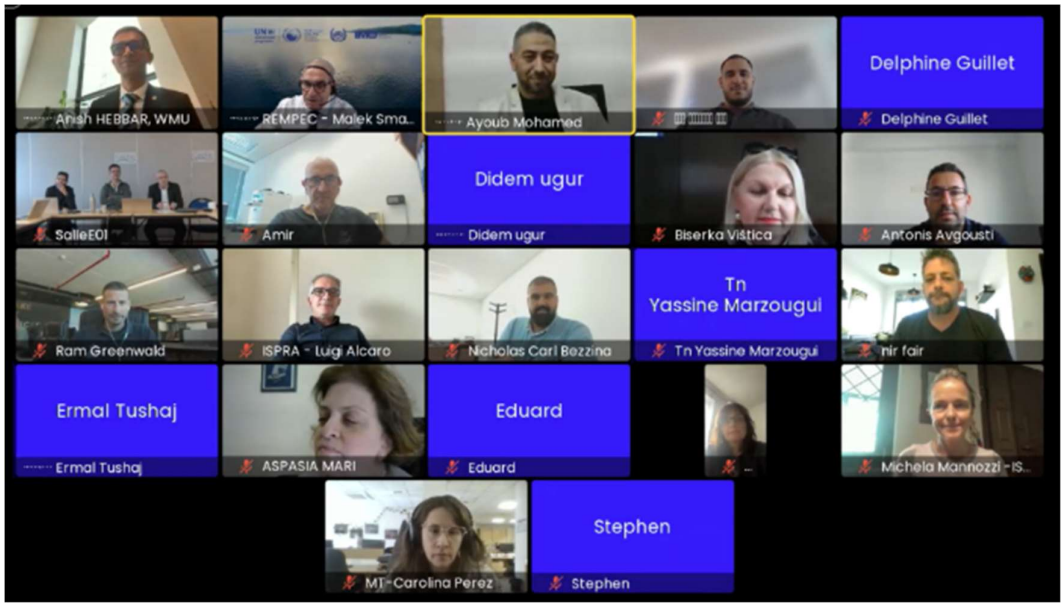
REPORT
REGIONAL WEBINAR ON
THE STUDY ON READINESS OF THE MEDITERRANEAN REGION TO RESPOND TO MARINE POLLUTION INCIDENTS INVOLVING LOW-SULPHUR AND ALTERNATIVE FUELS,
AND
THE REVISED GUIDELINES FOR THE USE OF DISPERSANTS FOR COMBATING OIL POLLUTION AT SEA IN THE MEDITERRANEAN



ONLINE, 17 NOVEMBER 2025

Report by REMPEC contractor
CEDRE

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SUMMARY SHEET

Title of the Webinar:	Regional Webinar on the Study on readiness of the Mediterranean region to respond to marine pollution incidents involving low-sulphur and alternative fuels, and the revised Guidelines for the use of dispersants for combating oil pollution at sea in the Mediterranean region
Host:	Regional Marine Pollution Emergency Response Centre for the Mediterranean Sea (REMPEC)
Venue and date:	Online 17 November 2025
Type:	Regional
Organised by:	Regional Marine Pollution Emergency Response Centre for the Mediterranean Sea (REMPEC)
Supported by:	Mediterranean Trust Fund (MTF)
Number of Participants and Number of Countries and/or Organizations:	17 participants from 11 out of 22 Contracting Parties to the Barcelona Convention

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Summary

The Webinar on the Study on readiness of the Mediterranean region to respond to marine pollution incidents involving low-sulphur and alternative fuels, and the revised Guidelines for the use of dispersants for combating oil pollution at sea in the Mediterranean was held online the 17th of November 2025.

The target audience for the Webinar were government officials responsible for the preparedness and response to marine pollution.

The aim was to enhance awareness and technical understanding of the national competent authorities and stakeholders on the two deliverables of the 16th Meeting of the Focal Points of REMPEC (Malta, May 2025). For the Study this covers the proposed Strategic Roadmap to implement the Study recommendations on the Short-Medium-Long term. Regarding the Guidelines the focus is on the updates since 2011 on dispersants, response techniques, and ecosystem data for dispersants safe use and effective response technique.

