Guidelines for the use of dispersants

for combating oil pollution at sea in the Mediterranean region

Part III: Outline and template for a national policy on the use of dispersants

MEDITERRANEAN ACTION PLAN (MAP)
REGIONAL MARINE POLLUTION EMERGENCY RESPONSE CENTRE FOR THE MEDITERRANEAN SEA (REMPEC)

REGIONAL MARINE POLLUTION EMERGENCY

RESPONSE CENTRE FOR THE MEDITERRANEAN SEA (REMPEC)

MEDITERRANEAN ACTION PLAN

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Part III: Outline and proposed template for a national policy for the use of dispersants

Regional Information System

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Note

This document is aimed at facilitating the implementation of the “Protocol concerning Co-operation in Combating Pollution of the Mediterranean Sea by Oil and Other Harmful Substances in Cases of Emergency” of the Barcelona Convention (Emergency Protocol, 1976) and the “Protocol concerning Co-operation in Preventing Pollution from Ships and, in Cases of Emergency, Combating Pollution of the Mediterranean Sea” (Prevention and Emergency Protocol, 2002) by the Contracting Parties of the Barcelona Convention.

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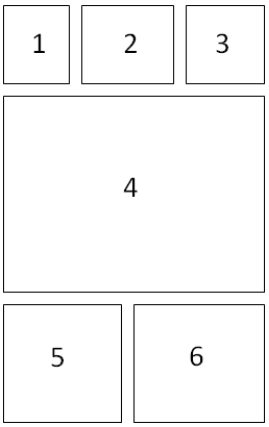

Helicopter mounted spraying system

Airborne treatment

Aerial monitoring operation

Ship mounted spraying system

Airborne treatment

Shipborne treatment

The Guidelines are downloadable from REMPEC’s website (www.rempec.org) in the section “Information resources/Regional Guidelines/Preparedness & Response”.

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Foreword

In a large part of the Mediterranean coastal States, the use of dispersants as a response method for combating accidental oil spills at sea has not as yet been covered by specific national regulations.

Controlled and appropriate use of selected dispersants on types of oil amenable to chemical dispersion, is widely recognized as one of the useful methods for combating accidental oil spills, and in particular the massive ones. Moreover, under certain sea and weather conditions the use of dispersants might be the only applicable response method for protecting sensitive natural resources, coastal installations or amenities.

However, the opportunistic attitude regarding the use of dispersants is hardly acceptable. Selection of products which might be used, definition of zones in which their use is either allowed or prohibited and their place in the general strategy of pollution response need to be adequately regulated if the use of dispersants is expected to produce desired results without creating additional risks for the environment.

Considering the developments in the field of dispersants since the October 1998 edition of the "Guidelines for the Use of Dispersants for Combating Oil Pollution at Sea in the Mediterranean Region", the Ninth Meeting of the Focal Points of the Regional Marine Pollution Emergency Response Centre for the Mediterranean Sea (REMPEC), Malta, 21-24 April 2009, tasked the Mediterranean Technical Working Group (MTWG) to review their content.

This new edition of the Guidelines, endorsed by the Tenth Meeting of the Focal Points of REMPEC, Malta, 3 to 5 May 2011, has been prepared with the technical support of the 'Centre of Documentation, Research and Experimentation on Accidental Water Pollution' (CEDRE) and reviewed by the Centre in collaboration with the MTWG.

They aim at assisting the Mediterranean coastal States in developing and harmonizing national laws and regulations regarding the use of dispersants in response to oil spills at sea. It does not refer to the use of dispersants on shore.

The Guidelines are divided into four independent parts addressing different issues. Each part has been developed with a specific objective and is aimed at different end-users:

PART I REGIONAL APPROVAL

Part I which remains unchanged when compared to the version adopted by the Eighth Ordinary Meeting of the Contracting Parties to the Barcelona Convention (UNEP (OCA)/MED IG.3/5, Appendix I, Antalya, Turkey 15 October 1993), provides regionally approved guidance for the development of national laws and regulation on the use of dispersants.

PART II BASIC INFORMATION ON DISPERSANTS AND THEIR APPLICATION

Part II provides theoretical information on dispersants and their application. It is aimed at providing background information on the matter to any person interested in the subject.

PART III OUTLINE AND TEMPLATE FOR A NATIONAL POLICY ON THE USE OF DISPERSANTS

Part III has been prepared with a view to assisting coastal States in the development of their national policy on the use of dispersants. It has been developed as a template which can be followed and adapted by the authorities in charge of the development/maintenance of the national policy on the use of dispersants and can also be used for the implementation of national or local contingency plan for dispersants.

PART IV OPERATIONAL AND TECHNICAL SHEETS

Part IV is based on the publication entitled “Using dispersant to treat oil slicks at sea. Airborne and shipborne treatment. Response manual” (CEDRE 2005). It provides a set of practical technical sheets which point out the different operational issues when using dispersants. It has been developed for operational users with a view to providing them with the required knowledge for efficient dispersant application.

In order to keep the coastal States regularly informed of the current situation regarding the use of dispersants, REMPEC shall update this document to include any new and significant developments in the research field.

GUIDELINES FOR THE USE OF DISPERSANTS FOR COMBATING OIL POLLUTION AT SEA IN THE MEDITERRANEAN REGION

P A R T III

OUTLINE AND TEMPLATE FOR A NATIONAL POLICY ON THE USE OF DISPERSANTS

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P A R T III

OUTLINE AND TEMPLATE FOR A NATIONAL POLICY ON THE USE OF DISPERSANTS

Template for National Policy on the Use of Dispersants In "*Country* Name" Marine Waters

1. Preamble

Chemical dispersion is one of the response options to combat oil spillages. This technique is designed for offshore and not for shoreline situations.

This technique has clear operational advantages, however it requests some precautions. These points are developed in this document which is to be used in conjunction with the National Oil Spill Contingency Plan (NOSCP).

Note: Concerning the use of oil spill dispersant in inland waters (e.g. lakes or rivers), refer to Chapter 10.

2. Objectives of chemical dispersion

Chemical dispersion aims at minimizing the impact of oil pollution.

The use of dispersants at sea aims at reducing the amount of oil which would reach the coast, or environmentally or economically sensitive areas.

