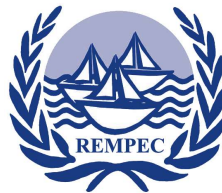


Use of dispersants in the Mediterranean Sea and Methodology for the Decision Making



**Mediterranean
Action Plan**
Barcelona
Convention



INTERNATIONAL
MARITIME
ORGANIZATION

REMPEC Regional Webinar
November, 17th 2025
Stephane.le.floch@cedre.fr



Objectives of the talk

The main objective is to share with **Focal Points of REMPEC** the key findings of the study.

In particular to

- ✓ Determine how effective this technique will be according to the type of oil and its degree of weathering
- ✓ Assess its relevance with regard to environmental constraints and in comparison to other techniques
- ✓ To plan the logistics required to implement a dispersion operation (dispersant stockpiles, spraying equipment...)

Why use of dispersant

To transfer the pollutant from the surface into the water column to

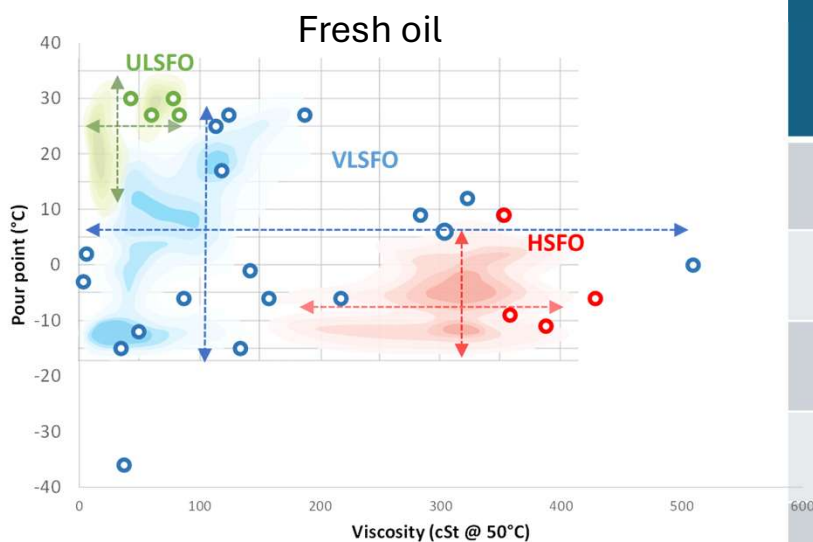
- ✓ Prevent the oil from reaching the coast
- ✓ Limit damage to birds and mammals on water surface
- ✓ Reduce the amount of waste that will need treated (case of recovery)
- ✓ Reduce fire hazard and limit responders exposure
- ✓ Promote and accelerate oil degradation



To determine how effective this technique will be according to the type of oil and its degree of weathering

Type of oil and degree of weathering

First requirement, according to the oil's **viscosity** (viscosity of the fresh oil)



