documents/27/D5.3_-_MANIFESTS_DSS_-_User_guides.pdf

**Support documentation**

A PowerPoint presentation is provided during the training session.

## UPDATES AND NEW FUNCTIONALITIES

**Update planned for this tool in the framework of the MANIFESTS Genius project.**

The multi-energy model for explosions will improve overpressure predictions in environments other than open sea.

## FEEDBACK

**Support email**

marine-forecasting-officer@naturalsciences.be

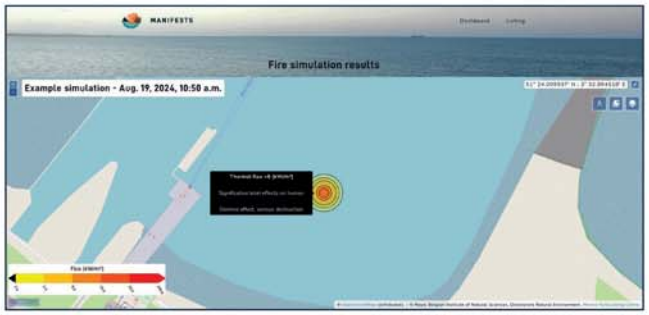
# FIRE MODEL

## AUTHORS

Ludovic Lepers (RBINS), Samuël Orsi (RBINS),
Laurent Aprin (IMT Mines Alès), Sébastien Legrand (RBINS)

## ACCESS/DOWNLOAD AT

https://odnature.naturalsciences.be/oserit/

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IMT Mines Alès
École Mines-Télécom

## APPLICATION AND USE

### Purpose/objective of the tool

Estimate the safety distances at which responders can safely approach a burning HNS slick on the surface of seawater in an open environment.

### Applications of this tool

- Contingency planning and guidance
- Operational response
- Modelling
- Risk assessment

### How to use it

The user fills out an online form with simulation metadata, event location and time, environmental data, and HNS properties (can be auto-filled from the HNS database). After waiting a few seconds, the simulation results are displayed in the online web interface.

### Key features and functionalities

The model estimates thermal fluxes as a function of distance from a burning slick and assesses the expected impact on humans and structures. It also estimates the burning rate and burning time.

### Practical examples where this tool can be used

Simulate the potential impact of a burning oil slick to determine how close responders can safely approach it.

### Results or outputs produced

The interface provides a numerical value for the burning rate, a plot of the remaining amount in the slick over time, and a map with ellipses indicating the expected impact on responders or structures within the ellipses.



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# FIRE MODEL

## TECHNICAL REQUIREMENTS

### Operating system required

- Apple macOS
- Microsoft Windows
- Linux OS

### Devices the tool can run on

- PC

### Hardware requirements

An internet connection and a computer capable of running a recent version of a modern web browser.

## TARGET AUDIENCE

### Target audience

- Authorities and companies with legal responsibility of implementing contingency plans
- Port and maritime authorities
- Coastguards
- Emergency responders (Civil protection, firefighters, army, police officers, etc.)

### Type of knowledge background required to use this tool

Users should have completed a training session on the tool.

## ACCESS

### Permissions required

This tool requires a login and is not open to the public.

### Obtain permissions

https://odnature.naturalsciences.be/oserit/

## USER GUIDANCE

### User guides or manuals available

MANIFESTS DSS User guides: https://manifests-project.eu/documents/27/D5.3_-_MANIFESTS_DSS_-_User_guides.pdf

### Support documentation

A PowerPoint presentation is provided during the training session.

## FEEDBACK

### Support email

marine-forecasting-officer@naturalsciences.be

# HNS DATABASE

## AUTHORS

Ludovic Lepers (RBINS), Samuël Orsi (RBINS), Sébastien Legrand (RBINS)

## ACCESS/DOWNLOAD AT

https://manifests-project.eu/hns-database/


## APPLICATION AND USE

### Purpose/objective of the tool

An online chemical database providing access to over 600 chemicals, each with up to 100 physical and chemical parameters.

