

GUIDELINES ON THE USE OF OIL SPILL DISPERSANT IN MALAYSIA

**2016 Edition
Department of Environment, Malaysia**



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**DEPARTMENT OF ENVIRONMENT
MALAYSIA**

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**MINISTRY OF NATURAL RESOURCES AND ENVIRONMENT
LEVEL 1- 4, PODIUM 2 & 3, WISMA SUMBER ASLI
NO. 25, PERSIARAN PERDANA, PRECINCT 4
62574 PUTRAJAYA**

Hunting Line: +603-88712100/ 2200

Fax: +603-8888 4070

URL: <http://www.doe.gov.my>

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FOREWORD

The 4,675 km stretch of Malaysia's coastline which is surrounded by the South China Sea, the Straits of Johor, the Straits of Malacca and the Sulu Sea, is exposed to marine pollution incidences. Economic development activities at sea can potentially cause marine pollution such as oil spill incident either intentionally or inadvertently resulting from accidents of vessels, activities from marine installations including oil platforms, pipelines, jetties, ports and so forth. Therefore, we should always be alert and be prepared to deal with such unwanted incidences, so as to protect the coastal and marine environment of Malaysia.



This guideline is designed to guide all pertinent parties and government agencies in making decisions for the use of dispersants during oil spill incidences at sea. Dispersant is one of several tools available to combat oil spills and is a necessary component of an effective response to large volume offshore spills when used appropriately. 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.

In the publication of this guideline, sincere appreciations are extended to members of the "Task Force in Updating the Guidelines on the Use of Oil Spill Dispersant in Malaysia", as well as other relevant agencies in providing important inputs and their expertise towards the successful completion of this guideline. It is hoped that this guideline could serve as a practical guidebook to relevant parties in the use of dispersants to combat oil spills at sea and thus protecting the country's coastal and marine environment. The Department of Environment, as the coordinator for the National Oil Spill Contingency Plan trusts that preventive actions and proper planning are some of the important components in the mainstreaming of environmental agenda to be observed by any operators at sea, in minimizing oil spill incidences. Certainly prevention is better than cure.

"Protecting the Environment is Our Shared Responsibility"

A handwritten signature in black ink, appearing to read 'ahmad', written over a white background.

DATU' DR. AHMAD KAMARULNAJIB CHE IBRAHIM
DIRECTOR GENERAL OF ENVIRONMENT
July, 2016

ACKNOWLEDGEMENT

The Department of Environment Malaysia would like to express our sincere appreciation to the Task Force Members who have given and shared their precious guidance, support and knowledge into the formulating of this guideline, consisting of officials/individuals from:-

- Department of Environment
- Marine Department Malaysia
- Department of Marine Park
- Department of Fisheries
- Malaysian Maritime Enforcement Agency
- Royal Malaysian Air Force
- Air Operations Force, Royal Malaysia Police
- PETRONAS
- Petroleum Industry of Malaysia Mutual Aid Group (PIMMAG)
- SapuraKencana Energy Inc.

IMPORTANT NOTICE

This document is intended as a **reference/guide** for On-Scene Commanders, oil spill contingency planners, oil spill response organizations and operators involved in oil spill counter measures. It is intended to advise when and where dispersants should be considered for use.

This guideline is applicable to all organizations including ports operators, oil processing, handling, storage facilities operators, shipping companies (master/owner), crude oil refinery operators and government agencies involved in marine oil spill response within the territorial sea of Malaysia and the Exclusive Economic Zone.

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1. INTRODUCTION

Oil spill dispersants are liquids that are sprayed onto oil spilled at sea to disperse the oil into water column in the form of very small oil droplets. The addition of dispersants is intended to accelerate natural dispersion of oil which occurs when waves break a surface slick up into droplets that become suspended in the water column.

1.1 Definition of Oil Spill Dispersants

- i. Oil spill dispersants are chemical formulations consisting mainly of a mixture of surfactants which are dissolved in solvents designed to promote dispersion of oil into water. Oil spill dispersants provide an effective and practical first-line response option during large oil spill incidents, particularly for offshore applications.
- ii. These formulations contain surface-active agents (surfactants) that lower the interfacial tension between oil and water. **Figure 1** shows the active ingredients in dispersants. Surfactants consist of two parts namely water seeking hydrophilic head group and oil seeking oleophilic tail group. This allows them to stabilize oil droplets. This is shown in **Figure 2**.