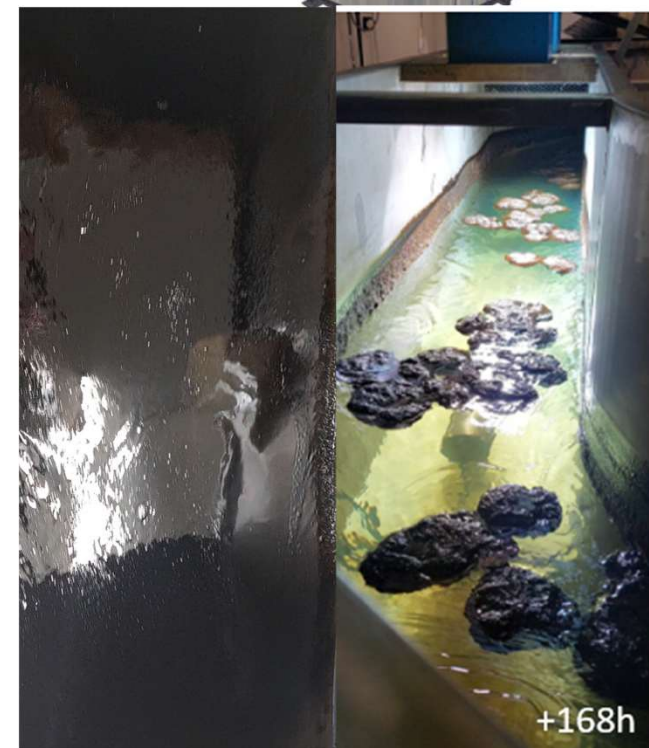
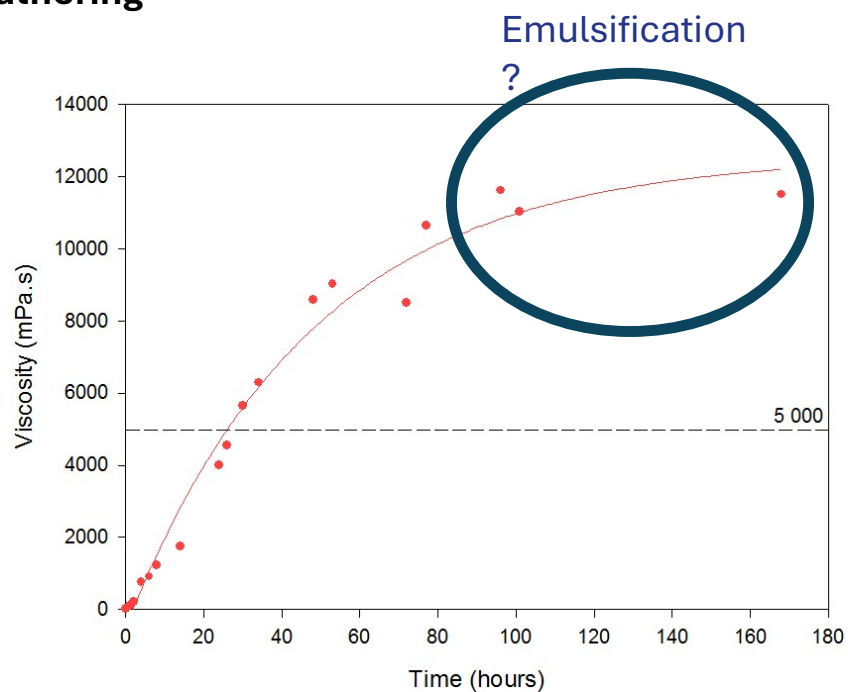
Oil viscosity (cSt)	Effectiveness of chemical dispersion
< 500	Generally easy
500 < viscosity < 5,000	Generally possible
5,000 < viscosity < 10,000	Uncertain – Requires checking
> 10,000	Generally not possible
Up to 15,000	Possible if oil is emulsified