### Applications of this tool

- Characterisation and knowledge of HNS
- Contingency planning and guidance
- Modelling
- Risk assessment
- Training and exercising

### How to use it

On the main page, users can click any HNS for details or search by name, CAS or UN numbers using the 'Search' field. The provider refers to the source of the chemical information. Users can navigate pages using the bottom-right controls. HNS entries are listed alphabetically, with some repeated due to the two data providers. Users can indeed choose data from either Cedre (lab-measured or collected through European projects like HNS-MS) or REMPEC (literature-based data from MIDSIS-TROCS).

### Key features and functionalities

The chemicals available are from the MIDSIS-TROCS database (from REMPEC) and from the HNS-MS database (from Cedre). It can be used easily by a user looking to retrieve data for a chemical or can be accessed from an API.

### Results or outputs produced

- General description of the substance (CAS and UN numbers, Gesamp profile, MARPOL Classification, etc.)
- Physico-chemical properties (density, hydrosolubility, vapour pressure, etc.)
- Behaviour at sea
- Ecotoxicity
- Hazards
- Gesamp Hazard profile



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# HNS DATABASE

## TECHNICAL REQUIREMENTS

### Devices the tool can run on

- PC
- Mobile devices
- Tablet

### Integration with other software/systems/tools

The database is linked with the modelling app of the MANIFESTS DSS.

## TARGET AUDIENCE

### Target audience

- Port and maritime authorities
- Coastguards
- Emergency responders (Civil protection, firefighters, army, police officers, etc)

### Type of knowledge background required to use this tool

Users should be able to interpret key parameters to extract relevant information for emergency response.

## ACCESS

### Permissions required

The tool is open to the public.

## USER GUIDANCE

### User guides or manuals available

MANIFESTS DSS User guides: https://manifests-project.eu/documents/27/D5.3_-_MANIFESTS_DSS_-_User_guides.pdf

### Dissemination materials

A PowerPoint presentation is provided during the training session.

## UPDATES AND NEW FUNCTIONALITIES

### Update planned for this tool in the framework of the MANIFESTS Genius project

The database will be updated with experimental data from Cedre collected at various environmental conditions (e.g. hydrosolubility, evaporation rates).

## FEEDBACK

### Support email

For each chemical entry, users may click on 'Report a Mistake' to indicate any inaccuracies in the information provided.

# OSERIT HNS

## AUTHORS

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## ACCESS/DOWNLOAD AT

https://odnature.naturalsciences.be/oserit/


natural sciences .be

## APPLICATION AND USE

### Purpose/objective of the tool

Simulate the 3D drift of HNS spilled at sea, considering sea and atmospheric conditions, and track the HNS state over time using an online web interface.

### Applications of this tool

- Management of crisis and decision making
- Operational response
- Modelling
- Risk assessment

### How to use it

The user fills out an online form with simulation metadata, event location and time, release conditions, and HNS properties (can be auto-filled from the HNS database). After waiting a few minutes, the simulation results are displayed in the online web interface.

### Key features and functionalities

Estimate the location over time of HNS spilled at sea, including concentration in the water column and air for volatile HNS, and predict potential beaching locations and times. The model uses daily updated forcings to enable simulations for both past event and future evolution of current situations. It supports forward simulations to assess the impact of a release and backward simulations to determine the origin of pollution.

### Practical examples where this tool can be used

In the event of a collision involving a vessel transporting HNS, the tool assesses the drift direction of the spill over time. It estimates air concentration to evaluate responder risk and underwater concentration to assess ecosystem impact.

### Results or outputs produced

The model provides the location of HNS over time on a map, categorized by surface slick, atmosphere, etc. It estimates the thickness of the surface slick, concentration in air and water, and exposure time above thresholds among others. Time series data includes the mass balance of HNS in different phases and distance travelled.



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# OSERIT HNS

## TECHNICAL REQUIREMENTS

### Operating system required

- Apple macOS
- Microsoft Windows
- Linux OS

### Devices the tool can run on

- PC

### Hardware requirements

An internet connection and a computer capable of running a recent version of a modern web browser.