The use of dispersants generates the scattering of the oil in a dispersed form into the marine environment which is favourable to degradation processes (particularly biodegradation).

3. The chemical dispersion process

Applied onto oil slicks, dispersants tend to reduce the interfacial tension between the water and the oil and allow the natural mixing generated by the waves to split the oil into a myriad of tiny droplets suspended in the water column: the oil is dispersed. Then turbulences and streams disseminate this dispersed oil into the marine environment.

By removing the oil from the surface, it helps to stop the wind effect on the oil slick's movement that may otherwise push the surface slick towards sensitive areas (often the shoreline).

Dispersants also prevent coalescence of oil droplets and reformation of oil slick.

4. Role of the dispersant response option in the at sea combating strategy

At sea there are different response options: Recovery possibly associated with Confining, Chemical Dispersion, In Situ Burning, Monitor and Wait for action – refer to IMO manual).

In the decision making process, each of these options considered alone and/or combined should be examined in a comparative way.

Chemical dispersion is generally not compatible with the other response options (especially the confining and recovery). However, in the same case of pollution, the use of chemical dispersion simultaneously with other response options can be considered on different locations.

Note: Concerning the use of oil spilled dispersants in inland waters (e.g. lakes or rivers), refer to Chapter 10.

5. Dispersant formulations and types

Oil spill dispersants are composed of two main groups of components:

- Surface-active agents (surfactants);
- Solvents.

For efficiency prospective only concentrate dispersants are recommended for use in «*COUNTRY NAME*» marine waters.

Note: For fresh water use refer to Chapter 10.

6. Advantages and disadvantages

6.1 Advantages:

- Dispersant can be generally used in more difficult situations (wind and sea state) than the other active response options, especially containment and recovery).
- Dispersion does not produce wastes to be disposed.
- When dispersed the pollutant is no longer drifted by the wind, and then follows the stream; therefore, when carried out upwind sensitive areas, dispersion contributes to reduce the amount of pollutant which would drift towards these locations.
- Dispersants help in reducing the contamination (oiling) of some resources sensitive to the floating oil (surface slick), e.g. mammals and birds.
- Chemical dispersion enhances the (bio)degradation of the oil in the marine environment.

6.2 Disadvantages:

- Dispersants are not efficient towards all oil pollutants especially those which present a high viscosity (Refer to chapter. 7.1.1).
- Dispersion increases temporary and locally the toxicity of the oil, as the dispersed oil is more bioavailable for organisms living in the water column.
- Dispersion is not appropriate everywhere, particularly where the possibility of dilution and dissemination is reduced (Refer to chapter 7.1.2).
- When initially efficient, chemical dispersion is applicable only for the first hours/days of the operation, before the oil becomes non dispersible.

- On significant pollution, chemical dispersion is not applicable in too calm sea state (sea state 0, 1 possibly 2 according to the situation)[1].

- Pollutant is not removed but only dispersed.

7. Recommendations for the use of dispersants.

7.1 Recommendation for the decision making on the use of dispersants.

Taking into account that dispersants can be efficient only during the beginning of the oil release, it is of utmost importance that the decision to use or not to use dispersant is made quickly, without loss of time in assessments and discussions.

The speed of decision depends on a close preparation in which decision criteria will have been first studied from the physico-chemical, environmental and logistic viewpoints.

7.1.1 Dispersible and non-dispersible oil.

The effectiveness of chemical dispersion depends on the nature of the pollutant; the viscosity of the pollutant at ambient temperature constitutes one of the most important factors.

Chemical dispersion is usually possible for the pollutants not exceeding a viscosity of 5 000 cSt; (with some exceptions, for example, in the case of hydrocarbons containing strong paraffin contents).

Beyond 5000 cSt the chances of success decrease quickly; dispersion often is not adapted for the pollutants having a viscosity of 10.000 cSt and more.

The viscosity of an oil pollutant increases with the time spent in the environment (since the release); under the effect of ageing (evaporation, emulsification), its dispersibility decreases with time: in general, an oil pollutant is dispersible only during a certain time - we speak about “window opportunity for dispersion”.

To have an idea of the viscosity of an oil pollutant, and/or its “window opportunity for dispersion”, certain data-processing models designed to estimate the evolution of a pollutant according to its nature and the environmental conditions can be used (model of ageing: ADIOS freeware from US NOAA[2]).

When the pollutant has a significant viscosity, the more agitated the environment is (state of sea), the higher are the chances for dispersion.

On the other hand, in terms of environmental concerns, non persistent oils - refined products, (e.g. petrol, diesel oil, kerosene.) do not require the application of dispersant as they are expected to evaporate and self disperse when released at sea. Moreover, these light products contain toxic light ends which would generate a greater impact if dispersed in the water column.

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[1] In some situations, the application of dispersant can carried out in very calm situation, 1) when the size of the spill is small enough to be able to bring artificially the mixing energy (e.g. with water hoses); this may be the case of small Tier 1 incident; 2) when the weather forecast announces a rapid deterioration of the prevailing meteorological conditions.

[2] National Oceanographic & Atmospheric Administration.

On these products the chemical dispersion could be considered only for safety reasons (reduction of the fire or explosion hazard).

Generally accepted viscosity limits	
Light refined product (petrol, kerosene, diesel oil…)	No chemical dispersion.
Pollutant viscosity < 500 cSt	Dispersion is generally easy with a concentrated dispersant, applied neat or prediluted in seawater.
500 cSt < Pollutant viscosity < 5 000 cSt	Dispersion is usually possible with a concentrated dispersant applied neat.
5 000 cSt < Pollutant viscosity < 10 000 cSt	Uncertainty as to the result: dispersion is sometimes possible with a concentrate applied neat but in that case it is better to check on part of the slick whether the dispersant is effective before extending the treatment to all of the slick.
Viscosity > 10 000 cSt	Dispersion is generally impossible.

Reminder in order to prepare the dispersion response option: for oils frequently transported inside or in the vicinity of *"COUNTRY NAME"* waters / regularly imported in *"COUNTRY NAME harbours",* specific studies should be conducted on these oils in order to assess the windows of opportunity for dispersion (time delay during which the oil remains dispersible):

i) weathering study using modelling (ADIOS);
ii) completion of lab tests to assess oil dispersibility.