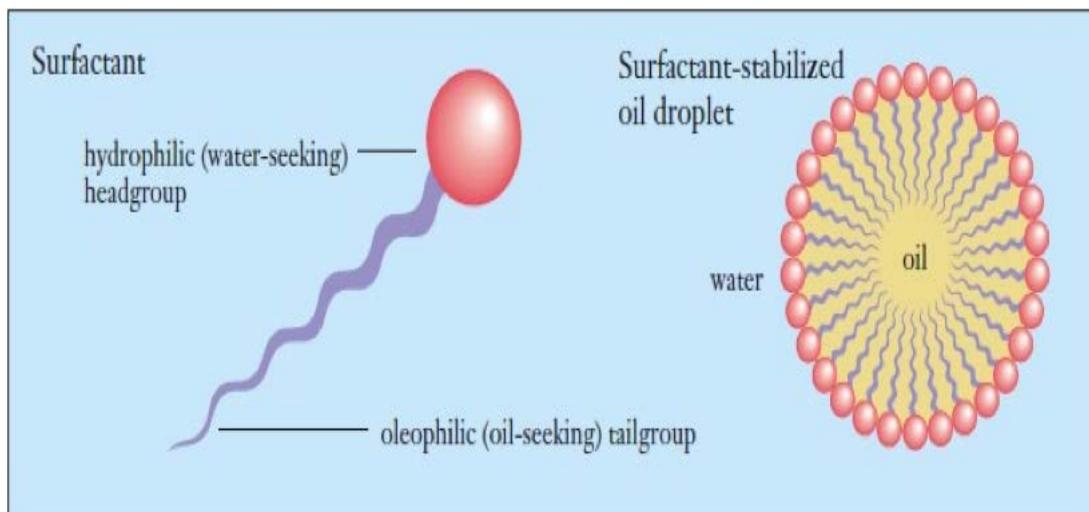


Figure 1: Active ingredients in dispersant (source: IPIECA report series volume 5, second edition, November 2001).

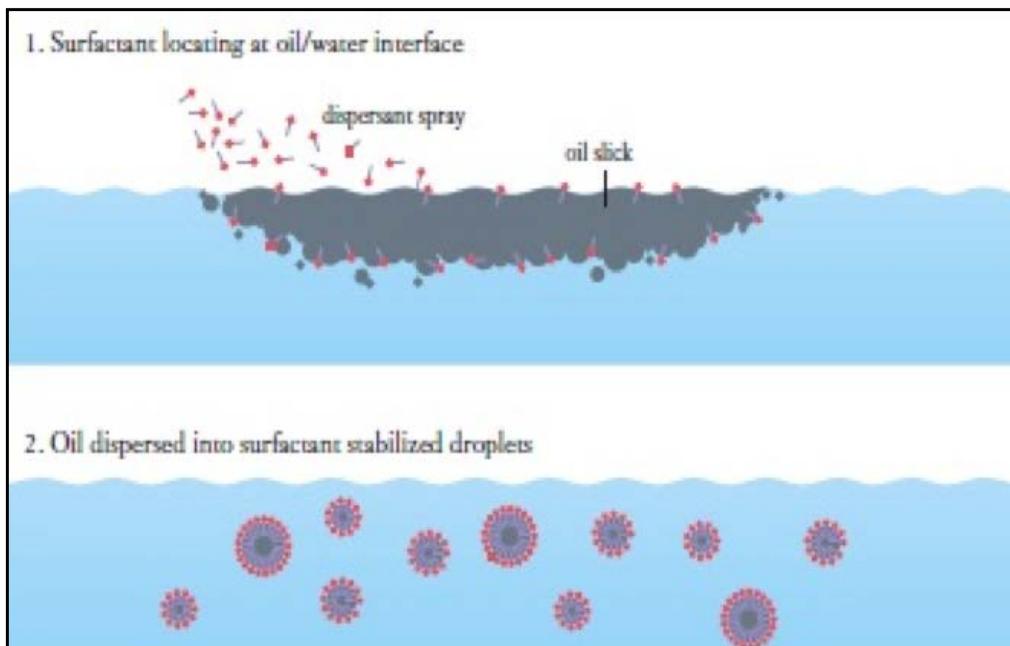


Figure 2: (1) surfactant locating at oil/ water interface; (2) oil disperses into surfactant stabilized droplets (source: IPIECA report series volume 5, second edition, November 2001).

- iii. Each of the molecule of surfactant possesses a water-soluble (hydrophilic) end. After contacting an oil slick on water, these molecules diffuse through the oil and orient themselves at the water-oil interface under the slick. As the water moves due to wave action, or is agitated by a boat wake, oil droplets with attached dispersant molecules break away from the slick. These are prevented from re-coalescing because they are repelled by surrounding water soluble ends of the surfactant.

