

**DISPERSANT USE IN ICE-AFFECTED WATERS: STATUS
OF REGULATIONS AND OUTREACH OPPORTUNITIES**

FINAL REPORT 2.8

Report from Joint Industry Programme to summarize the current technical/policy obstacles on use of dispersants for each Arctic nation



ABOUT THE JIP

Over the past four decades, the oil and gas industry has made significant advances in being able to detect, contain and clean up spills in Arctic environments. To further build on existing research, increase understanding of potential impacts of oil on the Arctic marine environment, and improve the technologies and methodologies for oil spill response, in January 2012, the international oil and gas industry launched a collaborative four-year effort – the **Arctic Oil Spill Response Technology Joint Industry Programme (JIP)**.

Over the course of the programme, the JIP will carry out a series of advanced research projects on six key areas: dispersants, environmental effects, trajectory modeling, remote sensing, mechanical recovery and in-situ burning. Expert technical working groups for each project are populated by the top researchers from each of the member companies.

JIP MEMBERS

The JIP is managed under the auspices of the International Association of Oil and Gas Producers (OGP) and is supported by nine international oil and gas companies – BP, Chevron, ConocoPhillips, Eni, ExxonMobil, North Caspian Operating Company (NCOC), Shell, Statoil, and Total – making it the largest pan-industry programme dedicated to this area of research and development.

EXECUTIVE SUMMARY

The purpose of this report is to identify and describe the regulatory requirements and permitting process for use of dispersants for each Arctic nation, or nation with ice-affected waters where offshore energy activities are conducted, and to summarize the current technical/policy obstacles with recommendations leading to a positive regulatory stance and possible pre-approvals.

This report describes:

- 1. The present status of regulations related to the use and or limitations of dispersants in 21 Arctic countries or those countries that have ice-affected waters;*
- 2. The potential obstacles to achieving permission to conduct dispersant operations in jurisdictions with ice-affected waters where it is not presently allowed or restricted; and*
- 3. A discussion of strategies to address identified obstacles and potential opportunities to communicate the benefits and merits of dispersant application as a response countermeasure.*

Based upon the review of the current regulatory environment which is more cautious since the Deepwater Horizon (DWH) response, and except for the UK and the US, this report suggests that obtaining blanket nationwide pre-approval for dispersants from all ice-affected countries is probably unlikely. However, a feasible goal is helping countries with oil and gas activities in ice-affected waters appreciate the potential benefit of an expedited process to approve the use of dispersants, including at least a limited policy authorizing dispersants in specific areas, and potentially pre-approval for specific projects. Key findings include:

- A primary objective of energy companies with exploration, production and transportation of petroleum activities in remote areas of countries with ice-affected waters is to assist in the development of dispersant pre-approval processes either on a national, regional or project-specific basis. The process should include a product testing and approval program.*
- Industry's appropriate role in the decision-making process is one of technical support that leads to a national policy allowing the use of dispersants as a response option, either nationwide or in specific geographic areas, plus an expedited approval process for incident-specific use. Providing technical support to decision makers in each country and other stakeholders is the overall strategy to advance decision making.*
- An engagement program, designed to enhance the acceptability of ISB and dispersant use as a first response option in Arctic or ice-affected nation states, individually and by region, is a process which takes time to develop credible, working relationships with appropriate entities in each country.*
- Appropriate national government agencies, which vary from country to country, must make a policy decision to allow the use of dispersants, i.e., to authorize their use in that country.*
- When an oil spill incident occurs, a procedure needs to be in place to authorize a pre-designated individual in the nation's competent authority, to rapidly approve dispersant use for that situation.*
- If dispersants are to be a feasible response countermeasure and to be effective within a limited window of opportunity, it is essential that the dispersant option has been pre-*

approved by the jurisdictional authority of the spill location, or are in accordance to relevant response strategy described in scenario-based contingency plans approved by authorities, and that the product to be applied has been approved for use for that jurisdiction and that the necessary logistics are in place, e.g., the supply and application resources are rapidly deployable and can reach the spilled oil each day.

- *Many of the nation states addressed within this document require a NEBA to be conducted prior to any consideration of dispersant use. In order to be able to utilize dispersants within the window of opportunity, two levels of NEBA may be needed going forward: (1) strategic level and (2) tactical level. A strategic NEBA would consider the overall potential value of dispersants as a response tool and would explore possible spill situations in a specific country. If a country develops a policy to allow the use of dispersants, tactical NEBAs would be a tool for evaluating whether or not dispersants are useful in a specific planning scenario or actual incident. NEBAs should be expanded to include economic, social and public health considerations.*

Overarching categories of potential obstacles to dispersant use:

Decision-making Process

- *Absence of a national policy to allow use of dispersants.*
- *Absence of a national procedure to approve the use of dispersants during an incident.*
- *Incomplete agreements and arrangements about response countermeasures (source control, dispersants, and controlled burning in-situ, mechanical) for oil spill response (OSR) plans.*
- *Inadequate information to assess dispersibility, including window of opportunity, of oils in a nation state.*
- *Absence of logistics to implement dispersant applications on the water surface or subsurface, e.g., identification and list of acceptable dispersants, stockpile of acceptable dispersants, technological feasibility (available delivery and application equipment within the time window).*
- *Presence of exploration/ production (E&P) activities near places inhabited or used by indigenous peoples.*

Stakeholder Engagement and Communications

- *Key stakeholder, e.g., government decision makers, perceptions, concerns, and questions about dispersant risks, as shown in Table 2.*
- *Inadequate information to address concerns and questions of decision makers and other key stakeholders about oil spills and dispersants, e.g., impact on a nations' commercial fishing industry and native fishing.*
- *Inadequate communication of technical information about oil spills and dispersants, e.g., unclear or inconsistent use of terms like subsurface and submerged oil.*
- *Questionable credibility of technical sources and information about oil spills and dispersants.*
- *Inadequate information regarding available compensation regimes for socio-economic and environmental damages and lack of pre-spill consensus about compensation*

arrangements with local communities and national authorities in the event of a spill incident.

Overarching strategies to address potential obstacles:

Decision-making Process

- *An overarching strategy to advance decision making is to provide science-based, credible information and engage in dialogue with decision makers and other stakeholders in each country to address their risk perceptions, concerns, and questions about dispersant use.*
- *One way for OGP to leverage expertise and credibility, is working in partnership with other international organizations having similar missions, goals and or objectives, e.g., European Maritime Safety Agency and members, Emergency Prevention, Preparedness and Response (EPPR), Oil Spill Working Group (OSWG) and the Arctic Council.*
- *The initial primary engagement focus should be on those countries that currently envision dispersants as a secondary option.*
- *A secondary focus should be on those countries that currently consider the utilization of dispersants as a last option.*
- *If a national dispersant policy is unobtainable, agreements should be attempted between OGP and each Arctic country on a specific project or regional basis at the time of drilling application and submittal of exploration and production oil spill contingency plans. Ideally, dispersant use policies should be incorporated into oil spill contingency plans with some forethought as to logistical concerns and sensitive resources.*
- *As appropriate, facilitate and support country consideration of a product listing, oil and dispersant testing, policies and procedures of countries that have instituted a program to govern dispersant use as a viable response option.*
- *Depending upon the country, either or both strategic and tactical NEBAs may be needed during preparedness, and some countries seem to require incident-specific NEBAs during a response, that is, tactical NEBAs.*

Stakeholder Engagement and External Communications

- *Develop an engagement program as a long-term endeavor (2 to 5 years), planned and funded accordingly.*
- *Incorporate UN initiatives to reinforce the credibility of a dispersant engagement plan.*
- *Education using risk communication principles is essential to improving the decision-making process by addressing the risk perceptions, concerns and questions of decision makers and other key stakeholders.*
- *Key stakeholders need to be identified and mapped along with their concerns which may be barriers to positive consideration and policy development.*
- *For each stakeholder group, identify (map) important stakeholder representatives and/or organizations who serve as opinion leaders and are considered trusted sources of information, i.e., a trusted intermediary, in each country of interest for dispersant and ISB information.*

- *It is important to “listen” to stakeholder’s questions and concerns, and their risk perceptions, which are indicative of information needs and the nature of misperceptions or incomplete understanding.*
- *Technical information will need to be consolidated and shared in credible ways to address stakeholder risk perceptions and concerns. Such ways include: presentations at conferences, publishing articles in peer-reviewed journals, facilitating access to oil spill practitioners and dispersant specialists and scientists; literature and research by decision makers, stakeholders and their trusted intermediaries who are viewed as credible sources of information. A searchable database maintained by academia like the Louisiana Universities Marine Consortium (LUMCON) dispersant database, could serve as a credible one-stop resource for relevant publications.*
- *OGP should consider establishing a team of technical specialists possessing stakeholder engagement and risk communication capabilities in addition to technical knowledge, and be given assignments to participate in global workshops, conferences, educational outreach to governmental agencies, non-governmental organizations, media and communities. The specialist team should include both industry technical and GPA representatives as well their consultants, who are sometimes regarded by stakeholders as more objective third parties than industry, even if they are contracted by industry.*
- *Through the technical team, provide knowledge-based support to nations as appropriate for strategic and tactical NEBAs, provide examples of policies from other countries, help guide and organize and/or participate in country-sponsored engagement activities, such as meetings, open houses, and seminars.*

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ACRONYMS

AMOP	(Canada) Arctic and Marine Oilspill Program
BMP	(Greenland) Bureau of Minerals & Petroleum
CALA	Canadian Association for Laboratory Accreditation
CBD	(United Nations) Convention on Biological Diversity
CCG	Canadian Coast Guard
CCME	(Germany) Central Command for Maritime Emergencies
CEDRE	Centre of Documentation, Research and Experimentation on Accidental Water Pollution
CEPA	Canadian Environmental Protection Act
CNLOPB	Canada-Newfoundland-Labrador Offshore Petroleum Board
CNSOBP	Canada-Nova Scotia Offshore Petroleum Boards
Cst	centistoke
CTG	(EMSA) Consultative Technical Group
DEC	Danish Centre for Environment and Energy
DWH	Deepwater Horizon oil spill
E&P	exploration/ production
EAI	Environment Agency of Iceland
EC	European Commission
EHS	(Ireland) Environment and Heritage Service
EMSA	European Maritime Safety Agency
EPA	U.S. Environmental Protection Agency
EPPR	Emergency Prevention, Preparedness and Response
ESA	Environmentally-Sensitive Area
ESTS	(Canada) Emergencies Science and Technology Section
EU	European Union
FOSC	Federal On-Scene Coordinator
FPIC	Free, Prior and Informed Consent
HELCOM	Helsinki Commission
HFO	Heavy fuel oil
HSE	Health, safety and environment
IMO	International Maritime Organization
IOSC	International Oil Spill Conference
IPIECA	International Petroleum Industry Environmental Conservation Association
ISB	In-situ burn
ITOPF	International Tanker Owners Pollution Federation
KING	Kazakh Institute of Oil & Gas
LA	Lead Agency
MEP	(Kazakhstan) Ministry of Environmental Protection
MEPC	Marine Environment Pollution Committee
MERRAC	Marine Environmental Emergency Preparedness and Response Regional Activity Centre
MMO	(United Kingdom) Marine Management Organization
MOU	Memorandum of Understanding
MSA	(China) Maritime Safety Administration
MUMM	Management Unit of the North Sea Mathematical Models
NCA	Norwegian Coastal Administration
NCOC	(Kazakhstan) North Caspian Operating Company
NCP	National Contingency Plan
NCP	(United States) National Oil and Hazardous Substances Pollution Contingency Plan
NEB	(Canada) National Energy Board
NEBA	Net Environmental Benefit Analysis
NEDRA	Net Environmental Damage and Response Assessment
NEPA	(Greenland) Danish Environmental Agency

NGO	Non-Governmental Organizations
NOWPAP	Northwest Pacific Action Plan
OGP	International Association of Oil & Gas Producers
OMA	Oil-Mineral Aggregates
OPRC	Oil Pollution Response Committee
OPRC 90	Oil Pollution Preparedness, Response and Cooperation Convention
OSCE	Organization for Security and Cooperation in Europe
OSCP	(Greenland) Oil Spill Contingency Plan
OSER	(Russia) Oil Spill Emergency Response
OSPRI	Oil Spill Preparedness Regional Initiative
OSTP	oil spill treatment products
OSWG	Oil Spill Working Group
POAC	International Conference on Port and Ocean Engineering under Arctic Conditions conference
REDD	(United Nations) Collaborative Program on Reducing Emissions from Deforestation and Forest Degradation in Developing Countries
REET	(Canada) Regional Environmental Emergency Team
RRT	(United States) Regional Response Team
SCA	(United States) Special Consideration Area
SOA	(China) State Oceanic Administration
SOK	Soevaernets Operative Kommando (Danish Royal Navy)
SOSC	(United States) State On-Scene Coordinator
STA	(Canada) Spill Treating Agent
SYKE	Finnish Environment Institute of the Ministry of Environment
UC	(United States) Unified Command
UNEP	United Nations Environment Program
UNFCCC	United Nations Framework Convention on Climate Change
UNDG	United Nations Development Group
USCG	United States Coast Guard
VOC	Volatile Organic Compounds

CHAPTER 1. INTRODUCTION

Potential increasing interest in offshore oil and gas exploration and production operations, coupled with climate changes that are contributing to extended open water seasons in the Arctic has focused attention on oil spill response preparedness for ice affected waters. These considerations include the potential surface and subsurface application of dispersants as a spill countermeasure in an Arctic ice affected marine environment.

If an oil spill occurs, the goal of oil spill responders is to rapidly determine which options, given the conditions of the specific incident, will reduce environmental impacts as much as possible. The main categories of response options available for marine spills include:

- 1) Mechanical containment, recovery and removal (booms, skimmers, etc.)
- 2) Controlled burning, known as in-situ burning (burning in place)
- 3) Enhanced dispersion, using dispersants or other types of treating agents such as some types of fine mineral particles

All of these approaches have their place in oil spill response because of the extreme variability of marine spill conditions. Mechanical recovery will generally be the most important and widely used oil spill response option because most spills are relatively small, close to shore, and, often, near locations where booms, skimmers, and trained responders are located.

Dispersants become a critical response tool for larger spills far from shore, spills distant from stockpiles of equipment and trained responders, when weather and ocean conditions preclude the use of other options, or when weather conditions are predicted to become more severe. The reasons for this are that dispersants can be rapidly applied from aircraft; they are efficient when wind and waves preclude vessel-based operations; and they are efficient when slicks are very thin (0.1 mm).

Additionally, dispersant aircraft can travel to spill locations at speeds one to two orders of magnitude faster than vessel-based mechanical or subsea dispersant application operations, potentially allowing an effective response to start before slicks have spread, moved, or broken apart into smaller surface slicks. Furthermore, aircraft are able to travel between slicks located only a few miles apart in a matter of minutes while vessel-based response options may require many hours to haul in equipment, move a few miles to a new location, and reposition equipment. Dispersants are a response option worthy of serious consideration in arctic countries due to their ability to help limit the spread of spilled oil and thereby mitigate the net environmental impacts associated with a spill in remote, potentially ice-affected locations.

The Task 1 report from this project, *State of the Knowledge Review*, was prepared to identify and summarize the research conducted to date on:

- The effectiveness of dispersant and mineral fines in ice.
- Research describing Arctic capable delivery systems.
- New “green” dispersant technologies.

The Task 1 report summarizes past studies of wave-tank testing of dispersant effectiveness that have been conducted on spilled oils with ice present (Lewis, A. 2013). Past studies have shown that dispersant use on spilled oils can be effective in the presence of some (0% to 95%) ice on the sea surface. The presence of broken pieces of ice on the sea surface provides a localized source of shearing action at the ice / water edges that provides sufficient energy to disperse

dispersant-treated oil into the water. The degree of dispersant effectiveness has been found to be dependent on:

- i. Test oil used, and the degree of oil 'weathering' (loss of volatile components by evaporation and water-in-oil emulsification),
- ii. Dispersant brand used, and the treatment rate of dispersant use (DOR, Dispersant to Oil Ratio),
- iii. Mixing energy, from either prevailing wave action or additional mixing energy, such as 'prop-wash' from vessels, and
- iv. The extent and type of ice coverage.

Further studies will be undertaken to explore the boundaries of dispersant use on spilled oils in ice but the state of knowledge provides evidence that dispersants can be an effective response option in cold waters with and without ice.

This is the Task 8 report under the project. It complements the Task 1 report with a discussion of the status of decision making around dispersant use in ice-affected countries where energy activities are occurring. Central to the approval of dispersant use is considering when dispersant use could be an appropriate response option to reduce the overall economic and environmental damage from an accidental oil spill. Lunel and Lewis (1999) identified key questions about the potential use of dispersants which should be considered and addressed during pre-spill planning and response decision making.

- How effective are dispersants likely to be?
- What are the fate and effects of the dispersed oil?
- Would oil spill dispersants be an appropriate option during response?

The order in which these questions are considered can vary but it is likely that nations with ice-affected waters will want to address them prior to developing or updating a national policy on dispersant use and for case by-case approval for a specific project.

CHAPTER 2. DISPERSANT USE DECISION ISSUES

For dispersants to remain a viable response option, each country will have to allow their use, that is, to decide under what conditions they may and may not be used. Industry is prepared to work with nations that lack a dispersant policy and process and assist those countries in developing dispersant-approval policies and processes, on a national, regional or project-specific basis.

To be clear, two levels of decision making are needed. First, appropriate government agencies, which vary from country to country, must make a policy decision to allow the use of dispersants, i.e., to authorize their use in that country. Then, when a response occurs, a process needs to be in place to authorize a pre-designated individual in the nation's competent authority, to rapidly approve dispersant use for that situation. This second level essentially specifies pre-approved conditions to enable rapid application of dispersants within their window of opportunity, which is the time frame and associated location when dispersant applications can be effective.

2.1 Window of Opportunity

Estimating the effectiveness of dispersants on spilled oil under field conditions is a relative rather than an absolute measure and varies with the type of oil spilled and ambient conditions. As a general rule, dispersants are more effective when applied to dispersible oils before they weather to the point of no longer being readily or completely dispersible. The term *window of opportunity*, also known as *time window*, is used to estimate the duration of dispersant effectiveness in the field. The overall success of oil spill response operations is largely dependent on the time necessary to make decisions and mobilize oil spill response resources rapidly within a window of opportunity especially with regard to dispersant application, and in-situ burning (ISB). Given the window of opportunity consideration, it is important to obtain pre-approval of dispersant use in the region in question ahead of time, preferably at the stage of preparing oil spill contingency plans, so that in a real-life situation, the National Incident Commander of the oil spill response organization, can promptly make the final decision in consultation with the environmental authorities. Government authorities also should be prepared to consider a range of effectiveness, i.e., percent removal of the oil dispersed, which they will find acceptable because setting an absolute percentage is unrealistic.

The window of opportunity for effective dispersant application following an oil spill event commences immediately upon the oil entering the marine environment, either on the surface or subsurface. In large oil spills, releases of oil can be instantaneous or continuous as would occur when a vessel gradually breaks up or as oil rises to the surface from a blow out at an offshore wellhead, e.g., the 2010 DWH incident and the 1979 IXTOC-1 well blowout in the Bay of Campeche in the Gulf of Mexico. When oil is continuously released over time the clock for estimating the window of opportunity must be reset to reflect the reality of what is essentially a sequence of oil spills. In these situations, the duration of the window of opportunity depends on a number of factors, e.g., oil type, weather and sea conditions when the oil surfaces, season, and distance from application equipment. For light oils, the window of opportunity will be longer than for heavy oils. Conditions which may reduce the window of opportunity even for lighter oils include, ambient weather conditions which increase the rate of emulsification, ambient temperatures that are close to (more than 5-15°C below) the oil's pour point, long distance to the oil (e.g., over 2 hours travel each way from the staging area). This travel time can impact the logistical feasibility of the needed resources to apply dispersants, such as distant locations

encountered in the Arctic environment. Generally for heavier oils, the window of opportunity does not last beyond two to three days, so it is crucial to begin applying the chemical dispersant as soon as practicable.

2.2 Operational Considerations for Dispersant Policies

For a continuous subsea release of heavier or lighter oil that is located far from shore, the application of dispersants subsea at the source or to the oil when it surfaces is more effective rather than the traditional approach of treating the leading edge of a slick. Another option is using a new formulation of gel dispersants which remains with the floating oil and prolongs the mechanism of action.¹ These are aspects of dispersant use which need to be considered during the decision making process.

Given the many variables which need to be assessed at the time of an actual spill, if dispersants are to be a feasible response countermeasure, it is essential that the dispersant option has been pre-approved by the jurisdictional authority of the spill location, or are in accordance to relevant response strategy described in scenario-based contingency plans approved by authorities, and that the product to be applied has been approved for use for that jurisdiction and that the necessary logistics are in place, e.g., the supply and application resources are rapidly deployable and can reach the spilled oil each day. Specifically:

- First, there has to be approval in concept that dispersants can be sprayed at specified locations under defined conditions. This will require consideration of factors such as the relative importance of the resources at risk, water depths, currents, wave characteristics and mixing energy, and distance from environmentally sensitive resources.
- Second, specific dispersant products have to be approved and stocked for use in particular areas. Product approval by a jurisdictional authority usually involves testing for both effectiveness and toxicity.
- Third, there are logistical requirements, such as aircraft to operate in certain areas, with necessary back up such as air traffic control and availability of refueling and loading facilities to logistically support the aircraft or vessel and response personnel.

Assuming nationwide pre-approval may be unlikely in most countries, the pre-approval process for an area or project should be established by potential responders in discussion with all relevant organizations and stakeholders, e.g., governmental authorities, conservation organizations, research institutions, indigenous peoples, and involve:

Definition of oil types, scenarios and geographical locations where dispersants are a viable option from the logistical point of view;

Net Environmental Benefit Analysis (NEBA), consideration of advantages and disadvantages of dispersant use compared with advantages and disadvantages of other response options; and

Identification of locations and situations where dispersant use are, and are not, pre-approved; any restrictions should be clearly indicated on sensitivity maps.

¹ NEBA can be found in the literature under other terminologies: NEEBA (Net Environmental and Economic Benefit Analysis, or NEDRA (Net Environmental Risk and Damage Assessment)

Some countries have defined zones along their coastlines where dispersant use may be restricted, as noted in the Status section of this chapter and Annex 3. These restrictions may be based on water depth or distance from the shore, proximity to environmentally sensitive areas or wildlife, or a combination of factors. Outside of these zones, dispersants can be used with minimal impact to the environment. Spraying dispersants within these zones may be prohibited or require specific prior permission from a national authority and that national authority should ensure that preapproval for the use of dispersants has been prearranged within the aforementioned restrictions to their usage.

Many of the nation states addressed within this document require a NEBA to be conducted prior to any consideration of dispersant use. Two levels of NEBA may be needed going forward: (1) strategic level and (2) tactical level. A strategic NEBA would consider the overall potential value of dispersants as a response tool and would explore possible spill situations in a specific county. This type of analysis would support the policy development. Strategic NEBAs involve identifying potential spill location and volumes, types of oils, identification/mapping of environmentally sensitive and economically valuable areas that could be potentially impacted, and options available to protect priority sensitive areas. Strategic NEBAs will be helpful for structured, knowledge-based stakeholder discussions about oil spill response options in general, and specifically the potential value of dispersants as a response option. Once a country develops a policy to allow the use of dispersants, tactical NEBAs can be a tool for evaluating whether or not dispersants are useful in a specific planning scenario or actual incident. Decision guidelines, checklists, and procedures can facilitate the rapid conduct of a scenario or incident-specific NEBA, that is, an evaluation of the situation in relation to policy conditions allowing dispersant use. An example of a detailed decision checklist used in the US Gulf of Mexico can be viewed at <http://www.rrt6.org/Uploads/Files/Approvals%20-%20RRT6%20Offshore%20Dispersant%20Pre-Authorization%20Plan%20--%202001.pdf> Tactical or incident-specific NEBAs are discussed in the following section.

2.3 Incident-specific Consideration of Dispersants

Several countries have developed decision trees and flow diagrams to evaluate dispersants and the conditions of a specific spill and guide their incident-specific decision-making process. The non-US examples included here can provide starting points for discussions with nations which currently have considered dispersant use as a viable and appropriate response option in that country.

Figure 1 illustrates the decision-making procedure diagram from Marine Environmental Emergency Preparedness and Response Regional Activity Centre (MERRAC), which is one of four centers in the Northwest Pacific region and is supported by the United Nations Environment Program (UNEP). This decision process is recommended in the event of an offshore oil spill caused by a ship, drilling platform, or subsea pipeline accident. In this procedure, an oil spill response technique is chosen from four possible options: mechanical recovery, dispersion, burning, and shoreline cleanup. If the choice is made in favor of shoreline cleanup, then booms must be used to protect oil-vulnerable environmental/economic sensitive stretches of the shoreline. If the forecast indicates that the oil is moving to the open sea or ocean, then no action may be taken, but the persons in charge must arrange for monitoring of the slick, because the situation could change dramatically.

In the UK, The Marine Management Organization (MMO) is responsible for the approval of oil spill treatment products (OSTPs) in English and Welsh waters. The MMO is committed to give

a decision on requests to *approve oil spill treatment products within one hour* of the initial request, as shown in **Figure 2**.