## TARGET AUDIENCE

### Target audience

- Authorities and companies with legal responsibility of implementing contingency plans
- Port and maritime authorities
- Coastguards
- Emergency responders (Civil protection, firefighters, army, police officers, etc.)

### Type of knowledge background required to use this tool

Users should have completed a training session on the tool.

## ACCESS

### Permissions required

This tool requires a login and is not open to the public.

### Obtain permissions

https://odnature.naturalsciences.be/oserit/

## USER GUIDANCE

### User guides or manuals available

MANIFESTS DSS User guides:
https://manifests-project.eu/documents/27/D5.3_-_MANIFESTS_DSS_-_User_guides.pdf

### Support documentation

A PowerPoint presentation is provided during the training session.

## FREQUENTLY ASKED QUESTIONS

### Why aren't particles moving when I do a backward simulation?

The release time should be set at the start of the simulation, not the end.

## FEEDBACK

### Support email

marine-forecasting-officer@naturalsciences.be

# RISING UNDERWATER GAS PLUME MODEL


## AUTHORS

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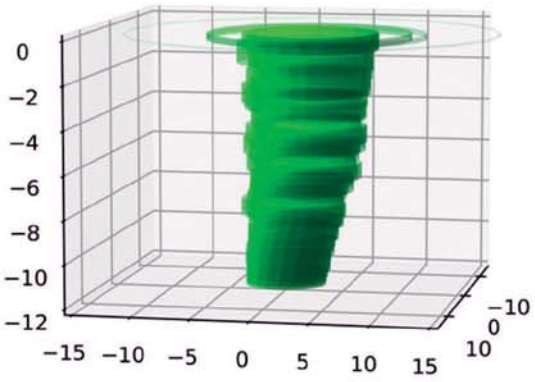
## ACCESS/DOWNLOAD AT

https://odnature.naturalsciences.be/oserit/




## APPLICATION AND USE

### Purpose/objective of the tool

Model the rise of a gas plume from an underwater release to the water surface.

### Applications of this tool

- Contingency planning and guidance
- Operational response
- Modelling
- Risk assessment

### How to use it

The user fills out an online form with simulation metadata, event location and time, environmental data, and HNS properties (can be auto-filled from the HNS database). After waiting for the computations to be done, the simulation results are displayed in the online web interface.

### Key features and functionalities

The model estimates the flow rate of gas reaching the surface and the amount dissolving in the water column.

### Practical examples where this tool can be used

Assess the impact of a gas leak from an underwater pipeline or a sunken vessel carrying gaseous HNS. Users can estimate the quantity of gas reaching the surface.

### Results or outputs produced

A map showing where the gas is expected to reach the surface, along with plots comparing the quantity released into the atmosphere versus dissolved in the water column.

# RISING UNDERWATER GAS PLUME MODEL

## TECHNICAL REQUIREMENTS

### Operating system required

- Apple macOS
- Microsoft Windows
- Linux OS

### Devices the tool can run on

- PC

### Hardware requirements

An internet connection and a computer capable of running a recent version of a modern web browser.

### Integration with other software / systems / project tools

The output flow rate can be used as initial conditions for consequence models.

## TARGET AUDIENCE

### Target audience

- Authorities and companies with legal responsibility of implementing contingency plans
- Port and maritime authorities
- Emergency responders (Civil protection, firefighters, army, police officers, etc.)

### Type of knowledge background required to use this tool

Users should have completed a training session on the tool.

## ACCESS

### Permissions required

This tool requires a login and is not open to the public.