Key words: Dispersant, Alternatives fuels, Low-Sulphur fuels, ULSFO, VLSFO, Mediterranean Sea, Recommendations, Enforcement

Co-ordinator: Malek Smaoui (REMPEC), in close cooperation with REMPEC contractor CEDRE, represented by **Stephane le Floch**, Research Department Manager.

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1. INTRODUCTION

1.1 The Webinar on the Study on readiness of the Mediterranean region to respond to marine pollution incidents involving low-sulphur and alternative fuels, and the revised Guidelines for the use of dispersants for combating oil pollution at sea in the Mediterranean, hereinafter referred as 'the Webinar', was convened online on the 17th of November 2025.

1.2 The Webinar, organised by the Regional Marine Pollution Emergency Response Centre for the Mediterranean Sea (REMPEC), was financed by the Mediterranean Trust Fund (MTF). The List of Participants is contained in **Annex I**.

2. OBJECTIVE

The principal objectives of the Webinar were:

2.1 to enhance awareness and technical understanding of the national competent authorities and stakeholders enabling the implementation of the above-mentioned roadmap and the contribution to achieving the Study's strategic objectives (SOs); and

2.2 to highlight the above-mentioned updates since 2011 on dispersants, response techniques, and ecosystem data for dispersants safe use and effective response techniques to marine pollution incidents.

3. VENUE, DATE, ROLES AND PARTICIPANTS

3.1 The Webinar was held online on the 17th of November 2025.

3.2 CEDRE provided its platform "Lifesize" for the Webinar. The link to the platform was disseminated by REMPEC to the registered attendees.

3.3 REMPEC was in charge of the opening and closing ceremonies, arrangements for use of the online platform by the participants, REMPEC Consultants and reproduction of materials.

3.4 The target audience for the Webinar were government officials responsible for the preparedness and response to marine pollution. All REMPEC OPRC Focal Points were invited to nominate jointly and, in consultation with the REMPEC Governmental Focal Points, their representatives in the Webinar.

3.5 Mr Malek Smaoui, Programme Officer OPRC at REMPEC oversaw the organisation and coordination of the Workshop. He closely worked with the REMPEC Consultant Dr Stephane Le Floch.

4 OPENING SESSION

4.1 The Webinar started on Monday, 17 November at 10:00 hours.

4.2 The Programme Officer, opened the Webinar. He explained that the objective was to promote the ongoing practice of raising awareness about, such deliverables, a further step toward their use and implementation. He added that the Webinar also forms part of the Study's strategic objective related to conducting regional training workshops and exercises (the Webinar Programme is presented in **Annex II**).

4.3 He also reiterated REMPEC's commitment to continue providing the necessary technical assistance to Contracting Parties, to implement activities with the support of both deliverables endorsed by the 16th Meeting of REMPEC Focal Points, held in Malta in May 2025, hereinafter referred to as 'the Study' and 'the Guidelines'.

4.4 He closed with his expression and appreciation to all the speakers, and participants for their presence and continued engagement and to continue the journey together for healthier seas, and a more resilient Mediterranean region.

5 SESSION ONE: Response to Marine Pollution Incident Involving New Fuels

Dr Le Floch presented the context of the Study, namely the objective of the International Maritime Organization (IMO), which aims for maritime transport to reach zero greenhouse gas emissions by 2050. This objective is leading to the emergence of new propulsion fuels. Among these new fuels are ultra-low sulphur heavy fuels (ULSO), which display very specific behaviour in the event of an accidental spill and therefore require an appropriate response.

Adapting the response to these ULSO fuels requires understanding their fate in the event of an accidental spill at sea. Moreover, this fate depends directly on the environmental conditions prevailing at the accident site, meaning that the response strategy in the Mediterranean will differ from that which could be deployed in Northern Europe.

It is also essential to take into account the specific characteristics of the Mediterranean in terms of the response framework, including the various regional agreements, the available resources, and all the interactions that may arise between the different stakeholders involved in the response.

He introduced the two speakers and their talks: Dr Ronan Jézéquel from CEDRE and Dr Abish Hebbard from the World Maritime University.