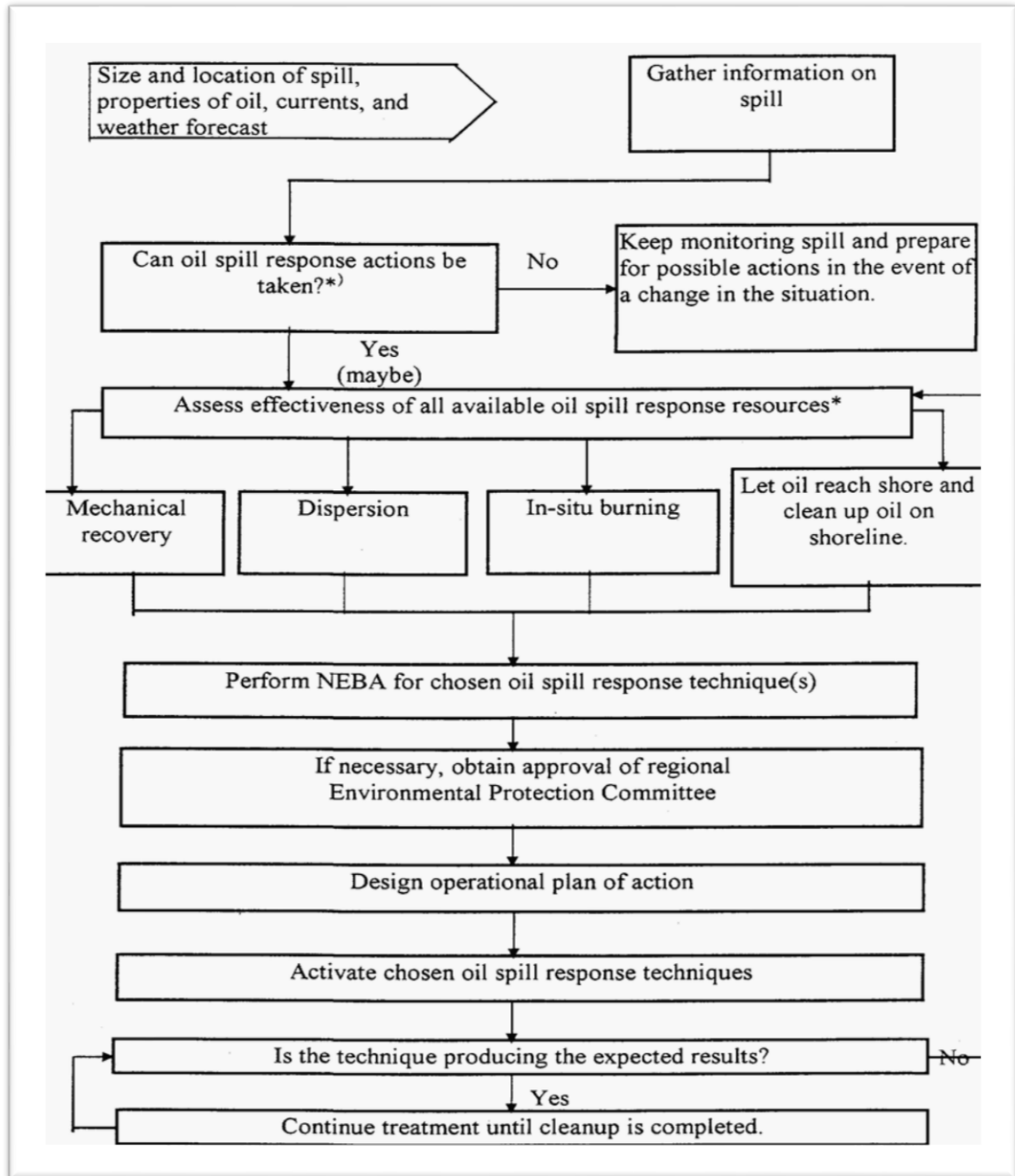


Figure 1: Guideline for the Use of Dispersants, NOWPAP Guidelines on Oil Spill Dispersant Application

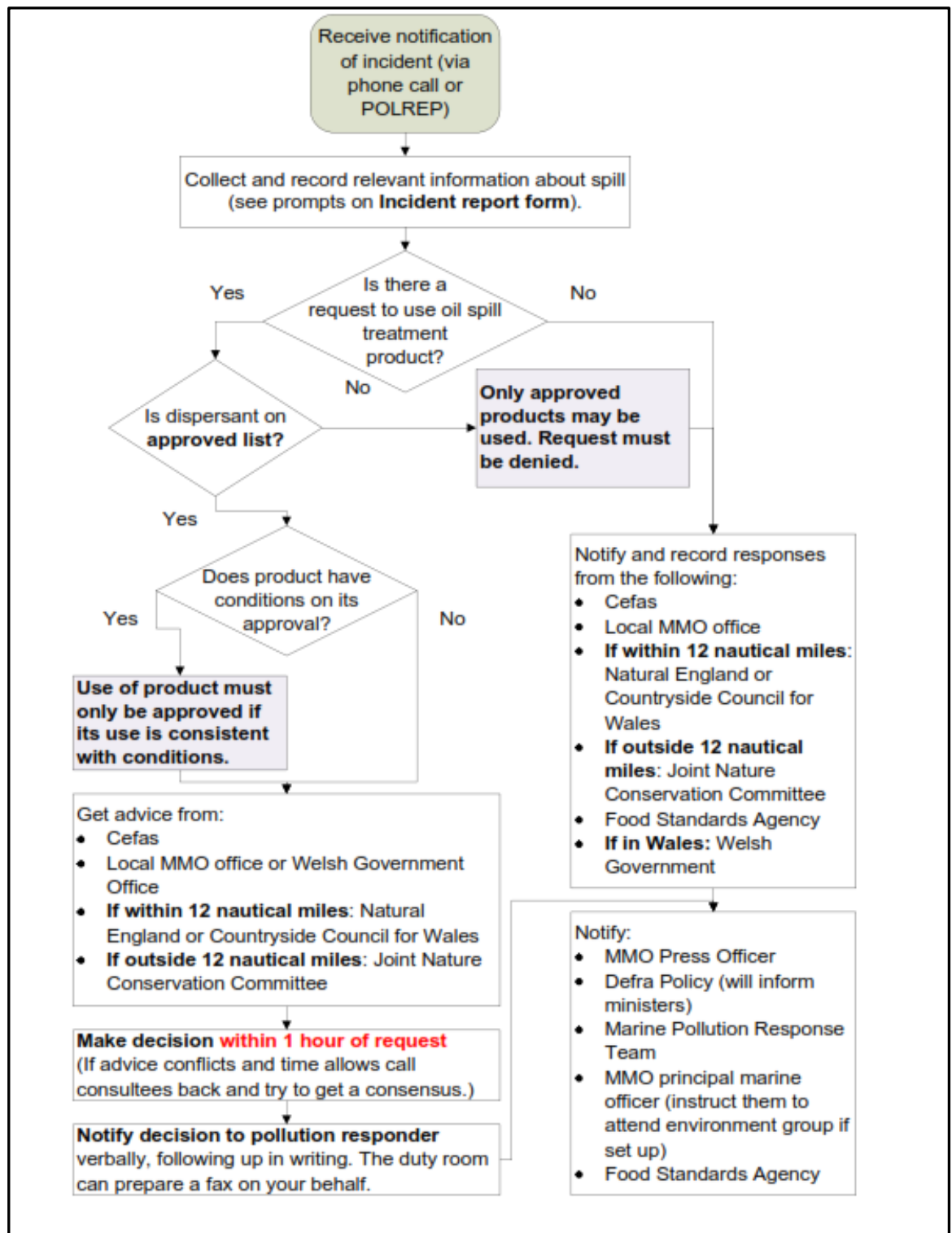


Figure 2: UK Marine Pollution Contingency Plan Dispersant Use Approval Process

Since the DWH spill, the Oil Pollution Response Committee (OPRC) has developed new guidelines for consideration and approval by the Marine Environment Pollution Committee (MEPC) of the International Maritime Organization (IMO). **Figure 3** shows the decision making process for the use of dispersants as shown in the **draft** OPRC document titled, “*Part II, Template for National Policy for the Use of Dispersants*”, which has been developed as a template document with a view to assist coastal States in the development of their national policy on the use of dispersants, and can also be used for the implementation of national or local contingency plan for dispersants. The intent of the document is to assist jurisdictional authorities in charge of the development/revision of the oil spill response national policy as well as the competent authorities in the decision-making procedures when considering the application of dispersants at the time of the incident.

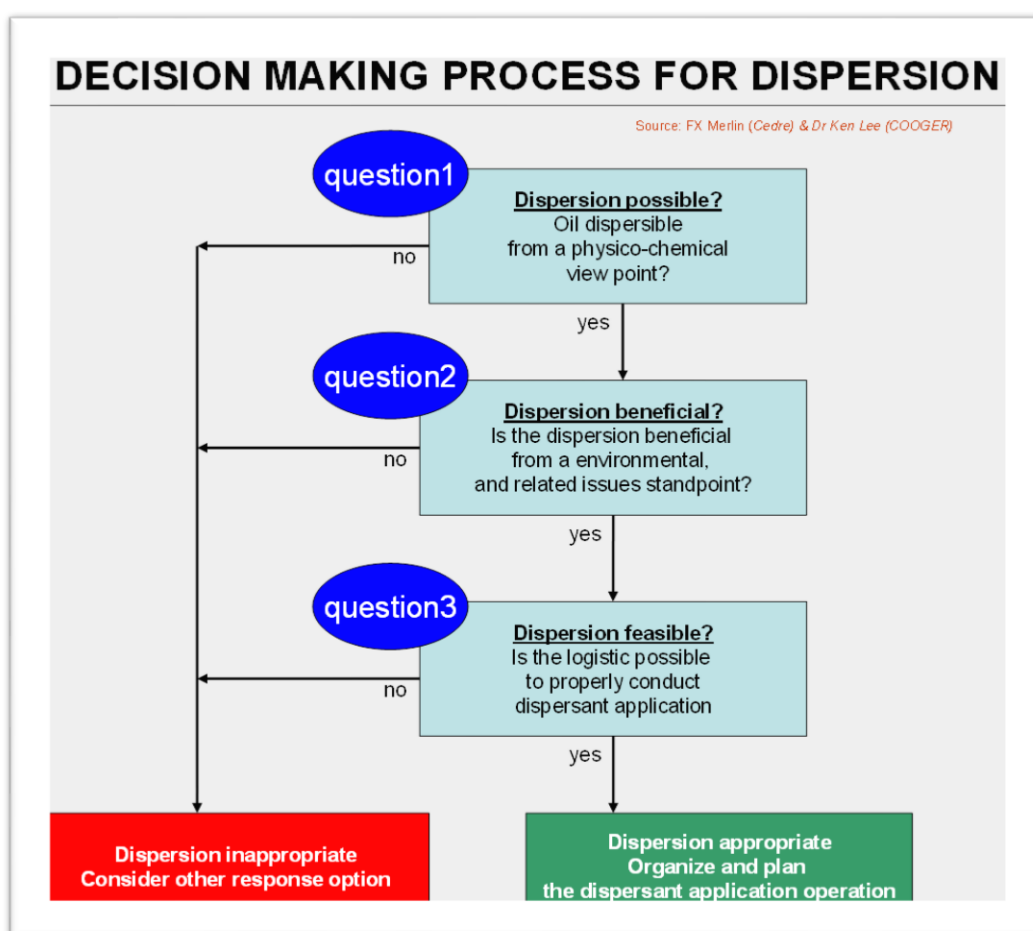


Figure 3: Decision-making process for Dispersion. Source: IMO, 2012. FX Merlin (Cedre) and Dr. Ken Lee (COOGER)

CHAPTER 3. STATUS OF DISPERSANT USE IN ARCTIC AND ICE-AFFECTED WATER NATIONS

Countries with the potential for spills in ice-affected conditions for at least a portion of time and located in the Northern Hemisphere were evaluated for their regulatory position on the use of dispersants as a response countermeasure. No pre-study list was provided; therefore the study team identified and surveyed the twenty-one nations with potential for energy activities in ice-affected waters. They are listed in alphabetical order in **Table 1**, along with the decision implications of policies related to dispersant use.

Table 1: Dispersant policies of ice-affected countries*

Country	Dispersant Policy?	Policy Implication for Dispersant Use
Belgium	Yes	Case-by-case; 2° response option after tactical NEBA
Canada	No	Guidance
China	Yes	Case-by-case
Denmark	Yes	Case-by-case; last resort
Estonia	Yes	Case-by-case; last resort
Finland	Yes	Case-by-case; last resort
France	Yes	Expedited in coastal waters for different scenarios; offshore - no limits
Germany	Yes	Geographic specific case-by-case; (a) 2° response option after tactical NEBA (b) in North Sea - last resort; (c) Baltic and Wadden Sea - forbidden
Greenland	Yes	Case-by-case; 2° response option after tactical NEBA
Iceland	Yes	Case-by-case; 2° response option after tactical NEBA
Ireland	Yes	Case-by-case
Kazakhstan	Yes	Case-by-case; seasonal and geographic considerations
Latvia	Yes	Case-by-case; qualified last resort
Lithuania	Yes	Case-by-case; last resort
Netherlands	Yes	Case-by-case with oil testing and conditions
Norway	Yes	Expedited with NEDRA and permit
Poland	Yes	Case-by-case as secondary option
Russia	Yes	Expedited if meet conditions
Sweden	Yes	Case-by-case; last resort
United Kingdom	Yes	Expedited
United States	Yes	National policy defers to each federal region; most coastal regions have some pre-approval; Alaska in Region 10 is undecided

* Policies address use or no use; Table 2 summarizes supporting product schedule, testing, procedures, and restrictions which are all needed for dispersant use within a practical window of opportunity, stockpiling, and operational implementation.

Each country's spill preparedness activities, including dispersant decision making, regulations have been guided by international regulations, agreements, working groups, and research which are briefly described in **Annex 1**. The results of the country-by-country evaluation are summarized in **Table 2**. Individual regulatory profiles for each country are presented in **Annex 2**.

Many of the nations evaluated are members of the European Union. As such, the European Maritime Safety Agency (EMSA) has been established for the purpose of ensuring a high, uniform and effective level of maritime safety, maritime security, prevention of, and response to, pollution caused by ships as well as response to marine pollution caused by oil and gas installations. EMSA provides a platform for the exchange of information among member state experts through convening the consultative technical group for MPPR. Within the framework of its mandate, the EMSA continues to develop and disseminate technical and scientific documents and information "tools", contributing to the improvement of knowledge in the field of marine pollution preparedness and response. To this end, EMSA has developed and maintains a graphic status of dispersant approval for European countries as shown in **Figures 4-6**.

As a body of the European Union (EU), EMSA is at the heart of the EU maritime safety and pollution response network and collaborates with many industry stakeholders and public bodies, in close cooperation with the member states. EMSA continues to support a range of technical and operational issues utilizing workshops, studies and training sessions. Therefore, cooperation between the International Association of Oil & Gas Producers (OGP) and EMSA as to a process to enhance the ability to utilize dispersants within the EU could conceivably yield mutual beneficial results.

The ice-affected countries adjacent to the Baltic Sea became contracted parties to the Helsinki Convention and have agreed, as noted in **Annex 3**, "The use of dispersants in oil combating operations is limited as far as possible and any such use is subject to authorization, in each individual case, by the competent national authorities." The majority of these countries have noted that dispersants are a last response option due to the shallow water depths and limited circulation in the Baltic Sea. Changing this status would need to be worked through both the regional organization and in individual countries.

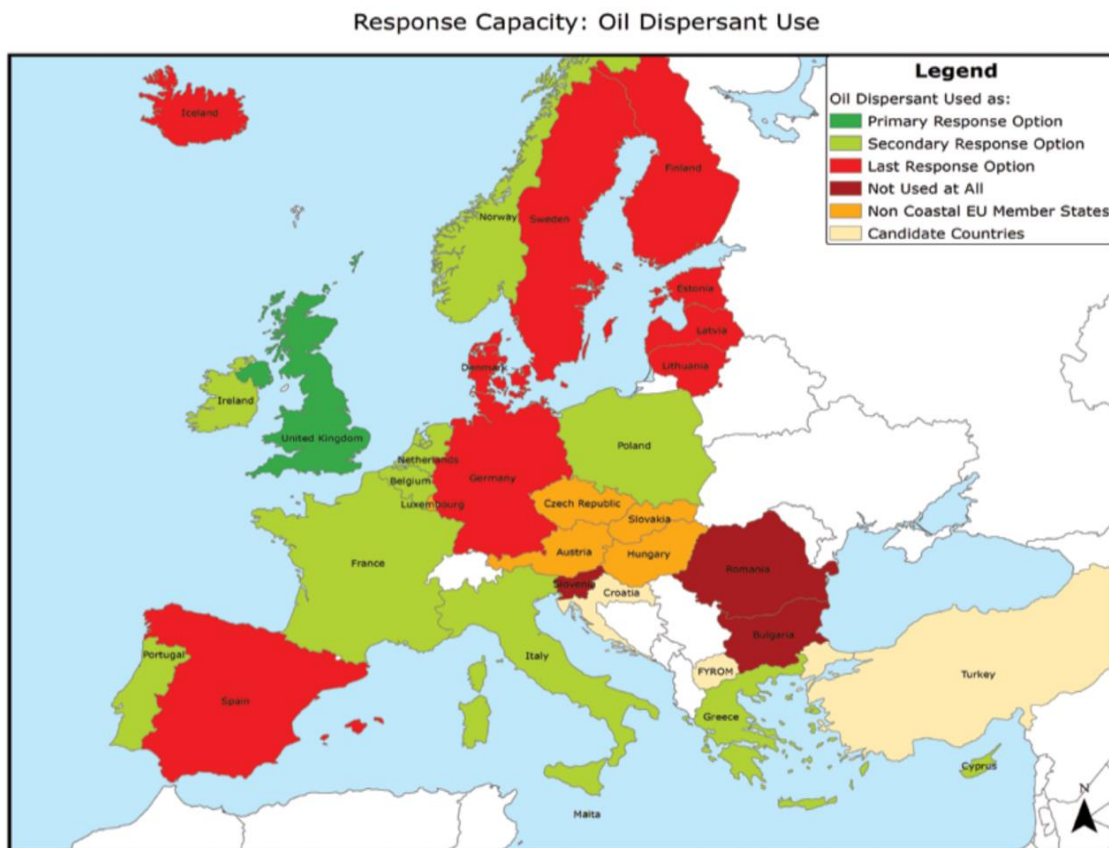
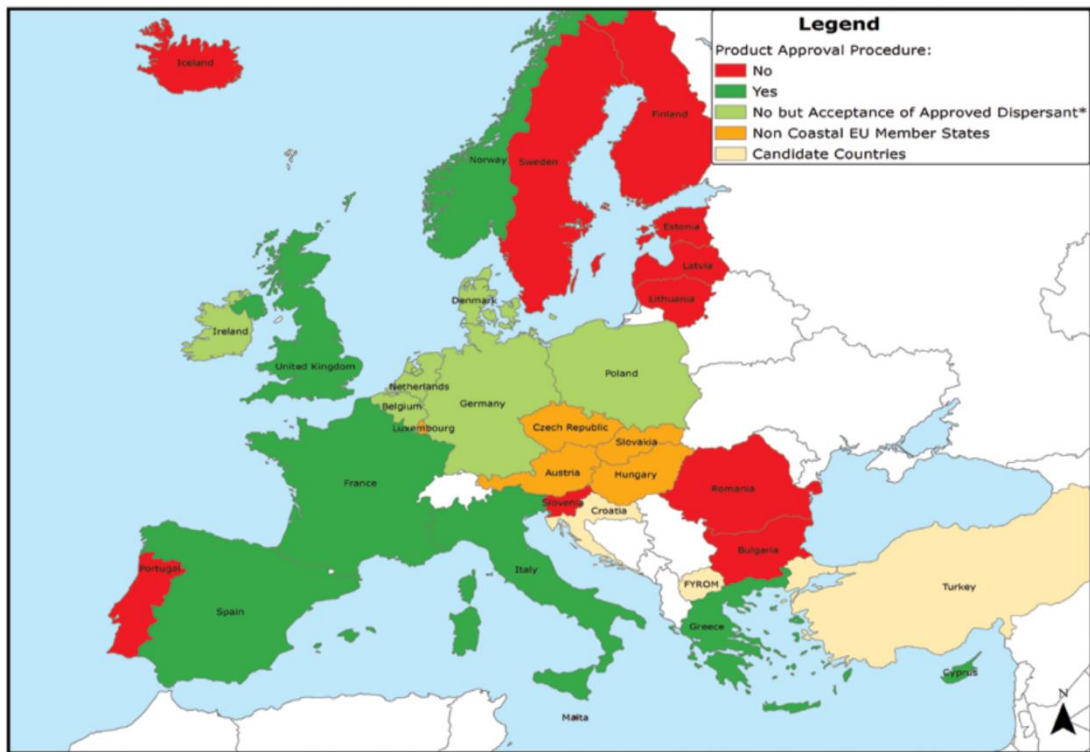


Figure 4: European Maritime Safety Agency Inventory of National Policies Regarding the Use of Oil Spill Dispersants in the EU Member States 2010

Response Capacity: Product approval procedure & list of approved dispersants



* No but Acceptance of Dispersants Approved or Used by other EU Countries/ Regional Agreements

Figure 5: European Maritime Safety Agency Inventory of National Policies Regarding the Use of Oil Spill Dispersants in the EU Member States 2010

Response Capacity: Connection to contingency plan

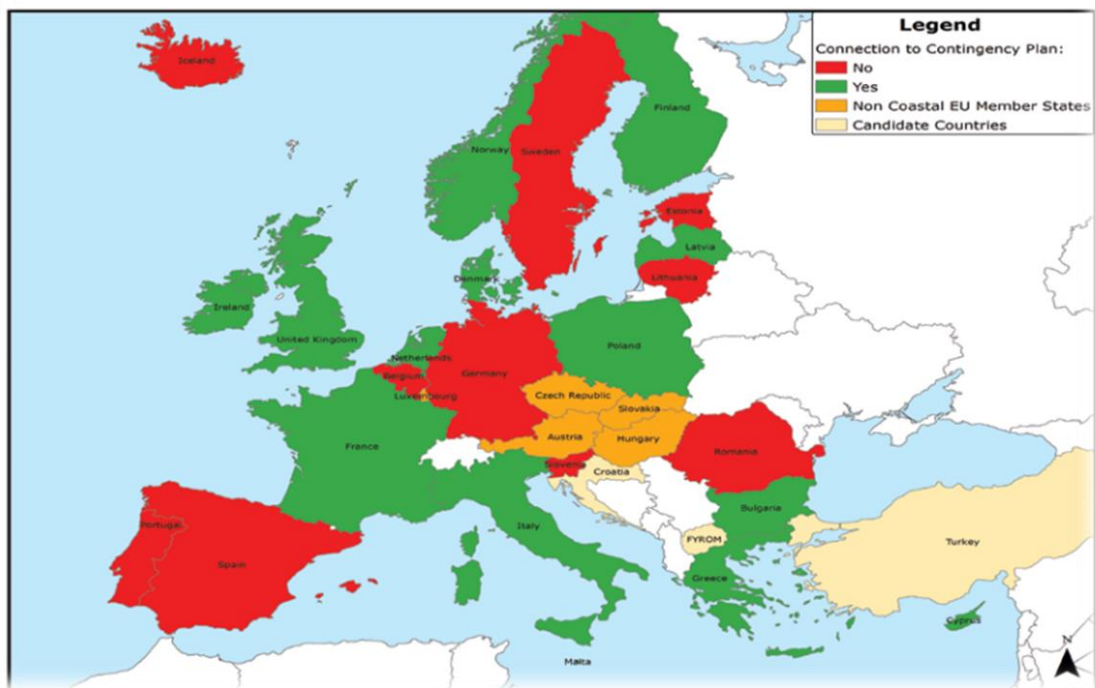


Figure 6: European Maritime Safety Agency Inventory of National Policies Regarding the Use of Oil Spill Dispersants in the EU Member States 2010

Table 2: Status Summary of Dispersant Regulations, Authorization, Restrictions & Testing/Approval Program in Ice-Affected Countries
(Primary source: EMSA, 2010)

Country (water body) Responsible Agency	Policy on Use (regulations, guidelines)	Authorization Protocols (process to use; chain of command)	Restrictions on Use	Dispersant Testing & Approval Program
Belgium (North Sea, English Channel) Federal Department of the Environment	<ul style="list-style-type: none"> Allowed as a secondary response option (after NEBA) following prior official authorization from the Management Unit of the North Sea Mathematical Models (MUMM) 	<ul style="list-style-type: none"> The use of oil spill dispersants is not described in Belgium's National Contingency Plan (NCP); it is covered in the operational plan for combating oil spills in Belgian waters, which is attached to the NCP. 	<ul style="list-style-type: none"> On the shoreline dispersants are not used. According to the provision of national law for the protection of the marine environment, the volume of oil spill dispersants used is restricted to less than 20% of the volume of oil treated and no more than 100 t of dispersant per treated spill. 	<ul style="list-style-type: none"> No standard dispersant testing process is in place. No formal dispersant approval process is in place. Dispersants which have at least two of the contracting parties to the Bonn Agreement could be considered for use.
Canada (All waters, e.g., Beaufort & Labrador Seas, Hudson & Baffin Bays) Environment Canada (EC) National Energy Board (NEB) Canada-Newfoundland-Labrador Offshore Petroleum Board (CNLOPB) Canada-Nova Scotia Offshore Petroleum Board (CNSOPB) Canadian Coast Guard (CCG) Regional Environmental Emergency Team (REET)	<ul style="list-style-type: none"> There is a "guidance" document developed some time ago which governs dispersant use entitled "<i>Guidelines on the use and acceptability of oil spill dispersants</i>" (Environment Canada Regulations, Code and Protocols Report EPS 1-EP-84-1, 1984, 2nd edition). This guidance document is considered out of date by Environment Canada. These guidelines addressed technical issues surrounding dispersant use and decision-making, as well as regulatory testing of dispersant products. Canada's dispersant policy is currently in a state of flux. Up-to-date guidelines are currently being drafted by Environment Canada. In the matter of spill response countermeasures, e.g., dispersant use, the Lead Agencies will discuss and consult with the Regional Environmental Emergency 	<ul style="list-style-type: none"> Dispersant application requires evaluation of dispersant request and recommendation of the Regional Environmental Emergency Team (REET). CCG is the Lead Agency for vessel spills The National Energy Board (NEB) is responsible for regulating response to spills from offshore oil and gas exploration and development in all Canadian waters including the North, except for Newfoundland and Labrador and Nova Scotia. The Canada Newfoundland and Labrador Offshore Petroleum Board (CNLOPB) and Canada Nova Scotia Offshore Petroleum Board (CNSOPB) regulate offshore oil and gas activities in Newfoundland-Labrador and Nova Scotia, respectively. The NEB and Petroleum Boards assess applications, issue authorization for wells, and are the primary response 	<ul style="list-style-type: none"> There is no written policy on dispersant use; however, dispersants are not permitted in fresh water or near biologically sensitive areas. Use of substances such as dispersants is essentially prohibited, and while several agencies have oversight functions they have neither authority nor process to grant an approval. Operator who decides to use dispersants is acting at its own risk and may be subject to both civil and criminal charges. Contingency plans with dispersants listed as a response option may be submitted to Petroleum Boards but may not be approved. 	<ul style="list-style-type: none"> There is a dispersant testing and approval process. Environment Canada has a list of approved products.

