

**POLICY**

**Reference:  
NP-POL-04**

## **NATIONAL PLAN**

# **REGISTER OF OIL SPILL CONTROL AGENTS FOR MARITIME RESPONSE USE**



Endorsed by NPSCC 1 May 2015



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# 1. BACKGROUND

Under the National Plan for Maritime Environmental Emergencies ('National Plan'), only those spill response chemicals or Oil Spill Control Agents (OSCA) listed on the National Plan Register of Oil Spill Control Agents (OSCA Register) will be employed to combat oil pollution incidents.

A product listed on the OSCA Register is considered to have met the requirements of acceptable practice for the National Plan. The requirements for inclusion of a product on the OSCA Register are described within this Policy.

AMSA has no statutory product approval or licensing powers and will not issue a license or formal approval for OSCA products. Products that meet requirements will be accepted for listing on the OSCA Register. This means that the use of these products in Australian Water is protected under an exemption under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Inclusion of a product on the OSCA Register is not an endorsement of a product for use in any particular oil spill response operation.

Products included on the OSCA Register will be identified for the particular operational and/or response use as stipulated in the application and the Register listing.

Products will be included on the Register for a five year period. At the end of this time products will need to be reassessed against any requirements applying at that time.

## 2. PRODUCTS TO BE INCLUDED ON THE OSCA REGISTER

OSCAs include all products designed to be applied, for the purposes of oil spill response, to oil slicks or residues:

- floating on or near the surface of the sea, or
- on sea shorelines or marine wetlands or other marine ecosystems, or
- on maritime or coastal structures, vessels or other infrastructure.

OSCAs also include all chemical products that can be used or applied to shorelines or structures in order to protect them from oil impacts (e.g. to provide a chemical barrier or reduce adhesion).

OSCA product types are shown in Table 1.1.

Chemical products that may be used during an oil spill response, but which are contained (i.e. are not released to the environment) are not required to be listed on the OSCA Register. Examples of these are cleaning agents for machinery, personnel or wildlife (where washing water and/or other residues are contained and disposed of in a controlled manner) or granular sorbents that remain enclosed within a bag, sock or boom.

For the avoidance of doubt, all existing stocks, of previously accepted Oil Spill Control Agents, held within the National Plan (AMSA and AMOSC) inventories, as of 1 January 2012, remain acceptable for National Plan use until used or disposed of. They are listed in the OSCA Register as 'transitional OSCAs' and almost exclusively comprise the AMSA and AMOSC pre-2012 stockpiles of dispersants.

Replacement stock, purchased or procured after 1 January 2012, even if of an identical formulation to a transitional OSCA product, will not be recognised or accepted as an OSCA Listed product, unless and until that product has successfully completed the current efficacy and toxicity tests for new listing on the OSCA Register.