Results from these studies are given in the document *"to be specified"* in form of tables giving the [oil viscosity / the window of opportunity] of each studied oil according to different environmental conditions (temperature, wind). Studies are to be done by *"administration or institute in charge"* in collaboration with *"list of administration, institutes, etc involved"*.

7.1.2 Locations where the chemical dispersion can be undertaken

The toxicity of the dispersed oil can affect marine fauna and flora, hence chemical dispersion is not applicable everywhere.

Chemical dispersion is not generally adapted on or in the immediate vicinity of the ecologically vulnerable or sensitive areas and in areas where the possibilities of renewal and mixing of water do not offer conditions for rapid dilution of the dispersed oil.

The definition of the areas where chemical dispersion can be reasonably undertaken is a relatively complex and long process since it must take into account different local environmental parameters and data (current, biological diversity…). Such a task would be hardly carried out during an incident. Areas where chemical dispersion can be reasonably undertaken from an environment point of view should be pre-established and geo-localised to define geographical limits for the use of the dispersants.

The choice of these areas should be based on studies of scenarios which aim at comparing the evolutions and the environmental and socio-economic impacts of the pollutant of dispersed and non-dispersed oil (reference to the concept of "NEBA" Net environmental

benefit analysis – IMO/UNEP Guidelines). These studies of scenarios would take into account all local characteristics: type of ecological and socio-economic resources – marine protected areas and the fisheries related resources, currents, seasons – climate variations and migrations of the marine species of interest, etc (a summary of these issues is given in the box below).

The geographical limits must be defined for increasing spill scenarios, corresponding to pollution situation of Tiers 1, Tiers 2 *[up to 200 t of oil]* and Tiers 3 *[larger than 200 tons of oil]*.

As a general regulation, dispersion operations can be achieved in the following limits:

- Off the *[proposed depth: 20 m]* isobath depth and *[proposed distance: 1 Km]* distance to the shore for dispersing Tier 3 pollution.

- Off the *[proposed depth: 10 m]* isobath depth and *[proposed distance: 0.5 Km]* distance to the shore for dispersing Tier 1 and Tier 2 pollution.

However, a technical committee,

- led by *"name of the administrative body in charge",*
- and composed of: "*list of the administrations, laboratories, institutes, harbour authority, private bodies... involved"*
- with consultation of : *"list of the administrations, laboratories, institutes, harbour authority, private bodies…. involved"*
- The technical secretary of the technical committee is carried out by *"name of the administrative body in charge",*

will examine and study, when necessary *"on areas of special interest such as harbour entrance (risky area), marine protected areas (high environmental interest: fisheries and marine critical habitats)"*, modifications of these general limits at local scale to take into account local characteristics (environmental and socio-economic).

This technical committee can take advantage of consulting Non Governmental Organisations dealing with marine conservation, scientific experts in marine environment.

Considering harbour areas *"list of the concerned harbours"*, the possibility of using dispersant should be examined on realistic scenarios in terms of quantity of oil to be involved in expected spill incidents, the main locations where the risk for incident is the most important, the prevailing weather conditions, the tidal stream and the surface agitation. These scenario studies will aim at comparing realistically (according to the available equipment) the possibilities for containment and recovery, chemical dispersion and letting oil to come ashore for shoreline cleanup. For each of these options the environmental damage and the associated cost will be considered and compared in order to determine the most appropriate option.

"Name of the administration" is in charge of conducting these investigations.

The charts of the limits are integrated in the contingency plan to assist persons in charge of the response to decide without delay to disperse or not (to decide quickly as long as the pollutant is still dispersible).

The local specific regulations related to the use of dispersants decided by the commission are presented (or described) as charts in the Annex *"to be specified"*.

These charts are regularly updated by *"name of the administration in charge"* under the supervision of the technical committee designed above.

Note on the use of oil spill dispersants in inland waters: *in inland waters the rationale can be different and the environmental considerations may differ. This document deals only with the marine application and not with the use in inland waters. See Chapter 10.*

Basic principles to set environmental considerations to the use of dispersant particularly in coastal waters

As a first approach, the following basic principles can be considered:

1) Consider the use of dispersant in open sea / offshore / ahead sensitive resources, to avoid oil to reach the shoreline or possibly sensitive items (where water quality need to be preserved).

2) Generally speaking, no use of dispersant on or in the immediate vicinity of sensitive items.

3) On coastal areas where several sensitive items are of concern, NEBA based on realistic scenarios is needed.

4) When NEBA is needed:
   a. Local sensitive items should be listed and their possible vulnerabilities assessed;

   b. Consider NEBA approach in terms of vulnerability rather than sensibility (vulnerability=sensitivity and restoration time);

   c. If conflicting conclusions:
      - Preserved the habitat before the species;
      - Preserved the reproduction possibilities rather than the young stages;

5) Warning: special concerns for the application of dispersants when the wind is blowing in the direction of flocks of birds (contact between dispersants and feathers of seabirds should be avoided).

Note 1: The use of dispersants should be a response to incidental pollution; in sheltered area, a chronic-usage on repeated incidents can lead to chronic contamination.

7.1.3 Logistics for dispersant application

Logistics required for the application of dispersant include the spraying systems, the products, and other related items.

These products and means required are listed in the contingency plan (location, quantities, characteristics, compatibility, availability, operational limit conditions and mobilisation and deployment timeframe) such as:

- operational stocks of dispersant;
- shipboard spraying systems;
- vessel on which spraying equipment can be used;
- vessels equipped with spraying systems;
- aerial spraying aircrafts;
- facilities from where means would be deployed (airports, ports…).

and eventually:

- aerial surveillance aircrafts aiming at following, and guiding the operations;
- communication means;
- transport means...

The plan must include information (characteristic, performances, requirements, and conditions of availability ...) related to the equipments which are likely to be mobilized:

- at national level public and private equipment;
- at regional level equipment available through bilateral or regional agreement(s) with neighbour countries;
- at international level equipment available through international, regional, sub-regional or bilateral agreements or through contracts with international cooperative companies.

The plan provides details on the persons in charge of the equipment (contact person).