Country (water body) Responsible Agency	Policy on Use (regulations, guidelines)	Authorization Protocols (process to use; chain of command)	Restrictions on Use	Dispersant Testing & Approval Program
<p>China/People's Republic of China (PRC) (Bohai Sea)</p> <p>Maritime Safety Administration (MSA)</p> <p>State Oceanic Administration (SOA)</p>	<p>Teams (REETs) which are chaired by Environment Canada.</p> <ul style="list-style-type: none"> Restrictions on the use of dispersants for combating or cleaning up oil spill. Dispersants may be used in open waters over one nautical mile from the shoreline at low tide if this method is deemed necessary, effective and environmentally preferable to other methods. 	<p>and coordination body in the event of an oil spill.</p> <ul style="list-style-type: none"> The main law and regulation concerning dispersant application is the marine environmental protection law of the PRC and the regulations concerning the prevention of areas by vessels of the PRC. Any dispersant used should be approved by the organization authorised by the PRC. Application dispersant must be approved by MSA of China. 	<ul style="list-style-type: none"> Dispersant application is to be in compliance with the marine environmental protection law and the regulations concerning the prevention of areas by vessels of the PRC. 	<ul style="list-style-type: none"> Any dispersant used should be approved by the organization authorised by the PRC.
<p>Denmark (Baltic & North Sea)</p> <p>Danish Environmental Protection Agency (EPA)</p>	<ul style="list-style-type: none"> Dispersants are allowed as a last resort option following prior official authorization from the Ministry of Environment on the advice of the Danish EPA. 	<ul style="list-style-type: none"> During an oil spill incident, official authorization is required prior to the dispersant use. The Ministry of the Environment on the advice of the Danish EPA is the responsible authority to grant permission to use dispersants. 	<ul style="list-style-type: none"> In the Danish North Sea sector, Denmark recognizes a limited scope for dispersant use, when mechanical recovery is not possible and when particularly sensitive resources are threatened. In the Baltic Sea sector, dispersant use is not supported. 	<ul style="list-style-type: none"> No standard dispersant testing scheme in place, but Danish EPA allows dispersants approved for use in two to three other Bonn Agreement countries to be used in Denmark without further requirements. No list of approved dispersants and no formal dispersant approval scheme are in place.
<p>Estonia (Baltic Sea)</p> <p>Estonia Police & Border Guard Board under the Ministry of the Interior</p>	<ul style="list-style-type: none"> Use of oil spill dispersants is in principle prohibited; case-by-case permits to use dispersants in an oil spill situation as a last resort option may be issued by the Environment Inspectorate under the Ministry of Environment. 	<ul style="list-style-type: none"> During an oil spill incident, an official Authorization is required prior to dispersant use. The Estonia Environment Inspectorate under the Ministry of Environment is the responsible authority to grant permission to use dispersants. 	<ul style="list-style-type: none"> Use of dispersants is limited in accordance with the Helsinki Commission recommendation 22/2. However, permits to use dispersants can be issued if the situation warrants. 	<ul style="list-style-type: none"> No standard testing scheme is in place. No formal dispersant approval scheme is in place.
<p>Finland (Baltic & Barents Sea)</p> <p>Finnish Environment Institute (SYKE) Environmental Damage Division</p>	<ul style="list-style-type: none"> Allowed as a last resort response option following prior official authorization from the SYKE. 	<ul style="list-style-type: none"> During an oil spill incident, an official Authorization is required prior to the dispersant use. The Finnish SYKE, under the Ministry of Environment is the 	<ul style="list-style-type: none"> Helsinki Convention requires response policy of Baltic Sea countries to be based upon the mechanical recovery of oil. The Helsinki Convention 	<ul style="list-style-type: none"> No standard testing scheme is in place. No formal dispersant approval scheme is in place.

Country (water body) Responsible Agency	Policy on Use (regulations, guidelines)	Authorization Protocols (process to use; chain of command)	Restrictions on Use	Dispersant Testing & Approval Program
<p>France (North Sea, English Channel & Atlantic Ocean)</p> <p>Maritime Prefect</p>	<ul style="list-style-type: none"> •The use of oil spill dispersants is allowed in France. No change in the national policy regarding dispersant usage is currently being considered. 	<ul style="list-style-type: none"> •The Maritime Prefect is the only one who decides the opportunity to use dispersant. The Maritime Prefect dispatches experts and response tools in order to define the risks and opportunities. Marine charts with three geographical limits along the French coast, defining areas where dispersants can be used without major risk, are used as a basis for deciding upon dispersant usage. 	<p>allows the use of chemicals only with very strict limitations.</p> <ul style="list-style-type: none"> •Geographical limits for dispersant applications along the French coastal waters have been defined. Three oil spill scenarios are considered: 10, 100 and 1,000 tons of oil to be treated with dispersants. The larger the quantity of oil which has to be dispersed, the greater the distance from the coast and the greater the water depth which is required in order for dispersant use to be approved. • Outside these coastal waters, the use of dispersants can be contemplated without major risk to the marine environment. 	<ul style="list-style-type: none"> •Standard dispersant testing and approval procedures exist in France. Tests measuring the effectiveness, determining the acute toxicity and assessing the biodegradability of the dispersants are performed. • According to this approval procedure, all dispersant products have to pass successfully all three tests step by step: effectiveness first, toxicity and then biodegradability in order to be approved; if a product fails in one of these tests the procedure is interrupted. Each approval granted is valid for a period of five years. The CEDRE is the competent body for dispersants approval.
<p>Germany (Baltic & North Seas)</p> <p>Federal Ministry for the Environment, Nature Conservation & Nuclear Safety</p>	<ul style="list-style-type: none"> • Allowed following prior official authorization from the Central Command for Maritime Emergencies (CCME) 	<ul style="list-style-type: none"> • During an oil spill incident, official Authorization is required prior to dispersant use. • Authorization can be granted by the CCME after a Net Environmental Benefit Analysis (NEBA) has been carried out and if the decision 	<ul style="list-style-type: none"> • In the North Sea sector, dispersants are used as a last response option and suitable criteria for their use are still under examination and have to be harmonized with those of neighboring countries. • Dispersant application is prohibited within shallow 	<ul style="list-style-type: none"> • No standard testing scheme is in place. • There is no formal dispersant approval scheme in place. Dispersants approved for use in the UK or France could be considered for use.

Country (water body) Responsible Agency	Policy on Use (regulations, guidelines)	Authorization Protocols (process to use; chain of command)	Restrictions on Use	Dispersant Testing & Approval Program
Greenland (Greenland & Labrador Seas, Baffin Bay, Atlantic and Arctic Ocean) Greenland Bureau of Minerals and Petroleum (BMP) , under the Ministry of Industry and Labor	<ul style="list-style-type: none"> Any spills from mineral & hydrocarbon related activities fall under the jurisdiction of the Bureau of Minerals & Petroleum (BMP). The Greenland BMP, under the Ministry of Industry and Labor, administers the Mineral Resources Act and is the sole government agency responsible for the development of environmental and health and safety regulations of offshore drilling. Any spills from other sources, e.g., vessels, outside of the 3 nm zone, falls under the jurisdiction of the Danish government, e.g., The Joint Arctic Command, which is appointed by the Danish government to monitor & respond. 	<ul style="list-style-type: none"> During an oil spill incident, official Authorization is required prior to dispersant use. In a spill event, case by case permission can be requested using a NEBA-based application form from the Bureau of Minerals & Petroleum (BMP), which would be referred to their environmental consultants, the Danish Centre for Environment & Energy (DCE). A large spill related to offshore drilling, the BMP's Contingency Committee (BMPCC) & an Emergency Response Group (ERG) would be mobilized comprising the BMP, Joint Arctic Command, the DCE, and local authorities. The government of Greenland will liaison & cooperate with the Canadian & Danish governments. 	<p>coastal areas (less than 10 meters depth) and in locations with limited water exchange, and can be used restrictively in depths of between 10 and 20 meters, whereas new generation dispersants may be used offshore in "spot" spraying.</p> <ul style="list-style-type: none"> There is no restriction in waters deeper than 20 meters. In the Baltic and Wadden Sea sectors, dispersant use is forbidden. 	<ul style="list-style-type: none"> Currently there is no product testing or approval process. Dasic Slickgone NS is approved as a dispersant for application in Greenland by the BMP. Approval of any other dispersant product must be requested on a case by case basis.
Iceland (Atlantic Ocean)	<ul style="list-style-type: none"> Allowed as a last resort option following prior official 	<ul style="list-style-type: none"> During an oil spill incident, an official Authorization is 	<ul style="list-style-type: none"> A major consideration in use of dispersants is the concern 	<ul style="list-style-type: none"> No standard dispersant approval scheme is in place.

Country (water body) Responsible Agency	Policy on Use (regulations, guidelines)	Authorization Protocols (process to use; chain of command)	Restrictions on Use	Dispersant Testing & Approval Program
Environment Agency of Iceland (EAI) under the auspices of the Ministry of Environment	authorization from the EAI under the auspices of the Ministry of Environment.	required prior to the dispersant use. <ul style="list-style-type: none"> The EAI is the responsible authority to grant permission to use dispersants. 	to avoid tainting commercial fish stocks, particularly salmon farms scattered around the coast.	<ul style="list-style-type: none"> There is no list of approved dispersants.
Ireland (Atlantic Ocean) Irish Coast Guard has the delegated authority of the Department of Transport	<ul style="list-style-type: none"> The use of oil spill dispersants is allowed as a secondary response option. The decision to use dispersants will be on a case-by-case basis. The policy on dispersants is that the use of dispersants in Irish waters is forbidden unless authorised by the Department of Transport. 	<ul style="list-style-type: none"> Oil spill dispersant may not be used without the authorization of the Irish Coast Guard unless it is deemed that the immediate situation requires its use to prevent or reduce substantial hazards to human life or limb or to reduce substantial explosion or fire hazards to property. Where any dispersant is used the Irish Coast Guard should be notified immediately. 	<ul style="list-style-type: none"> Dispersant spraying must be authorised by Irish Coast Guard. The Coast Guard must consult with nominated State bodies before authorizing dispersant use in the following areas; <ul style="list-style-type: none"> Water depth less than 30 meters; Inside the straight base lines and the mainland; Within one nautical mile of charted banks. The use of dispersants in shallow waters, bays, harbors and inlets may not be authorised except in exceptional circumstances. 	<ul style="list-style-type: none"> There exist no standard regulations or formal evaluation procedures for the testing and approval of dispersants. Dispersants which have been tested and approved for use in the UK may be considered for use. There is no list of approved dispersants.
Kazakhstan (Aral & Caspian Seas) Ministry of Environmental Protection (MEP)	<ul style="list-style-type: none"> National plan and associated action plan for implementation was approved in April 2012. OSPRI is working closely with North Caspian Operating Company (NCO) to encourage and assist the authorities in the development of a dispersant policy. 	<ul style="list-style-type: none"> The national plan accepted dispersant as a potential response strategy and identified the MEP as the key authority. However, no details concerning dispersant policy or procedures were included in the plan. 	<ul style="list-style-type: none"> OSPRI is promoting the development of dispersant use policies, primarily based around water depth with a proposed >10 meter depth for pre-approvals and with a NEBA approach to shallower waters. At the moment, there is no specific consideration of dispersant use in the shallow ice affected waters in the northern Caspian Sea, as occurs in the autumn and spring seasons; such circumstances would require a NEBA justification, if proposed dispersant use parameters are accepted by 	<ul style="list-style-type: none"> OSPRI is working with the Kazakh Institute of Oil & Gas (KING), which is a part of the national oil company) on a dispersant testing project, with a view to development of a product approval regulation. Approved list of dispersants is anticipated by the end of 2013.

Country (water body) Responsible Agency	Policy on Use (regulations, guidelines)	Authorization Protocols (process to use; chain of command)	Restrictions on Use the MEP.	Dispersant Testing & Approval Program
Latvia (Baltic Sea) Marine Environment Board	<ul style="list-style-type: none"> In general, the use of dispersants is prohibited. Dispersant use is decided on a case-by-case basis. 	<ul style="list-style-type: none"> During an oil spill incident, an official Authorization is required prior to the dispersant use. The State Environmental Service is the competent authority for granting permission for dispersant use. 	<ul style="list-style-type: none"> The use of dispersants may be considered as a response option to an oil spill when mechanical recovery is impossible and sensitive ecological resources are at risk. 	<ul style="list-style-type: none"> No standard dispersant testing or approval scheme is in place. The Laboratory of the Latvian Environment, Geology and Meteorology Center SC Limited, may carry out testing of dispersant hazards to human health; the Latvian Institute of Aquatic Ecology may carry out dispersant toxicity tests. No list of approved dispersants exists.
Lithuania (Baltic Sea) Regional Environmental Protection Department of Ministry of Environment	<ul style="list-style-type: none"> The use of oil spill dispersants is allowed as a last resort response option following authorization from the Environmental Protection Department of the Ministry of Environment. 	<ul style="list-style-type: none"> During an oil spill incident, an official Authorization is required prior to the dispersant use. The Region Environmental Protection Department of the Ministry of Environment is the competent authority for granting permission for dispersant use. 	<ul style="list-style-type: none"> Helsinki Convention response policy of Baltic Sea countries is based upon the mechanical recovery of oil. The Helsinki Convention allows the use of chemicals only with very strict limitations. 	<ul style="list-style-type: none"> No standard dispersant approval scheme is in place. The procedure which is usually followed is that the company selling the dispersant has to provide the Regional Environmental Protection Department of the Ministry of Environment with specific data on the product against which the decision on the dispersant approval is made on a case-by-case basis. Lithuania uses relevant information on laboratory dispersant testing performed in other countries. No list of approved dispersants exists.
Netherlands (North Sea) The Netherlands Coast Guard, operationally assisted by RWS Noordzee	<ul style="list-style-type: none"> The use of oil spill dispersants is allowed as one of the response options. The use of dispersants is allowed and a decision tree (flowchart) is under construction. 	<ul style="list-style-type: none"> During an oil spill incident, an official authorization is required prior to the dispersant use. The RWS Noordzee, Netherlands Coast Guard is the competent authority for granting permission for 	<ul style="list-style-type: none"> Depending on the type and quantity of the oil slick, a response plan will be made considering the best response means. If applicable then the following conditions should be met: 	<ul style="list-style-type: none"> The Netherlands is planning to make arrangements with the UK in order to call upon their assets for dispersant spraying. This will also imply that the UK testing/approval procedures will be applicable for NL waters.

Country (water body) Responsible Agency	Policy on Use (regulations, guidelines)	Authorization Protocols (process to use; chain of command)	Restrictions on Use	Dispersant Testing & Approval Program
	<ul style="list-style-type: none"> The use of dispersants is clearly described in Netherlands's National Contingency Plan 	<p>dispersant use.</p> <ul style="list-style-type: none"> A test run will be made to study the effectiveness by the Netherlands RWS Water Dienst that will follow the procedures applicable in the UK and agreements in the European Maritime Safety Agency (EMSA)/Consultative Technical Group (CTG). 	<ul style="list-style-type: none"> Oil volume > 300 meters³ and Layer thickness 50-200 µm and water depth > 20 meters; Oil volume < 200 meters³; and Layer thickness 50-200 µm and water depth > 5 meters. No operational limitations exist when: <ul style="list-style-type: none"> There is sufficient visibility (with regard to spray aircraft); Oil is one slick or more than one big slicks; Layer thickness is over 50 µm; viscosity is < 5000 cSt; Wind force between 3 and 7 Bft. Ecologically sensitive situations and areas have been identified. 	<ul style="list-style-type: none"> The list of approval dispersants included in the Bonn Agreement Manual.
<p>Norway (Norwegian, North & Barents Seas)</p> <p>The Norwegian Coastal Administration – NCA (under the Department of Fisheries) is the Authority with overall responsibility for oil pollution response</p> <p>Norwegian Environmental Agency is in charge for the regulation concerning dispersants</p>	<ul style="list-style-type: none"> The policy for use of dispersants in Norway is regulated in chapter 19 in the Pollution Control Act Today both mechanical recovery and dispersants are options to be used in spill situations in Norway Dispersants shall be chosen when this method will give less overall damage to the environment than any other method. All companies in charge of oil operations (oil terminals, refineries, offshore oil fields) are obliged to consider and document dispersants as an oil spill response method in their contingency plans; the use of dispersants must be documented as a combat 	<ul style="list-style-type: none"> The NCA have issued documents (e.g. "Decision matrix"/"Control forms") with guidelines that clarify framework for assessment that must be done before dispersants can be used. Decision-making during an oil spill incident: If the user (e.g. oil company) has such a scenario-based oil spill contingency plan founded on NCA's requirements, the "Decision Matrix" becomes the users "Internal control procedure" during a decision - making situation, to ensure that decision to use dispersants is within the conditions as founded in the contingency plans. The "Control" form" can be rapidly 	<ul style="list-style-type: none"> Applications for the use of dispersants should be based upon a NEBA (also called NEDRA- Net Environmental Damage Assessment): .Oil spill dispersants are used in spill situations in Norway when it can be demonstrated that they provide less environmental damage than mechanical recovery / no response. Emergency response assessment of relevant spill scenario whether or not the use of dispersants is the best overall response method for the environment should be documented in the scenarios-based contingency plan. 	<ul style="list-style-type: none"> A dispersant testing scheme is in place in Norway. Dispersants shall undergo effectiveness and algae toxicity testing. These requirements of the regulations must be fulfilled and documented in all contingency plans involving use of dispersants. The Ministry of Environment is the competent authority for the dispersants test requirements. No official list of approved dispersants exists, as the companies that produce or process oil, have to document (as a part of the contingency plan) the effectiveness of dispersant on their own oils. This include: to select the

Country (water body) Responsible Agency	Policy on Use (regulations, guidelines)	Authorization Protocols (process to use; chain of command)	Restrictions on Use	Dispersant Testing & Approval Program
	<p>strategy in the scenario-based contingency plans before an incident occurs.</p>	<p>filled out by the user and sent to NCA and the dispersant spraying operation can start. No further official authorization is required prior to commencing the dispersant application.</p> <ul style="list-style-type: none"> NCA can also issue a permit to use dispersant during situations if the user can document sufficiently that dispersants would be beneficial, even if these have not been laid out in a contingency plan as part of requirements from Norwegian Environmental Agency. However, this is not preferable situation as it will take more time for making decision 		<p>most effective dispersants and to optimize the dosage ratios required for the specific oil. The enterprises also have to test the dispersibility at varying weathering degrees for the relevant oil in order to estimate the “time window” for effective use of dispersants under various turbulence conditions.</p>
<p>Poland (Baltic Sea) Director of Maritime Board</p>	<ul style="list-style-type: none"> The use of oil spill dispersants is allowed as a secondary response option. There is no specified contact point regarding the use of dispersants in Poland. According to Polish law, the Director of one of the three regional Maritime Offices, subordinated to the Minister of Maritime Economy, is the competent authority for that purpose, and the official inquiry contact point, the Department of Maritime and Inland Waters Administration in the Ministry of Infrastructure, could also be considered. 	<ul style="list-style-type: none"> During an oil spill incident, an official authorization is required prior to the dispersant use. The local maritime authorities (Harbor Masters) are the responsible authority to grant permission to use dispersants. 	<ul style="list-style-type: none"> The use of chemical agents and other non-mechanical means in oil spill response is restricted under the relevant HELCOM Recommendation 22/2 regarding Restricted Use of Chemical Agents and Other Non-Mechanical Means in Oil Combating Operations in the Baltic Sea Area. 	<ul style="list-style-type: none"> No standard dispersant testing scheme is in place. No formal dispersant approval scheme is in place. The use of any dispersant (concentrates type 2 or 3) which have at least two of the contracting parties to the Bonn Agreement could be considered for use.
<p>Russia (Barents, Kara, Laptev, East Siberian, Chukchi & Bering Seas, Sea of Okhotsk)</p>	<ul style="list-style-type: none"> The general oil spill strategy for Tier 1 spills to be treated by mechanical means if 	<ul style="list-style-type: none"> The decision to apply dispersants shall be made solely on the basis of a NEBA 	<ul style="list-style-type: none"> Initial concentration must not exceed the dispersant’s LC50. 	<ul style="list-style-type: none"> Only dispersant, toxicity of which is tested in duly authorised Russian research

Country (water body) Responsible Agency	Policy on Use (regulations, guidelines)	Authorization Protocols (process to use; chain of command)	Restrictions on Use	Dispersant Testing & Approval Program
<p>Ministry of Natural Resources & Ministry of Health & the Fisheries Committee for dispersants</p> <p>Federal Agency of Maritime & River Transport and State Marine Pollution Control, Salvage & Rescue Administration (MPCSA) of the Ministry of Transport is the national authority for oil spill preparedness & response</p>	<p>weather conditions allow. For Tier 2 and Tier 3 incidents, all response methods are permitted, including dispersant use.</p> <ul style="list-style-type: none"> Dispersants must be preapproved by the Ministry of Natural Resources, the Ministry of Health and the Fisheries Committee. 	<p>for the regions that have become contaminated or that are under a threat of pollution.</p> <ul style="list-style-type: none"> Only preliminary approved dispersants shall be used. "Regulations on Oil Spill Dispersants Application", adopted for implementation in 2005. During an actual incident, the IC in agreement with the territorial bodies of environmental protection agency, Rosprirodnadzor & Fisheries agency Rosrybolovstvo on basis of a NEBA being conducted according to the procedure specified by the regulations. 	<ul style="list-style-type: none"> Dispersants are not recommended for use in enclosed regions of the sea with a low water exchange rate (inlets, lagoons), in shallow waters or when the temperature of the marine environment is below +5°C. 	<p>centers, can be considered preliminary approved dispersants.</p>
<p>Sweden (Baltic Sea)</p> <p>Swedish Coast Guard</p>	<ul style="list-style-type: none"> The use of oil spill dispersants is allowed as a last resort response option. Sweden is currently considering a possible change to the national policy regarding dispersant use and is also closely following the discussion at regional level regarding new opportunities for the usage of dispersants in the Baltic Sea within the framework of the Helsinki Commission. 	<ul style="list-style-type: none"> During an oil spill incident, an official authorization is required prior to the dispersant use. The Swedish Coast Guard is the responsible authority to grant permission to use dispersants. 	<ul style="list-style-type: none"> There are no specific circumstances to use dispersants in Sweden. 	<ul style="list-style-type: none"> No standard dispersant approval schemes are in place. Sweden has no intention of using dispersants and the knowledge of which "non-toxic dispersants" to use in case of an emergency is being discussed in Sweden and in the HELCOM Response group. No list of approved dispersants exists.
<p>United Kingdom (Atlantic Ocean & North Sea)</p> <p>The Department for Energy & Climate Change (oil & gas exploration)</p> <p>The Maritime & Coast Guard Agency (marine pollution from shipping)</p> <p>The Marine Management</p>	<ul style="list-style-type: none"> The UK's primary response to an oil spill is the aerial application of dispersants, although some mechanical recovery equipment is held as a secondary response option. The UK is currently developing testing protocols to allow the offshore use of dispersants on heavy fuel oils. 	<ul style="list-style-type: none"> Approval of the use of dispersants is given by the MMO in England and Wales, Marine Scotland in Scotland and the Environment and Heritage Service (EHS), within the Department of the Environment, for Northern Ireland. Approval is not formally 	<ul style="list-style-type: none"> Oil spill dispersants are used where deemed effective and when the environmental advantages outweigh the disadvantages of cost and ecological damage. The use of dispersants in sea depths of less than 20 meters or within one nautical mile of such depths is prohibited, 	<ul style="list-style-type: none"> Dispersant testing and approval schemes are in place in the UK. The MMO is the authority for approving dispersants for the UK. The MMO, as operators of the product approval procedures, maintains a list of currently approved products.

Country (water body) Responsible Agency	Policy on Use (regulations, guidelines)	Authorization Protocols (process to use; chain of command)	Restrictions on Use	Dispersant Testing & Approval Program
Organization (MMO) is the authority for approving dispersants	<ul style="list-style-type: none"> The use of dispersants is clearly described in the UK's National Contingency Plan (NCP). 	<p>required where approved products are used in deeper waters, more than one mile away from the 20 meters contour line but consultation prior to use is encouraged.</p> <ul style="list-style-type: none"> Prior approval for dispersant use is needed in sea depths of less than 20 meters or within 1 nm of such depths. 	<p>unless the dispersant use is approved by the UK authorities.</p>	
<p>United States (Beaufort, Bering & Chukchi Seas, Atlantic Ocean)</p> <p>Environmental Protection Agency (EPA) has authority to approve dispersant products. United States Coast Guard (USCG) Federal On Scene Coordinator (FOSC) authorizes dispersant use in the Coastal Zone.</p>	<ul style="list-style-type: none"> In pre-authorized areas, dispersant capability is required to be in place for vessels & facilities. There is a FOSC authorization procedure in a pre-authorized region. There are regions where there is an expedited process, or a case-by-case approval process. There are also regions where there are no dispersant use zones. 	<ul style="list-style-type: none"> The USCG is the national authority in the Coastal Zone, being represented by the USCG FOSC. Oil spill response is managed in a Unified Command structure containing the FOSC, the Responsible Party Incident Commander (RPIC) and the State On-scene Coordinator (SOSC). A Regional Response Team (RRT) is the multi-governmental agency organization that determines the approval and use of dispersants in various Coastal Regions. 	<ul style="list-style-type: none"> Regional Contingency Plans may have "pre-authorized" dispersant use in some areas dependent on water depth, distance from shore and Special Consideration Areas, e.g., marine sanctuaries, etc. 	<ul style="list-style-type: none"> Dispersant testing, product approval processes and approved product list are in place. Subpart J of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) is the list of approved dispersant products.