5.1 First talk: Understanding Their Behaviour at Sea Through Experimental Inputs (IMAROS and IMAROS II projects)

Dr Jézéquel began by presenting the different propulsion fuels and explaining the differences between them, their behaviour at sea and which response techniques can be used.

1. Overview of the main results of the project "Properties, behaviour and Environmental Risk Assessment of Low-Sulphur Fuels and Alternative Fuels".
2. Focus on HFO, LSF, HSFO, ULSFO and VLSFO (chemical composition, and different existing standards as ISO 8217 dedicated to classification of marine fuel).
3. The fate of these products under different environmental conditions was presented, notably through the results of the IMAROS and IMAROS II projects, two projects that were funded by Directorate-General for European Civil Protection and Humanitarian Aid Operations (DG-ECHO).
4. The performance of several skimmers in relation to a slick of ULSFO was presented and discussed.
5. The main concerns highlighted are as follows:
    a. Recent evolution of regulations regarding NOx, SOx and PM emissions is leading to the emergence of new fuels

b. LSFO is a category of new fuels with a high variability of physico-chemical properties (especially for VLSFO)
c. VLSFO's behavior is difficult to predict (some are liquid, others are semi-solid)
d. Blend of biodiesel with marine fuel increase the variability of physico-chemical properties and their behavior when spilled at sea
e. Conventional Oil Spill Response strategies seem to be adapted for blends of biodiesel with marine fuel ➔ Need to be confirmed for other VLSFO and other biodiesels

5.2 Second talk: Readiness of the Mediterranean Region to respond to marine pollution by LSF

Dr Anish Hebbard began by presenting the context of the Study. This Study aimed to assess the Mediterranean region's capacity to respond to marine pollution incidents involving low-sulphur and alternative fuels and to deliver practical recommendations for strengthening emergency response. It examined the readiness of Contracting Parties, analysed the risks and environmental behaviour of these fuels, reviewed global best practices for their relevance in the Mediterranean, and proposed strategic recommendations to enhance response mechanisms and regulatory frameworks.

1. Overview of the Mediterranean region on its territorial waters.
2. Overview of existing regulation can be used in the prevention phase, in particular SOLAS, MARPOL, IGF CODE and ISM CODE, and in the readiness for response, in particular OPRC Convention and OPRC HNS Protocol.
3. Overview of response option: monitoring system, detection equipment, potential innovative solutions for the Mediterranean context.
4. Recommendation and action plan.

After Session One, a **roundtable** was organised to allow participants to exchange with the speakers and also with REMPEC (Mr Malek Smaoui).

The main points discussed were:

- **Limited knowledge of chemical composition**: ULSFO formulations vary significantly between producers and even between batches.
- **Insufficient transparency from suppliers**: The exact chemical composition is often unknown.
- **Safety Data Sheets (SDS) are not sufficient**: Not enough information on physico-chemical parameters which limits the accuracy of the models (weathered processes not really described). Should SDS regulations evolve, what can be done?
- **Complex weathering processes**: ULSFO can exhibit unusual or non-linear weathering patterns, making their environmental fate harder to predict compared with conventional marine fuels.
- **Lack of experimental data**: Only a few laboratory or field studies exist on ULSFO spills, leading to gaps in understanding of how these fuels interact with different marine conditions (temperature, salinity, turbulence).

6 SESSION TWO: Revised Guidelines for the Use of Dispersants for Combating Oil Pollution at Sea in the Mediterranean Region

Dr Le Floch was in charge of the session introduction. He presented the philosophy behind the use of dispersants and, more specifically, how dispersants fit within the broader range of tools used to combat oil pollution. These principles were developed according to the French approach, which states that mechanical recovery (containment and pumping) should be prioritised, and that dispersants should only be considered when such operations are not feasible. However, the importance of carrying out a Spill Impact Mitigation Assessment (SIMA), readily available within emergency plans, is strongly recommended.

The session was then presented with contributions from Dr Tristan Gobert, Dr Stéphane Le Floch, and Ms Fanny Azzid-Jouannin.