1.2 Generations and Types of Dispersant

- i. There are three (3) types of dispersants namely:
 - a. First generation dispersants;
 - b. Second generation dispersants; and
 - c. Third generation dispersant.
- ii. The descriptions of the 3 types of dispersants are as followings:

- a. **First generation dispersants** were industrial detergents primarily developed for cleaning oily machinery, washing vehicles and clean up spill oil on a small scale. These dispersants were used for the first and last time when the massive Torrey Canyon oil spill occurred in 1967. However, the damage done to the local environment was judged to be worse than the damage inflicted by the spilled oil. More effective dispersants were needed. This type is no longer used as oil spill dispersants and is prohibited for use by the Department of Environment.

- b. **Second generation dispersants** were developed at the beginning of the 1970's. These were also known as 'UK Type 1', 'hydrocarbon base' or 'conventional'. It has a much lower toxicity to marine life compared to the First generation dispersants. The solvent used was kerosene with a very low aromatic content and contained a low concentration of surfactants. However, the effectiveness of these types were low and needed to be used at very high treatment rates. Thus, again more effective dispersants were needed.

- c. **Third generation dispersants** are also known as 'concentrate'. Higher performance dispersants were produced by employing a higher amount of surfactant (up to 50% weight) than the 'hydrocarbon base' dispersants. Because of this, Third generation dispersant will generally have much higher viscosity than the second generation dispersant. They can be spray undiluted (UK Type 3) or diluted with seawater (UK Type 2). When sprayed undiluted from aircraft or ships, the recommended treatment rate is 1 part dispersant to 20 – 30 parts of oil. This is the most effective way of using it. The addition of seawater as an extra solvent to reduce the viscosity of the dispersant is not feasible when spraying from aircraft and the dispersants needs to be used undiluted or 'neat'.

iii. The different generations and types of oil spill dispersants are presented in **Table 1**.

Table 1: Generations and types of oil spill dispersants (Source: EMSA Manual on the applicability of oil spill dispersants, Version 2: September 2009).

Description and Generation	UK Type	Sprayed from	Recommended treatment rate	Comments	Current Availability
1. First generation dispersants	-	Ships, boats, onshore	High treatment rate 30 - 50% dispersant as volume of spilled oil or 1 part dispersant to 2 to 3 parts oil	Industrial detergents with solvents that are too toxic to be used as dispersants	No longer used as oil spill dispersants
2. "Conventional" or "Hydrocarbon-base" or "Second generation dispersants"	UK Type 1 "Conventional" Or "Hydrocarbon-base" dispersant	Ships, boats, onshore	High treatment rate 30 - 50% dispersant as volume of spilled oil or 1 part dispersant to 2 to 3 parts oil	Low toxicity High treatment rate	Available
3. "Concentrate" or "Third generation dispersant"	UK Type 2 "Water-dilutable concentrate dispersant"	Ships and boats	10% solution of dispersant in seawater to 2 to 3 parts oil equivalent to 1 part dispersant to 20 to 30 parts oil	Low toxicity High treatment rate When diluted with water and can only be sprayed from ships and boats in this way.	Available
	UK Type 3 "Concentrate" dispersant	Aircraft, ships and boats	Low treatment rate 3 to 5% dispersant as volume of spilled oil or 1 part dispersant to 20 to 30 parts oil	Low toxicity Low treatment rate Used undiluted (or 'neat')	Available

2. SCOPE

- 2.1 This document is intended to guide On-Scene Commanders, oil spill contingency planners, oil spill response organizations and operators involved in oil spill counter measures. It is intended to advise when and where dispersants should be considered for use. This guideline is applicable to all organizations including ports operators, oil processing, handling, storage facilities operators, shipping companies (master/owner), crude oil refinery operators and government agencies involved in marine oil spill response within the territorial sea of Malaysia and the Exclusive Economic Zone.
- 2.2 Manufacturers or suppliers of oil spill dispersants must follow the application procedure for dispersant product in obtaining approval from the Department of Environment Malaysia. Please refer to section 6 of the guideline.

3. POLICY ON THE USE OF DISPERSANT

- 3.1 Under the National Security Council Directive 20, the Department of Environment, Malaysia is the lead agency for National Oil Spill Contingency Plan for the maritime disasters caused by occurrence of oil spill.
- 3.2 The Director General of Environmental Quality is also empowered to take necessary action to remove, disperse, destroy or mitigate the pollution caused by oil spillage under Section 47, Environmental Quality Act (EQA) 1974 and Section 14(1), Exclusive Economic Zone Act 1984.
- 3.3 The use of the Department of Environment approved dispersants as oil spill counter measure is in accordance with the National Oil Spill Contingency Plan, provided it complies with this guideline. Non-Department of Environment approved dispersants are prohibited from being used in any oil spill response.
- 3.4 The use of dispersants are prohibited in the sensitive areas listed below:
 - i. Marine aquaculture areas.
 - ii. Fresh water environment e.g. rivers and lakes.
 - iii. Areas gazetted as Marine Parks and Marine Reserves and Fisheries Prohibited Area under Fisheries Act, 1985.