Figure 7: Arctic Ocean and Bordering Countries, Brad Cole of Geology.com using data licensed from Map Resources

CHAPTER 4. OBSTACLES AND STRATEGIES TO ADVANCE DISPERSANT DECISION MAKING

OGP has requested a summary of the current technical and policy obstacles with specific recommendations leading to a positive regulatory stance and possible pre-approvals.

This section of the report describes general strategies and related recommendations to address and remove the obstacles which could lead to a positive regulatory stance, i.e., positive decisions for dispersant use. The suggestions offered are conceptual at this point since no direct contact was made with the nations to learn about specific issues of concern to specific stakeholders in each country. Therefore, our review of these issues revealed a general common overarching group of obstacles and strategies rather than differences for each country. If additional, more detailed information about each country could be provided by OGP members, then country-specific strategies could be developed.

Based upon this review of the current regulatory environment which is more cautious since the Deepwater Horizon (DWH) response, and except for the UK and the US, obtaining blanket nationwide pre-approval for dispersants from all ice-affected countries is probably unlikely. However, a feasible goal is helping countries with oil and gas activities in ice-affected waters understand the potential benefit of an expedited process to approve the use of dispersants, and at least a limited policy authorizing dispersants in specific areas, and potentially pre-approval for specific projects. Feedback is needed from OGP with regard to specific goals and priorities among the countries, that is, how important is it to achieve a full set of supporting regulations and procedures which are needed to plan for dispersant use as a viable response option in each country.

In addition to the regulatory review conducted for this report, the discussion and recommendations in this section reflect SEA's relevant experience, past and current. Publications and presentations by SEA personnel are referenced in the Bibliography. Our experience reflects past coordination work with academia on preparedness and response projects, coordination with academics in Louisiana about dispersants during Deepwater Horizon, and current work with multiple academic departments at the University of Washington on a grant funded by the National Oceanic and Atmospheric Administration (NOAA). Ms. Walker is co-principle investigator on the NOAA grant through the University of New Hampshire's Coastal Response Research Center to research and develop "Response Risk Communication Tools for Dispersants and Oil Spills."

4.1 Overarching Obstacles

For purposes of this report and to provide a systematic way to consider and address obstacles to dispersant use, we have identified the following categories of potential issues based on literature review and SEA experience with these issues since the 1980s.

Decision-making Process: *Direct contact with appropriate authorities in each country; provide support to the countries to address the obstacles.*

- Absence of a national policy to allow use of dispersants.
- Absence of a national procedure to approve the use of dispersants during an incident.
- Incomplete agreements and arrangements about response countermeasures (source control, dispersants, controlled burning *in-situ*, and mechanical) for oil spill response (OSR) plans.

- Inadequate information to assess oil dispersibility, including window of opportunity, of oils in a nation state.
- Absence of logistics to implement dispersant applications on the water surface or subsurface, e.g., identification of acceptable dispersants, stockpile of acceptable dispersants, technological feasibility (available delivery and application equipment within the time window).
- Presence of exploration/ production (E&P) activities near places inhabited or used by indigenous peoples.

Stakeholder Engagement and Communications: *Direct contact with national authorities, and indirect or direct contact with other key stakeholders per guidance from national authorities. Collaborate and coordinate with each country to provide technical support to address identified concerns.*

- Key stakeholder, e.g., government decision makers, perceptions, concerns, and questions about dispersant risks, as shown in Table 2.
- Inadequate information to address concerns and questions of decision makers and other key stakeholders about oil spills and dispersants, e.g., impact on a nations' commercial fishing industry and native fishing.
- Inadequate communication of technical information about oil spills and dispersants, e.g., unclear or inconsistent use of terms like subsurface and submerged oil.
- Questionable credibility of technical sources and information about oil spills and dispersants.
- Inadequate information regarding available compensation regimes for socio-economic and environmental damages and lack of pre-spill consensus about compensation arrangements with local communities and national authorities in the event of a spill incident.

Further, for purposes of this report, the role of industry is assumed to be primarily one of technical support needed to inform decision makers and other stakeholders in each country. Technical support is also a necessary component of government and public affairs (GPA) communications external to the oil industry and generally to obtain consensus within and outside the oil industry.

Technical support involves sharing knowledge with each country to address a broad range of stakeholder questions, concerns, and issues of interest related to oil spills. This support includes technical information about oil, contingency planning, spill response, response options, risk assessment and communication, and potential impacts as well as support for conducting NEBA of available response options to mitigate an accidental oil spill from an E&P activity. For example, industry could explain the rationale, timing and sequence of preferred various response options, i.e., source control, dispersants, controlled burning in-situ, mechanical on water or on shore, in an integrated manner, that is, the strategic vision for implementing the complete set of countermeasures.

4.1.1 Decision-Making Process

It seems that industry's appropriate role in the decision-making process is one of technical support that leads to a national policy allowing the use of dispersants as a response option, either nationwide or in specific geographic areas, plus an expedited approval process for incident-specific use.

Many of the countries with ice-affected waters have communities of indigenous peoples living in or near energy exploration and production areas. Their presence may call for some participation in the decision making process if that country has formally recognized their rights. UN Guidelines outline existing international law and emerging State practice affirming that indigenous peoples have the right to effective participation in the decisions, policies and initiatives that affect them and that Free, Prior and Informed Consent (FPIC) is a legal norm that imposes duties and obligations on the States. These guidelines can be viewed at http://www.un-redd.org/Launch_of_FPIC_Guidelines/tabid/105976/Default.aspx. Canada, Russia, Finland and the US are specifically mentioned in these guidelines. **Annex 4** contains additional information from the UN about indigenous peoples and FPIC in decision making.

Last September IMO's OPRC working group completed a draft of "*Guidelines for the Use of Dispersants for Combating Oil Pollution at Sea*". These guidelines consist of four parts:

1. Basic information on dispersants and their application (finalized);
2. Template for a national policy for the use of dispersants (finalized);
3. Operational and Technical Sheets for surface application of dispersants (finalized); and
4. Sub-sea application of dispersant (to be finalized).

The guidelines, Parts I and II, are expected to be approved in 2013. They are an important starting point for international dispersant decision making going forward. Both parts of the IMO guidelines refer to and encourage conducting a NEBA, and suggest conducting a preliminary NEBA when developing an OSR plan.

The term NEBA is used to reflect a complete consideration of potential risks, including risk perceptions, beyond those which are primarily and traditionally environmental. In the past, NEBA included environmental and some socio-economic impacts on marine and coastal resources resulting from oil spills. NEEBA (Net Environmental and Economic Benefit Analysis, or NEDRA (Net Environmental Risk and Damage Assessment) are other terms used in the literature to describe NEBAs. However, since DWH with the global sharing of information from the public and local stakeholders through social media, human health risks and political issues associated with dispersant use also need to be included in all NEBA discussions going forward. Future NEBAs need to proactively address the perception that dispersant use represents a risk to public health and welfare in addition to the previously-recognized environmental risks.

Because NEBA involves a comparison of all response options, the OGP might wish to consider a combined ISB and dispersant outreach and engagement program with Arctic/Ice-affected countries to optimize OGP resource efficiencies, along with countermeasures to control a spill source, versus a separate path forward initiative for each countermeasure. In addition, the industry should be prepared to explain the sequence and timing of deploying these response options should an oil spill occur.

4.1.2 Stakeholder Engagement and Communications

General concerns about dispersants shared by decision makers and stakeholders have to do with their risk perceptions about dispersants. **Table 3** highlights the dispersant risk perceptions which have been discussed in social media and among social science researchers following the DWH response. Although dispersants were also applied by boat spray to reduce volatile organic compounds (VOCs) for workers and scientific monitoring purposes, the public generally did not comment on boat spray applications.

Table 3: Dispersant Risk Perceptions

Concerns = risk perceptions	Type of dispersant application	Impact Perceptions
Fear of direct contact by “toxic” droplets	Aerial	Potential human and animal health impacts, especially on children and pets which causes stress and potentially leads to mental health impacts
Fear of ecosystem toxicity in the water column	Aerial and subsurface	Acute and chronic exposure potential to marine ecosystem - all life stages of marine organisms, both individual organism and population
Fear of toxicity in residual tarballs	Aerial and subsurface	Potential health impact through direct contact (people and organisms) or ingestion (organisms)
Fear of toxic effects on the health of marine organisms, which are harvested for personal or commercial use	Aerial and subsurface	Potential acute and chronic health impacts on marine organisms and subsequent socio-economic impacts - loss of subsistence and commercial seafood, loss of economic revenue
Fear of consuming toxic seafood through exposure to and tainting by oil AND disperstants	Aerial and subsurface	Potential socio-economic impacts and human health impacts - loss of subsistence and commercial seafood, loss of economic revenue and cultural way of life which causes stress and potentially leads to corrosive mental health impacts on individuals, families and communities.

Since every oil spill involves risks to the environment, applying risk communication principles to external communications is beneficial. There are many different approaches to risk communications. Some of them focus on improving the way external communications about risks are conducted, e.g., developing succinct, accurate messages, and some focus on the content of risk communications, e.g., what information is needed to address misperceptions, incomplete or inaccurate understanding about potential for risks. Risk communication has been defined in multiple ways; risk communication:

- Includes actions, words, and other interactions that incorporate and respect the perceptions of the information recipients, intended to help people make more informed decisions about threats to their health and safety (Ropeik, 2008).
- Is the interactive process of exchange of information and opinions among individuals, groups, and institutions concerning a risk or potential risk to human health or the environment? (National Research Council, 1989)

- Means communication intended to supply lay people with the information they need to make informed, independent judgments about risks to health, safety and the environment. (Fischhoff, 1995; Gow and Otway, 1990)

All definitions include two-way communications (dialogue) and some measure of independent consideration as necessary components of effective risk communication. Engagement during preparedness is a way to promote good risk communication while also assuring that oil spill practitioners, including industry, and trusted intermediaries (like public health agencies) can guide the process in a technically-sound way and interpret data and information in relation to risk perceptions. Engagement offers mutual value and benefit to advance the process for the expedited authorization of dispersant use as a legitimate, first-line response option.

Risk communications for accidental marine pollution was the focus of European community in the risk communications report by AMPERA (European Concerted Action to foster prevention and best response to Accidental Marine Pollution) http://www.upf.edu/enoticies/0708/_pdf/ampera.pdf. In this report, AMPERA noted communication mistakes made during the Prestige oil spill in 2002:

1. Unidirectional communication (lack of interaction with audience).
2. Contradictory messages between different governmental spokespersons.
3. Unclear messages: ambiguous and confusing terminology.
4. Absence of an independent expert voice to justify the governmental actions.
5. No self-criticism in the message, minimizing the crisis and consequences.
6. No channels of direct communication with those affected in local area suffering from the accident.
7. Lack of online information and tailored to needs of media.
8. Crisis without a controlled end by the response authorities (no quick economic and environmental impact assessments).

External communications should aim to prevent the mistakes noted by AMPERA and is important for all oil spill responses going forward, and particularly those involving dispersants. Risk communication can provide value, especially to prevent some of the mistakes noted by AMPERA, especially #1, 3, 4, and 6.

Risk communication can occur through stakeholder engagement, which is a two-way process used by an organization to engage relevant stakeholders for a clear purpose to achieve accepted outcomes. Stakeholders are defined as those groups that have a stake/interest/right in a geographic area and those that will be affected either negatively or positively by E&P activities. They include relevant government agencies, formal and informal natural resource users, private sector entities, and indigenous peoples. Engagement is a process which supports developing relationships with government decision makers and other key stakeholders. It facilitates the exchange of credible, technical information to address risk perceptions. Outreach which consists primarily of one-way communications, e.g., press releases, talking points and briefings for the media, is not considered engagement and it has limited value in risk communication. A NEBA is a form of stakeholder engagement, i.e., it is an engagement activity primarily with spill specialists and agency scientists. Other specialists may also participate representing other stakeholders, e.g., fishing representatives and NGOs, but their participation seems to less predictable. Other engagement activities also may be needed. NEBA considers

the risks and benefits of response options and therefore risk communication principles should be incorporated into the process and the summation of results.

4.2 Overarching Strategies

An overarching strategy to advance decision making is to provide science-based, credible information and engage in dialogue with decision makers and other stakeholders in each country to address their risk perceptions, concerns, and questions about dispersant use. One way for OGP to leverage expertise and credibility, is working in partnership with other international organizations having similar missions, goals and or objectives, e.g., European Maritime Safety Agency and members, Emergency Prevention, Preparedness and Response (EPPR), Oil Spill Working Group (OSWG) and the Arctic Council. Such partnerships could share an engagement process to move forward in a coordinated manner with Arctic countries having the potential for E&P activities in their territorial waters.

Multiple UN initiatives exist which can be drawn upon to develop a stakeholder engagement plan to cultivate a positive decision making environment. Through various treaties, covenants and programs, the UN actively encourages stakeholder engagement during policy making. **Incorporate these UN initiatives to reinforce the credibility of a dispersant engagement plan.**

For each country, key stakeholders need to be identified and mapped along with their concerns which may be barriers to positive consideration and policy development. There are various ways to map stakeholders. Two methods are provided as examples in **Annex 5**. For each stakeholder group, identify important stakeholder representatives and/or organizations who serve as opinion leaders and are considered trusted sources of information, i.e., a trusted intermediary, in each country of interest for dispersant and ISB information.

It is important to “listen” to stakeholder’s questions and concerns, and their risk perceptions, which are indicative of information needs and the nature of misperceptions. Gathering information in writing and in a methodical way is important. This mapping should also identify sources of information which these stakeholders view as credible and who they trust. For example, fishermen often turn to their trade associations for educational information. For controversial topics, more benefit may be gained by sharing information with identified trusted intermediaries than communicating directly with specific key stakeholders.

Technical information will need to be conveyed to address stakeholder risk perceptions and concerns. Much of the information should be applicable to all countries, but some information may have to be tailored to or developed for specific issues or cultures. Multiple levels of engagement may be necessary depending upon the specific regulatory process in each country. For example, in the US, according to national policy, dispersant decision making is carried out on a regional (multi-state) basis.

As a result of DWH, there are now emerging needs to also engage key stakeholders in local areas. Consequently, SEA has conducted two open houses (one on the Mid-Atlantic Coast and one the Pacific Northwest Coast) on dispersants with local officials, public health representatives, fishing organizations, tribal organizations, emergency managers and NGOs, e.g., The Nature Conservancy and local representatives in the Water Keepers Alliance, among others. These events provided opportunities for local stakeholders to converse directly with response specialists and scientists about their risk perceptions, concerns and questions. The approach was similar for both, but the agenda and speakers were tailored to the culture and

geography of the area. According to the feedback, both were successful in resolving some fundamental concerns and questions. Especially for countries with populations of indigenous peoples near E&P areas and which have a form of UN Free, Prior and Informed Consent agreement, such open houses could be beneficial in advancing the decision making process.

In the US during the 1990s under contract to the Marine Spill Response Corporations R&D Program, SEA engaged various stakeholders, e.g., Regional Response Teams (RRT), elected officials, and agency scientific advisors, regarding their questions about and possible benefits of dispersants and ISB. This work led to successful dispersant and ISB preauthorization and or expedited decision making processes in the majority of the coastal RRTs by 1997, as can be seen in the summary on the USCG website <https://homeport.uscg.mil/mycg/portal/ep/contentView.do?contentType=2&channelId=-30095&contentId=125795&programId=114824&programPage=%2Fep%2Fprogram%2Feditorial.jsp&pageType=13489> (scroll to bottom of page). Considerable progress was made in achieving pre-approvals, even before NEBAs were conducted. The first oil spill NEBA in the US was conducted in 1997 by SEA in Washington State. SEA suggests that engagement activities - building credible relationships through dialogue about dispersant questions, concerns and risk perceptions – is an important prerequisite to a NEBA.

Suggested strategies consist of a set several interconnected activities, which begin during preparedness and are sustained throughout E&P activities.

- Stakeholder Engagement:
 - Define a general engagement approach to advance decision making for expedited approval, which can be refined as necessary for each country. Incorporate to the extent practicable United Nations stakeholder engagement principles related to policy development.
 - Define purpose, scope and engagement limitations for each country.
 - Identify and map stakeholders for each country.
 - Develop plan to engage government agencies in each country, including NEBA and other technical support and communication needs.
 - Develop engagement plan to support government agencies' interactions with key stakeholders in each country.
 - Implement Engagement Plans, which will incorporate external communications.
- External Communications:
 - Risk Communication:
 - Identify stakeholder issues of concern.
 - Identify risk perceptions around those issues of concern.
 - Identify technical specialists to address risk perceptions.
 - Identify trusted sources of information, who stakeholders would find credible about the identified issues of concern.
 - Develop technical information to address risk perceptions using risk communication principles.

- Assure credibility of technical information: achieve consensus with trusted sources, publish in journals and conferences.
- Distribute technical information to trusted sources and stakeholders.
- Obtain feedback on information, revise and update as needed.
- Public Communication:
 - Develop messages and other materials for public communication using risk communication principles.
 - Engage traditional media, e.g., television and print media.
 - Develop and implement electronic media strategy including websites and social media.

Especially in remote areas where the local public may consist of small communities and/or indigenous peoples with a direct connection to and dependence upon the marine and coastal environment, addressing public health and cultural concerns may be a dominant barrier to the use of dispersants. Stakeholder discussion should include worker health even though it may be addressed through responder health and safety plans. Appropriate trusted sources of information about public health include occupational physicians and clinics and community health workers, as well as pharmacists who understand the interactions of various chemicals and human health.

This engagement process is a long term endeavor, as it was in the US in the 1990s, and based upon the US experience, it is possible to achieve regulatory approvals for dispersant use. However, the specific questions and concerns of key stakeholders in each country will need to be addressed. It is premature at this stage to make predictions about the level of effort and duration of support needed for each country to, first, reach policy decisions that dispersants are a viable option and, second, define the procedure to approve their use on actual spills.

4.2.1 *Recommended Technical Actions to Support Strategies*

1. Develop a list of unique successes, achievements and key issues people want to know more about, including important misperceptions to correct.
2. Identify public venues which are viewed as credible places for key stakeholder groups to learn about topics of concern and interest. Present dispersant information, where they go to learn of information relevant to their professional interests and responsibilities.
3. Consolidate, summarize and distill the facts and science to date for dispersants and in relation to response options and NEBA by developing internal technical consensus around topics.
4. Provide the output to public affairs consultants for media outreach.
5. Identify the journal and conference priorities for trusted sources of information and key stakeholders. See **Annex 6** for a list of journals which were recommended by scientists from industry and government during the DWH response.
6. The above preparation will provide a well-reasoned basis to support effective engagement. Implementing an engagement program should include the following activities:

- a. Review/refine messages developed for technical accuracy.
- b. Develop outreach schedule of conferences and journal submissions Identify speakers, coordinate events, develop and submit papers and presentations.
- c. Complete design of the outreach program and initiate.
- d. Define approach for various levels (national, regional, state, local).
- e. Define topics benefiting from technical consensus.
- f. Identify specialists/trusted intermediaries to engage.
- g. Develop a short term (one year) and long-term (five year) schedule of goals and objectives.

4.3 Implementation of Decision-Making and Engagement Strategies

An engagement program, designed to enhance the acceptability of ISB and dispersant use as a first response option in Arctic or ice-affected nation states, individually and by region, is a process which takes time to develop credible, working relationships with appropriate entities in each country. Therefore, the **engagement program should be envisioned as a long-term endeavor (2 to 5 years) and structured and funded accordingly**. To support this program, **OGP should consider establishing a team of technical specialists possessing stakeholder engagement and risk communication capabilities in addition to technical knowledge, and be given assignments to participate in global workshops, conferences, educational outreach to governmental agencies, non-governmental organizations, media and communities. The specialist team should include industry technical and GPA representatives as well as their consultants who are sometimes regarded by stakeholders as more objective third parties than industry, even if they are contracted by industry.**

Education using risk communication principles is essential to improving the decision-making process. Educational workshops and open houses designed to allow for 2-way discussion among decision-makers, spill practitioners, scientists, trusted intermediaries, and stakeholders will lay the foundation to increase their knowledge about spill response in general and on dispersant issues. Some of these activities may be needed prior to conducting a strategic NEBA or a tactical NEBA for a project or region during preparedness. This form of engagement will help stakeholders consider in a rational manner the distinctive value of dispersants as a response option in that country, and understand the need to make decisions in hours even if there is no memorandum of understanding or pre-approval process in place to assure dispersant use will be a viable option.

Partnership projects between OGP and other organizations, e.g., EMSA; Task Force on Arctic Marine Oil Pollution Preparedness and Response, Emergency Prevention of the Arctic Council, Preparedness and Response Working Group (EPPR) of the Arctic Council; OSWG of IPIECA; Oil Spill Preparedness Regional Initiative (OSPRI), would facilitate mutually acceptable consolidated engagement effort rather than separate activities by individual companies or organizations. This approach could maximize resource utilization and technical support as well as common objectives.

The initial primary engagement focus should be on those countries that currently envision dispersants as a secondary option. The aim of this engagement would be to

achieve agreement with these States to consider response parity of dispersants and ISB as a first response option alongside mechanical recovery. Suggested countries would include Canada, Norway, Ireland, Netherlands, Belgium, Poland, Russia and the US in Alaska.

A secondary focus should be on those countries that currently consider the utilization of dispersants as a last option. These efforts would follow a similar process as for those countries that currently consider dispersants a secondary option. These countries would include Sweden, Finland, Germany, Denmark, Latvia, Estonia, Lithuania, etc. Ideally, success with the first group of nations will assist in achieving success with the second group of nations. The aim of technical support to these countries would be to assist them in developing a harmonized, ideally multi-national, acceptable, product-approval process.

Many countries seem to prefer using only specific dispersants. Therefore, **decision making may be advanced with supporting the development of a pre-approved product schedule.** This also will enable the staging of stockpiles of approved products in appropriate quantities and locations as well as logistical support and necessary operational resources, e.g. application platforms (vessels/aircraft), trained personnel, communication systems.

There are many examples of individual dispersants that are only approved for use in one nation's waters. This seems to be because the dispersant manufacturer (who has to pay for dispersant testing for approval purposes) finds no commercial reason to get approval for dispersant use in any other than that specific nation's waters. There is no particular reason to believe that many dispersants would not be approved in several countries, if the manufacturers chose to submit them for additional testing. This produces national exclusivity and multiplicity of dispersants approved for use only in individual countries. Although there have been discussions at different forums, about the necessity of harmonizing dispersant approval testing regimes, these initiatives have yet to prove successful.

If a national dispersant policy is unobtainable, agreements should be attempted between OGP and each Arctic country on a specific project or regional basis at the time of drilling application and submittal of exploration and production oil spill contingency plans. Ideally, dispersant use policies should be incorporated into oil spill contingency plans with some forethought as to logistical concerns and sensitive resources.

Depending upon the country, either or both strategic and tactical NEBAs may be needed during preparedness, and some countries seem to require incident-specific NEBAs during a response, that is, tactical NEBAs. Examples of existing approaches (with checklists, flow diagrams, and decision trees) for incident-specific decision making or tactical NEBAs, from the UK, Norway and US could serve as models for consideration by other countries.

As noted earlier, the first type of NEBA needed to clarify the potential value of dispersants is a "*Strategic Net Environmental Benefit Analysis*". This reasoning is illustrated in **Figure 8**.

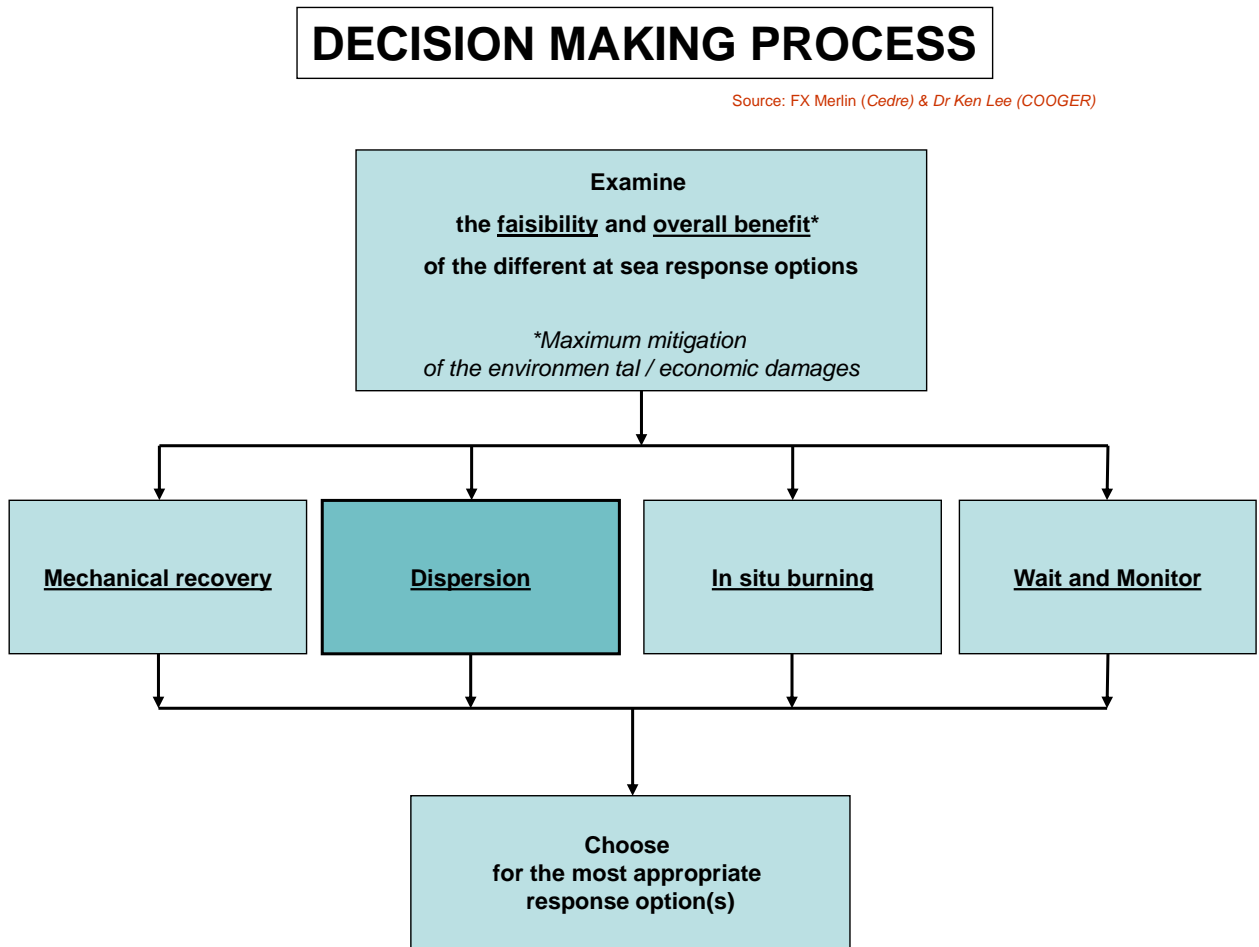


Figure 8. Strategic-level consideration of dispersants. Source: IMO, 2012. FX Merlin (CEDRE) and Dr. Ken Lee (COOGER)

A strategic NEBA process should encompass the following:

- Terms and definitions for NEBA, first of all, the definition of Valuable Environmental Sensitive Areas (ESA) and Economically Valuable Areas to be accounted for;
- Types of ESA to be taken into account during NEBA and their prioritized listing;
- Oil spill scenarios for which the NEBA is developed;
- Environmental parameters to be considered currents, temperature, salinity, depth, e.g. modelling trajectories;
- Characteristics of spilled oil to be taken into account, dispersibility of the oils, toxicity of dispersed and flowing oil potentially impacting ESAs; and
- List of information needed for NEBA, e.g., environmental sensitivity maps, results of mathematical modelling of oil behaviour on water surface, advantages and disadvantages of oil spill response techniques, etc.