"Name of the administration in charge" in cooperation with the stakeholders *(private companies, ports….)* is in charge of keeping the listing of equipment and related logistics up to date.

7.2 The decision making process

The decision at the time of the incident is led through 3 questions:

- Q1) Is dispersion *a priori* possible or not from a physicochemical point of view? Is the viscosity of the pollutant compatible with dispersion? This question refers to the recommendations put forth in § 7.1.1.

- Q2) Is dispersion acceptable from an environmental point of view? Is the pollution located in an area where *a priori* dispersion is possible? This question refers to the recommendation mentioned in § 7.1.2.

- Q3) Is dispersion feasible from a logistic point of view? Are the logistics available (products and spraying equipment) *a priori* available and sufficiently mobile to conduct the operation within the time limit (period when chemical dispersion remains effective "window of opportunity for dispersion")? This question refers to the recommendation mentioned in § 7.1.3.

At the time of the incident, the decision of using dispersant is taken by *"name of the administration in charge"*. For this decision, *"name of the administration in charge"* can request the assistance of other relevant institutions: *"name of other institutions"*.

Decision trees for decision making process are reproduced in **Annex.**

7.3 Selection of dispersant products

The dispersants used in the *"COUNTRY NAME"* controlled waters must be approved for pollution countermeasure use by the authorities.

Note: such acceptation (or approval) do not prevent a dispersant to comply with the general regulation on chemicals.

For efficiency prospective only concentrate dispersants are recommended for use in *"COUNTRY NAME"* controlled waters.

For safety reasons dispersant products flash point should be above *60 °C*.

The product should be documented through manufacturer's recommendations.

Dispersant should be guarantee by its producer to be stable and to keep its properties for 5 years minimum when stored in proper conditions.

The products approved are registered on a list of approved products constantly revised.

In the event of pollution concerning neighbouring countries, the decisions related to the use and to the application of dispersant must take into account the existence of bilateral (or regional) agreements with the neighbouring country(ies), *"Name of the Agreement(s) and Country(ies) part of the agreement(s)"*. These agreements refer to: the dispersants approved by the related country(ies), the application equipment which can be pooled, and the integration in the *"COUNTRY NAME"* response capacities brought from the related country(ies).

As a principle, in case of joint operation at the regional level, dispersants approved in the partner countries will be accepted if they have been tested for effectiveness and toxicity.

In the event of major pollution, requiring international assistance (Tier 3), dispersants can then be products which will have been examined at least from the point of view of their effectiveness and their toxicity and which are acceptable.

The approval procedure and its possible revision are under the responsibility of a technical committee:

- led by *"name of the administrative body in charge"*;
- and composed of: *"list of the administrations, laboratories, institutes, harbour authority, private bodies... involved"*.
- with the consultation of: *"list of the administrations, laboratories, institutes, harbour authority, private bodies… involved"*.
- The technical secretary of the technical committee is carried out by *"name of the administrative body in charge"*.

Note ***on the use of oil spill dispersants in inland waters:*** *the choice of the dispersant product is different (products efficient at sea are often not efficient in fresh water). See Chapter 10.*

7.4 Choice of application equipment

The equipment used for the application of the dispersants is specialised materials or materials converted for this purpose (e.g. agricultural plane equipped with proper nozzles or mobile spraying equipment to be set in (under) transports planes).

The equipment ensures a regular spraying and distribution of the dispersant (diameter of the dispersant droplets, rate of application).

The equipment is regularly maintained (individually checked once a year at the warehouse) and is tested periodically through exercises (Refer to chapter. 9.1).

The choice of the application equipment of the national stockpiles should be approved by *"name of the administrative body in charge"* with technical advice of *"list of the administrations, institutes and/or private bodies involved"*.

7.5 Logistics related to the application of dispersants

The application of dispersants requires a complete logistics; in addition to the spraying equipment, it is necessary to envisage the logistics to carry this equipment (ships, helicopters and planes), the required consumable (in particular fuel), adapted facilities (port, airport and runways) as well as other related provisions (e.g. means of transport of the material or products).

Aircrafts can be in *"COUNTRY NAME"* or coming from external countries; they can belong to public sector or to private companies.

In case of aircrafts owned by external private or public bodies, contracts should be set to ensure the availability of the equipment at the time of the incident (e.g. availability within 6 hours after call for mobilization).

Reciprocal compatibilities of the equipment and materials deployed must be checked in order to guarantee the reliability of the whole logistic chain (e.g. compatibility of the spraying systems with the ships, compatibility of planes or helicopters with the local facilities…).

Moreover, for these aircrafts, the different authorisations linked to the Civil Aviation regulations should be prepared in advance in order to allow a fast deployment of the aircrafts at the time of the incident.

Operational stocks of dispersant: In order to ensure prompt dispersion application, dispersant stockpiles must be set up. These stockpiles should be quickly deployed or localised near the spraying systems. They must be also dimensioned to enable a day of dispersion with the spraying system available at the location. Regarding the vessel-mounted spraying systems, stockpiles should be located preferentially in the ports where the vessels are located. Concerning the aerial spraying aircrafts, stockpiles should preferably be available at the airport.

The date of manufacture of the product must be given by the supplier.

The dispersant must be stored according to the manufacturer's instructions and their material safety data sheet (MSDS).

The batches of dispersant of the operational stockpiles are checked periodically (physicochemical parameters – aspect, viscosity, density –; effectiveness…) to check their good conservation. (*Suggestion: periodic checking plan: 5 years after purchase if the product has been kept in its original tank/drum, and further every 2 years)*.

Disposal of unusable dispersants is the responsibility of the dispersant owner. The dispersant must be disposed off in environmentally acceptable norms akin to any chemical substances which are disposed in accordance to the environment regulation that are in force (tractability).

An inventory of stockpiles of dispersant and spraying systems should be kept up-to-date. This inventory must take into account stockpiles of the countries or entities with which bilateral agreements or agreements of assistance exist as well as the industry capacities.

The public stockpiles of dispersant are under the responsibility of *"name of the administrative body in charge"*.

Considering the aerial application equipment, *"name of the administrative body in charge"* makes an inventory of the possible available resources at a regional level (e.g. existing spraying aircrafts).

Considering application equipment taking into account that private resources will be needed contracts must be set with bodies owning this equipment.