- iv. Areas described as “environmentally sensitive area” as per the followings:
 - a. any area specified as such in the development plan or national physical plan under the Town and Country Planning Act 1976 [Act 172];
 - b. any area specified as environmental protection area or environmental conservation area under any Enactment in the State of Sabah such as Sabah Parks Enactment 1984 and Sabah Wildlife Conservation Enactment 1997; or
 - c. any area specified as environmental protection area or environmental conservation area under any Ordinance in the State of Sarawak such as Sarawak National Parks and Nature Reserves Ordinance 1998.

- v. Dispersant prohibited areas as identified in the Environmental Sensitivity Index (ESI) published by PETRONAS. Approval from the Department of Environment Malaysia is needed for the areas not within the ESI map.

3.5 Dispersant application should be done under the supervision of trained personnel.

4. GENERAL RULES

4.1 The followings are some general rule-of-thumb for consideration on when to use and when not to use dispersants.

i. When to use dispersant

- a. When natural dispersion is not sufficiently rapid;
- b. When oil is moving towards shore or sensitive area based on oil trajectory analysis;
- c. When there is a continuous discharge of oil from an oil well or pipeline, the sub-sea application of dispersant is a better option; and
- d. When deploying physical methods or mechanical recovery equipment is not practicable and ineffective due to weather and current conditions, logistic restrictions, large area of coverage, unavailability of large of space or volume required for storage of recovered oil and risk of personnel safety or as such.

ii. When not to use dispersant

- a. Dispersants shall not be used on oil sheen;
- b. Dispersants shall not be used on non-persistent oil e.g. gasoline, diesel;
- c. Dispersants shall not be used on weathered viscous emulsions (chocolate mousse) at sea;
- d. Dispersants shall not be used on types of oil with pour point above that sea water ambient temperature;
- e. Dispersants shall not be used when there is no agitation presence;
- f. In water with poor circulation e.g. harbours, enclosed bays, inlets;
- g. Within 3 nautical miles from shoreline;
- h. Near intake point for drinking water supplies;
- i. In water used for industrial cooling systems; and
- j. In adverse weather conditions e.g. wind above 25 knots.

5. DISPERSANT USE DECISION TREE

- 5.1 Chemical dispersion should be used when the advantages outweigh the disadvantages. Indiscriminate and unauthorized use is dangerous and illegal.
- 5.2 In reaching the decision to use dispersants many difficult trade-offs must be considered using Net Environmental Benefit Analysis (NEBA) to ensure that the response chosen in applying dispersants is the best option under prevailing oil spill circumstances.
- 5.3 Assuming that mechanical recovery of the oil is no longer viable as a primary counter measure, the overriding consideration must be that the use of dispersants will result in an improvement in safety or a reduction in overall environmental impact.
- 5.4 **Dispersant Use Decision Tree Flow Chart** is shown in **Annex I**.

6. APPROVAL PROCEDURE FOR DISPERSANT PRODUCT

- 6.1 Only second and third generation dispersants are allowed to be submitted to the Department of Environment Malaysia for approval. An advanced list of the Department of Environment Malaysia approved dispersants is maintained to ensure that only suitable dispersants can be used during an oil spill response. Once a spill has occurred, there is rarely sufficient time to consider obtaining approval for the use of dispersants to minimize the impact of the spill.
- 6.2 Manufacturer and vendors must obtain supporting letter from the Department of Environment Malaysia before applying for product testing. Product testing can be done at the Fisheries Research Institute (FRI) Batu Maung, 11960 Batu Maung, Penang (Tel: 04-6263925/26) or any accredited laboratory.
- 6.3 Any application by manufacturers or any vendor for evaluation of their dispersant product at the Fisheries Research Institute in Penang or any accredited laboratory must be submitted with the following items:
 - i. a sample of the product;
 - ii. Safety Data Sheet as per CLASS Regulations 2013; and
 - iii. product technical information accompanied by the Department of Environment Malaysia supporting letter for product testing.
- 6.4 The method used for toxicity test of dispersant is ISO 7346-2, ISO 6341 and ISO 8692; 1989.
- 6.5 The method to test effectiveness Standard Test Method for Laboratory Oil Spill Dispersant Effectiveness Swirling Flask (ASTM F2059-062012) or equivalent method.
- 6.6 Dispersant products that have passed toxicity and effectiveness testing will be considered by the Department of Environment Malaysia for approval and included in the Department of Environment Malaysia approved list of dispersants.
- 6.7 Please refer to **Annex II** for the List of Approved Dispersants by the Department of Environment Malaysia.