6.1 First talk: What are dispersants? New generation of products (bio-dispersants)

Dr Gobert provided a detailed overview of the key aspects related to the use and development of dispersants:

1. **Chemical composition of dispersants**, consisting of one or more surfactants diluted in appropriate solvents, with examples provided for each category.
2. **Mechanisms of action**, including the distinction between effective and ineffective oil dispersion.
3. **Ecotoxicological considerations** regarding their potential impacts on marine organisms.
4. **Ongoing research into bio-dispersants** produced exclusively from natural substances.
5. **Operational constraints** associated with bio-dispersants, such as longer production timelines and application challenges.

6.2 Second talk: Use of dispersants in the Mediterranean Sea and Methodology for the Decision Making

Dr Le Floch presented the objectives of the Study, the main aim of which was to share with the REMPEC Focal Points the key findings of the work. This included determining how effective the technique was according to the type of oil and its degree of weathering, assessing its relevance in light of the environmental constraints and in comparison with other response techniques, and identifying the logistical requirements needed to implement a dispersion operation, including dispersant stockpiles and spraying equipment.

1. Dispersant effectiveness as a function of oil weathering

- Analysis of how dispersant efficiency decreases as oils undergo physical and chemical weathering.
- Specific focus on low-sulphur fuels, with links to Dr J Jézéquel's presentation on their composition and behaviour.
- Introduction of the concept of a dispersibility window, defining the time frame during which dispersants remain operationally effective depending on the oil's degree of weathering.

2. **Feasibility of chemical dispersion in the Mediterranean context**

- Assessment of operational feasibility in relation to environmental constraints specific to the Mediterranean Sea.
- Identification of key factors influencing decision-making, including:
    - the presence of vulnerable ecological areas,
    - strategic or high-value zones (shipping lanes, marine protected areas, coastal assets),
    - regional bathymetry and its implications for dispersion efficiency and potential subsurface impacts.
- Reminder of the French approach, which establishes limits for dispersant use based on water depth and distance from the coastline, guiding safe and responsible operational deployment.

3. **Key elements in conducting a Spill Impact Mitigation Assessment (SIMA)**

- Recap of the essential steps required to develop a robust SIMA for decision-making during an oil spill.
- Emphasis on operational preparedness, including:
    - identification and accessibility of dispersant stockpiles,
    - availability and suitability of spraying equipment (vessels, aircraft, nozzles, pump systems),
    - integration of dispersant strategies within national and regional emergency response plans.

6.3 Third talk: Spraying equipment

Ms. Fanny Azzid-Jouannin, presented the different techniques available for dispersant application, whether from vessels or airborne platforms. She also outlined recent tests in spraying nozzles and spray arms, and described the methods used to evaluate the effectiveness of this application equipment.

1. **Spraying equipment:** Equipment must be able to control the dispersant application rate, produce adequately small droplets, and apply a uniform amount across the oil slick.
2. **Efficiency of spraying equipment:** Presentation of a protocol developed to evaluate the adequacy between equipment and dispersant (especially in relation to the dispersion nozzles and the viscosity of the dispersant).

After Session Two, a **roundtable** was organised to allow participants to exchange with the speakers and also with REMPEC (Mr Malek Smaoui).

The main points discussed were:

- **Environmental and operational conditions:** The assessment of the required sea state is essential to determine whether surface agitation is sufficient to ensure effective dispersant action, as wave energy plays a key role in promoting the breakup and dilution of oil droplets.
  Equally important is the definition of what constitutes “sufficient water depth,” as adequate depth is necessary to allow dispersed oil to dilute to environmentally acceptable concentrations and thereby minimise potential impacts on the marine ecosystem.

The importance of having a precise mapping of the different zones where limits on the use of dispersants are defined was highlighted.

- **Oil characteristics and weathering:** The determination of the dispersant "window of opportunity" relies on understanding how oil weathering processes—such as increases in viscosity, emulsification, and other changes in physical properties—affect the potential for successful dispersion. As oil weathers, its characteristics evolve, and these transformations directly influence the effectiveness of dispersant application, narrowing the operational time frame during which dispersants can be used efficiently.
  There is a lack of data on the effectiveness of dispersants on ULSFO slicks.
- **Fate of dispersed oil in the water column:** Once oil is dispersed, the dilution processes in the water column and the resulting exposure of marine organisms must be carefully considered. At the same time, effective dispersant use requires proper management of stockpiles, including awareness of shelf life and expiration dates, which necessitates periodic renewal and entails notable financial implications.
  If bio-dispersants enter the market, should they be evaluated in the same way in terms of toxicity and effectiveness?