"Name of the administrative body in charge" is in charge of establishing contracts with private/external bodies owning application equipment which are planned to be mobilised in the contingency plan.

"Name of the administrative body in charge", keeps updated the inventory of equipment and products available from public and private sector.

8. Application procedures

8.1 On location dispersion efficiency test and dispersion monitoring

The weathering degree of the oil is generally unknown; therefore the dispersibility of the pollutant remains uncertain when the treatment starts and further.

For this reason, any treatment operation should begin with careful observation of the treatment effect (e.g. visual observation to look for brown plume under the sea surface corresponding to dispersed oil). It is necessary to carry out when starting the treatment with a test spraying run in order to decide whether to continue or to stop the dispersant application. Such tests should be repeated along the operations to check periodically the dispersant keeps efficient.

When available, remote aerial sensing techniques such as Infra Red (IR) can be used to confirm the disappearance of the surface oil resulting from the dispersion process.

At last, when a vessel is on site, it is possible to assess the oil dispersibility by collecting a sample in a glass jar in the slick and by testing it in the field. The field test procedure consist

in comparing, following manual agitation (hand checking), the dispersion of a sample containing dispersant and oil and one containing only oil (e.g. National Plan Oil Spill Dispersant Effectiveness Field Test Kit - Nat-DET).

"Name of the administrative body in charge" must designate the person on location who will complete these controls in order to be informed on the efficiency of the application.

"Name of the administrative body in charge" in consultation with the *Ministry Responsible for the Environment* will decide to continue or to stop the treatment.

8.2 Dispersion application procedure

Success of an operation is based on the respect of treatment procedures. The treatment should be conducted:

- on the thick parts of the slick (colour brown to black) without taking into consideration the thinnest parts (iridescence, shine…);
- in a systematic way, taking into account the wind;
- (Reference Appendix 6 – Operational procedures from IMO / UNEP recommendations on dispersant application) and Part IV of these Guidelines.

As often as possible, treatment equipment (especially ships) are guided during the spraying operation by a spotter aircraft which indicates the slick zones where the dispersant application must be targeted. When necessary, these parts to be treated can be marked out (with buoys or smoke canisters).

As often as possible, the treatment is monitored in order to assess its efficiency; such a monitoring can be carried out by taking waters samples on the treated slick before and after treatment for further oil concentrations measurements, or by aerial photography or remote sensing technique (e.g. IR) to assess the amount of oil remaining on sea surface (reduction of the slicks due to the dispersion process). This monitoring can be useful to justify the decision to use dispersant and to claim for compensation afterwards.

"Name of the administrative body in charge" with, if necessary, the help of *other institutions*, is responsible for organising the monitoring of the efficiency of the dispersion.

8.3 Assistance to foreign experts / operators

In case of large incident (Tier 3) involving foreign experts / operators (from neighbouring countries, international service companies...), and according to the decision taken by the Contracting Parties to the Barcelona Convention, it is necessary to plan national contact persons in charge of welcoming these external teams and facilitating their involvement in the national context (example, a contact person at the airport to take care of a foreign team in charge of running a spraying aircraft, for accommodations, jet-fuel supply, customs clearance, various authorisations…).

8.4 Involvements on fisheries activities

The dispersion of significant amount of oil can impact some environmental resources as fisheries (e.g. tainting of sea food following contact with oil droplets). For sanitary reasons and to justify afterwards claims for compensation, it is useful to monitor the water column

quality which may have been in contact with oil as well as the quality of the sea food, and possibly to take appropriate measures such as banning fishing temporarily.

The monitoring of the effects of the use of dispersants as well as the appropriate decisions (e.g. fishing ban) is under the responsibility of the *"name of the administrative body in charge"* in consultation with the *"list of the administrations, institutes and/or private bodies involved"*.

9. Precautions and operational recommendations

9.1 Drills

Drills are organized periodically to validate the combating procedures, to train the operators and to check the capability of the contingency plan (through table top exercises to check the availability of persons to be mobilized – level 1 exercise) and through practical field exercise to check the capability of the combating equipment to respond to a pollution situation (through real simulations, mobilizing people and equipment on site – level 2 exercise).

One level 1 exercise (table top) per year should be organised in each riparian district, and one level 2 exercise per year should be organised at the national level, in a different riparian district each year.

Level 2 exercise could be organised in the frame of the NOSCP (National Oil Spill Contingency Plan) (involving other techniques than dispersion).

Corrective actions will be taken according to the observations made during the exercises.

Drills are coordinated by the *"name of the administrative body in charge"* with the *concerned organisations*.

9.2 Training

Personnel in charge of operating the dispersant application equipment are specifically trained. This training can be integrated in the general training plan scheduled in the NOSCP (National Oil Spill Contingency Plan).

The *"name of the administrative body in charge"* coordinates and supervises the training.

9.3 Protection of persons and equipment

Personnel in charge of the spraying operations are protected against mist of dispersant (Individual Protective Equipment; e.g. mask, protective impermeable clothes, gloves…).

Solid surfaces (especially ship decks) which may receive spray of dispersant are flushed with water to avoid being slippery (safety concerns).

Materials and equipment in contact with dispersant are flushed with water to avoid any deterioration (of paint, rubber seals…).

Spraying equipment is rinsed with fresh clear water after use.

10. Use of oil spill dispersants in inland waters (rivers and lakes)

The use of dispersants in inland waters differs from the open sea use:

Generally speaking, chemical dispersion is not appropriate to oil pollutions in inland waters as:

- The volume of water is often limited and does not allow the same dilution-dissemination conditions as those prevailing in the open sea.
- The agitation is often too weak to promote the dispersion process.
- The lack of agitation is favourable to the choice of the containment and recovery response option.
- In inland waters, the oil spill incidents involve more often light refined products which do not require chemical dispersion.
- There are uncertainties on the environmental and socio-economic impact; the environmental considerations may differ from those prevailing in marine environment, in terms of sensibility and vulnerability; these should need to be studied in advance in order to check that dispersion would bring more advantages than disadvantages. In particular, chemical dispersion is not suitable in the vicinity or upstream of water intakes (which would be polluted in such a case), of fish farms etc…

According to these considerations, generally speaking, the use of dispersant in fresh water environment should be avoided; the situations for which the dispersion process could be applied in fresh water would be only:

- on oil products dispersible, (viscosity less than 5 000-10 000 cSt), and also persistent (which excludes the light refined products – petrol – diesel oil – kerosene – which naturally evaporate and self-disperse);
- possibly, on rivers presenting a strong stream preventing any possibility to choose the recovery/containment option, or in great lakes when the agitation resulting of bad weather conditions (wind) is strong enough to prevent any containment/recovery operation;
- far away from environmentally sensitive resources or waters intakes;
- on very limited quantities of pollutant, in order not to pollute the local environment.