7. AUTHORIZATION OF OIL SPILL DISPERSANT USE

7.1 Section 27 of the Environmental Quality Act, 1974 on prohibition of discharge of oil into Malaysian waters states that:

1. No person shall, unless licensed, discharge or spill any oil or mixture containing oil into Malaysian waters in contravention of the acceptable conditions specified under section 21; and
2. Any person who contravenes subsection (1) shall be guilty of an offence and shall be liable to a fine not exceeding five hundred thousand ringgit or to imprisonment not exceeding five years or to both.

7.2 Under the Environmental Quality Act, 1974 and Part IV, Section 10 of the Exclusive Economic Zone Act, 1984, the release of chemicals classified as environmentally hazardous substances to the marine environment is prohibited. Therefore, in the event of an oil spill, authorization for the use of dispersants to combat oil spill at sea should follow the following conditions:

i. **Use of dispersants in Malaysia Territorial Waters**

The use of dispersants listed in the Department of Environment approved dispersant list in the Malaysia territorial waters must be approved by the Department of Environment State Director. The application form is as per Annex III.

ii. **Use of dispersants in Exclusive Economic Zone Area**

The use of dispersants listed in the Department of Environment approved dispersants list is allowed in the Exclusive Economic Zone area and must be notified as soon as practicable and within 24 hours to the Department of Environment State Director.

7.3 To meet condition 7.2, the benefits and drawbacks of dispersants use, compared with other feasible response options and no intervention should be taken into account using Net Environmental Benefit Analysis (NEBA). NEBA is a process used by the response community for making the best choices to minimize impacts of oil spills on people and the environment. The NEBA outcome must show that advantages of dispersant outweigh the disadvantages.

7.4 The application of the Department of Environment approved dispersants in the Exclusive Economic Zone does not require authorization from the Department of Environment, provided that all conditions of the guidelines are met.

7.5 A full report on the use of dispersant must be submitted to the Department of Environment not later than 30 days after clean-up operation ceases. The reporting format is as per **Annex IV**.

8. CONTACTS FOR APPROVAL APPLICATION ON THE USE OF DISPERSANT

8.1 The contacts information for dispersant use approval is as per **Annex V**.

9. APPLICATION OF DISPERSANT

9.1 Dispersants can be sprayed from vessels or aircrafts. A typical dispersant spraying system will consist of:

- i. A tank to hold the dispersant
- ii. A pump to transfer the dispersant
- iii. Spray arms
- iv. Nozzles which convert the stream of dispersant into droplets of the required size distribution

9.2 Deployment Using Aircrafts

The use of fixed-wing aircraft for dispersant spraying requires the installation of the spraying equipment either inside or attached to the outside of the aircraft. With helicopters, there is the possibility of using a self-contained and under-slung spraying module.



Figure 3: Deployment Using Aircrafts (Photo source: Mark Hamilton Photography)

9.3 Deployment Using Vessels

The vessel must be equipped with dispersant spraying system including dispersant tank, education system, suitable pump and spraying arm and nozzles. The general strategy with spraying dispersant from boats or ships is to spray while heading to the wind, where possible, but spraying while heading with the wind is also acceptable in most circumstances.



Figure 4: Deployment Using vessels (Photo source: DOE Johor)

9.4 Sub-sea Application

Dispersants for sub sea oil spill release, where dispersants to be injected underwater should be considered for deepwater operation area. Direct application to a subsea well head will reduce the concentration of volatile organic compounds from reaching the air, therefore reducing fire and explosion risk including potential hazard to human health who are exposed directly during an unwanted well blow out incident.