Type of oil and degree of weathering

According to the oil's **viscosity**

a) oil weathering

Oil	Initial viscosity (mPa.s)
Crude 1	19



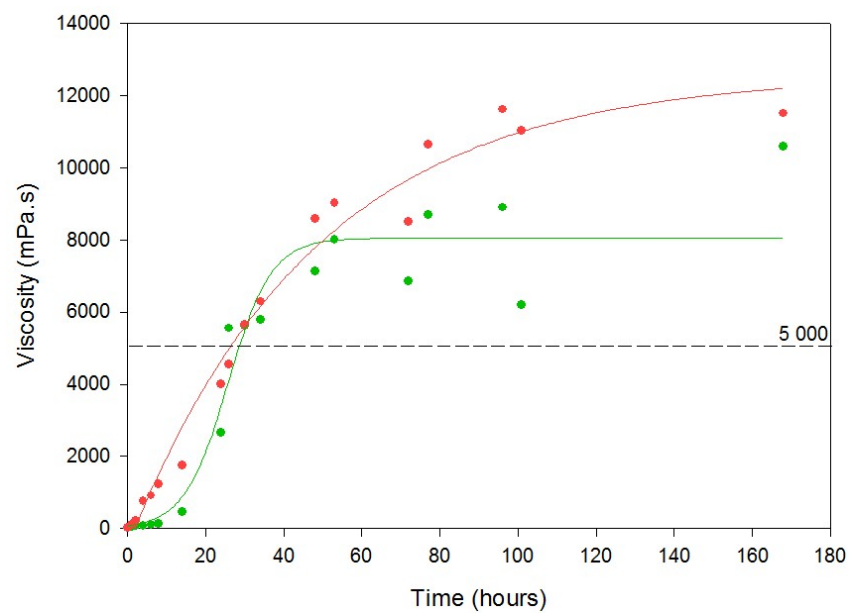
Type of oil and degree of weathering



According to the oil's **viscosity**

a) oil weathering

Oil	Initial viscosity (mPa.s)
Crude 1	19
Crude 2	15



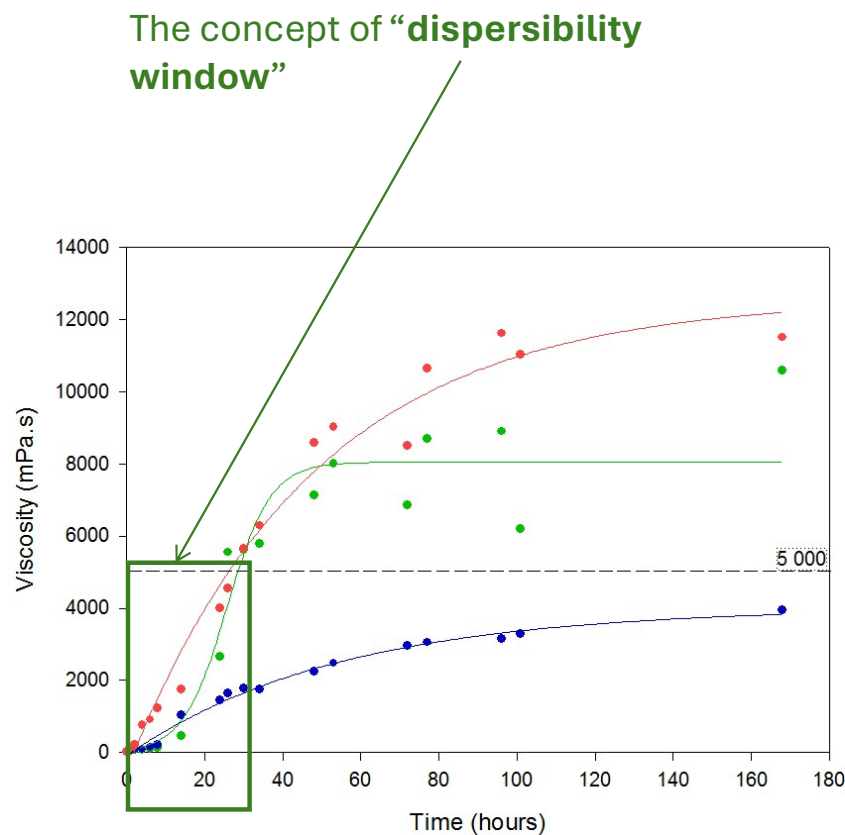
Type of oil and degree of weathering

According to the oil's **viscosity**

a) oil weathering

Oil	Initial viscosity (mPa.s)
Crude 1	19
Crude 2	15
Crude 3	11

b) Effect of **temperature**



Type of oil and degree of weathering



Depending on the **type** of oil

Type of oil	Treatment option
Crude oils • Light crudes and moderate weathered crudes • Certain heavy crudes (e.g. Boscan, Venezuela)	Dispersion possible

Type of oil and degree of weathering



Depending on the **type** of oil

Type of oil	Treatment option
Light refined products • E.g. Petrol/diesel/kerosene	Treatment possible but not worthwhile
Crude oils • Light crudes and moderate weathered crudes • Certain heavy crudes (e.g. Boscan, Venezuela)	Dispersion possible

Type of oil and degree of weathering



Depending on the **type** of oil

Type of oil	Treatment option
Light refined products • E.g. Petrol/diesel/kerosene	Treatment possible but not worthwhile
Crude oils • Light crudes and moderate weathered crudes - Certain heavy crudes (e.g. Boscan, Venezuela)	Dispersion possible
Paraffinic crude oils and heavy refined oils (heavy fuel oils) The pour point may be $> T_{sw}$ (initial or weathered crude)	Dispersion not possible

To assess the relevance of this technique
with regard to environmental constraints
and in comparison to other techniques

Is dispersion acceptable?