Table 1.1 Oil Spill Control Agent (OSCA) Product Types

Class	Product Type	Purpose	Sub Type	Description/other Information	
1	Oil Spill Dispersants (OSD)	Products which, when applied to floating oil or oil on shorelines, increase the rate of dispersion and dilution of oil into the water column to enhance the degradation of the oil by micro-organisms.	1.1	Hydrocarbon-based	Designed for use undiluted on shorelines, structures or at sea. At sea need agitation (e.g. breaker boards). Not suitable for aerial spraying. Relatively high application rates needed (1:3 or 1:5).
			1.2	Water-dilutable Concentrates	Designed for use at sea after dilution with seawater (up to 10%). Generally require agitation. Application rates of about 1:3 (i.e. equivalent to 1:30 dispersant: oil) . Not suited for aerial spraying (high application rates cannot be achieved with diluted product).
			1.3	Concentrates	Designed for use undiluted at sea or on shorelines. Vessel manual or aerial application. Low application rates, high efficacy.
2	Surface Cleaners or Washing Agents (SCA)	Products which, when applied to oil on shorelines or other firm surfaces facilitates the removal of the oil by natural processes or cleanup activities.	-	-	
3	Bioremediation Agents (OBA)	Products which, when applied to oil or oiled substrates, enhance the biological degradation of oil by stimulating the growth of oil degrading bacteria or fungi. Does not include products applied solely to oil on water – these will be treated as dispersants.	3.1	Nutrient only	Stimulate naturally occurring oil degrading micro-organisms.
			3.2	Biological agent	Contain oil degrading organisms. Not necessarily indigenous to the treated area.
4	Loose Sorbents (OSA)	Products (usually powder, granules or beads) which adsorb or absorb oil. Note: Sorbent pads, bags and booms that are easily recovered are not included amongst OSCAs.	4.1	Natural organic	E.g. wool, sawdust, husks etc. These may sink when saturated with water. Biodegradable.
			4.2	Natural mineral	Mineral based sorbents may sink. Ash, vermiculite or other.
			4.3	Synthetic material	High sorbency but may not be biodegradable.
5	Degreasers (ODA)	Products used for cleaning oil from solid surfaces (more commonly machinery or marine structures). Unlike washing agents degreasers do not result in the incorporation of oil into run-off waters.	5.1	Natural solvent	Usually citrus oil based.
			5.2	Enzyme-based products	Specifically designed for oil and grease.
			5.3	Solvent-based Products	Generally not used as an OSCA. No acceptance needed if used as a machinery industrial degreaser only.
6	Solidifying or Gelling Agents (OSA)	Products which, when applied to oil, result in the oil forming or being incorporated into a solid or semi-solid matrix, and facilitate or enhance mechanical recovery of oil.	-	Not commonly used at sea or on shorelines. Primarily promoted for small spills and response in inland, enclosed waterways.	
7	Emulsion Breakers (EBA)	Products designed to separate oil and water from emulsions. These are not generally used outside of controlled environments.	-	Not commonly used in uncontrolled conditions.	
8	Herdng Agents (OHA)	Products added to surface oil to restrict spreading	-	Not commonly used in Australia.	
9	Wicking Agents (OWA)	Products added to surface oil to facilitate ignition.	-	In situ burning has not been undertaken at sea in Australia.	



**Table 1.2 Required Testing Regime for OSCAs**

Test Requirement	Ref	Intended Application	Dispersants	Surface Cleaners Washing Agents	Bioremediation Agents	Loose Sorbents	Degreasers	Solidifying or Gelling Agents	Emulsion Breakers	Herdling Agents	Wicking Agents
1.1 Efficacy Testing	5.2	Marine	Yes	NA	NA		NA	D			
		Shoreline	NA	D	NA	Yes <sup>3</sup>	NA	D	Yes	No	No
1.2 Toxicity Tests	5.3	Marine	Yes	NA	D <sup>2</sup>		NA	D <sup>1</sup>	Yes <sup>1</sup>	D <sup>1</sup>	
		Shoreline	Yes <sup>1</sup>	D <sup>2</sup>	D <sup>2</sup>	D <sup>6</sup>	D <sup>2</sup>	D <sup>2</sup>	Yes <sup>2</sup>	D <sup>2</sup>	No
1.3 Degradation Test	5.4	Marine	D <sup>5</sup>	D <sup>5</sup>	D <sup>5</sup>	D <sup>7</sup>	D <sup>5</sup>	Yes <sup>4</sup>	D <sup>5</sup>	D <sup>5</sup>	D <sup>5</sup>

<sup>1</sup> If acceptance is sought for proposed use of an OSCA product at sea, where it could affect a shoreline, then a mixture of relevant shoreline and/or marine toxicity tests may be required – consult with AMSA.

<sup>2</sup> If acceptance is sought for proposed use on shorelines or other surfaces, where proposed OSCA product (or cleaning residues) could migrate into adjacent marine waters, then a mixture of relevant shoreline and/or marine toxicity tests may be required – consult with AMSA.

<sup>3</sup> Efficacy test is independent of test medium.

<sup>4</sup> If not to be recovered, in which case both product, and product and reference oil mixture must be tested.

<sup>5</sup> In general, discretionary to AMSA, but required to be tested for biodegradability if it can be demonstrated that the chemical constituents of the OSCA are not inherently persistent and harmful. The requirement for biodegradability testing is however reserved for cases where concerns regarding potential persistence cannot be resolved.

<sup>6</sup> Discretionary to AMSA, depending on the nature of the proposed sorbent product.

<sup>7</sup> Required for synthetic material; discretionary for natural organic material; and not required for natural mineral material.