### Obtain permissions

https://odnature.naturalsciences.be/oserit/

## FEEDBACK

### Support email

marine-forecasting-officer@naturalsciences.be

# OPERATIONAL FIELD GUIDE - PROTECTING COMMUNITIES FROM MARITIME INCIDENTS INVOLVING AIRBORNE POLLUTANTS

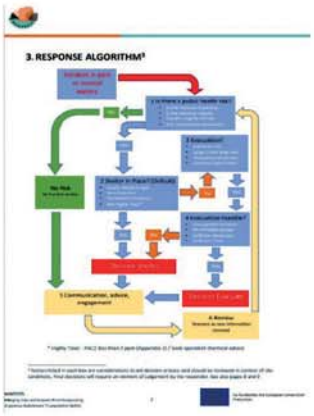
## AUTHORS

Paul Harold and Andrew Kibble (UKHSA)

## ACCESS/DOWNLOAD AT

https://manifests-project.eu/documents/31/Deliverable_D3.2_Decision_making_Guidance_Field_Guide_UKHSA_Final_V1.pdf

UK Health Security Agency




## APPLICATION AND USE

### Purpose/objective of the tool

The aim of this guide is to aid decision making in the immediate aftermath of an incident, prior to receipt of detailed monitoring and modelling data.
The guide is aimed at those involved in managing initial response as well as those with emergency planning roles.
The guide is targeted at protection of the public and not response personnel located within the immediate source of the incident.

### Applications of this tool

- Management of crisis and decision making
- Contingency planning and guidance
- Risk assessment
- Training and exercising

### How to use it

The Tool Requires users to collect basic information immediately following report of an incident. Using the source-pathway-receptor approach data required are – type and quantity of gas / evaporator released, hazards for that chemical, weather conditions, local receptors. This information can then be used to follow the decision-making algorithm and establish immediate best actions.

### Key features and functionalities

The guide provides an approach for decision making and is primarily designed to be used during training of responders or for resilience planning.
It comprises a decision algorithm based upon a source-pathway-receptor approach, a range of prompts and considerations to be made at key points during the assessment process, key information resources and summaries of key hazard data for multiple gaseous and volatile HNS.
A separate detailed guidance document details the development of the approach and should be read before using the operational guide.

### Practical examples where this tool can be used

The tool is specifically designed for use during training exercises so that responders can be given a scenario involving a gas or vapour release and then use the algorithm to decide best public protection. The tool has been workshopped in MANIFESTS Project and 2 worked examples are provided in the supporting technical report (See Section 5 Q17 for link).

### Results or outputs produced

The Tool does not produce specific outputs but is aimed at planners and responders to become familiar with the considerations when deciding protective actions for communities during gas or vapour releases from ports or near shore.



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# OPERATIONAL FIELD GUIDE - PROTECTING COMMUNITIES FROM MARITIME INCIDENTS INVOLVING AIRBORNE POLLUTANTS

## TECHNICAL REQUIREMENTS

### Operating system required

Paper copy

### Integration with other software / systems / project tools

It can be used in conjunction with exercise materials such as chemical datasheets, atmospheric model outputs, maps and monitoring data.

## TARGET AUDIENCE

### Target audience

- Authorities and companies with legal responsibility of implementing contingency plans
- Port and maritime authorities
- Coastguards
- Emergency responders (Civil protection, firefighters, army, police officers, etc.)
- Environmental managers

### Type of knowledge background required to use this tool/output

Users need a basic understanding of chemical incident response and risk assessment.

## ACCESS

### Permissions required

This tool is open.

## USER GUIDANCE

### User guides or manuals available for this tool

Supporting technical guidance and illustrative examples https://manifestsproject.eu/documents/18/Deliverable_D3.2_Decision_making_Guidance_UKHSA_Final_V1.pdf

## FREQUENTLY ASKED QUESTIONS

### How do I use the guidance for planning and preparedness?

Identify the types and quantities of gases or evaporators handled at your port or along your coastal waters, review potential communities that could be affected. Use the algorithm to identify likely best protective options. This can be done for multiple chemicals at varying quantities of release and can be used to identify where to establish monitors and resources, inform training exercises and develop pre-prepared risk messaging for communities.

### How do I use the guidance for Training?

Choose a realistic scenario for your region. Use injects for delegates to request information and populate the algorithm. The Technical Report provides 2 illustrative examples of a desk top scenario.