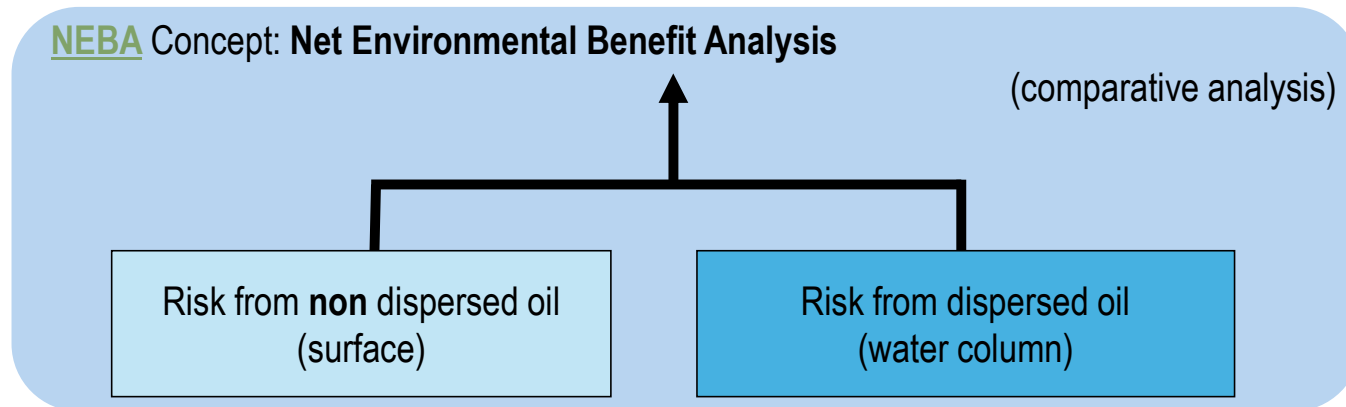


Dispersion helps to break down the oil

- First, large dilution of the pollution (dilution in 3D)
- And, biodegradation of oil droplets (decrease in pollution persistence)

At high concentration, dispersed oil can be more dangerous than the oil slick at the surface

- Dispersion can increase contact between living organisms and the oil –resident fish, coral...)
- Toxicity at high concentrations (which implies the requirement of **having sufficient water volume** for optimal dilution)



Is dispersion acceptable?



Offshore

Massive dilution potential

No real impact & optimal biodegradation conditions

Coastal waters

Dispersant use prohibited/limited/subject to authorisation

The **French approach** has been to define limits for which dispersion is acceptable or not