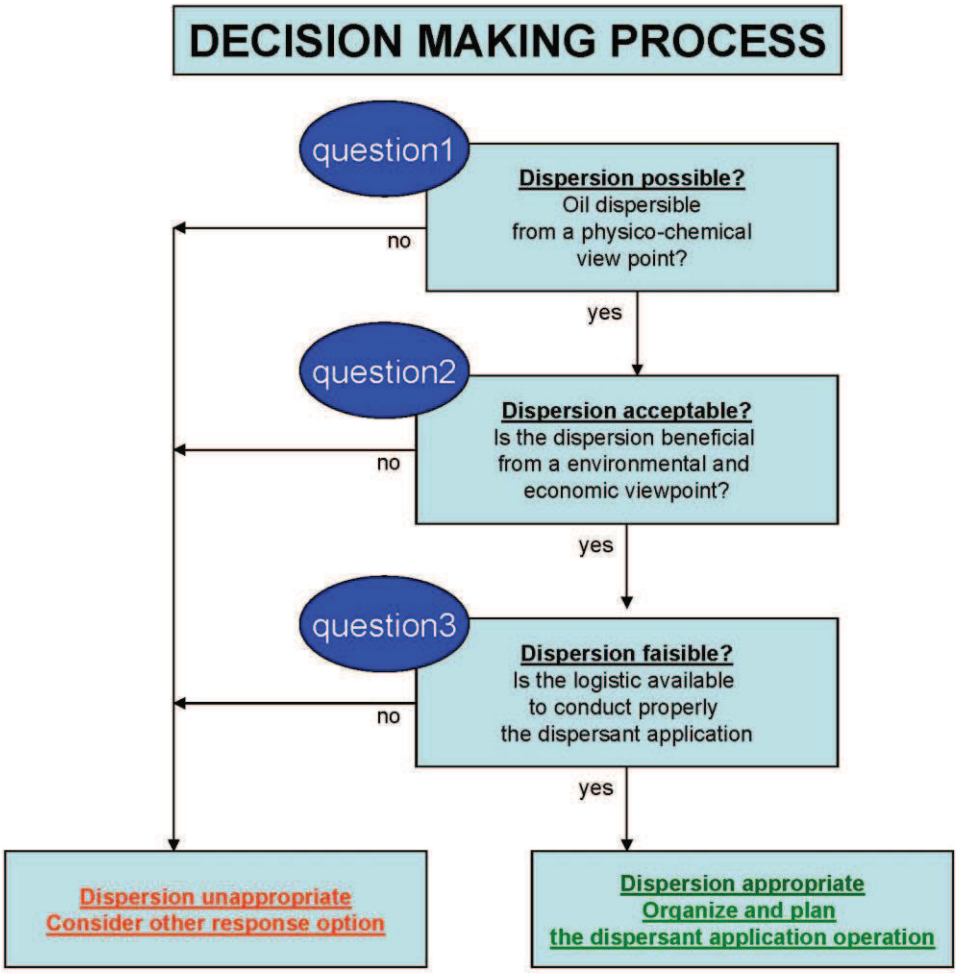
In such a case, it would be necessary to:

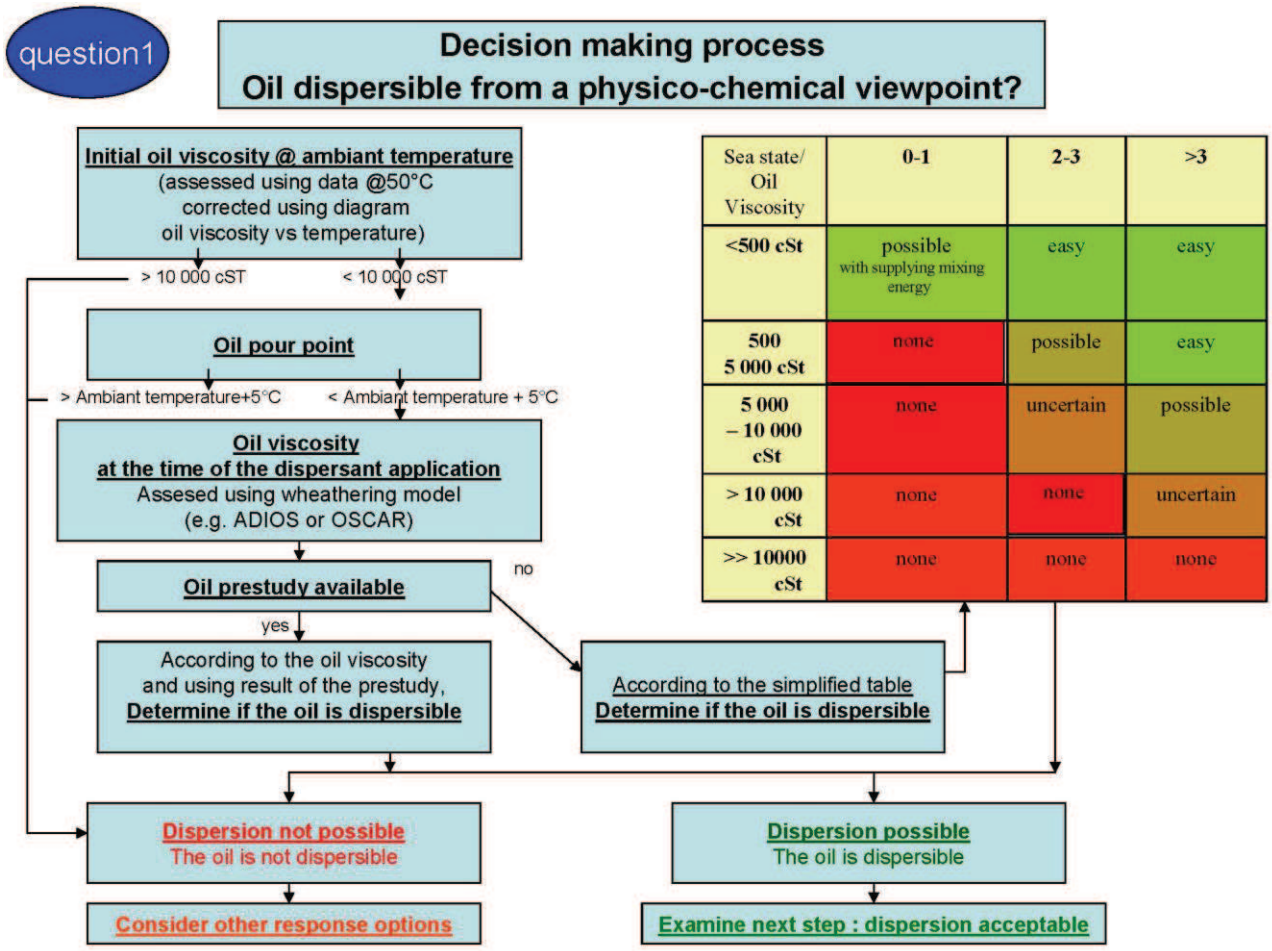
- use a specific dispersant designed for fresh water use (as marine oil spill dispersants are not efficient in fresh water). Refer to the French list of fresh water dispersants at: http://www.cedre.fr/en/response/dispersants_ed_gb.pdf;
- if necessary, promote the dispersion process by mixing the slick with water jets after application;