10. MONITORING DISPERSANT EFFECTIVENESS

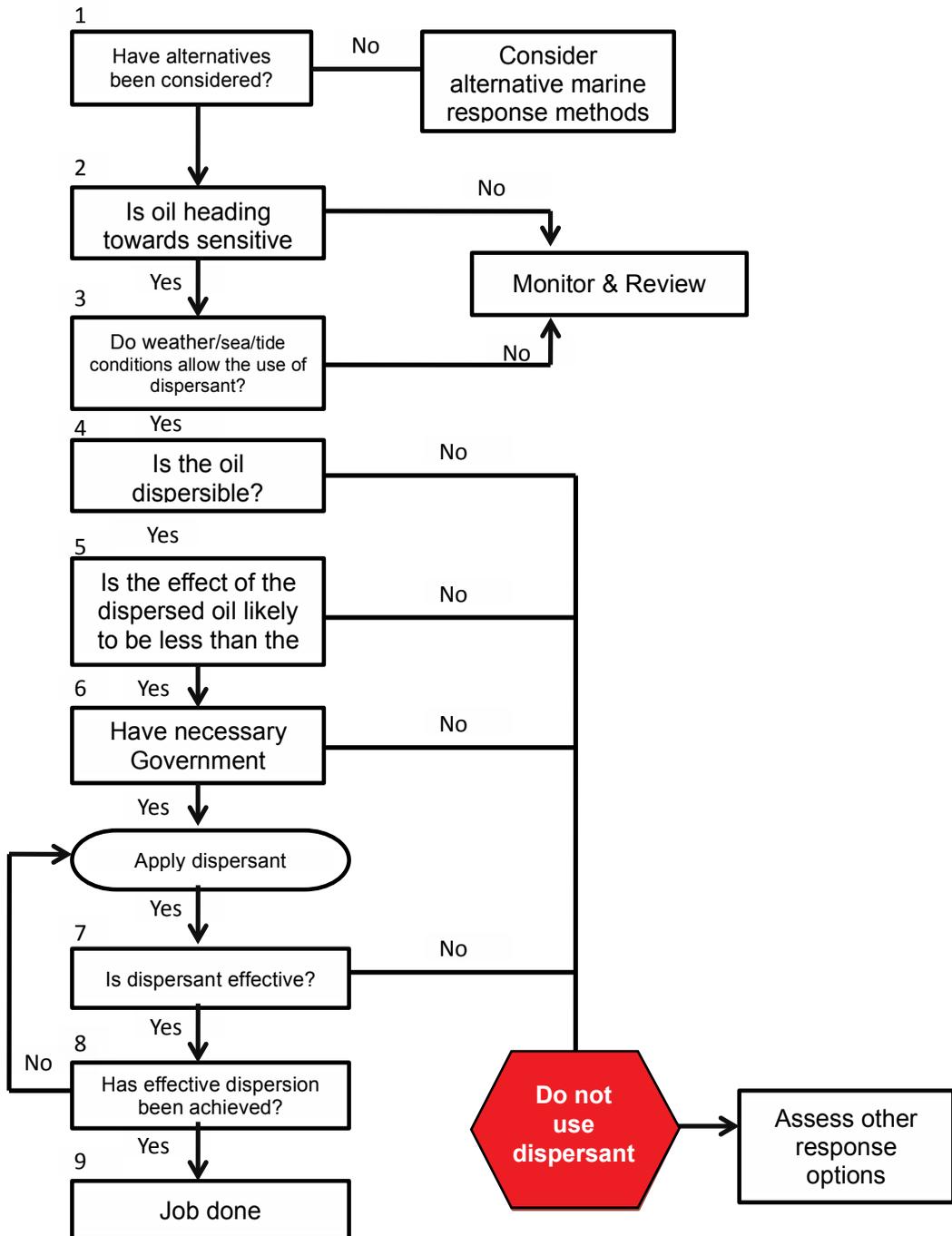
10.1 It is essential that the effectiveness of chemical dispersion is monitored continually and dispersant use terminated as soon as it is no longer effective. Visual observation of effectiveness from a vessel or aerial platform is the key but may be difficult in poor weather conditions, in waters with high sediment content, when dispersing pale-coloured oils, or in poor light.

10.2 Monitoring of dispersant effectiveness can be done using Ultra-violet fluorometry (UVF) or satellite imaging to provide 'real-time' data on the concentration of dispersed oil in the water column. Ideally, it should be used in combination with visual observations to decide whether dispersant application is providing a worthwhile response.

11. DISPOSAL

11.1 Disposal of unusable or expired dispersants is the responsibility of the dispersant owner. These dispersants are categorized as scheduled wastes and must be handled and disposed of in accordance with the Environmental Quality (Scheduled Wastes) Regulations, 2005 under the Environmental Quality Act 1974.