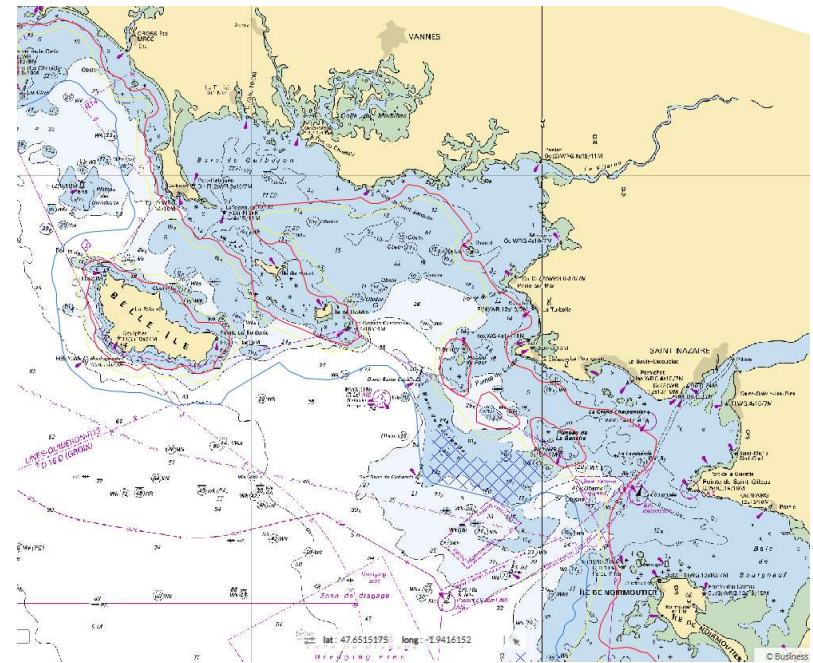
Amount of oil to be dispersed (tonnes)	Minimum depth (metres)	Minimum distance from shore (nautical mille)
Dispersion forbidden	< 5	< 0,5
< 10	5	0,5
10 < Oil < 100	10	1
> 100	15	2,5



Is dispersion acceptable?

Consideration of local specificities

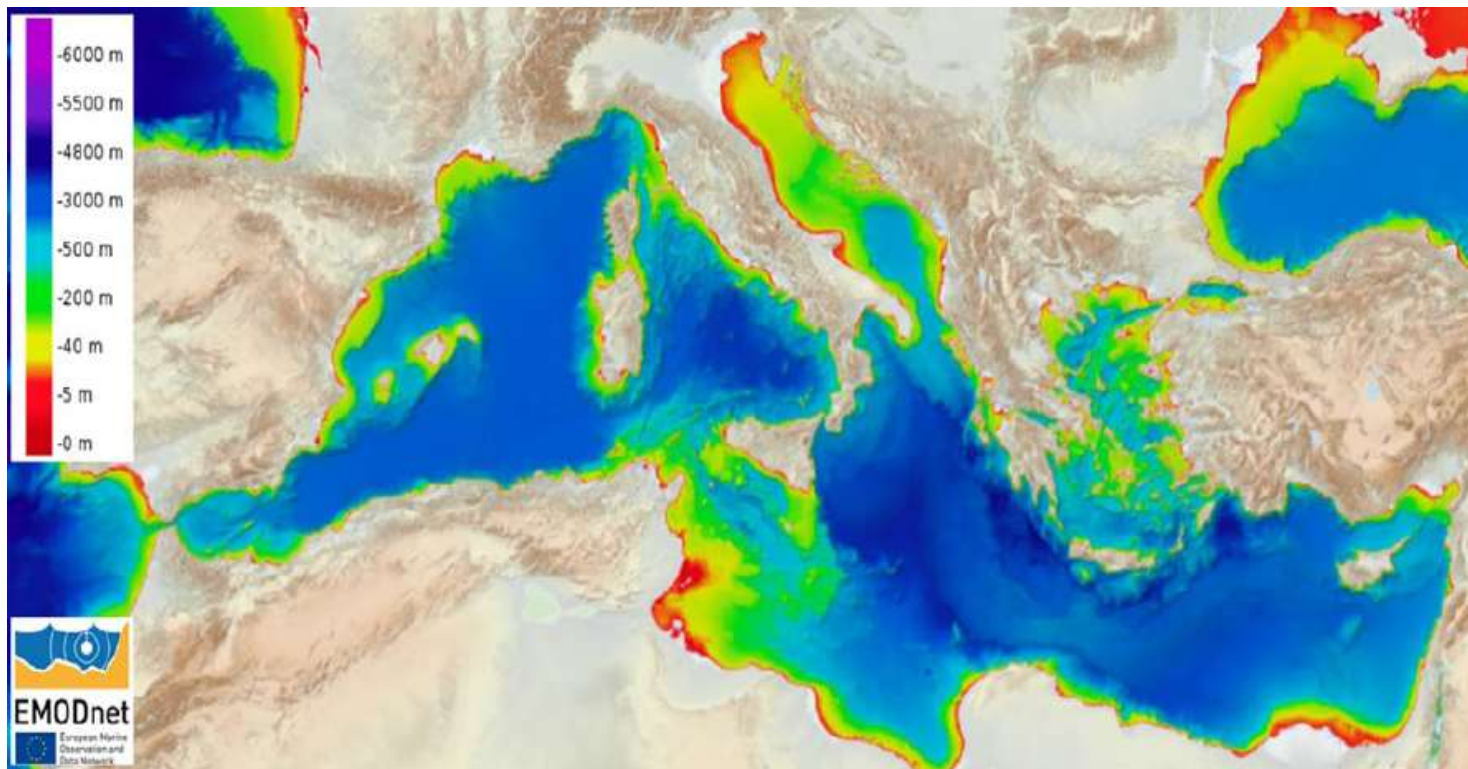
- industrial sensitivity: wind farm, oyster farming...
- Environmental sensitivity: mussels, coral...