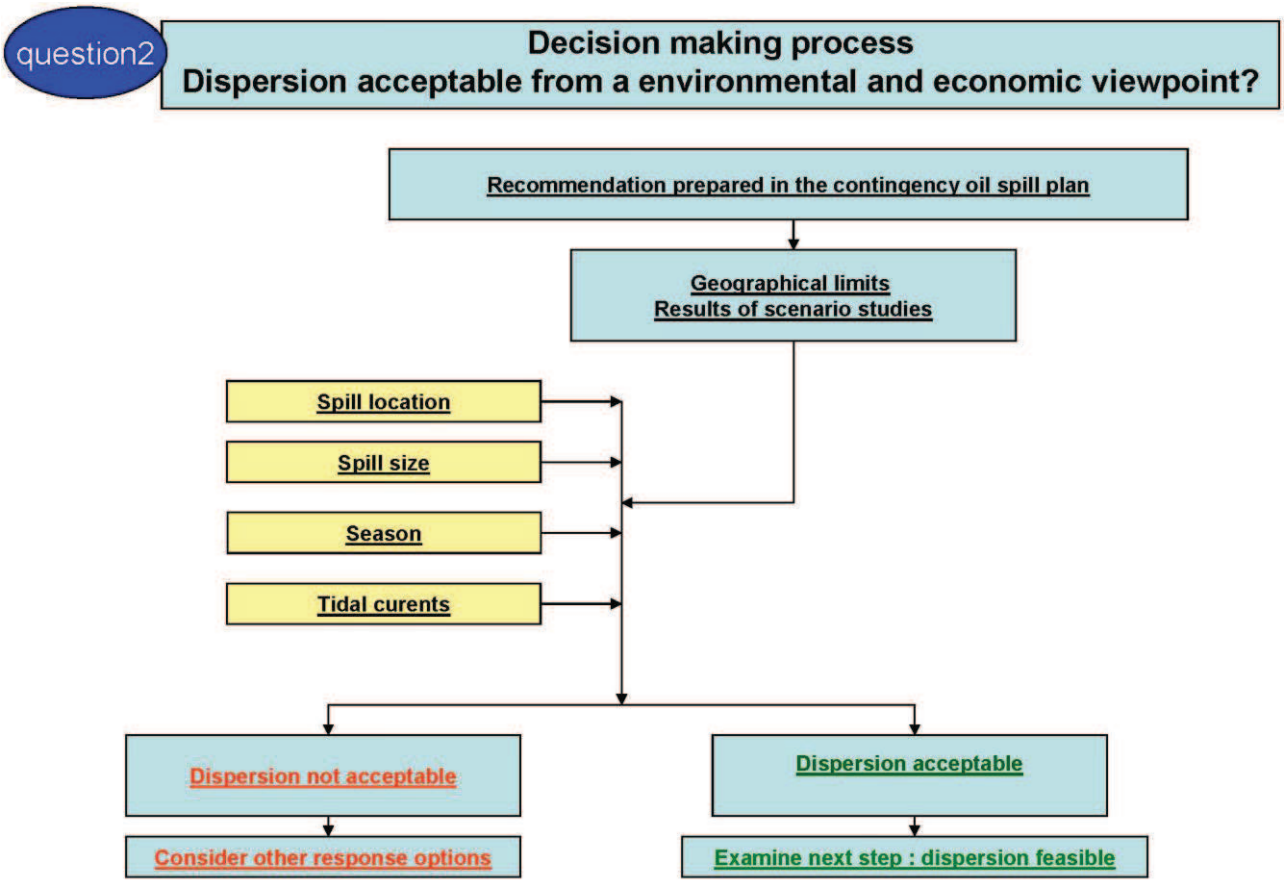
- on location where the depth is higher than 10 meters;
- with warning toward the populations which use the water (water uptakes, fishing…);
- with report of the incident to the authorities and monitoring of the environment.