The results of the strategic-level NEBA can be captured, and communicated, as simply as illustrated in Figure 9.

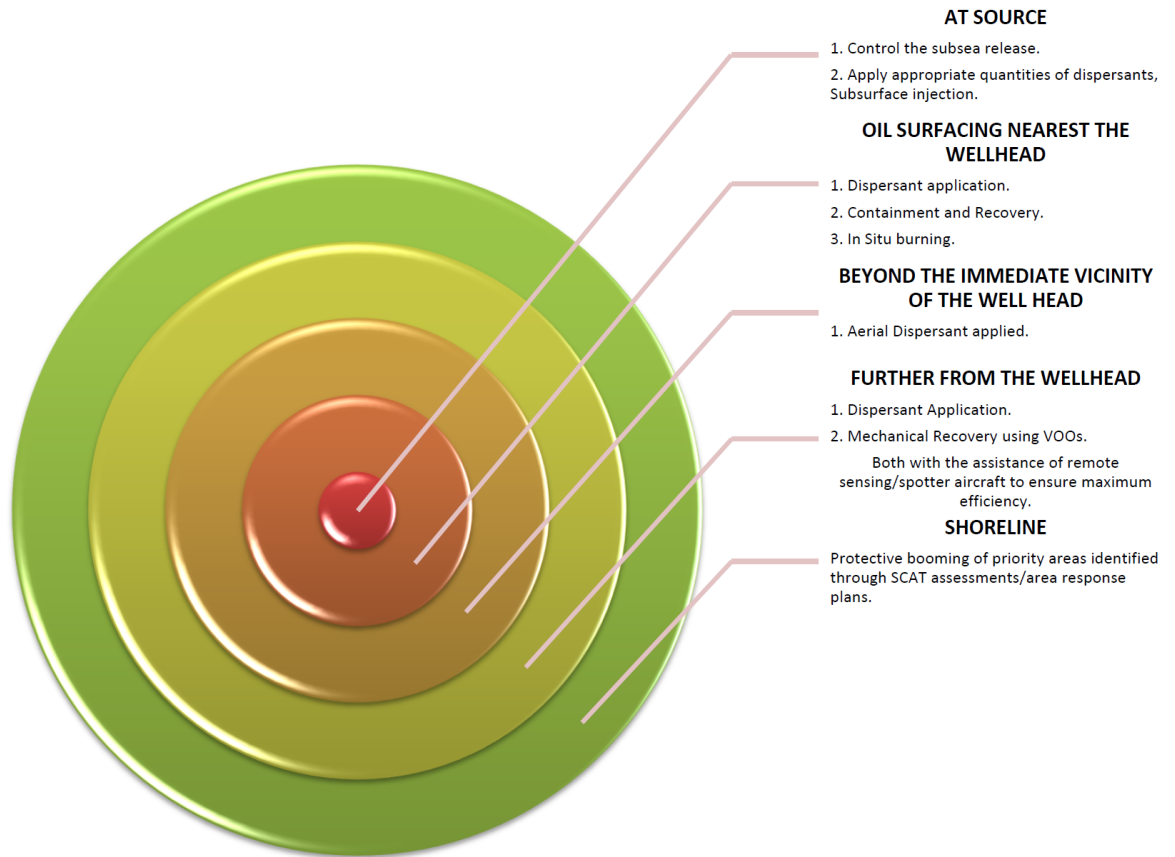


Figure 9: Example Output of a Strategic NEBA. Borwell, M. 2011.

A tactical/operational NEBA accomplished at the time of an incident would provide confirmation of the parameters of the initial strategic NEBA leading to dispersant use authorization. Similar to Norway, consideration can also be given to development of a Net Environmental Damage and Response Assessment (NEDRA) at the time of development and submittal of a scenario based contingency plan for a given project. Discussions of relevant issues and interests ahead of time eliminate the lengthy approval procedure and hence increase the opportunity for effective usage of dispersants.

Assuming ice-affected nations adopt policies allowing the use of dispersants and NEBAs have been carried out, **OGP should develop with each country a mutually-agreed dispersant management protocol and application/monitoring plan so that implementation and activation of the necessary resources can be prompt in order to be in a position to take advantage of the window of opportunity.**

Without feedback and guidance from OGP on this report, at this point SEA suggests the following generic steps:

1. Ask OGP technical work group members to identify, for each ice-affected country in which they operate, a draft list of country-specific issues, e.g., concerns, questions and perceived risks associated with dispersants (or in situ burning), which represent potential barriers to decision making. SEA could provide a form to enable consistent, comparable information gathering.
2. Ask OGP technical work group members to identify key decision makers and/or stakeholder groups in each ice-affected country in which they operate.

3. Develop preliminary list of key stakeholder groups for each country given the identified issues of concern.
4. Identify country-specific communication networks, especially trusted intermediaries in the areas of E&P activities.
5. Assess opportunities to leverage networks, e.g., a global organization with country-specific representatives.
6. With the above information, develop country-specific plans to address decision making obstacles.
7. Engage government stakeholders knowledgeable about local issues to refine specific list of concerns and risk perceptions.
8. Engage trusted intermediaries to refine communication network and set priorities – meet with them and establish a working relationship. Consider using the survey toolkit developed for the API JIP dispersant communications workgroup to learn about lay person understanding in relation to expert understanding. Using this survey interactively at meetings promotes rational consideration of dispersants in relation to an untreated spill.
9. Gather technical information to address identified issues (concerns, risk perceptions and questions) and provide to engagement teams consisting of company representatives and consultants as appropriate. This information would be useful for all subsequent NEBA activities, as well as important to share with identified trusted intermediaries in all countries. Organize information for both: (1) issues of general concern for all countries, and (2) issues specific to countries or a region. Keep in mind that dispersant risk communication research from the 1990s showed that most decision makers in the US lacked a shared, accurate, and comprehensive understanding of oil transport and fate processes which is essential for contemplating how those processes change with the application of dispersants.
 - a. Use risk communication principles to develop media messages and talking points about identified issues of concern. For example, message maps are a risk communication tool to facilitate developing technically-sound messages.
 - b. Organize package of technical information sources for trusted intermediaries, especially a list of peer-reviewed papers relevant to dispersants, and the issues – develop lists of publications on dispersants to share. An example of how this might be given to identified trusted intermediaries in OGP countries is:
<http://www.pwsrcac.org/programs/environmental-monitoring/dispersants/dispersant-literature-reviews/> Sources for this information would include the IOSC proceedings (www.iosproceedings.com), the publications section of the Gulf of Mexico Research Initiative (GOMRI) <http://gulfresearchinitiative.org/> for research funded by BP's grant following DWH. There are at least 34 dispersant papers, although the search for dispersant keyword did not show them all. Also look at the Louisiana Universities Marine Consortium (LUMCON) dispersant database (which has been updated through 2012 but the GOMRI pubs seem to be missing) <http://www.lumcon.edu/library/dispersants/>

- c. Identify/prioritize conferences appropriate for OGP technical workgroup members to present papers and journals for them to submit papers.

We offer some general, preliminary suggestions specific to external communications. The message map in Figure 10 provides a template for crafting media messages using risk communication principles. Table 4 provides an overview communication networks which can be leverage to share information externally in a credible way about dispersants.

Figure 10: Message map template to address stakeholder questions.

Message Map		<u>Stakeholder Question or Concern:</u>			
<u>Key Message</u> 9 words on average		<u>Key Message</u> 9 words on average		<u>Key Message</u> 9 words on average	
<u>Supporting Info.</u> 1.1		<u>Supporting Info.</u> 2.1		<u>Supporting Info.</u> 3.1	
<u>Supporting Info.</u> 1.2		<u>Supporting Info.</u> 2.2		<u>Supporting Info.</u> 3.2	
<u>Supporting Info.</u> 1.3		<u>Supporting Info.</u> 2.3		<u>Supporting Info.</u> 3.3	

Table 4: Suggested external communication networks.

External Communication Networks	Some Examples	Geographic Influence	Stakeholder Groups that view the networks as trusted and credible sources of information
<p>Technical consensus (e.g., by scientific panels, intergovernmental organizations, and/or joint industry and governmental projects)</p> <p>(Engagement)</p>	<p>UN, European Maritime Safety Agency, IMO, National Academy of Sciences, Joint industry and government projects, e.g., JIP, issue-focused educational symposiums and workshops’ United Nations Permanent Forum on Indigenous Issues (UNPFII), Unrepresented Nations and Peoples Organization (UNPO), US Regional Response Teams</p>	<p>International, national, regional</p>	<p>International governmental organizations (topic), national regulatory agencies and their scientist advisors, international and national scientific bodies, elected/regulatory officials</p>
<p>Industry Trade Associations (including sectors whose members could be impacted by an oil spill)</p> <p>(Engagement, media/PR)</p>	<p>API, OCIMF, IPIECA, APICOM, Seafood Choices Alliance (European and US), European Tourism and Action Group (ETAG), World Tourism Organization, Japan Fisheries Association</p>	<p>International, national, state</p>	<p>Industry, elected officials, oil spill professionals</p>
<p>Trusted “intermediaries” (Engagement required - relationship-based)</p>	<p>Academic researchers and scientists, trade associations which represent potential spill impacts (seafood and tourism), NGOs, community health workers/public health clinics and physicians, classification societies, professional associations</p>	<p>Regional, state, local</p>	<p>NGOs, community, individuals</p>
<p>NGOs (review the NGOs which have consultative status with IMO; assess by multiple criteria)</p> <p>(Engagement first, followed by PR)</p>	<p>Pew Environmental Trust, Waterkeeper Alliance; Marine Conservation Society (UK), The North Sea Foundation (The Netherlands), Greenpeace, and WWF – all partners with Seafood Choices Alliance; National Wildlife Federation (US)</p>	<p>International, national, regional, local</p>	<p>Members, concerned citizens, communities, elected officials</p>
<p>Professional and research associations (Media/PR and engagement)</p>	<p>The Society for Occupational Medicine, Society of Toxicology (SOT), Society for Risk Analysis (SRA), American College of Toxicology, American Medical Association, International Association of National Public Health Institutes</p>	<p>International, national, regional, local</p>	<p>Individuals within that professional, who also may become trusted intermediaries and opinion leaders, includes academia and other researchers, practitioners, and regulators</p>

External Communication Networks	Some Examples	Geographic Influence	Stakeholder Groups that view the networks as trusted and credible sources of information
News coverage (of opinion leaders, papers, conferences, hearings, special reports)	CNN, The Economist, London Times, New York Times, International Wall Street Journal, National Public Radio, Washington Post, Time Magazine	International, national, regional	Elected officials, regulatory officials, NGOs, community, individuals
(Media/PR)			
Professional/research conferences (e.g., reviewed abstracts and papers, or invited) (OGP can reference relevant journal articles in media and engagement activities and/or sponsor presentations)	Academics: SETAC, association conferences, e.g., SOT Government agencies: International Association of Emergency Managers Oil Spill: International Oil Spill Conference/Interspill/ Spillcon; Gulf of Mexico Oil Spill and Ecosystem Conference (sponsored by GOMRI http://gulfresearchinitiative.org/)	International, national	Academic researchers, regulatory scientists, professional associations, expert witnesses
Peer-reviewed journals* (OGP could reference relevant journal articles in media and share papers during engagement activities)	Science, Nature, Proceedings of the National Academy of Sciences, International Oil Spill Conference Proceedings, Marine Pollution Bulletin, New England Journal of Medicine, Journal of Environmental Monitoring, Ecology and Society, Environmental Science and Technology	International, national, regional, state	Academic researchers, regulatory scientists, professional associations, Congressional staffers, expert witnesses, NGOs
*See below for top cited journals which translates to high credibility			

**Top Ten Most-Cited Journals
(All Fields), 1999-2009**

Rank	Journal	Papers 1998-2009	Citations
1	Journal of Biological Chemistry	54,695	1,652,432
2	Proc. Natl. Acad. Sci. USA (PNAS)	30,396	1,376,541
3	Nature	10,549	1,242,392
4	Science	9,369	1,125,022
5	Physical Review Letters	31,112	884,911
6	J. American Chemical Society	29,272	881,457
7	Physical Review B	48,888	612,377
8	Astrophysical Journal	26,418	581,299
9	New England Journal of Medicine	3,564	568,698
10	Applied Physics Letters	36,759	549,224

ANNEX 1: INTERNATIONAL ORGANIZATIONS & CONVENTIONS

This annex highlights intergovernmental organizations and conventions, research institutions and industry organizations whose work is relevant to oil spill preparedness and response in ice-affected countries.

International Bodies and Conventions

United Nations: International Maritime Organization (IMO)

IMO is the secretariat for the International Oil Pollution Preparedness, Response and Cooperation Convention (OPRC 90), and has assisted the Northwest Pacific Action Plan (NOWPAP) Marine Environmental Emergency Preparedness and Response Regional Activity Centre (MERRAC) and NOWPAP member States in the development of a Regional Oil Spill Contingency Plan and an associated regional Memorandum of Understanding (MOU) as well as other activities which belong to the scope of MERRAC.

The European Maritime Safety Agency (EMSA)

The European Maritime Safety Agency is one of the European Union's decentralised agencies. Based in Lisbon, the Agency provides technical assistance and support to the European Commission and Member States in the development and implementation of EU legislation on maritime safety, pollution by ships and maritime security. It has also been given operational tasks in the field of oil pollution response, vessel monitoring and long-range identification and tracking of vessels.

EMSA provides member states with the technical and scientific assistance needed and with a high level of expertise, in order to help them:

Apply European Union (EU) legislation properly in the field of safety and prevention of pollution;

Monitor its implementation;

Evaluate the effectiveness of the measures in place.

EMSA also provides operational means, upon request, as well as technical and scientific assistance, to help member states respond to marine pollution by ships and oil and gas installations within the European Union.

The tasks of the EMSA are broadly divided into four key areas in line with its founding regulation and relevant EU legislation. Two of these key areas are as follows:

1. Marine pollution preparedness, detection and response capability is provided by EMSA to coastal States. this includes a European network of Stand-by oil Spill response vessels as well as a European satellite oil spill and vessel detection service, contributing to an effective system for protecting EU coasts and waters from pollution.
2. EMSA provides technical and scientific advice in the field of safety and prevention of pollution in the continuous process of evaluating the effectiveness of the measures in place, and in the updating and development of new legislation. It also provides support to, and facilitates co-operation between, the member states and disseminates information on best practice.

The Arctic Council

The Ottawa Declaration of 1996 formally established the Arctic Council as a high level intergovernmental forum to provide a means for promoting cooperation, coordination and interaction among the Arctic States, with the involvement of the Arctic Indigenous communities and other Arctic inhabitants on common Arctic issues, in particular issues of sustainable development and environmental protection in the Arctic.

The Arctic Council is an intergovernmental forum for Arctic governments (and Arctic indigenous people). Arctic Council Member States are Canada, Denmark (including Greenland and the Faroe Islands), Finland, Iceland, Norway, Russian Federation, Sweden, and the US.

The Ministers of the Arctic Council member states established a Task Force (**Task Force on Arctic Marine Oil Pollution Preparedness and Response**), reporting to the Senior Arctic Officials, to develop an international instrument on Arctic marine oil pollution preparedness and response, and called for the EPPR and other relevant working groups to develop recommendations and/or best practices in the prevention of marine oil pollution; the preliminary or final results of both to be presented jointly at the next Ministerial meeting in 2013. The Task Force is co-chaired by Norway, Russia and the US.

The **Emergency Prevention, Preparedness and Response Working Group (EPPR)** of the Arctic Council address various aspects of prevention, preparedness and response to environmental emergencies in the Arctic. Members of the Working Group exchange information on best practices and conduct projects to include development of guidance and risk assessment methodologies, response exercises, and training. The goal of the EPPR Working Group is to contribute to the protection of the Arctic environment from the threat or impact that may result from an accidental release of pollutants or radionuclides. In addition, the Working Group considers questions related to the consequences of natural disasters.

The Baltic Marine Environment Protection Commission (HELCOM)

Also known as Helsinki Commission is an intergovernmental organization governing the Convention on the Protection of the Marine Environment of the Baltic Sea Area (Helsinki Convention). HELCOM works on protection of the marine environment of the Baltic Sea. Contracting parties of HELCOM are:

Denmark	Estonia	European Union	Finland	Germany
Latvia	Lithuania	Poland	Russia	Sweden

The Bonn Agreement

A mechanism by which the North Sea States, and the European Community, work together: to help each other in combating pollution in the North Sea Area from maritime disasters and chronic pollution from ships and offshore installations; to carry out surveillance as an aid to detecting and combating pollution at sea. The North Sea States are Belgium, Denmark, France, Germany, Ireland, the Netherlands, Norway, Sweden, and the UK and Northern Ireland.

The International Convention on Oil Pollution Preparedness, Response and Co-operation 1990 (OPRC 90)

The International Convention on Oil Pollution Preparedness, Response and Co-operation 1990 (OPRC 90) is the international instrument that provides a framework designed to facilitate international co-operation and mutual assistance in preparing for and responding to major oil pollution incidents and requires States to plan and prepare by developing national systems for pollution response in their respective countries, and by maintaining adequate capacity and resources to address oil pollution emergencies. States which are party to the OPRC Convention are required to establish a national system for responding to oil pollution incidents, including a designated national authority, a national operational contact point and a national contingency plan. This needs to be backstopped by a minimum level of response equipment, communications plans, regular training and exercises.

Tehran Convention's Oil Pollution Incident Protocol (the 'Aktau Protocol')

Four ancillary Protocols to the Tehran Convention, namely the Protocol on Conservation of Biological Diversity, the Protocol for the Protection of the Caspian Sea against Pollution from Land-based Sources and Activities, the Protocol Concerning Regional Preparedness, Response and Cooperation in Combating Oil Pollution Incidents, and the Protocol on Environment Impact Assessment in a Trans-boundary Context, has been assigned priority by the Contracting Parties to the Tehran Convention. The Protocol Concerning Regional Preparedness, Response and Co-operation in Combating Oil Pollution Incidents ("Aktau Protocol") has been adopted and signed.

Joint Contingency Plan Against Pollution in the Bering and Chuckchi Seas

This is an agreement between Russia and the US to combat pollution in an emergency situation in the Bering and Chuckchi Seas.

Research Institutions

CEDRE

Centre of Documentation, Research and Experimentation on Accidental Water Pollution (CEDRE) is a non-profit-making association created as one of the measures taken in the aftermath of the *Amoco Cadiz* oil spill, to improve spill response preparedness and strengthen the national response organization. It is responsible, on a national level, for documentation, research and experimentation on pollutants, their effects and the response means and tools that can be used to combat them. It is charged with providing advice and expertise to the authorities responsible for responding to accidental pollution. It is competent for both marine waters and inland surface waters. The members of the association CEDRE include French Government administrations, local authorities, at all levels, public research establishments and private organizations.

Centre for Offshore Oil and Gas Environmental Research (COOGER)

Fisheries and Oceans Canada established the Centre for Offshore Oil, Gas and Energy Research (COOGER) to coordinate nation-wide research into the environmental and oceanographic impacts of offshore petroleum exploration, production and transportation. The role of COOGER, a non-profit, is to "provide scientific facts to support decision-making" related

to aquatic environmental issues associated with oil and gas development and transport in Canada's offshore and inland waters. The overall goal is to protect the health of these waters, and, thus, the long-term sustainability of their renewable resources. COOGER carries out research needed by industry and regulators by pulling together multidisciplinary teams of the very best experts from all across the country and, in some cases from around the world, to look at common issues of concern. National coordination and collaboration are core components of COOGER

SINTEF

SINTEF is the largest independent research organization in Scandinavia which attempts to create value through knowledge generation, research and innovation, and develop technological solutions that are brought into practical use. SINTEF is an independent, non-commercial organization.

SINTEF's Oil Spill Laboratory performs analysis of oil behavior and fate in the marine environment. The laboratory methodology developed at SINTEF is based on 20 years experiences, and is today a reputable methodology internationally. The results generated at the oil-laboratory are used as input to numerical models like, SINTEF Oil Weathering Model and OSCAR 2000, which predict the behavior and fate of oil spills on sea and in the water column. In addition, testing and analysis in relation to different oil spill countermeasures like use of dispersants and different skimmers for mechanical recovery of oil.

Industry Organizations

International Tanker Owners Pollution Federation (ITOPF)

The International Tanker Owners Pollution Federation is a not-for-profit organization, involved in all aspects of preparing for and responding to ship-source spills of oil, chemicals and other substances in the marine environment. ITOPF devotes considerable effort to a wide range of technical services, of which the most important is responding to spills of oil and chemicals. At this point, ITOPF's focus is pollution from vessels and not oil and gas E&P or production activities.

International Association of Oil & Gas Producers (OGP)

The vision of the OGP is to work on behalf of the world's oil & gas E&P companies to promote safe, responsible, and sustainable operations. Its mission is to facilitate continuous improvement in HSE, security, social responsibility, engineering and operations; undertake special projects and develop industry positions on critical issues affecting the industry; create alignment between oil & gas E&P companies and with relevant national and international industry associations; advance the views and positions of oil & gas E&P companies to international regulators, legislative bodies and other relevant stakeholders; and provide a forum for sharing experiences, debating emerging issues and establishing common ground to promote co-operation, consistency and effectiveness.

International Petroleum Industry Environmental Conservation Association (IPIECA)

IPIECA is the global oil and gas industry association for environmental and social issues. IPIECA was formed in 1974 following the launch of the UNEP. IPIECA is the only global association involving both the upstream and downstream oil and gas industry on environmental

and social issues. IPIECA's membership covers over half of the world's oil production. IPIECA is the industry's principal channel of communication with the United Nations. The OSWG was established in 1987 and serves as a key international industry forum to help improve oil spill contingency planning and response around the world.

The Oil Spill Preparedness Regional Initiative (OSPRI)

OSPRI for the Caspian Sea, Black Sea and Central Eurasia was formed in August 2003. Its mission is to work with governments and other key regional and international organizations to promote effective oil spill preparedness in the region. **Figure A1-1** shows the OSPRI states.



Figure A1-1: The Caspian Sea, Black Sea and Central Eurasia showing the littoral States (OSPRI 2012 Annual Report)

The OSPRI was created out of an industry effort to coordinate improved oil spill preparedness in the Caspian Sea, Black Sea and Central Eurasia. OSPRI was formalized by a Memorandum of Agreement through the IPIECA network. BP, BG Group, Chevron, ConocoPhillips, ENI, ExxonMobil, INPEX, OMV Petrom, Shell, Statoil, and Total are the current OSPRI members.

ANNEX 2: DISPERSANT APPROVAL STATUS IN ARCTIC/ICE AFFECTED NATIONS

Belgium	Canada	China
Denmark	Estonia	Finland
France	Germany	Greenland
Iceland	Ireland	Kazakhstan
Latvia	Lithuania	Netherlands
Norway	Poland	Russia
Sweden	United Kingdom	United States

Note: Much of the EU Nation dispersant text in Annex 3 is taken from the EMSA, *“Inventory of National Policies Regarding the Use of Oil Spill Dispersants in the EU Member States; 2010”*. It is our understanding that this document is in the process of being updated with a revised document to be issued this year.

CHAPTER 5. BELGIUM

Competent national authority with overall responsibility for oil pollution response at sea: The Directorate-General Environment of Federal Public Service Health, Food Chain Safety & Environment



5.1 USAGE OF OIL SPILL DISPERSANTS

The use of oil spill dispersants is allowed as a secondary response option. No change in the national policy regarding dispersant usage is currently being considered.

National contingency plan: The use of oil spill dispersants is not described in Belgium's National Contingency Plan as such. It is covered in the operational plan for combating oil spills in Belgian waters, which is attached to the NCP.

Previous experience with dispersant usage: Oil spill dispersants have been used once in Belgium, for a minor spill (200 L dispersant sprayed from ship). Dispersant (aerial) spraying was considered during the *TRICOLOR* spill but not carried out due to unsuitable weather conditions.

Use restrictions/specific circumstances to use dispersants: On the shoreline dispersant are not used. According to the provision of national law for the protection of the marine environment, the volume of oil spill dispersants used is restricted to less than 20% of the volume of oil treated and no more than 100t of dispersant per treated spill.