Need to consider the specific characteristics of the Mediterranean Sea

The characteristics of the sea are well documented:

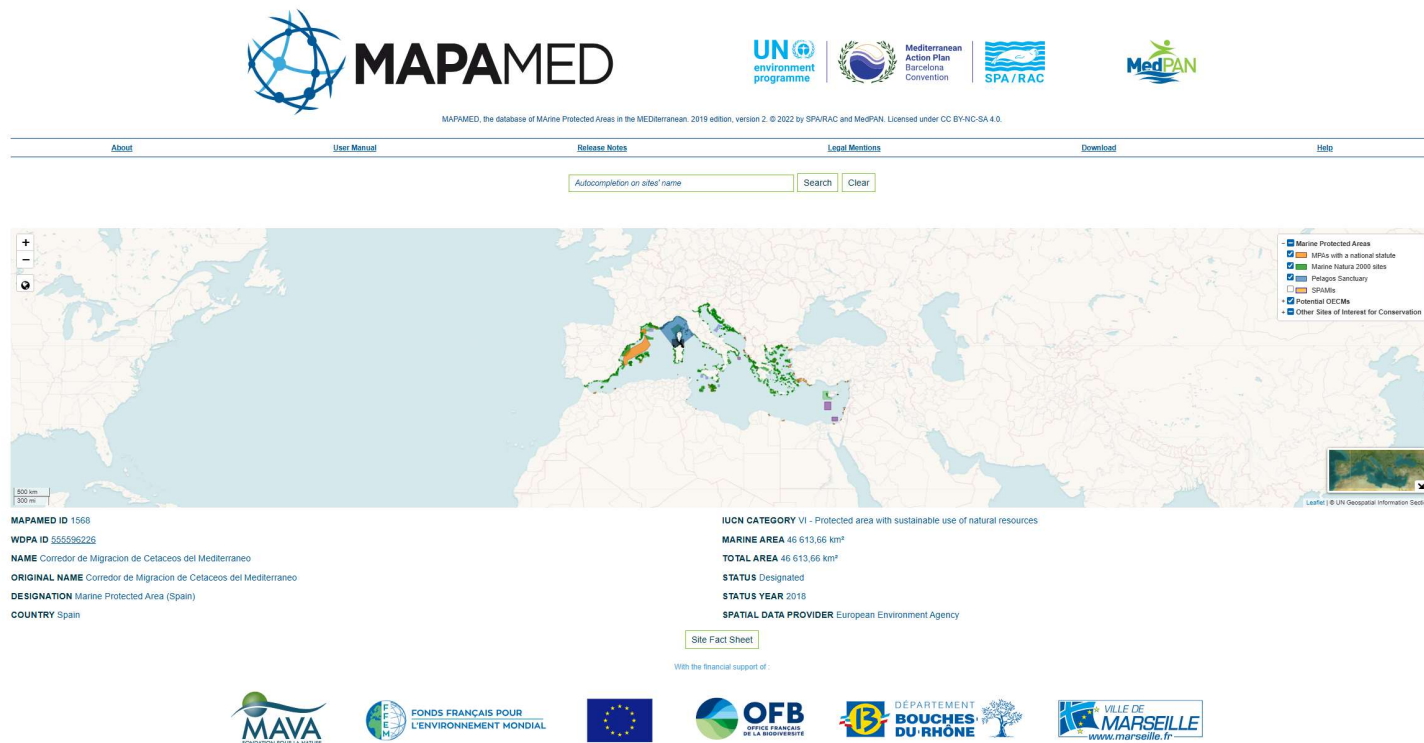
- ✓ salinity,
- ✓ depth,
- ✓ water temperature,
- ✓ etc.