### Can I use the tool in a real incident?

The tool can be applied in a real incident however, application should be mindful of any other operational procedures and site specific factors relevant to the incident e.g Site emergency plans, SEVESSO / COMAH plans, real-time monitors etc.

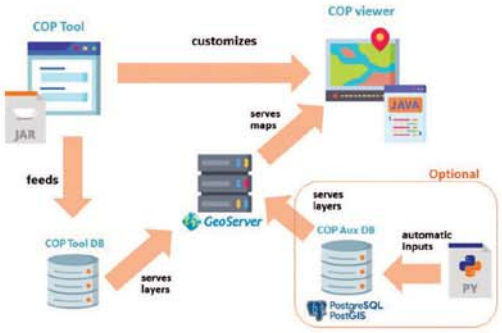
# COP TOOL 2.0

## AUTHORS

Silvia Allen-Perkings, Garbiñe Ayensa, Silvia Calvo & Pedro Montero

## ACCESS/DOWNLOAD AT

https://github.com/MANIFESTS-DSS/




## APPLICATION AND USE

### Purpose/objective of the tool

**COPTool** helps manage marine pollution incidents by integrating and organizing key data from multiple sources. It lets managers quickly create tailored COPs, showing only relevant info to each user. New features include a tactical GIS module, dashboard, info sheet generator, and integration with Exercise and Knowledge tools. The system is containerized with Docker for easy deployment.

### Applications of this tool

- Crisis management and decision making
- Operational response
- Training and exercising
- Communication

### How to use it

Before a contingency, managers upload WMS layers and set user roles (viewers, contributors, managers). During an incident, a COP is created with selected layers and linked reports. Viewers access only authorized data; contributors upload new info (e.g., POLREP, SCAT). External systems (e.g., models, drifters) also feed data. A tailored COP can be deployed in minutes for efficient, role-based response.

### Key features and functionalities

The system allows contingency managers to share critical info with key stakeholders, showing each user only data relevant to their role. It supports user management, SCAT and POLREP forms, alerts, photos, tactical GIS, and integration with Exercise and Knowledge tools. All features enable efficient, secure, and coordinated crisis response in a clear and user-friendly environment.

### Practical examples where this tool can be used

**COPTool** has been implemented as an operational tool by the Galician Coast Guard. It has been used in dozens of drills and real incidents in recent years, enabling information sharing between the Coast Guard and other agencies such as Puertos del Estado and Sasemar. Additionally, it has demonstrated interoperability by exchanging data with external systems like Cedre's ARGEPOL, ensuring coordinated multi-agency response capabilities.

### Results or outputs produced

The system is a web-based contingency manager supported by databases and map servers. These feed both data entry/management web apps and a web viewer, which is the main interface for end users. In short, it includes web apps for data input and management, a viewer for accessing information, and the necessary backend infrastructure to support both.



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# COP TOOL 2.0

## TECHNICAL REQUIREMENTS

**Operating system required**

- Microsoft Windows
- Linux OS
- Android OS
- Apple iOS

**Devices the tool can run on**

- PC
- Tablet
- Mobile devices

**Hardware requirements**

A regular server

**Integration with other software / systems / project tools**

This tool integrates seamlessly with other project components such as the Knowledge Tool and the Exercise Tool. It has also demonstrated its ability to exchange information with external systems like Cedre's ARGEPOL, ensuring interoperability and enhancing coordination across platforms during contingency planning and response operations.

## TARGET AUDIENCE

**Target audience**

- Authorities and companies with legal responsibility of implementing contingency plans
- Port and maritime authorities
- Coastguards
- Emergency responders (Civil protection, firefighters, army, police officers, etc.)
- Environmental managers

**Knowledge background required**

Users don't need extensive technical knowledge, but they should be individuals with responsibilities in crisis management.

## ACCESS

**Permissions required**

The tool is open to the public.