DISPERSANT USE DECISION TREE FLOW CHART



LIST OF APPROVED DISPERSANT BY DEPARTMENT OF ENVIRONMENT

NO.	DISPERSANT
1.	Shell VDC
2.	Corexit 9527
3.	Corexit 7664
4.	Dasic Slickgone NS
5.	Finasol OSR 52

**APPLICATION FORM ON THE USE OF DISPERSANT
FOR THE DEPARTMENT OF ENVIRONMENT APPROVAL**

1. DETAILS OF THE OIL SPILL			
a) Date			
b) Time			
c) Location	<ul style="list-style-type: none"> ▪ Latitude: ▪ Longitude: 		
d) Source of oil spill	<ul style="list-style-type: none"> ▪ Vessel/ Site name: ▪ Owner information: ▪ Others: 		
e) Type of oil	<p>Please tick <input type="checkbox"/> in the box</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> <input type="checkbox"/> Crude oil <input type="checkbox"/> Heavy fuel oil <input type="checkbox"/> Medium fuel oil <input type="checkbox"/> Light fuel oil <input type="checkbox"/> Gasoline <input type="checkbox"/> Others (please state) </td> <td style="width: 50%; vertical-align: top;"> <input type="checkbox"/> Diesel <input type="checkbox"/> Hydraulic oil <input type="checkbox"/> Kerosene <input type="checkbox"/> Petrol </td> </tr> </table>	<input type="checkbox"/> Crude oil <input type="checkbox"/> Heavy fuel oil <input type="checkbox"/> Medium fuel oil <input type="checkbox"/> Light fuel oil <input type="checkbox"/> Gasoline <input type="checkbox"/> Others (please state)	<input type="checkbox"/> Diesel <input type="checkbox"/> Hydraulic oil <input type="checkbox"/> Kerosene <input type="checkbox"/> Petrol
<input type="checkbox"/> Crude oil <input type="checkbox"/> Heavy fuel oil <input type="checkbox"/> Medium fuel oil <input type="checkbox"/> Light fuel oil <input type="checkbox"/> Gasoline <input type="checkbox"/> Others (please state)	<input type="checkbox"/> Diesel <input type="checkbox"/> Hydraulic oil <input type="checkbox"/> Kerosene <input type="checkbox"/> Petrol		
f) Estimated amount of oil spill (kg or metric tonne)			
g) Estimated size of oil spill area (square meters, m ² or kilometer square kilometers, km ²)			
h) Pour point of the oil			
i) Thickness and Colour			
j) Others			

2. WEATHER AND SEA CONDITIONS	
a) Weather and sea conditions	Please tick <input checked="" type="checkbox"/> in the box <input type="checkbox"/> Sunny <input type="checkbox"/> Rain <input type="checkbox"/> Overcast <input type="checkbox"/> Fog <input type="checkbox"/> Cloudy <input type="checkbox"/> Others (please state):
b) Air and Water Temperature Is air and water temperature more than (>) Pour Point ?	
c) Water depth Is water depth more than (>) 10 meter?	
d) Wind speed Is wind speed less than (<) 25 knots/km?	
e) Wave height (meter)	
f) Others	
3. DISPERSANT APPLICATIONS	
a) Location ▪ contour map	▪ Latitude: ▪ Longitude: Attach chart where available
k) Size of target area (square meters, m ² or kilometer square kilometers, km ²)	
b) Dispersant type	Please tick <input checked="" type="checkbox"/> in the box <input type="checkbox"/> Shell VDC <input type="checkbox"/> Dasic Slickgone NS <input type="checkbox"/> Corexit 9527 <input type="checkbox"/> Finasol OSR 52 <input type="checkbox"/> Corexit 7664 <input type="checkbox"/> Others (please state):

b) Name of sensitive area/s	
c) Types of sensitive area at risk/ threatened (specific)	
d) Environmental Sensitivity Index (ESI) ranking	
e) Distance of the sensitive areas/ from the oil spill area	
5. THIS REPORT IS MADE BY:	
<p>a) Declaration:</p> <p>I, the undersigned, certify that the information given in this application form is to the best of my knowledge is true and correct.</p>	
b) Name	
c) Position	
d) Organization	
e) Address	
f) Contact Details	Tel. (Office): Tel. (mobile): Fax: Email:
g) Date and Time	
h) Signature	
i) Official Stamp	

"FOR THE DEPARTMENT OF ENVIRONMENT USE ONLY"

6. APPROVAL BY THE DEPARTMENT OF ENVIRONMENT MALAYSIA

A. PROCESSING OF APPLICATION

a) Information complete?	Please tick \checkmark in the box <input type="checkbox"/> Yes <input type="checkbox"/> No If no, please elaborate:
b) Name of Processing Officer and Current Position	
c) Office Address	
d) Date and Time	
e) Recommendation	Please tick \checkmark in the box <input type="checkbox"/> Approve <input type="checkbox"/> Not approve Comments:
f) Signature	
B. APPROVAL	
g) Name of Approving Officer and Current Position	
h) Office Address	
i) Date and Time	
j) Decision	Please tick \checkmark in the box <input type="checkbox"/> Approved <input type="checkbox"/> Not approved Comments:
k) Signature	
l) Official Stamp	