Need to consider the specific characteristics of the Mediterranean Sea

And local specificities:

- ✓ At national level (inventory of protected area...)
- ✓ At regional level ([project mapamed](#))



MAPAMED

UN environment programme | Mediterranean Action Plan Barcelona Convention | SPA/RAC | MedPAN

MAPAMED, the database of Marine Protected Areas in the Mediterranean, 2019 edition, version 2. © 2022 by SPA/RAC and MedPAN. Licensed under CC BY-NC-SA 4.0.

About | User Manual | Release Notes | Legal Mentions | Download | Help

Autocompletion on sites' name [Search] [Clear]

MAPAMED ID 1568
WDPA ID 555596226
NAME Corredor de Migración de Cetáceos del Mediterraneo
ORIGINAL NAME Corredor de Migración de Cetáceos del Mediterraneo
DESIGNATION Marine Protected Area (Spain)
COUNTRY Spain

IUCN CATEGORY VI - Protected area with sustainable use of natural resources
MARINE AREA 46 613,66 km²
TOTAL AREA 46 613,66 km²
STATUS Designated
STATUS YEAR 2018
SPATIAL DATA PROVIDER European Environment Agency

[Site Fact Sheet]

With the financial support of:

MAVA FONDATION POUR LA NATURE | FONDS FRANÇAIS POUR L'ENVIRONNEMENT MONDIAL | EUROPEAN UNION | OFB OFFICE FRANÇAIS DE LA BIODIVERSITÉ | DÉPARTEMENT DES BOUCHES DU RHÔNE | VILLE DE MARSEILLE

To plan the logistics required to implement a dispersion operation (dispersant stockpiles, spraying equipment, etc.).

Methodology for decision-making



1. Is dispersion possible?

(from a physical-chemical point of view)

=> Decision-making criteria
(viscosity limitation)

Information on the pollutant

2. Is dispersion acceptable?

(from an environmental point of view)

=> Geographical limitations for dispersion

Location of the pollution

3. Is dispersion feasible?

(from a logistical point of view)

=> Available **dispersants** & means of application

Quantity of oil to be dispersed

=> limitation of resources (ship, plane, spreading equipment...)

Conditions in the area

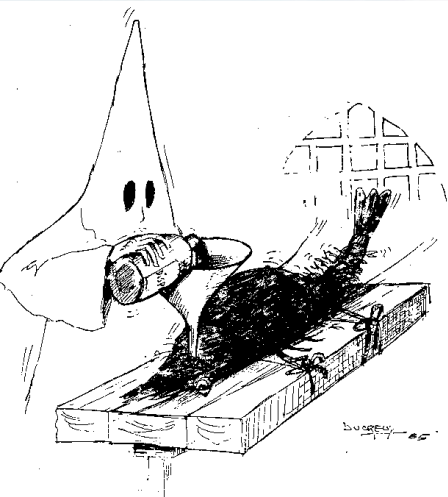
Innocuity of dispersants



In France, **before use**, a dispersant must be approved by *Cedre*. This approval includes

1. an **efficiency** test: NFT 90345
2. a **toxicity** test: on shrimps
3. a **biodegradability** test: NFT 90346

Several countries have their own approval system



Approval procedure is based on 2 goals



Dispersant selection

when selecting a dispersant, I want the most efficient product which is not toxic by itself.