7. CLOSING CEREMONY

7.1 The REMPEC Programme Officer OPRC made the closing remarks.
7.2 He thanked the collective and collaborative attitude of all. He thanked all speakers for their presentations and help in preparing for the Webinar.

7.3 The Webinar was closed on Monday 11 November at 1:15pm.

8. RESOLUTIONS/ RECOMMENDATIONS

8.1 The Webinar thanked the Regional Marine Pollution Emergency Response Centre for the Mediterranean Sea (REMPEC), as Secretariat, and its consultants, for the work they conducted and for their respective contributions to the preparation and successful organisation of the Workshop.

8.2 REMPEC must continue organising thematic webinars to support Contracting Parties and stakeholders and actors in strengthening their knowledge and operational capacity to implement the **Study Action Plan to achieve its strategic objectives (SO)s**.

8.3 REMPEC should continue **to provide expert assistance to Contracting Parties** that request it, in order to assess their level of preparedness for responding to oil spills at the national level, as well as among port operators and the shipping industry.

8.4 Relaunch the assessment of the Contracting Parties' level of preparedness for responding to oil spills, using the **online RETOS tool**, in order to identify gaps and areas for improvement (including for low-sulphur fuel spills).

8.5 To foster the exchange of experiences among Mediterranean research institutions, it is recommended that these **institutions enhance their research** on the testing of bio-dispersants and also to explore the interest of bioremediation treatment.

8.6 The Webinar appreciated the speakers from WMU and CEDRE, and the facilitators who helped in achieving the objectives of the Webinar.

ANNEXES

ANNEX I - List of Participants

ANNEX II – Webinar program

ANNEX 1– List of Participants

Name of participant	Contracting Party	Organisation
Ermal Tushaj	Albania	General Maritime Directorate
Biserka Vištica	Croatia	Ministry of the Sea, Transport and Infrastructure
Antonis Avgousti	Cyprus	Department of Fisheries and Marine Research
Aspasia Mari	Greece	Hellenic Coast Guard/Marine Environment Protection Directorate
Nir Fair	Israel	Marine environment division ministry of environment
Ram Greenwald	Israel	Israel Ministry of Environmental Protection
Amir Arad	Israel	Israeli Ministry of environment
Luigi Alcaro	Italy	ISPRA
Michela Mannozzi	Italy	ISPRA
Ayoub Mohamed	Libya	National Oil Corporation
Ali Tantosh	Libya	Ministry of Environment
Andrea Carolina Perez	Malta	Environment & Resources Authority - ERA
Nicholas Carl Bezzina	Malta	Authority for Transport in Malta
Stephen Baldacchino	Malta	Transport Malta
Darinka Joksimovic	Montenegro	Maritime Safety and Ports Management Administration
Yassine Marzougui	Tunisia	National Environmental Protection Agency
Didem Ugur	Türkiye	Ministry of Environment, Urbanisation and Climate Change

ANNEX 2 –Webinar program

10:00	**Registration of participants**	Lecturer
10:10	**Welcome & Opening session** • Introduction of speakers and host • Goals of the webinar	Malek Smaoui – REMPEC
Session One: Response to Marine Pollution Incidents Involving New Fuels		
10:15	Definition of “Low Sulphur Fuels” and “Alternative Fuels” Understanding Their Behaviour at Sea Through Experimental Inputs (IMAROS I and IMAROS II projects)	Ronan Jézéquel - CEDRE
10:45	Readiness of the Mediterranean Region to respond to Marine pollution by LSF	Anish Hebbard – WMU
11:15	Q/A	
11:30-11:45	***Coffee Break***	
Session Two: Revised Guidelines for the Use of Dispersants for Combating Oil Pollution at Sea in the Mediterranean Region		
11:45	What are the dispersants? New generation of products (bio-dispersants)	Tristan Gobert - CEDRE
12:00	Use of dispersants in the Mediterranean Sea and Methodology for the Decision Making	Stéphane Le Floch - CEDRE
12:30	Spraying equipment	Fanny Jouannin - CEDRE
12:45	Q/A	
13:00	***End of Webinar***	