## USER GUIDANCE

**User guides or manuals available**

https://github.com/MANIFESTS-DSS/DOCUMENTS

**Dissemination materials available, or materials in which this tool is featured**

https://github.com/MANIFESTS-DSS/DOCUMENTS

## UPDATES AND NEW FUNCTIONALITIES

In this new version, several enhancements are included: a new tactical GIS module for adding crisis response information, a new dashboard module, a new module for generating specific information sheets, and the integration of other tools such as the Exercise Tool and the Knowledge Tool. Additionally, the entire system will be containerized using Docker to facilitate easier installation and integration.

## FEEDBACK

**Support email**

pmontero@intecmar.gal

# COP TOOL 2.0

## FREQUENTLY ASKED QUESTIONS

### How does the user management system work in COPtool and what are the different types of user permissions?

The COPtool has two main user types: Administrator and User. Administrators have access to all modules and can manage users and information layers. Regular users have access only to specific modules assigned by the administrator. Various permissions can be granted, including COP Manager (managing information during contingencies), POLREP Reports Manager, SCAT Manager, Observer (for inspections), Strategy Map creator, and COP Viewer (with different confidentiality levels: low, intermediate, and high). Each permission grants access to specific functionalities within the system.

### What are POLREP and SCAT reports, and how are they created and managed in the COPtool?

POLREP (Pollution Report) is a standardized report model used to collect initial information about marine pollution events. In the COPtool, users can create new POLREPs by filling in forms about observer data, meteorological conditions, pollution information (spills, sources, photos, comments), and geographical locations. SCAT (Shoreline Cleanup Assessment Technique) reports are used to document coastal contamination details. These reports include information about the coastal segment, inspection team, types of coastlines, operational characteristics, surface and subsurface hydrocarbon presence, and other contaminating substances. Both report types can include geolocated photos and comments, and once created, they're stored in the database for access by authorized users.

### What are the main modules available in the COPtool system and what functions do they perform?

The COPtool includes several modules: Management Module (for user and geographic information management), COP Management Module (for handling information distributed during contingencies), POLREP Module (for standard pollution observation reports), SCAT Module (for coastal contamination assessment), Reports Module (for communications from response teams including photos and videos), and COP Viewer (for visualizing all geographic information). Each module serves a specific purpose in managing different aspects of maritime emergency response.

### How can I share information during an emergency using the Reports Module?

The Reports Module allows quick communication between field teams and the coordination center. To create a new report, click the "+" button and complete the form with an optional title, message text, and attached files (photos, videos, PDFs). You can tag communications as "Alarm," "News," or "General" to help managers filter information. If you've been linked to a specific contingency by the COP manager, all your reports will automatically be visible to members at the coordination center. You can also geotag your reports by providing coordinates manually, using your current location, or marking a position on the map.

### What steps should I follow to create a new COP during an emergency situation?

To create a new COP, access the COP Management module and click the "+" button. You'll need to complete several screens: first enter contingency details (name, start date, description), define the affected geographical area on a map, select relevant information layers, choose which users should have access, and set confidentiality rules. Once created, you can manage the COP by linking POLREP reports, SCAT assessments, photos, and strategic maps to provide a comprehensive view of the emergency situation.

### How can I add geographic information and manage layers in the COPtool?

To add geographic information, you must have administrator privileges. The system uses Web Map Service (WMS) and organizes layers hierarchically into groups and panels. You can create new panels (via the panel menu), add groups to panels (using the group menu), and then add layers to groups. When adding a layer, you'll need to provide details like name, URL, projection, and boundary coordinates. These layers become available to COP managers who can select them during contingency management.

### How do I navigate between different modules and features in the COPtool interface?

Navigation within the COPtool is done through the menu on the left side, which provides access to all modules you have permission to use. Common navigation elements include the "+" button to create new elements, search fields to find records, summary bars at the top to access different sections of forms and edit/delete options to modify or remove records. You can also use the "Next" buttons to progress through multi-step forms and return to the main dashboard to see your most recent data.


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