5.2 DISPERSANT TESTING AND APPROVAL

Product testing and approval scheme: No list of approved dispersants exists in Belgium. The Management Unit of the North Sea Mathematical Models (MUMM), a department of the Royal Belgian Institute for Natural Sciences, advises on the use of the products accepted by the other contracting parties to the Bonn Agreement.

List of approved dispersants: There is a stockpile of 10,000 liters of DASIC SLICKGONE NS, type 3 dispersant and according to EMSA it is approved for use.

5.3 RESPONSE STRATEGY

Authorization required prior to the dispersant use: During an oil spill incident, official authorization is required prior to the dispersant use. Authorization for the use of dispersant must be granted by MUMM after NEBA. Belgium possesses limited vessel dispersant application capability. No aircraft dispersant application capability is available. Dispersant stockpiles are available in Belgium.

CHAPTER 6. CANADA



Competent national authority with overall responsibility for oil pollution response at sea:

The Federal government oversees the response through a Lead Agency (LA) that deals directly with the spiller.

The LA is determined by the circumstances of the spill. When Canada's dispersant regulations were first developed in the 1970s and 1980s, dispersant use was regulated solely by Environment Canada (EC). However since 1984 several government agencies have been created to regulate offshore oil exploration and production in Canada. For example, the National Energy Board (NEB) regulates offshore oil activities in the Arctic, while the Canada-Newfoundland-Labrador Offshore Petroleum Board (CNLOPB) and Canada-Nova Scotia Offshore Petroleum Boards (CNSOPB) regulate activities in Newfoundland-Labrador and Nova Scotia, respectively. The Canadian Coast Guard is the LA for oil spills originating from vessels. These Lead Agencies appear to share regulatory control over dispersant use on oil spills in consultation with Environment Canada and other agencies through the Regional Environmental Emergency Teams.

6.1 USAGE OF OIL SPILL DISPERSANTS

There is a "guidance" document developed some time ago which governs dispersant use entitled "*Guidelines on the use and acceptability of oil spill dispersants*" (Environment Canada Regulations, Code and Protocols Report EPS 1-EP-84-1, 1984, 2nd edition). Those guidelines addressed technical issues surrounding dispersant use and decision-making, as well as regulatory testing of dispersant products. They applied to spills from both ships and from offshore petroleum exploration, in the Arctic as well as on east and west coasts. In recent years it has become clear that responsible Canadian Government agencies believe that these 1984 guidelines are out of date, therefore, one should consider Canada's dispersant policy being one currently in a state of flux. Up-to-date guidelines are currently being drafted by Environment Canada.

In the matter of spill response countermeasures, e.g., dispersant use, the Lead Agencies will discuss and consult with the Regional Environmental Emergency Teams (REETs) which are chaired by Environment Canada. In Canada, spill response is the responsibility of the spiller. Dispersant application requires approval of the REET. The REETs are made up of a number of agencies, including Environment Canada which chairs the REET and provinces and provides consolidated environmental advice to the LA during a spill. The legislative basis for EC's role in REET includes the Fisheries Act, the Canadian Environmental Protection Act, and the Migratory Bird Convention Act.

The approach followed by EC and REET is outlined in the Fisheries Act and dispersant guidelines that provide guidance on dispersant testing, effectiveness standards, toxicity standards, and considerations for use, etc. These guidelines were developed in 1984 and are currently undergoing revision. The CNLOPB is the lead regulatory agency for offshore exploration and production activities in Newfoundland, with a regulated responsibility for spills and dispersants. An MOU between CNLOPB and EC identifies REET as the mechanism by which discussions of dispersant planning, including pre-approval, would take place. CNLOPB believes that pre-approval for dispersant use on small spills from offshore platforms would be simpler than for an all-inclusive, region-wide pre-authorization for all spills from shipping. However, the situation might be complicated in Newfoundland by the fact that Grand Banks crude oils are waxy, meaning that the limits of the dispersant effectiveness against these oils

might be uncertain. Conflicting jurisdictions, specifically, “*What happens when it is not clear from the spill circumstances whether CNLOPB or CCG should be designated as LA.*” In such cases, the CNLOPB and CCG would discuss the matter with the other potential LA and decide how to proceed.

Previous experience with dispersant usage: Laboratory, tank, and field-testing have been performed to demonstrate that dispersant can be used effectively in cold waters, in waters where ice is present, and in brackish waters, which may be of concern in areas affected by the Mackenzie River outflow. The use of additional mixing energy from a ship’s propellers has been shown to be beneficial for aiding dispersion in dense ice concentrations. The use of Oil-Mineral Aggregates (OMA) has been investigated in recent lab and field testing, and has shown promise in greatly enhancing the degradation of oil spilled in ice.

6.2 DISPERSANT TESTING AND APPROVAL

Product testing and approval scheme: Information on all new products in Canada must be submitted to the New Substances Program to ensure compliance with the New Substances Notification Regulations (Chemicals and Polymers) under the Canadian Environmental Protection Act (CEPA, 1999). Once the product has been confirmed to meet CEPA regulations, the product and supporting documentation may be submitted to ESTS for evaluation. The Spill Treating Agent (STA) will be subjected to the effectiveness tests deemed appropriate by EC staff. If the effectiveness results merit consideration for approval, the product will be sent for aquatic toxicity testing using Canadian Association for Laboratory Accreditation (CALA) accredited laboratories by the STA vendor/manufacturer. The results of the toxicity testing and the effectiveness testing will be considered in tandem when determining whether to include the product on the internal EC list of approved products. An individual product must meet minimum standards. Products that do not meet the minimum standards for effectiveness and aquatic toxicity will not be considered for use.

List of approved dispersants: The term ‘*approved*’ is misleading. Canada primarily uses mechanical methods to combat oil spills. Dispersants are only used when weather prevents the use of other methods. EC has sufficient information to formulate an opinion on only Corexit 9500 and 9527. EC is responsible for the approval and administration of products. Below are the listed EC approved products.

Dispersant	Dispersant
Corexit 9500	Corexit 9527
Corexit 9550	Corexit CRX-8
Drew Dispersant LT	Enersperse 700
Enersperse 2000	Gamelin 2000
Oilersperse 43	Slickgone LT

6.3 RESPONSE STRATEGY

Authorization required prior to the dispersant use: At a spill scene, the federal oversight agency (Lead Agency) will consult/discuss the use of treating agents with the REET. The use of dispersants during an uncontrolled release of petroleum crude oil and/or products is prohibited by law; there is no implied exemption. The recommendation by REET on the

outcome of a proposed course of action may support dispersant use, but Environment Canada does not have power of authorization.

Canada has no written policy on dispersant use. Based on recent discussions with government officials, it appears that at least two federal government initiatives are proceeding to clarify Canada's policy. On the legal side, an "*Interagency Working Group on Spill Treating Agents*" has been struck to address the legal issues surrounding dispersant use. On the technical side, EC has been charged with preparing dispersant use guidelines. If a spill were to occur today, dispersant decisions might be made on a case-by-case basis. The decision-making process would be led by LA on the spill in consultation with other agencies/REET. The LA would be determined by the specific spill circumstances. For example, if the spill were to be exploration-related and occurred in the Arctic the lead agency might be the NEB.

Use restrictions/specific circumstances to use dispersants: Dispersants are not permitted in fresh water or near biologically sensitive areas. Canada should revise/update the existing dispersant use guidelines and streamline the spill-specific dispersant approval/endorsement process. Federal government should also evaluate the pre-approval option in selected spill scenarios. In order to facilitate the government planning process for dispersants, industry must put in place the response capabilities needed to conduct dispersant operations. Industry must also conduct planning, training, logistics and surveillance capabilities needed to support dispersant operations. In general, industry must build confidence in their ability to conduct dispersant operations. The response community should review the use of dispersants for offshore rig spills, particularly in the case of small and very large spills. Finally, there is a need to critically review dispersant research that has already been done, identify outstanding research needs and identify resources for conducting and funding the needed research.

CHAPTER 7. CHINA



Competent national authority with overall responsibility for oil pollution response at sea:

In China the use of dispersant application is governed by the marine environmental protection law of the People's Republic of China (PRC). The main regulation states that it is strictly limited to use dispersants in China. Any dispersant used must be approved by Maritime Safety Agency (MSA) of China. However, in some instances the jurisdictional boundary is not absolutely clear since apparently, if the spill involves offshore oil exploration, the State Oceanic Administration (SOA) is the lead agency. SOA is responsible for environmental protection of the marine area (**Figure A3-1**). This includes regulating pollutants, discharges into the sea and monitoring of the health of the sea areas. The agency assesses marine oil and gas exploration and developments, ocean dumping and ocean engineering projects to ensure the environmental impact is minimized and regulations are followed.



Figure A2-1: Map from Wikipedia, the free encyclopedia: There are three major bays inside the Bohai Sea: Laizhou Bay to the south, Liaodong Bay to the north, and Bohai Bay to the west.

7.1 USAGE OF OIL SPILL DISPERSANTS

China currently has restrictions on the use of dispersants for combating or cleaning up an oil spill. According to Chinese regulations, dispersants may be used in open waters over one nautical mile from the shoreline at low tide if this method is deemed necessary, effective and environmentally preferable to other methods.

In the Bohai Bay region, the depth of water is relatively shallow, around 30 meters. If a test shows that the oil is dispersible, and if the location is suitable, then dispersants can be used in

the response in conjunction with mechanical recovery since in a spill, a variety of response techniques will be utilized and in determining which strategy and/or strategies to implement, NEBA should be used to assist in the determination. It is advisable to have the crude that is to be handled, be tested before and incident to determine whether it is dispersible and which type of dispersants should be considered.

National contingency plan: MERRAC, the Marine Environmental Emergency Preparedness and Response Regional Activity Centre, is one of four Regional Activity Centers of the Northwest Pacific Action Plan (NOWPAP) which was adopted in 1994 as a Regional Seas Program of the UNEP by the PRC, Japan, Republic of Korea, and Russian Federation. MERRAC is responsible for regional co-operation on marine pollution preparedness and response in the region. The NOWPAP Regional Oil Spill Contingency Plan (the Plan) and its relevant MOU have been developed and officially come into effect as being signed by all NOWPAP Members. The purpose of the Plan is to provide an operational mechanism for mutual assistance through which the Member States will co-operate during major marine oil pollution incidents in the region.

Previous experience with dispersant usage: Unknown

7.2 DISPERSANT TESTING AND APPROVAL

Product testing and approval scheme: Yes, see NOWPAP MERRAC *Technical Report #3: Guideline for the Use of Dispersants*; UNEP/IMO, 2005

List of approved dispersants: List of Dispersants Approved by China MSA as shown in the MERRAC Technical Report #3

Production	Manufacture
GM—2 Oil Dispersant	Qingdao Guangming Environment Protection, Ltd.
M H Oil Dispersant	Wenzhou Marine Environment Protection Factory
Haihuan No.1 Sea surface Oil Dispersant	Marine Environment Protection Institute of SOA
Y D 9705 Oil Dispersant	Yongda Fine Chemical(Zhuhai), Ltd.
Ocean Oil Dispersant	Xiamen Weite Trade, Ltd.
B H X	Jiangsutaicang Blue Marine Environmental Protection Equipment, Ltd.
Double elephant Oil Dispersant	Dalian No.2 Organic Chemical Factory
GFS Oil Dispersant	Dalianshuangxing Industry Co.
CLEANSTAR Oil Dispersant	Zhuhai Jiexing Washing Technology, Ltd.
ZY—F1 Oil Dispersant	Zhuoyue Technical, Ltd. of Oil and Gas University
Fulaide Dispersant	Dalian Fulaide Environment Friendly Reagent Production, Ltd.
OLLERASER	Hangzhouzheda Huagao Industry Technology Development, Ltd.
High-speed Dispersant	Shanghaishengzhong Technical Development, Ltd.

7.3 RESPONSE STRATEGY

Authorization required prior to the dispersant use: Authorization is required

Use restrictions/specific circumstances to use dispersants: According to GB 18188.2-2000 (China Guidelines)

If the following conditions exist, consideration can be given to the use of dispersants:

Surface afloat oil or spilled oil that may move to the coast, marine products farming water and other sensitive areas, will threaten business, environment or comfort benefits, and can't be dispersed by itself through the nature evaporation or the function of wind, wave and flow, nor control or recovered with the physics method before arriving above sensitive areas;

The spill oil is difficult to handle with the physical and mechanical method, but the total damage handling spill oil usage dispersants is smaller than leaving the oil on the surface without handling;

The surface afloat oil or incident spill oil type and water temperatures, the weather, sea condition and other environment conditions is suitable for using dispersants; and

Under the situation of having taken place or being possible occurrence oil fire, exploding, etc. shall endanger the safe of human life or facilities.

If the following conditions exist usage dispersant will not be considered, but taking place or possible occurrence endangering human life or facilities safety are possible exceptions.

Spilled oil is of light quality oil that will vaporize easily, e.g., gasoline, kerosene... etc. or is thin oil film that presents a rainbow characteristic;

Spilled oil is high content wax oil or the high pour point oil and is difficult to scatter with chemistry method;

The spilled oil can't flow due to water temperature, or becomes a thick fragment that has a clear edge and emulsify becomes the oil-water thing through Aeolian erosion in a couple of days;

The spilled oil takes place in closing and shallow water area or quiet water area; and

The spill oil takes place in the fresh water source or the area of the important influence to the marine products resources.

CHAPTER 8. DENMARK



Competent national authority with overall responsibility for oil spill response at sea: The Soevaernets Operative Kommando (SOK) (Danish Royal Navy)

8.1 USAGE OF OIL SPILL DISPERSANTS

The use of oil spill dispersants is allowed as a last resort response option. No changes in the national policy regarding dispersants usage are being considered, but at regional level Denmark follows the discussions which are currently being undertaken within the framework of the Helsinki Commission (HELCOM), regarding new opportunities for the usage of oil spill dispersants in the Baltic Sea.

National contingency plan: The use of oil spill dispersants is described in Denmark's National Contingency Plan, in Part II of the *Response Manual*, Section 3.

Previous experience with dispersant usage: Oil spill dispersants have not been used in Danish waters for the past 10 years.

8.2 DISPERSANT TESTING AND APPROVAL

Product testing and approval scheme: No standard dispersant testing or approval schemes are in place in Denmark. Denmark accepts dispersants which have been approved by two or three other Bonn Agreement countries and in the list published in the Bonn Agreement.

List of approved dispersants: No list of approved dispersants exists in Denmark.

8.3 RESPONSE STRATEGY

Authorization required prior to the dispersant use: During an oil spill incident, official authorization is required prior to the dispersant use. The Ministry of the Environment on the advice of the Danish Environmental Protection Agency is the responsible authority to grant permission to use dispersants.

Use restrictions/specific circumstances to use dispersants: In the Danish North Sea sector, Denmark recognizes a limited scope for dispersant use, when mechanical recovery is not possible and when particularly sensitive resources are threatened. In the Baltic Sea sector, dispersant use is not supported.

CHAPTER 9. ESTONIA

Competent national authority with overall responsibility for oil pollution response at sea: The Estonia Police & Boarder Guard Board under the Ministry of the Interior



9.1 USAGE OF OIL SPILL DISPERSANTS

The use of oil spill dispersants is allowed as a last resort response option. The use of dispersants is limited in accordance with the Helsinki Commission recommendation 22/2. However, permits to use dispersants can be issued if the situation warrants. No changes in the national policy regarding dispersants usage are being considered, but at regional level Estonia follows the discussions which are currently being undertaken within the framework of the Helsinki Commission, regarding new opportunities for the usage of oil spill dispersants in the Baltic Sea.

National contingency plan: The use of oil spill dispersants is not described in Estonia's National Contingency Plan.

Previous experience with dispersant usage: Oil spill dispersants have not been used in Estonia's waters for the past 20 years.

9.2 DISPERSANT TESTING AND APPROVAL

Product testing and approval scheme: No standard dispersant testing or approval schemes are in place in Estonia.

List of approved dispersants: No list of approved dispersants exists in Estonia. The Estonian Environment Inspectorate, under the Ministry of Environment is the competent authority for dispersants approval.

9.3 RESPONSE STRATEGY

Authorization required prior to the dispersant use: During an oil spill incident, an official Authorization is required prior to dispersant use. The Estonia Environment Inspectorate under the Ministry of Environment is the responsible authority to grant permission to use dispersants.

CHAPTER 10. FINLAND

Competent National Authority with overall responsibility for oil spill response at sea: The Finnish Environment Institute (SYKE) of the Ministry of Environment



10.1 USAGE OF OIL SPILL DISPERSANTS

The use of oil spill dispersants is allowed as a last resort response option. The use of dispersants is limited in accordance with the Helsinki Commission recommendation 22/2. However, permits to use dispersants can be issued if the situation warrants. No changes in the national policy regarding dispersants usage are being considered, but at regional level Finland follows the discussions which are currently being undertaken within the framework of the Helsinki Commission, regarding new opportunities for the usage of oil spill dispersants in the Baltic Sea

National contingency plan: The use of dispersants is clearly described in the National Contingency Plan (Decree on Oil-Combating, 2009).

Previous experience with dispersant usage: Oil spill dispersants have not been used in Finland.

10.2 DISPERSANT TESTING AND APPROVAL

Product testing and approval scheme: No standard dispersant testing or approval schemes are in place in Finland.

List of approved dispersants: No list of approved dispersants exists in Finland.

10.3 RESPONSE STRATEGY

Authorization required prior to the dispersant use: During an oil spill incident, an official Authorization is required prior to the dispersant use. The Finnish Environment Institute (SYKE), under the Ministry of Environment is the responsible authority to grant permission to use dispersants.

Use restrictions/specific circumstances to use dispersants: Due to the sensitive ecology of the Baltic Sea, it has been internationally agreed in the Helsinki Convention that the oil combating policy of Baltic Sea countries is based on the mechanical recovery of oil. The Helsinki Convention allows the use of chemicals only with very strict limitations.

CHAPTER 11. FRANCE

Competent National Authority with overall responsibility for oil spill response at sea: Secretariat General de la Mer is the Competent National Authority, with the Maritime Prefect the authority determining the use of dispersants during an incident.



11.1 USAGE OF OIL SPILL DISPERSANTS

National contingency plan: The use of dispersants is clearly described in France's National Contingency Plan. There are Plans dedicated to the English Channel and Atlantic Ocean for reference use by experts and specialized technical documents, such as the CEDRE (Centre for Documentation, Research and Experimentation on Accidental Water Pollution) Guidelines on dispersant use, CEPOL (Centre of Practical Expertise for marine pollution response, French Navy) sensitive area charts designed by state environment coastal services, ecological guidelines from IFREMER, and NEBA tools.

Previous experience with dispersant usage: France has only used dispersants in very small quantities. No real previous experience of extensive dispersant use during a major oil spill.

11.2 DISPERSANT TESTING AND APPROVAL

Product testing and approval scheme: Standard dispersant testing and approval procedures exist in France. Tests measuring the effectiveness, determining the acute toxicity and assessing the biodegradability of the dispersants are performed. According to this approval procedure, all dispersant products have to pass successfully all three tests step by step: effectiveness first, toxicity and then biodegradability in order to be approved; if a product fails in one of these tests the procedure is interrupted. Each approval granted is valid for a period of five years. The CEDRE is the competent body for dispersants approval.

List of approved dispersants: A regularly updated list of dispersants approved for use at sea is available on the CEDRE website. According to this list, selected dispersants have been approved for use in France.

List of Approved Dispersants (CEDRE)

BIO REICO R93	DISPOIL	FINASOL OSR 61	NEUTRALEX C	SUPERDISPERSANT 25
DASIC SLICKONE NS	EMULGAL C-100	FINASOL OSR 62	NU CRU	
DISPEREP 12	FINASOL OSR 51	INIPOL IP 80	OD 4000 (PE 998)	
DISPER M	FINASOL OSR 52	INIPOL IP 90	RADIAGREEN OSD	

11.3 RESPONSE STRATEGY

Authorization required prior to the dispersant use: The Maritime Prefect is the only one who decides the opportunity to use dispersant. He dispatches experts and different tools in order to define the risks and opportunities. Marine charts with three geographical limits along

the French coast, defining areas where dispersants can be used without major risk, are used as a basis for this.

Use restrictions/specific circumstances to use dispersants: Geographical limits for dispersant applications along the French coastal waters have been defined. Three oil spill scenarios are considered: 10, 100 and 1,000 tonnes of oil to be treated with dispersants. The larger the quantity of oil which has to be dispersed, the greater the distance from the coast and the greater the water depth which is required in order for dispersant use to be approved. Outside these coastal waters, the use of dispersants can be contemplated without major risk to the marine environment.

CHAPTER 12. GERMANY



Competent national authority with overall responsibility for oil pollution response at sea: The Central Command for Maritime Emergencies (CCME) under the Federal Ministry of Transport, Building & Urban Development.

12.1 USAGE OF OIL SPILL DISPERSANTS

The use of oil spill dispersants is allowed as a last resort response option. A working group of experts is closely following the latest developments on this issue. Based on the results of the permanent working group, Germany reviews its policy on the possible usage of dispersants for the North Sea on a regular basis. At regional level Germany follows the discussions which are currently being undertaken within the framework of the Helsinki Commission, regarding new opportunities for the usage of oil spill dispersants in the Baltic Sea. No change in the national policy regarding dispersant usage is currently planned

National contingency plan: The use of oil spill dispersants is not described in Germany's National Contingency Plan.

Previous experience with dispersant usage: Oil spill dispersants have not been used in Germany in the last 20 years.

12.2 DISPERSANT TESTING AND APPROVAL

Product testing and approval scheme: No formal dispersant testing or product approval schemes are in place in Germany.

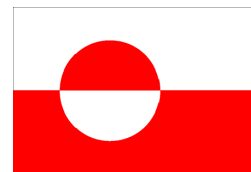
List of approved dispersants: No list of approved dispersants exists. Dispersants which have been successfully tested and approved for use in the UK or France may be applied in Germany.

12.3 RESPONSE STRATEGY

Authorization required prior to the dispersant use: During an oil spill incident, official Authorization is required prior to dispersant use. Authorization can be granted by the CCME after a NEBA has been carried out and if the decision has been made to adapt the national contingency plan (not yet adapted).

Use restrictions/specific circumstances to use dispersants: In the North Sea sector, dispersants are used as a last response option and suitable criteria for their use are still under examination in Germany and have to be harmonized with those of neighbouring countries. Currently, dispersant application is prohibited within shallow coastal areas (less than 10 meters depth) and in locations with limited water exchange, and can be used restrictively in depths of between 10 and 20 meters, whereas new generation dispersants may be used offshore in "spot" spraying. There is no restriction in waters deeper than 20 meters. In the Baltic and Wadden Sea sectors, dispersant use is forbidden.

CHAPTER 13. GREENLAND



Competent national authority with overall responsibility for oil pollution response at sea: The Act of Greenland Self-Government of June 21, 2009, Greenland was granted independence from Denmark and obtained the right to manage the development of minerals, petroleum and the working environment. Responsibility for response to pollution at sea lies with the Danish Ministry of Environment which has delegated planning and operational aspects to the Danish Environmental Agency (NEPA) which has prepared an Oil Spill Contingency Plan (OSCP) for Greenland.

Inside 3 nautical miles any spill falls under the jurisdiction of the Ministry of Domestic Affairs, Nature & Environment (MDANE), which reports to the government of Greenland. Spills outside of the 3 nautical miles fall under the jurisdiction of the Danish government which has appointed the Joint Arctic Command to monitor and respond to these spills. Any spills from hydrocarbon activities, e.g., E&P, whether inside or outside the 3 nautical mile zone, falls under the jurisdiction of the Bureau of Minerals and Petroleum (BMP) which reports directly to the government of Greenland through the Minister of Mineral Resources. The Danish Center for Environment and Energy (DCE) acts as environmental advisor to the BMP.

CANDEN Agreement aims at developing bilateral cooperation for protecting the marine environment of the waters lying between Canada and Greenland particularly for preparedness measures pursuant to pollution incidents arising from offshore hydrocarbon exploration or shipping activities. The Copenhagen Agreement between Denmark, Greenland, Finland, Iceland, Norway and Sweden addresses marine pollution. There is also a multilateral Convention on the Protection of the Marine Environment of North-East Atlantic (OSPAR 1992) which guides international cooperation on the protection of the marine environment of the North-East Atlantic.

13.1 USAGE OF OIL SPILL DISPERSANTS

Offshore containment & recovery is the preferred strategy. Within BMP's jurisdiction, dispersant application and in-situ burning are considered to be secondary strategies. In a spill event, case by case permission can be requested using a NEBA based application form from the Bureau of Minerals & Petroleum (BMP), which would be referred to their environmental consultants, the Danish Centre for Environment & Energy (DCE).

National contingency plan: NEPA has developed an OSCP for Greenland.

Previous experience with dispersant usage: There is no previous experience with dispersant usage. However, OSRL reports that surface dispersant application has been tested in exercises (no dispersants applied). Approvals were rapid and results were positive, albeit it is recognized that exercises do not represent what will occur in a real spill incident pursuant to approval to use dispersants.

13.2 DISPERSANT TESTING AND APPROVAL

Product testing and approval scheme: Currently there is no product testing or approval process in place.

List of approved dispersants: Dasic Slickgone NS is approved as a dispersant for application in Greenland by the BMP. Approval of any other dispersant product must be requested on a case by case basis. Permission to apply Dasic Slickgone NS would still be required prior to use.

13.3 RESPONSE STRATEGY

Authorization required prior to the dispersant use: In a spill event, permission can be requested using a NEBA based application form from the Bureau of Minerals & Petroleum (BMP), which would be referred to their environmental consultants, Danish Centre for Environment and Energy (DEC).

Use restrictions/specific circumstances to use dispersants: There is a NEBA based dispersant use application form that needs to be completed and approved prior to any use of dispersants, there is no pre-authorization in place for the use of dispersants.

CHAPTER 14. ICELAND

Competent national authority with overall responsibility for oil pollution response at sea: The Environment Agency of Iceland (EAI) under the auspices of the Ministry of Environment



14.1 USAGE OF OIL SPILL DISPERSANTS

The use of oil spill dispersants is allowed as a last resort response option. No change in the national policy regarding dispersant usage is currently being considered in Iceland.