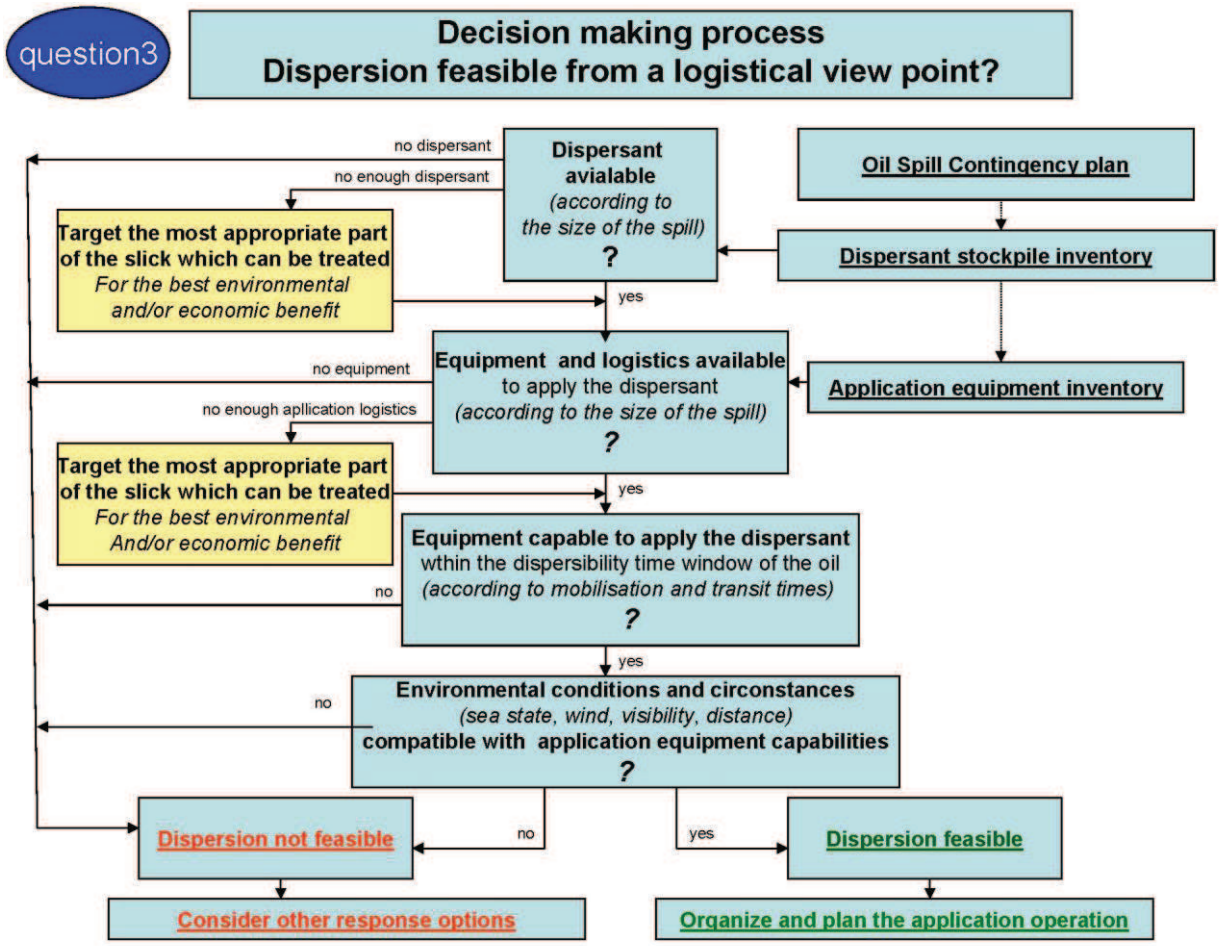
If some specific persistent oils (e.g. crude) would be frequently transported in known fresh water bodies, it is recommended that these oils are studied in terms of behaviour and toxicity in fresh water environment in order to determine the most appropriate response options and the best conditions for use, including the use of dispersant (determination of the weathering process of the oil dispersibility, dispersed oil toxicity…).

ANNEX


DECISION MAKING PROCESS
question1
Dispersion possible?
Oil dispersible
from a physico-chemical
view point?
no
yes
question2
Dispersion acceptable?
Is the dispersion beneficial
from a environmental and
economic viewpoint?
no
yes
question3
Dispersion faisible?
Is the logistic available
to conduct properly
the dispersant application
no
yes
Dispersion unappropriate
Consider other response option
Dispersion appropriate
Organize and plan
the dispersant application operation


question1
Decision making process
Oil dispersible from a physico-chemical viewpoint?
Initial oil viscosity @ ambiant temperature
(assessed using data @50°C
corrected using diagram
oil viscosity vs temperature)
> 10 000 cST
< 10 000 cST
Oil pour point
> Ambiant temperature+5°C
< Ambiant temperature + 5°C
Oil viscosity
at the time of the dispersant application
Assesed using wheathering model
(e.g. ADIOS or OSCAR)
Oil prestudy available
no
yes
According to the oil viscosity
and using result of the prestudy,
Determine if the oil is dispersible
According to the simplified table
Determine if the oil is dispersible
Dispersion not possible
The oil is not dispersible
Consider other response options
Dispersion possible
The oil is dispersible
Examine next step : dispersion acceptable
Sea state/ Oil Viscosity
0-1
2-3
>3
<500 cSt
possible with supplying mixing energy
easy
easy
500 5 000 cSt
none
possible
easy
5 000 – 10 000 cSt
none
uncertain
possible
> 10 000 cSt
none
none
uncertain
>> 10000 cSt
none
none
none


question2
Decision making process
Dispersion acceptable from a environmental and economic viewpoint?
Recommendation prepared in the contingency oil spill plan
Geographical limits
Results of scenario studies
Spill location
Spill size
Season
Tidal curents
Dispersion not acceptable
Consider other response options
Dispersion acceptable
Examine next step : dispersion feasible


question3
Decision making process
Dispersion feasible from a logistical view point?
Dispersant avialable (according to the size of the spill) ?
Oil Spill Contingency plan
Dispersant stockpile inventory
no dispersant
no enough dispersant
Target the most appropriate part of the slick which can be treated For the best environmental and/or economic benefit
yes
Equipment and logistics available to apply the dispersant (according to the size of the spill) ?
Application equipment inventory
no equipment
no enough apllication logistics
Target the most appropriate part of the slick which can be treated For the best environmental And/or economic benefit
yes
Equipment capable to apply the dispersant wthin the dispersibility time window of the oil (according to mobilisation and transit times) ?
no
yes
Environmental conditions and circonstances (sea state, wind, visibility, distance) compatible with application equipment capabilities ?
no
Dispersion not feasible
no
yes
Dispersion feasible
Consider other response options
Organize and plan the application operation

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