REPORTING FORMAT ON THE USE OF DISPERSANT

A. DETAILS OF THE SPILL

- i. Date and time
- ii. Location (Latitude and Longitude)
- iii. Source (land-based/ vessel/ oil transfer site/ offshore installation/ pipeline/ others)
- iv. Vessel/ Site Name
- v. Owner (Name, Address, Contact Information)
- vi. Types of oil (Crude/ HFO/LFO/Diesel/Hydraulic Oil/ Kerosene/ Petrol/ Gasoline/ etc)
- vii. Estimated volume of oil spill
- viii. Appearance of the oil
- ix. Pour point
- x. Thickness & Colour
- xi. Total area affected by spill
- xii. Estimated amount, slick
- xiii. area and thickness

B. WEATHER & SEA CONDITIONS

- i. Air & Water temperature
- ii. Water depth
- iii. Wind speed
- iv. Wave height
- v. Others

C. DISPERSANT APPLICATION SUMMARY

- i. Date and time
- ii. Location (Latitude and Longitude)
- iii. Size of target area
- iv. Types of dispersant
- v. Amount of dispersant used
- vi. Dilution rate
- vii. Application methods (Vessel/ aircraft/ sub sea)
- viii. Volume of oil treated
- ix. Date and time of application

- x. Date and time application ceased
- xi. Manpower strength
- xii. *Please attach report log for dispersant application

D. NEARBY SENSITIVE AREAS

- i. Location/ Name
- ii. Types of sensitive area threatened
- iii. ESI ranking
- iv. Distance from oil spill area
- v. others

E. OBSERVATIONS

- i. Number of days/ hours after application ceased
- ii. Spill observed from (vessel/ aircraft/ land)
- iii. Type of observation (visual, photographic, remote Sensing)
- iv. Estimated amount of oil left
- v. Observations on environmental effects/ damage (fish, birds, mangroves etc.)
- vi. Dispersant effectiveness monitoring (please attach the monitoring reports)

F. INFORMATION OF THE PERSON PREPARING THE REPORT

- i. Name
- ii. Position
- iii. Organization
- iv. Contact details
- v. Signature and official stamp
- vi. Date

CONTACTS FOR APPROVAL OF DISPERSANT USE

DEPARTMENT OF ENVIRONMENT HEADQUARTERS

General Line: 03-88712000/ 88712200

1. Ketua Pengarah
Jabatan Alam Sekitar
Kementerian Sumber Asli dan Alam Sekitar
Aras 1 - 4, Podium 3
Wisma Sumber Asli
No. 25, Persiaran Perdana, Presint 4
62574 PUTRAJAYA
Tel: 03-88712047
Fax: 03-88894020

DEPARTMENT OF ENVIRONMENT STATE OFFICES

1. Pengarah
Jabatan Alam Sekitar Negeri Johor
No 46, Jalan Pertama, Tower 2
Pusat Perdagangan Danga Utama
81300 JOHOR BAHRU, JOHOR
Tel: 07-5500522
Fax: 07-5500971
2. Pengarah
Jabatan Alam Sekitar Negeri Kedah
Aras 2, Menara Zakat
Jalan Telok WanJah
05200 ALOR SETAR, KEDAH
Tel: 04-7332832/ 7335633
Fax: 04-7337530
3. Pengarah
Jabatan Alam Sekitar Negeri Kelantan
Lot 322 - 324, Seksyen 27
Jalan Sri Cemerlang
15300 KOTA BHARU, KELANTAN
Tel: 09-7414888
Fax: 09-7479014
4. Pengarah
Jabatan Alam Sekitar Negeri Melaka
Aras 19, Menara Persekutuan
Jalan Persekutuan, Bandar MITC
Hang Tuah Jaya
75450 AYER KEROH, MELAKA
Tel: 06-2345720
Fax: 06-2345721
5. Pengarah
Jabatan Alam Sekitar Negeri Sembilan
Tingkat 5, Arab Malaysian Business
Centre, Jalan Pasar
**70200 SEREMBAN
NEGERI SEMBILAN**
Tel: 06-7649017/ 7649018
Fax: 06-7649019/ 7623493
6. Pengarah
Jabatan Alam Sekitar Negeri Pahang
Aras 1, Kompleks Mahkamah Kuantan
Bandar Indera Mahkota
25200 KUANTAN, PAHANG
Tel: 09-5730636
Fax: 09-5732412

7. Pengarah
Jabatan Alam Sekitar Negeri Perak
Tingkat 7 & 9, Bangunan Seri Kinta
Jalan Sultan Idris Shah
30000 IPOH, PERAK
Tel: 05-2542744/ 2538472
Fax: 05-2558595
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