National contingency plan: The use of oil spill dispersants is not described in Iceland's National Contingency Plan.

Previous experience with dispersant usage: Oil spill dispersants have been used in Iceland, minor am.

14.2 DISPERSANT TESTING AND APPROVAL

Product testing and approval scheme: No standard dispersant approval schemes are in place in Iceland.

List of approved dispersants: No list of approved dispersants exists in Iceland. The EAI is the competent authority for dispersants approval.

14.3 RESPONSE STRATEGY

Authorization required prior to the dispersant use: During an oil spill incident, an official Authorization is required prior to the dispersant use. The EAI is the responsible authority to grant permission to use dispersants.

Use restrictions/specific circumstances to use dispersants: A major consideration in the contemplated use of dispersants would be a concern to avoid tainting commercial fish stocks, particularly salmon farms scattered around the coast.

CHAPTER 15. IRELAND



Competent national authority with overall responsibility for oil pollution response at sea: The Irish Coast Guard has the delegated authority of the Department of Transport to authorize and control the use of dispersants in Irish waters.

15.1 USAGE OF OIL SPILL DISPERSANTS

The use of oil spill dispersants is allowed as a secondary response option. The policy on dispersants is that the use of dispersants in Irish waters is forbidden unless authorised by the Department of Transport, Sea Pollution Act 1991 sect 11(C). No change in the national policy regarding dispersant usage is currently being considered.

National contingency plan: The use of oil spill dispersants is expected to be clearly described in Ireland's National Contingency Plan, which is currently being drafted.

Previous experience with dispersant usage: Oil spill dispersants have not been used in Ireland.

15.2 DISPERSANT TESTING AND APPROVAL

Product testing and approval scheme: There exist no standard Irish regulations or formal evaluation procedures for the testing and approval of dispersants. Dispersants which have been tested and approved for use in the UK may be considered for use in Ireland.

List of approved dispersants: No list of approved dispersants exists in Ireland.

15.3 RESPONSE STRATEGY

Authorization required prior to the dispersant use: Oil spill dispersant may not be used without the Authorization of the Irish Coast Guard unless it is deemed that the immediate situation requires its use to prevent or reduce substantially hazards to human life or limb or to reduce substantially explosion or fire hazards to property. Where any dispersant is used the Irish Coast Guard should be notified immediately.

Use restrictions/specific circumstances to use dispersants: Dispersant spraying must be authorised by Irish Coast Guard. The Coast Guard must consult with nominated State bodies before authorizing dispersant use in the following areas; water depth less than 30 meters; inside the straight base lines and the mainland; within one nautical mile of charted banks. The decision to use dispersants will be on a case-by-case basis. The use of dispersants in shallow waters, bays, harbors and inlets may not be authorised except in exceptional circumstances.

CHAPTER 16. KAZAKHSTAN

Competent national authority with overall responsibility for oil pollution response at sea: Ministry of Environmental Protection (MEP)



Figure A2-2: Map from ITOPF Regional Profile for the Caspian Sea

16.1 USAGE OF OIL SPILL DISPERSANTS

National contingency plan: The new national plan and associated action plan for implementation was approved in April 2012. OSPRI is working closely with North Caspian Operating Company (NCOC) to encourage and assist the authorities in the development of a dispersant policy. The national plan accepted dispersant as a potential response strategy and identified the Ministry of Environmental Protection as the key authority. However, no details concerning dispersant policy or procedures were included in the plan.

Previous experience with dispersant usage: There has been no previous use of dispersants.

16.2 DISPERSANT TESTING AND APPROVAL

In 2012 included amendments of a Decree stipulating oil spill response resources for offshore operators; support to a workshop “International experience on oil spill prevention and response to draw a lesson from it and to apply on the sea and internal waters”, organized by an arm of the Ministry of Oil & Gas; working alongside IMO and the Organization for Security and Cooperation in Europe (OSCE) to promote signing the key IMO Conventions, with internal procedures underway to recommend signing the OPRC Convention; facilitating on-going discussions around the creation of an industry-led Tier 2 response organization; and technical inputs to a project to undertake dispersant testing, leading to recommendations concerning product approval and dispersant use policy.

Product testing and approval scheme: OSPRI is working with the Kazakh Institute of Oil & Gas (KING, which is a part of the national oil company) on a dispersant testing project, with a

view to development of a product approval regulation. This has involved laboratory effectiveness testing of a variety of commercial products, taking into account Caspian Sea salinities. This testing is nearing completion and it is anticipated that an approved list will be produced in the near future.

List of approved dispersants: It is anticipated that an approved product list will be available in the near future, e.g., end of 2013.

16.3 RESPONSE STRATEGY

Authorization required prior to the dispersant use: Ongoing work concerning development of dispersant approval policies and procedures.

Use restrictions/specific circumstances to use dispersants: OSPRI is promoting the development of dispersant use policies, primarily based around water depth with a proposed >10 meter depth for pre-approvals and with a NEBA approach to shallower waters. At the moment, there is no specific consideration of dispersant use in the shallow ice affected waters in the northern Caspian Sea, as occurs in the Autumn and Spring seasons, such circumstances would require a NEBA justification, if proposed dispersant use parameters are accepted by the Ministry of Environmental Protection.

Note: Appreciation is given to Mr. Peter Taylor, Manager OSPRI for his assistance in acquiring the current situation regarding dispersants in Kazakhstan.

CHAPTER 17. LATVIA



Competent national authority with overall responsibility for oil pollution response at sea: The Latvian Coast Guard (Naval Forces Flotilla) is the competent executive authority for dealing with oil pollution response at sea.

The State Environmental Service under the Ministry of Environment is the coordinating authority for implementation of the National Oil & HNS Contingency Plan. The State Environmental Service is the competent authority for the granting of permission for dispersant use.

17.1 USAGE OF OIL SPILL DISPERSANTS

The use of oil spill dispersants is allowed as a last resort response option. Use of dispersants is generally prohibited, but an individual permit may be issued for a single application use. No change in the national policy regarding dispersant usage is currently being considered. At regional level, Latvia is following the discussions that are being undertaken within the framework of the Helsinki Commission regarding new opportunities for the usage of dispersants in the Baltic Sea.

National contingency plan: The procedure for granting permits for dispersant use is clearly described in the National Oil and HNS Contingency Plan.

Previous experience with dispersant usage: Oil spill dispersants have not been used in Latvia.

17.2 DISPERSANT TESTING AND APPROVAL

Product testing and approval scheme: No standard dispersant testing or approval scheme is in place in Latvia. The Laboratory of the Latvian Environment, Geology and Meteorology Center SC Ltd. may carry out testing of dispersant hazards to human health; the Latvian Institute of Aquatic Ecology may carry out dispersant toxicity tests.

List of approved dispersants: No list of approved dispersants exists in Latvia.

17.3 RESPONSE STRATEGY

Authorization required prior to the dispersant use: During an oil spill incident, an official Authorization is required prior to the dispersant use. The State Environmental Service is the competent authority for granting permission for dispersant use.

Use restrictions/specific circumstances to use dispersants: The use of dispersants may be considered as a response option when mechanical recovery is impossible and sensitive ecological resources are at risk. Dispersant use is decided on a case-by-case basis by the State Environmental Service experts.

CHAPTER 18. LITHUANIA



Competent national authority with overall responsibility for oil pollution response at sea: The Naval Force Maritime Rescue Coordination Center of Ministry of National Defense.

18.1 USAGE OF OIL SPILL DISPERSANTS

The use of oil spill dispersants is allowed as a last resort response option.

National contingency plan: The use of oil spill dispersants is not described in Lithuania's National Contingency Plan. Currently Lithuania is preparing the order of Minister of Environment of issuance of permits to use chemicals in oil spills in the marine area. The marine area working plan indicated the need to issue permits to use dispersants. These will be issued by The Regional Environmental Protection Department of the Ministry of Environment.

Previous experience with dispersant usage: Oil spill dispersants have been used twice in Lithuania, since 1990.

18.2 DISPERSANT TESTING AND APPROVAL

Product testing and approval scheme: No standard dispersant approval scheme is in place in Lithuania. The procedure which is usually followed is that the company selling the dispersant has to provide the Regional Environmental Protection Department of the Ministry of Environment with the exact description of the product, including a sanitary certificate, a safety data sheet of the product and other relevant information, against which the decision on the dispersant approval is made on a case-by-case basis. Laboratory testing of dispersants is not being performed in Lithuania, which uses relevant information on laboratory dispersant testing performed in other countries.

List of approved dispersants: No list of approved dispersants exists in Lithuania.

18.3 RESPONSE STRATEGY

Authorization required prior to the dispersant use: During an oil spill incident, an official Authorization is required prior to the dispersant use. The Region Environmental Protection Department of the Ministry of Environment is the competent authority for granting permission for dispersant use.

Use restrictions/specific circumstances to use Dispersants: Due to the sensitive ecology of the Baltic Sea, it has been internationally agreed in the Helsinki Convention that the oil combating policy of Baltic Sea countries is based on the mechanical recovery of oil. The Helsinki Convention allows the use of chemicals only with very strict limitations.

CHAPTER 19. NETHERLANDS

Competent national authority with overall responsibility for oil pollution response at sea: The Netherlands Coast Guard, operationally assisted by RWS Noordzee



19.1 USAGE OF OIL SPILL DISPERSANTS

The use of oil spill dispersants is allowed as one of the response options. The use of dispersants is allowed and a decision tree (flowchart) is under construction.

National contingency plan: The use of dispersants is clearly described in Netherlands's National Contingency Plan.

Previous experience with dispersant usage: Oil spill dispersants have been used in Netherlands only for testing purposes (Ref. RWS-NIOZ oil on water trials in September 2009).

19.2 DISPERSANT TESTING AND APPROVAL

Product testing and approval scheme: The Netherlands is planning to make arrangements with the UK in order to call upon their assets for dispersant spraying. This will also imply that the UK testing/approval procedures will be applicable for NL waters.

List of approved dispersants: The list of approval dispersants included in the Bonn Agreement Manual.

19.3 RESPONSE STRATEGY

Authorization required prior to the dispersant use: During an oil spill incident, an official authorization is required prior to the dispersant use. The RWS Noordzee, Netherlands Coast Guard is the competent authority for granting permission for dispersant use. A test run will be made to study the effectiveness by the Netherlands RWS Water Dienst that will follow the procedures applicable in the UK and agreements in EMSA/CTG.

Use restrictions/specific circumstances to use dispersants: Depending on the type and quantity of the oil slick, a response plan will be made considering the best response means. If applicable then the following conditions should be met: oil volume > 300 meter³; layer thickness 50-200 µm and water depth > 20 meters; oil volume < 200 meter³; layer thickness 50-200 µm and water depth > 5 meter. No operational limitations exist when: There is sufficient visibility (with regard to spray aircraft); oil is one slick or more than one big slick; layer thickness is over 50 µm; viscosity is < 5000 cSt; wind force between 3 and 7 Bft. Ecologically sensitive situations and areas have been identified.

CHAPTER 20. NORWAY



Competent national authority with overall responsibility for oil pollution response at sea: The authority with overall responsibility for oil pollution response at sea is the Norwegian Coastal Authority (NCA). NCA authorizes dispersant use in situations where dispersants would be beneficial, but have not been laid out in a contingency plan as part of requirements from the Norwegian Environmental Agency (NEA)

20.1 USAGE OF OIL SPILL DISPERSANTS

The policy for use of dispersants in Norway is regulated in the Pollution Control Act, Chapter 19:

Dispersants shall be chosen when this method will give less overall damage to the environment than any other method. Applications for the use of dispersants should be based upon a NEBA (also called NEDRA- Net Environmental Damage Assessment): Oil spill dispersants are used in spill situations in Norway when it can be demonstrated that they provide less environmental damage than mechanical recovery / no response. Emergency response assessment of relevant spill scenario whether or not the use of dispersants is the best overall response method for the environment should be documented in the scenarios-based contingency plan.

National contingency plan: All companies in charge of oil operations (oil terminals, refineries, offshore oil fields) are obliged to consider and document dispersants as an oil spill response method in their contingency plans; the use of dispersants must be documented as a combat strategy in oil spill contingency plans before an incident occurs.

The NEA is responsible for pollution preparedness requirements, whereas, the NCA becomes the supervising authority when an oil spill incident actually occurs.

Previous experience with dispersant usage: Oil spill dispersants have been used in Norway in two incidents, one in 2006 and one in 2010 (minor incident). During the last 30 years, dispersant field testing of different spray systems from different application platforms (fixed-wing aircraft, helicopters, response vessels) have been performed as releases of oil at sea. Extensive scientific documentations and operational experiences in use/application of dispersants have been gained during these series of dispersant field trials.

20.2 DISPERSANT TESTING AND APPROVAL

Product testing and approval scheme: A dispersant testing scheme is in place in Norway. Dispersants shall undergo effectiveness and algae toxicity testing and only if they pass these tests can they be approved for use. These requirements must be fulfilled and documented in all contingency plans involving use of dispersants. The companies that produce or process oil have to prove the effectiveness of the dispersants on their own oils. The company also has to test the dispersibility at varying weathering degrees for the relevant oil in order to estimate the “time window” for effective use of dispersants under various turbulence conditions. The Norwegian Environmental Agency, is the competent authority for dispersant test requirements

List of approved dispersants: The NEA is in charge of the regulation concerning dispersants. In Norway there is no list of approved of dispersants, but the requirements of the regulation must be fulfilled before use. The agency has information about dispersants that have passed the selection criteria in the regulation. In addition, The NEA and NCA have produced documents

("Decision Matrix" and "Control Form") that clarify the assessments that must be accomplished before dispersants are used. The assessment involves information on: natural dispersion, vulnerable natural resources/sensitive areas, depth and distance to shore, possible stranding of oil, chemical dispersibility of the oil spill, wind conditions, strategy for spraying of dispersants, operations in darkness, spraying capacity, salinity of the water, surveillance / monitoring, how to quantify the amount of oil after an operation has been completed.

20.3 RESPONSE STRATEGY

Authorization required prior to the oil dispersant use: The primary objective is to contain and recover the oil as close to the source as possible. Dispersants are considered to be supplemental or alternative to mechanical recovery depending on the spill scenario. However, every organization required to have an oil spill contingency plan should consider dispersant use as a strategy. Decision-making during an oil spill incident:

- If the user (e.g. Oil Company) has such a scenario-based oil spill contingency plan founded on the NEA requirements, the "Decision Matrix" becomes the users "Internal control procedure" during a decision-making situation, to ensure that decision to use dispersants is within the conditions as founded in the contingency plans. The "Control" form" can be rapidly filled out by the user and sent to NCA and the dispersant spraying operation can start. No further official authorization is required prior to commencing the dispersant application.
- NCA can also authorize dispersant use in situations where dispersants would be beneficial, but these have not been laid out in a contingency plan as part of requirements from NEA. However, this is not a preferable situation as it will require more time for decision-making

Use restrictions/specific circumstances to use dispersants: Oil spill dispersants are used in Norway when it can be demonstrated that they provide less environmental damage than mechanical recovery. Emergency response assessment of whether or not the use of dispersants is the best overall response method for the environment. Applications for the use of dispersants should be based upon a NEBA (also called NEDRA [Net Environmental Damage and Response Assessment]).

CHAPTER 21. POLAND

Competent national authority with overall responsibility for oil pollution response at sea: The Director of one of the three regional Maritime Offices, subordinated to the Minister of Maritime Economy.



21.1 USAGE OF OIL SPILL DISPERSANTS

The use of oil spill dispersants is allowed as a secondary response option. There is no specified contact point regarding the use of dispersants in Poland. According to Polish law, the Director of one of the three regional Maritime Offices, subordinated to the Minister of Maritime Economy, is the competent authority for that purpose, and the official inquiry contact point, the Department of Maritime and Inland Waters Administration in the Ministry of Infrastructure, could also be considered. A change in the national policy regarding dispersant usage is currently being considered, following the current discussions within the framework of the Helsinki Commission regarding new opportunities for the usage of dispersants in the Baltic Sea, and in accordance with internal legal and organisational arrangements.

National contingency plan: The use of dispersants is clearly described in Poland's National Contingency Plan, in Attachment F – “*Operations combating pollution and threats at sea*”, which describes the use of dispersants in general as a secondary option, especially when the oil comes ashore. Following paragraph F.43 of the Attachment, the use of chemical agents and other non-mechanical means in oil combating is restricted under the relevant HELCOM Recommendation 22/2 regarding Restricted Use of Chemical Agents and Other Non-Mechanical Means in Oil Combating Operations in the Baltic Sea Area.

Previous experience with dispersant usage: Oil spill dispersants have been used in Poland. The last use of oil spill dispersants in ports was in January 2005, during the oil spill incident in Swinoujscie Harbour, where 90 L of dispersants was used.

21.2 DISPERSANT TESTING AND APPROVAL

Product testing and approval scheme: No standard dispersant laboratory testing or approval scheme is in place in Poland. In an emergency case, Poland would consider the use of any dispersant (concentrates type 2 or 3) from the Bonn Agreement list, that is accepted for use in at least two Bonn Agreement Contracting Parties and which has been subjected to at least two testing procedures for toxicity.

List of approved dispersants: No list of approved dispersants exists in Poland.

21.3 RESPONSE STRATEGY

Authorization required prior to the dispersant use: During an oil spill incident, an official authorization is required prior to the dispersant use. The local maritime authorities (Harbour Masters) are the responsible authority to grant permission to use dispersants.

Use restrictions/specific circumstances to use dispersants: No information provided.

CHAPTER 22. RUSSIA



Competent national authority with overall responsibility for oil pollution response at sea: Ministry of Transport is responsible for the establishment of the Oil Spill Emergency Response (OSER) at sea. Subordinate to the Ministry of Transport are the Federal Agency of Marine and River Transport and the State Marine Emergency Rescue and Salvage Coordination Service. Federal authorities are formally responsible for the establishment of the OSER system; regional authorities are in charge of actual oil spill operations. The region's deputy Governor as head of the Emergency Commission established in the event of an incident leads the operation.

22.1 USAGE OF OIL SPILL DISPERSANTS

The Russian policy of using oil spill dispersants is determined by federal laws "*Protection of environment*", "*Protection of population and territory in case of emergency situation*", Government order "*About urgent measures for prevention and combating oil and oil products spills*" and "*Oil spill dispersants applying rules*".

Oil spill response policies are to be based on the following principles: As much oil as possible should be recovered at sea before it reaches shore in order to cut costs and reduce environmental damage; mechanical recovery systems should preferably be used to clean up Tier 1 oil spills if the weather conditions allow to do it; all oil spill cleanup resources (dispersants and mechanical equipment) should be given equal consideration for cleaning up Tier 2 and Tier 3 spills, because experience has shown that on average mechanical equipment is only capable of recovering not more than 20 to 30 percent of the spilled oil; the chosen oil spill response techniques should be applied concurrently. That part of the slick that poses the greatest threat should be treated with dispersants, while the rest should be cleaned up mechanically, and a decision to use dispersants should be made solely on the basis of a NEBA of pre-approved dispersants for the polluted area or the area threatened by pollution.

National contingency plan: Russian Federal Contingency Plan for Oil Spill Prevention and Response at Sea, Adopted 2003 and is Annex 3(4) to NOWPAP Regional Oil and HNS Spill Contingency Plan, does not appear to specifically address dispersant policy, use or restrictions.

Previous experience with dispersant usage: Unknown

22.2 DISPERSANT TESTING AND APPROVAL

Preliminary approval by state nature protection agencies confirms that the dispersant in question has "in principle" been authorised for use in the inland and territorial seas, exclusive economic zone of the Russian Federation and may be included in particular site or regional oil spill contingency plans. The preliminary approval means that dispersant toxicity is tested by Russian specialized research centers and dispersant has duly established maximum permissible concentrations (hereinafter, MPC) for sea areas.

Product testing and approval scheme: Preliminary approval by Russian nature protection agencies confirms that the dispersant in question has "in principle" been authorised for use in the inland and territorial seas, exclusive economic zone of the Russian Federation and may be included in particular site or regional oil spill contingency plans. The preliminary approval means that dispersant toxicity has been tested by Russian specialized research centers and the dispersant has established maximum permissible concentrations for sea areas.

List of approved dispersants: List of dispersants approved by the Russian Federation as shown in the MERRAC Technical Report #3

No.	Dispersant Model	Efficiency 30 sec	10 min	LAC, mg/l
1	OM-6	60	30	0,005
2	OM-84	80	45	0,25
3	Corexit 9527	80	51	0,05

22.3 RESPONSE STRATEGY

Authorization required prior to the dispersant use: The decision to use pre-approved oil dispersants in an actual situation is made by the Incident Commander (IC) in agreement with the territorial bodies of environment protection agency, Rosprirodnadzor and Russian Fisheries Agency, Rosryolovstvo on the basis of a NEBA conducted according to the procedure specified by the Regulations.

In the event of an oil spill, a NEBA must be conducted for the actual situation. If a preliminary NEBA has been conducted, the NEBA of the actual situation is done in an abbreviated form. Its purpose is only to make sure that the actual situation corresponds to the scenarios given in the OSR plan, and also to refine the recommendations on the choice of OSR technology (technologies).

On the basis of real-time information, the leader of the NEBA group, who is appointed by the IC, organizes a comparison of the scenarios for which the preliminary NEBA was made to the actual situation at the site of the spill.

If the actual and preliminary scenarios coincide or are similar, the authorised representatives of the territorial units of Rosprirodnadzor and Rosryolovstvo should endorse the use of oil dispersants in the given situation.

If the actual situation deviates significantly from the preliminary scenarios IC shall convene the NEBA group as quickly as possible and conduct a NEBA to carry out a complete assessment of the actual situation.

Use restrictions/specific circumstances to use dispersants: When treating an oil slick with a dispersant, the initial concentration must not exceed the dispersant's LC50. All dispersants preliminary approved in Russia have equal LC50 corresponding to 10 ppm

Calculation of the initial concentration is based upon the amount of dispersant applied, assuming that dispersion takes place in a volume of water equal to the surface area of the oil slick to be treated multiplied by a factor of 10 (the depth of penetration of dispersed oil; it may reach 10 m).

It is recommended to use undiluted dispersants, but in practice water solutions of dispersants are sometimes used (usually in a concentration of 10-30%), especially for treating thin films and low-viscosity grades of oil (less than 500 cSt). In this case, a vessel's firefighting system can be used, and the dispersant is ejected into the fire main.

Oil dispersants are not recommended for use in enclosed regions of the sea with a low water exchange rate (inlets, lagoons), in shallow waters or when the temperature of the marine

environment is below +5°C. Some dispersants can emulsify spilled oil even in icy conditions, but since oil decomposition processes practically cease in winter, dispersants must be used in icy conditions only after a thorough NEBA is affected.

Conclusions:

1. Russian oil spill respond policy foresees using all methods (both dispersants and mechanical) to respond to large oil spills at sea.
2. The decision to apply dispersants shall be made solely on the basis of a NEBA for the regions that have become contaminated or that are under a threat of pollution. Only preliminary approved dispersants shall be used.
3. Only dispersant, toxicity of which is tested in duly authorised Russian research centers, can be considered preliminary approved dispersants.
4. Recommendations on NEBA and requirements to NEBA teams have been included in the Regulations.
5. Current regulatory restrictions to not use dispersants in waters below +5C should be revisited given new products and research.

Russian Federal Authorities Functions in Oil Spill Response

Federal authority	Oil spill response function
Ministry of Civil Defense, Emergencies and Elimination of Consequences of Natural Disasters (EMERCOM)	<ul style="list-style-type: none"> • Coordinates activities of federal authorities and presents an oil spill response operations plan for approval; • Participates in the activities and in the air transport support of the delivery of oil spill response resources from other regions to the area of the spill.
The Russian Maritime and River Transport Agency (Rosmorrechflot)	<ul style="list-style-type: none"> • Develops an oil spill response operations plan and determine the need for facilities and resources from other regions; • Ensures transportation of oil spill response facilities and resources from other regions to the area of the spill; • Performs operational command of top-priority activities; • Participates in the inspection and prediction of the oil spill behaviour.
State Maritime Rescue Service of Russia	<ul style="list-style-type: none"> • Participates in the development of an oil spill response operations plan; • Ensures allocation of vessels for the oil spill response; • Coordinates deployment of facilities and resource of a regional salvage department to the area of the spill; • Organizes immediate control and oil spill response activities.
Ministry of Natural Resources (Rosprirodnadzor)	<ul style="list-style-type: none"> • Participates in the development of the oil spill response operations plan with respect to minimizing impact on the environment and marine natural resources; • Participates in the determination of the cause of the spill; • Participates in the selection of oil spill response technique; • Evaluates the risk of pollution of priority protection zones; • Identifies the guilty polluter, issues required documentation and takes administrative measures in respect of the polluter; • Calculates environmental damage and seeks compensation.

Federal authority	Oil spill response function
Russian Fisheries Agency (Rosrybolovstvo)	<ul style="list-style-type: none"> • Liaises with administrations of fish terminals, fishing companies and fish protection authorities; • Ensures allocation and coordinates activities of oil spill response facilities and resources of the Russian Fisheries Agency; • In accordance with the Federal Oil Spill Response Plan prepares proposals for relocation of crews and equipment from other regions; • Participates in the selection of the oil spill response technique; • Participates in the development of the oil spill response operations plan with respect to minimizing impact on the environment and live resources; • Participates in calculation of damage to living resources; • Participates in the determination and investigation of oil spill causes.
Frontier Service of the Federal Security Service	<ul style="list-style-type: none"> • Ensures allocation and redeployment of its own facilities and resources to the oil spill area for the investigation and monitoring of the oil spill drift; • Controls compliance with established rules for temporary navigation hazardous areas in internal sea waters and territorial sea and guards these areas; • Ensures implementation of measures adopted by the RF government with the aim to protect the coast of the Russian Federation or associated interests (including fisheries) from pollution or pollution hazard in case of maritime accidents in the exclusive economic zone; • Issues permits for the crossing of the RF state border to emergency teams of other states in accordance with the established procedure • Participates in the investigation of oil pollution of marine environment to recover compensation for harm inflicted upon the marine environment and living resources. • Ensures implementation of measures adopted by the RF government with the aim to protect the coast of the Russian Federation or associated interests (including fisheries) from pollution or pollution hazard in case of maritime accidents in the exclusive economic zone; • Issues permits for the crossing of the RF state border to emergency teams of other states in accordance with the established procedure • Participates in the investigation of oil pollution of marine environment to recover compensation for harm inflicted upon the marine environment and living resources.
Ministry of Defense	<ul style="list-style-type: none"> • Ensures allocation and redeployment of the Ministry of Defense's facilities and resources for oil spill response and oil drift monitoring*. • <input type="checkbox"/> Resolves issues of granting access to the Russian territorial waters to assisting foreign oil spill response vessels within its powers.