Toxicity test of the dispersant itself

and not the toxicity of the oil+dispersant

Use of dispersant

when using dispersant, I want to be the most efficient and keep inside safe toxicity level.

Geographical limits for the use of dispersants based on toxicity of the dispersed oil and the assessment of the dilution

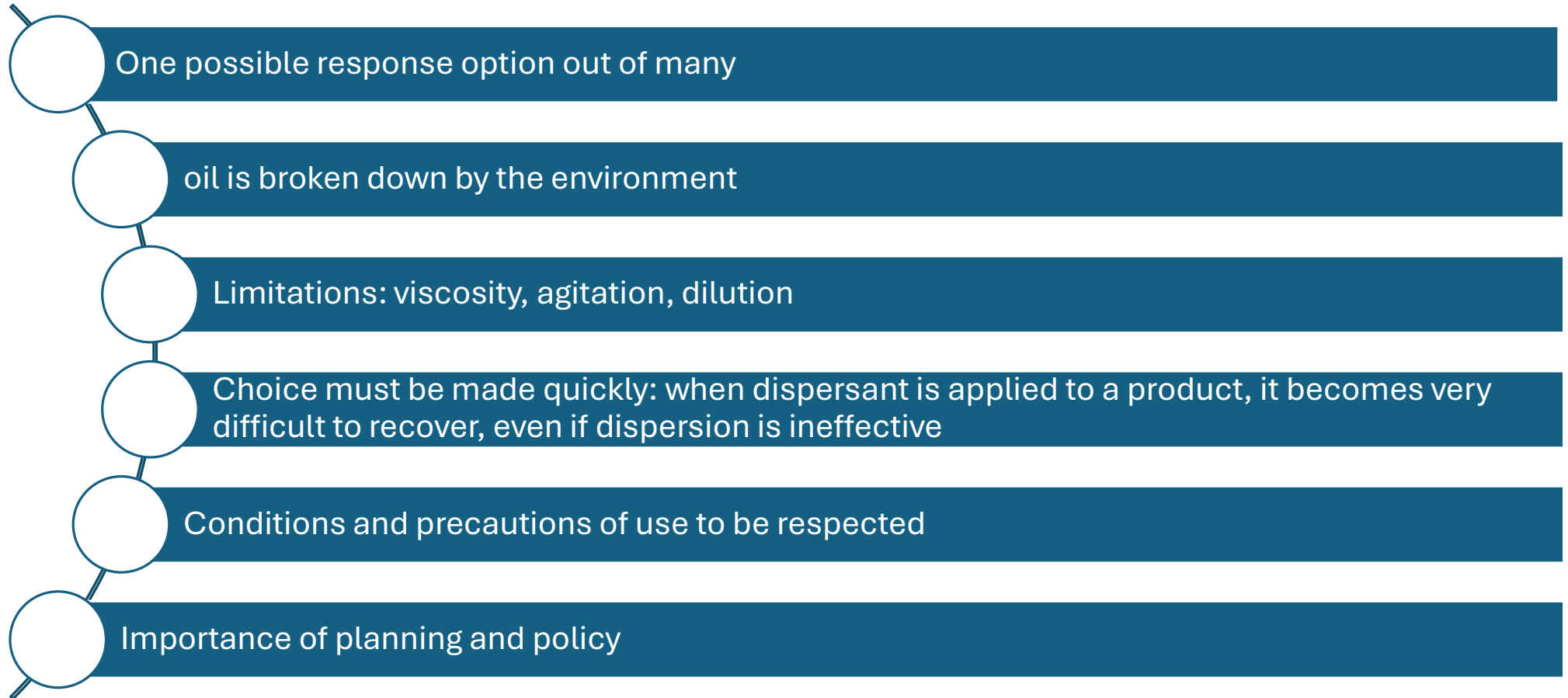
Don't forget the product stability

Need to have a stockpiles quality control

At European level, question of pooling stockpiles to optimize dispersant availability and turn over...



In nutshell





THANK YOU



Mediterranean
Action Plan
Barcelona
Convention