Federal authority	Oil spill response function
Federal Service for the Oversight of Consumer Protection and Welfare of the Ministry of Healthcare and Social Development (Rospotrebnadzor)	<ul style="list-style-type: none"> • Participates in the survey of the oil spill spread area; • Assesses the impact of the environmental pollution on public health and living conditions.
Russian Hydrometeorological Service (Rosgidromet)	<ul style="list-style-type: none"> • Ensures participation of Rosgidromet's units in the survey of the pollution levels in the oil spill area among others through sampling and analysis of the marine environment including shoreline; • Makes real-time forecast of the oil spill spread; • Provides the FOC with short-term and long-term forecasts, relevant hydro meteorological information and pollution data in the oil spill area.

Above Table: Improvement of the Emergency Oil Spill Response System Under the Arctic conditions for Protection of Sensitive Coastal Areas (Case Study: The Barents and the White Seas)-2010

CHAPTER 23. SWEDEN

Competent national authority with overall responsibility for oil pollution response at sea: The Swedish Coast Guard



23.1 USAGE OF OIL SPILL DISPERSANTS

The use of oil spill dispersants is allowed as a last resort response option. Sweden is currently considering a possible change to the national policy regarding dispersant use and is also closely following the discussion at regional level regarding new opportunities for the usage of dispersants in the Baltic Sea within the framework of the Helsinki Commission.

National contingency plan: Dispersant use is not described in Sweden's National Contingency Plan.

Previous experience with dispersant usage: Oil spill dispersants have not been used in Swedish waters for the past twenty years (Sweden started to use dispersants in 1973 and used them for about ten years).

23.2 DISPERSANT TESTING AND APPROVAL

Product testing and approval scheme: No standard dispersant approval schemes are in place. Sweden has no intention of using dispersants and the knowledge of which "nontoxic dispersants" to use in case of an emergency is being discussed in Sweden and in the HELCOM Response group.

List of approved dispersants: No list of approved dispersants exists in Sweden.

23.3 RESPONSE STRATEGY

Authorization required prior to the dispersant use: During an oil spill incident, an official authorization is required prior to the dispersant use. The Swedish Coast Guard is the responsible authority to grant permission to use dispersants.

Use restrictions/specific circumstances to use dispersants: There are no specific circumstances to use dispersants in Sweden.

CHAPTER 24. UNITED KINGDOM



Competent national authority with overall responsibility for oil pollution response at sea: the Department for Energy & Climate Change (oil & gas exploration); the Maritime & Coast Guard Agency (marine pollution from shipping); the Marine Management Organization (MMO) is the authority for approving dispersants.

24.1 USAGE OF OIL SPILL DISPERSANTS

The United Kingdom's (UK) primary response to an oil spill is the aerial application of dispersants, although some mechanical recovery equipment is held as a secondary response option. The UK is currently developing testing protocols to allow the offshore use of dispersants on heavy fuel oils.

National contingency plan: The use of dispersants is described in the UK's National Contingency Plan (NCP), in Chapter 6 and Appendix J.

Previous experience with dispersant usage: Oil spill dispersants have been used in UK.

24.2 DISPERSANT TESTING AND APPROVAL

Product testing and approval scheme: Dispersant testing and approval schemes are in place in the UK. The MMO is the authority for approving dispersants for the UK. All dispersants stocks, other than products kept in the manufactures' original, unopened and undamaged package, must be tested for efficacy within five years from the date of manufacture and on a five-yearly cycle thereafter. All stocks held in the original, sealed manufacture's packaging must be tested for efficacy within ten years of the date of manufacture and thereafter at no longer than five yearly intervals.

There are currently two toxicity tests. The first test is called the Sea Test. This test compares the relative toxicity of an oil dispersant mix to that of oil alone. The second test is called the Rocky Shore Test. This test compares the toxicity of dispersant alone to that of the standard test oil. All products except a class called "offshore dispersants" must pass both tests to become approved products. Offshore dispersants do not need to pass the Rocky Shore Test, but cannot be used within 12 nautical miles of the territorial baseline.

List of approved dispersants: The MMO, as operators of the approved scheme, maintains a list of currently approved products. A copy of this list is available on the MMO website: (http://www.marinemangement.org.uk/protecting/pollution/documents/approval_approved_products.pdf). This list is updated every year, or whenever a new product is approved.

Approved Product Name	Type 1. Conventional; 2. Concentrated pre-diluted; 3. Concentrated Undiluted
AGMA DR 379	2/3
AGMA OSD 569	2
CAFLON OSD	2/3
FINASOL OSR 51	2/3
FINASOL OSR 52	2/3
OD 4000	2/3
OSD/LT OIL SPILL DISPERSANT	1
OSR 4000	1
RADIAGREEN OSD	1
SEACARE ECOSPERSE	2/3
SEACARE ECOSPERSE 52	2/3
SEACARE OSD	1
SLICKGONE EW	2/3
SLICKGONE NS	2/3
SUPER DISPERSANT 25	2/3
W-2096	2/3

24.3 RESPONSE STRATEGY

Authorization required prior to the dispersant use: Approval of the use of dispersants is given by the MMO in England and Wales, Marine Scotland in Scotland and the Environment and Heritage Service (EHS), within the Department of the Environment, for Northern Ireland. Only products from the UK approved products list may be used.

Approval is not formally required where approved products are used in deeper waters, more than one mile away from the 20 metres contour line but consultation prior to use is encouraged. Prior approval for dispersant use is needed in sea depths of less than 20 metres or within 1 nm of such depths.

Use restrictions/specific circumstances to use dispersants: Oil spill dispersants are used where deemed effective and when the environmental advantages outweigh the disadvantages of cost and ecological damage. The use of dispersants in sea depths of less than 20 metres or within one nautical mile of such depths is prohibited, unless the dispersant use is approved by the UK authorities.

CHAPTER 25. UNITED STATES



Competent national authority with overall responsibility for oil pollution response at sea: The United States Coast Guard (USCG) is the national authority in the Coastal Zone, being represented by the USCG Federal On-scene Coordinator (FOSC). Oil spill response is managed in a Unified Command (UC) structure containing the FOSC, the Responsible Party Incident Commander (RPIC) and the State On Scene Coordinator (SOSC). Regional Response Teams (RRT) is the multi-governmental agency organization that sets regional policy to specify the conditions for approval and use of dispersants in various coastal regions.

Since the Deepwater Horizon (DWH) incident, the US EPA co-chairs of all the coastal RRTs have been directed to re-visit their policies, most of which were finalized in the 1990s. The USCG website presents an overview of the status on their website at: <https://homeport.uscg.mil/mycg/portal/ep/contentView.do?contentType=2&channelId=30095&contentId=125795&programId=114824&programPage=%2Fep%2Fprogram%2Feditorial.jsp&pageType=13489>

Also as a result of DWH, the US National Response Team has developed guidance for monitoring atypical applications of dispersants, e.g., deep subsea applications and prolonged aerial applications. The guidance can be downloaded at: [http://www.nrt.org/production/NRT/NRTWeb.nsf/AllAttachmentsByTitle/SA-1086NRT_Atypical_Dispersant_Guidance_Final_5-30-2013.pdf/\\$File/NRT_Atypical_Dispersant_Guidance_Final_5-30-2013.pdf?OpenElement](http://www.nrt.org/production/NRT/NRTWeb.nsf/AllAttachmentsByTitle/SA-1086NRT_Atypical_Dispersant_Guidance_Final_5-30-2013.pdf/$File/NRT_Atypical_Dispersant_Guidance_Final_5-30-2013.pdf?OpenElement)

25.1 USAGE OF OIL SPILL DISPERSANTS

National contingency plan: Where authorised by the RRT's, the use of dispersants is contained in the individual Responsible Party oil spill response plans. The National Oil and Hazardous Substance Pollution Contingency Plan (NCP) (Section 300.910(a)) provides for RRTs and Area Committees to prepare, and include in regional and/or area plans, dispersant preauthorization plans, which require the approval of the RRT.

Previous experience with dispersant usage: The USA has used dispersants previously, e.g., the Gulf of Mexico DWH oil spill.

25.2 DISPERSANT TESTING AND APPROVAL

Product testing and approval scheme: The US Environmental Protection Agency (EPA) lists all dispersants that have been authorised for use in Subpart J of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). While the listing of a dispersant on the schedule does not constitute EPA's approval of the product for use on an oil spill, it is a prerequisite that makes the product lawfully available for use in oil spill response activities. The EPA requires effectiveness and toxicology tests to be conducted and the results reported for dispersants.

EPA is considering revising Subpart J of the NCP to address the efficacy, toxicity, and environmental monitoring of dispersants, other chemical and biological agents, and other spill mitigating substances, as well as public, state, local, and federal officials concerns on their authorization and use. Specifically, the Agency is considering revisions to the technical product requirements under Subpart J, including amendments to the effectiveness and toxicity testing

protocols, and establishing new effectiveness and toxicity thresholds for listing certain products on the Schedule.

List of approved dispersants: Subpart J Product Schedule (as of August 2013) http://www.epa.gov/osweroe1/content/ncp/product_schedule.htm .

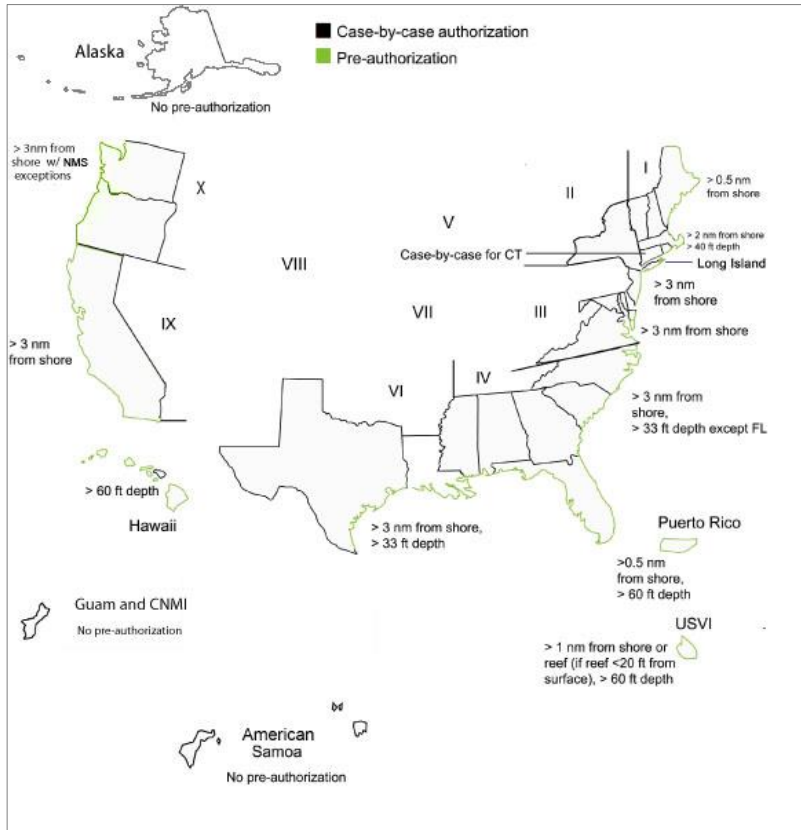
Dispersant	Dispersant
ACCELL® CLEAN DWD	BIODISPERS (formerly PETROBIODISPERS)
COREXIT® EC9500A	COREXIT® EC9527A
DISPERSIT SPC 1000™	FFT-SOLUTION™
FINASOL OSR 52	JD-109
JD-2000™	MARE CLEAN 200
MARINE D-BLUE CLEAN™	NEOS AB3000
NOKOMIS 3-AA	NOKOMIS 3-F4
SAF-RON GOLD	SEA BRAT #4
SEACARE ECOSPERSE 52 (see FINASOL® OSR 52)	SEACARE E.P.A. (see DISPERSIT SPC 1000™)
SF-GOLD DISPERSANT (see SAF-RON GOLD)	SUPERSPERSE™ WAO2500
ZI-400	ZI-400 OIL SPILL DISPERSANT

25.3 RESPONSE STRATEGY

Authorization required prior to the dispersant use: Authorization is required, however there are RRT pre-authorized areas but the USCG FOOSC must give final approval.

Use restrictions/specific circumstances to use dispersants: Many US Regional Contingency Plans have “pre-authorized” dispersant use in some areas dependent on water depth and distance from shore. The RRT Region X and the Northwest Area Contingency Plan (NWACP) for Alaska, Washington and Oregon, is applicable to offshore energy activities in the ice-affected waters of Alaska. The Region X RRT and Northwest Area Committee have established pre-approval zones, case-by-case approval zones, and no use zones for the use of dispersants. Voting authority is given to federally-recognized tribal representatives. Also, dispersant use in Alaska is under active evaluation. At this time, Alaska has pre-approval. The current status of dispersant use approval is shown in Figure A2-3.

Figure A2-3: US Dispersant Decision Status by Federal Region.



Note: Alaska no longer has pre-authorization. Washington now has pre-authorization beyond 3nm with exceptions for National Marine Sanctuaries. In Region I for Maine and New Hampshire, other than a “Special Consideration Area” (SCA), preauthorization for dispersant use is given for areas outboard of 0.5 NM from shore.

Updated: Monday, January 9, 2012 10:24 AM

With regard to Alaska, “It is EPA's understanding that in accordance with Subpart J of the National Contingency Plan, Pre-authorization in Prince William Sound (PWS) and Cook Inlet (CI), has been reinstated, as defined in the DOI letter. FOSCs should read the DOI letter carefully and seek clarification from DOI for any aspects of the letter or the conditions of Pre-authorization that aren't clear.

The EPA and USCG Co-Chairs of the Alaska RRT have asked the Science and Technology committee to prioritize the 2012 revision of the Alaska Oil Dispersant Guidelines, to reflect the lessons learned from recent spill applications and to incorporate the latest in dispersant research and technology. The STC will meet again on April 25th to move this task forward. By the end of 2012 we hope to have a revised Dispersant Pre-authorization Plan that further enhances clarity, consistency with Subpart J of the NCP, and ensures that dispersants continue to be a viable tool in the FOSC tool box, for Alaska.” (EPA 03/29/2012)

The Dispersant Pre-Approval Zone in Washington State is as follows:

- Marine waters 3 to 200 nautical miles from the coastline or an island shoreline except for waters designated as a part of a National Marine Sanctuary and the Makah Tribe Usual and Accustomed marine area or waters within three miles of the border of the Country of Canada or the Makah Tribe Usual and Accustomed marine area.

- In a pre-approved zone, typically the FOSC working in a UC will trigger a process to evaluate the applicability of dispersant use by setting that as an objective, ideally during the initial UC Objectives meeting. It is expected that the FOSC Checklist will be completed by the Technical Specialists within the Environmental Unit, with input from appropriate members of the Operations Section, Liaison and Information Officer as needed. The RRT will be notified by the FOSC as soon as practicable following a dispersant use decision. An After Action report will be completed by the FOSC.

The Dispersant Case-by-Case Approval Zones are as follows:

- All marine waters that are both within three nautical miles from the coastline or an island shoreline and greater than ten fathoms (60 feet) in depth, except any area located within a designated No Dispersant Use Zone (see Section 9406.4).
- Waters designated as a part of a National Marine Sanctuary and waters that are part of the Makah Tribe Usual and Accustomed marine area which are also greater than ten fathoms (60 feet) in depth.
- Waters of the Strait of Juan de Fuca and North Puget Sound from Point Wilson to Admiralty Head and north, and greater than ten fathoms (60 feet) in depth.
- Marine waters within three miles of the borders of the Makah Tribe Usual and Accustomed marine area and the country of Canada. In consideration of the use of dispersants within three miles of the Makah Tribe Usual and Accustomed marine area, the Region X RRT will consult with the Makah Tribal government. In considering the use of dispersants within three miles of the International border with Canada, the Region X RRT will consult with the Joint Coastal Pollution Response Team (Coastal JRT) comprised of representatives of the US and Canadian governments. (See section 9941 for further information about the Coastal JRT).
- Once UC establishes Objectives to consider the use of dispersants in a case-by-case area, the Planning Section should consult with NOAA about the window of opportunity for effective dispersant use.

The No Dispersant Use Zones are as follows:

- Marine waters that are both less than three nautical miles from the coastline and less than or equal to ten fathoms (60 feet) in depth
- Marine waters south of a line drawn between Point Wilson (48° 08' 41" N, 122° 45' 19" W) and Admiralty Head (48° 09' 20" N, 122° 40' 42" W)
- Freshwater environments

ANNEX 3: HELCOM RECOMMENDATION 22/2

Adopted 21 March 2001 having regard to Article 20(1), b) of the 1992 Helsinki Convention. (This Recommendation supersedes HELCOM Recommendation 1/8)

RESTRICTED USE OF CHEMICAL AGENTS AND OTHER NON-MECHANICAL MEANS IN OIL COMBATting OPERATIONS IN THE BALTIC SEA AREA THE COMMISSION,

RECALLING Regulation 7 of Annex VII of the Convention on the Protection of the Marine Environment of the Baltic Sea Area, 1992 stipulating that mechanical means are the preferred response measures, and that chemical agents may only be used in exceptional cases, after authorization has been granted in each individual case,

RECALLING ALSO the IMO Guidelines on Oil Spill Dispersant Application and the Technical Information Paper No. 4 of the International Tank Owners' Pollution Federation,

BEARING IN MIND that new response means, such as bioremediation, fertilization techniques and biosorbents as well as their effective and regular use in oil spill response, are still at development stage,

RECOGNIZING that the in-situ burning of oil could be a response option, especially under ice conditions,

RECOMMENDS that when in individual cases authorizing the use of chemical agents the appropriate national authority should ensure the use of chemical agents with optimized efficiency and acceptable affects to the marine environment (net environmental benefit),

RECOMMENDS ALSO that when the national authority considers whether to authorize the use of chemical agents at open sea it should make careful use of the IMO Guidelines on Oil Spill Dispersant Application taking into account the following:

- potential damage to the marine environment, sea birds, and other marine resources, if no other response method can be successfully applied;
- quantity, type of oil and its natural dispersibility enhanced by higher sea-state and wind forces;
- new products have a widened range of application, e.g., in heavy fuel oil (HFO) spills or if the viscosity has already increased up to 10.000 centistokes (cst);
- use in shallow waters should be authorised only in exceptional cases, for instance if this is the only option to avoid serious losses of sea birds within endangered breeding colonies, and must be restricted to minor oil spills,

RECOMMENDS FURTHERMORE that the Governments of the Contracting Parties ensure that

- sinking agents are not used at all; and
- absorbents are used only when sufficient recovery devices ensure the timely removal of the absorbed oil from the sea surface,

REQUESTS the Governments of the Contracting Parties to report on the implementation of this Recommendation, to the Sea-based Pollution Group, in accordance with Article 16, Paragraph 1 of the Helsinki Convention.

ANNEX 4: INDIGENOUS PEOPLES AND DECISION MAKING

Adapted from Guidelines on Stakeholder Engagement – UN-REDD Programme April, 2012

Indigenous people are often not engaged in public decision-making processes, yet they both contribute to resource protection and depend on natural resources and certain areas for their social and economic livelihoods as well as for cultural and spiritual well-being. As such they are often more vulnerable than other stakeholders in the context of formulation and implementation of industrial activities near them. Indigenous peoples and other resource-dependent communities have a special role to play given their traditional knowledge of and relationship to the areas they inhabit and their presence on the ground.

Free, Prior and Informed Consent (FPIC) is the collective right of indigenous peoples to participate in decision-making and to give or withhold their consent to activities affecting their lands, territories and resources or rights in general. Consent must be freely given, obtained prior to implementation of activities and be founded upon an understanding of the full range of issues implicated by the activity or decision in question; hence the formulation: free, prior and informed consent.

The specific mandate and obligation for States, the UN and its programs to promote and respect the right to FPIC are outlined in the following agreements:

- United Nations Development Group (UNDG) Guidelines on Indigenous Peoples Issues (2008);
- United Nations Declaration on the Rights of Indigenous Peoples (2007);
- Convention on Biological Diversity (CBD) (1992);
- International Labour Organization Convention 169 on Indigenous and Tribal Peoples (1989); and
- UNFCCC Cancun Agreements decisions on REDD+.

The UN outlines the following guiding principles for effective stakeholder engagement, particularly with regard to indigenous peoples:

1. The consultation process should include a broad range of relevant stakeholders at the national and local levels.
2. Consultations should be premised on transparency and timely access to information.
3. Consultations should facilitate dialogue and exchange of information, and consensus building reflecting broad community support should emerge from consultation.
4. Consultations with indigenous peoples must be carried out through their own existing processes, organizations and institutions, e.g., councils of elders, headmen and tribal leaders.
5. Special emphasis should be given to the issues of land tenure, resource-use rights and property rights because these are unclear as indigenous peoples' customary/ancestral rights may not necessarily be codified in, or consistent with, national laws.
6. Impartial, accessible and fair mechanisms for grievance, conflict resolution and redress must be established and accessible during the consultation process
7. Consultations should start prior to the design phase of the project/program
8. A national level workshop should be held to initiate the consultation and participation process.

9. It is important that participatory structures and mechanisms exist to manage the agreed process outlined in the Consultation and Participation Plan.
10. Prior to the development of an activity, indigenous peoples living in voluntary isolation that may be affected should be identified in consultation with the relevant entities at the national, sub-national and/or local level to ensure that the program/activity is developed in a way that completely avoids contact with these communities.

ANNEX 5: EXAMPLES OF STAKEHOLDER MAPPING

Potential generic stakeholder groups who could contribute to achieving a successful response or be affected by the outcome of response to oil or HNS spills are suggested in the table below, using the approach in AA1000 stakeholder engagement standard: Final exposure draft. (2011, www.accountability.org/standards/aa1000ses/index.html for mapping five attributes of relevant stakeholders as generally defined below. Mapping stakeholders by these attributes is not absolute and more detailed criteria should be developed when applied for oil spill preparedness and response, and especially for dispersants.

Stakeholder group relevance to spill response

Stakeholder Group	Attribute				
	Dependency	Responsibility	Tension	Influence	Diversity Perspectives
Category 1 responders	X	X		X	
Incident managers and spill responders	X	X		X	
Elected and appointed officials	X	X	X	X	X
Media and the public			X	X	
Agency regulators	X	X	X		
Public health specialists		X		X	X
Scientific/academic community			X		X
Seafood fishing industry	X	X	X		
Coastal tourist industry (hotels, restaurants and chefs, shops, recreational activities, and tourists)	X	X	X	X	
Non-Governmental organizations (NGOs)			X		X
Coastal land owners	X	X		X	
Oil, gas, marine industry	X				X
The polluter	X	X	X	X	
Volunteers			X	X	X
Others as appropriate					

- **Dependency** – those who are directly or indirectly dependent on the organisation or those whom the organisation is dependent upon for operation;

- **Responsibility** – those to whom the organisation has, or in the future may have, legal operational, commercial, or moral/ethical responsibilities;
- **Tension** – groups or individuals who need immediate attention with regard to financial, wider economic, social, or environmental issues;
- **Influence** – those who can have an impact on strategic or operational decision-making; or
- **Diverse perspectives** – those whose different views can lead to a new understanding of the situation and identification of unforeseen opportunities.

Stakeholders can also be mapped according to their specific concerns and the degree of their concern (high, medium, and low in each cell) by completing a table like the one shown below. For a geographic area, specific names of individuals or organizations should be identified to replace the generic term for external stakeholder groups.

Mapping of Stakeholders, their Concerns, and Relative Priority of Concerns

External Stakeholders	Concerns													
	Human Health	Trust	Safety	Environmental	Information	Ethics	Economics	Responsibility	Legal	Process	Pets/Livestock	Religious	Fairness	Other
Political Officials														
Public at Large														
Media														
Victims and their Families														
Community at Risk														
Emergency Response Personnel														
Public Health Personnel & Health Agency Employees														
Physicians/ Nurses/ Veterinarians/ Pharmacists														
Law Enforcement Personnel														
Hospital Personnel														
Non-Governmental Organizations (NGOs)														
Other (specify)														

ANNEX 6: JOURNAL/PUBLICATION SUGGESTIONS

- Natural sciences
 - Science
 - Nature
 - Environmental Science & Technology
 - Environmental Pollution
 - Marine Pollution Bulletin
 - Water Research
 - Microbial Ecology Journal of Environmental Monitoring
- Human/environmental health
 - Environmental Toxicology and Chemistry
 - Journal of Toxicology and Environmental Health
 - Human and Environmental Risk Assessment
 - Journal of the American Medical Association
 - Annals of Internal Medicine
- Ecology and Society (for example, an article under current review is, “*Acute toxicity of one oil-spill dispersant and two consumer cleaners to Gulf killifish, fundulus grandis*”)
- Social and decision sciences
 - Public Administration Review
 - International Journal of Mass Emergencies and Disasters
 - Disaster Management
 - Industrial Crisis Quarterly
 - Journal of Hazardous Materials
 - Journal of Health and Social Behavior
- Oil spill science, technology and operations
 - International Oil Spill Conference (IOSC)
 - Clean Gulf
 - Arctic and Marine Oilspill Program (AMOP) Technical Seminar
 - Spillcon (International Oil Spill Prevention & Preparedness Conference)
 - Interspill
 - Arctic Oil Spill Conference
- Arctic science and technology
 - POAC (International Conference on Port and Ocean Engineering under Arctic Conditions) conference
 - Cold Regions Science and Technology journal
 - Arctic journal

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