NA – Not applicable, as the product is not intended nor acceptable for use in the stated environment.

D – Discretionary to AMSA – see section 5.2 for detail



## 3. APPLICATION PROCESS TO LIST ON THE OSCA REGISTER

Manufacturers or suppliers of OSCAs designed for oil spill response (Table 1.1 above) should follow the following steps to seek listing on the Australian National Plan OSCA Register:

- Step 1 Contact AMSA ([ssc@amsa.gov.au](mailto:ssc@amsa.gov.au)) to confirm the latest requirements for testing (see Table 1.2 above):
- Step 2 Determine the use(s) of the OSCA for which acceptance is sought (i.e. use at sea or use on, or near, shorelines).
- Step 3 Commission tests as required by this Policy, after consultation with AMSA, and obtain a report detailing performance against the test criteria listed in Table 1.3 below. Testing procedures and guidance are provided in Section 5 of this Policy.
- Step 4 Complete the application form at Attachment 1, and send it and all test results, evidence and accompanying support documents (as listed in Section 4) of this Policy to AMSA, addressed to the Manager, Marine Environment Pollution Response, Marine Environment, AMSA.

**Note:** There are no fees payable to AMSA for processing an application for OSCA Register listing. The applicant sources and provides documents, evidence and tests results required to support their application, and meets all costs for these.

## 4. SUPPORTING DOCUMENTATION

The following documents or information must accompany each application:

- Completed application form (see Attachment 1).
- Product description (see Section 4.1).
- Proposed product container label (see Section 4.2).
- Safety Data Sheet (SDS) (see Section 4.3).
- Australian test reports (see Sections 4.4 and 5).
- Evidence of and test results from overseas testing, if undertaken using compatible testing methods (see Section 5).

### 4.1 Product description

The product must be described fully. This must include:

- Name of product (name, brand and trademarks under which it is sold or distributed).
- The type of product (as per Table 1.1).
- Name, address telephone number, e-mail address of manufacturer and Australian distributor
- Specific applications or uses (objectives when applied).
- Method of application.
- Indicative application rates.
- Special handling requirements including PPE or other protection.
- Storage requirements (container, maximum and minimum temperature), and anticipated shelf life of product (see 4.1.1).
- Details of product formulation (in confidence). Details must include the percentage (by weight or volume – please specify) of each chemical constituent, chemical name (when applicable) and function of components.
- The presence, or potential presence, or specific absence, of prohibited substances (heavy metals, cyanide, hydrocarbons, see Sections 4.1.2 and 4.1.3).
- Physical characteristics as per Table 1.3.

**Note:** Any change in the formulation of a product after it has been accepted may require a new application with new test results.

#### 4.1.1 Storage and shelf life

For dispersant, the surfactants shall be wholly soluble in the solvent and shall remain uniformly distributed at all temperatures from -10°C to +50°C. The dispersant shall not separate into layers at temperatures greater than -10°C.

#### 4.1.2 Prohibited ingredients

The OSCA shall not contain benzene, carbon tetrachloride or other chlorinated hydrocarbons, phenol, cresols, caustic alkali, or free mineral acid.

#### 4.1.3 Aromatic hydrocarbons

If hydrocarbon solvents are used in the manufacture of the OSCA, they shall be low in aromatic hydrocarbons, with an upper limit of three percent total aromatics as determined by gas chromatography/ flame ionisation detection, infrared spectroscopy or fluorescence detection.

**Table 1.3 Physical characteristics data to be supplied to AMSA**

Parameter		Comment/Applicability	Method of Measurement (indicative only) <sup>1</sup>
Colour and general description		e.g. clarity	Visual observation
Form		Solid, powder, granules, liquid	
Density		Specific Gravity or kg/m <sup>3</sup> (SI)	Relevant ASTM, IP or BS
Viscosity either:	Kinematic (cSt)	Liquids only at 20°C. Viscosity should not exceed 250cSt at 0°C.	ASTM D445, IP 71, ISO 3104, BS 4708, BS 188/BS 2000 Pt 71
	Dynamic (cP)		ASTM 7042-04 equivalent or as calculated by ASTM D445
Flash Point		Liquids only. Must be >60°C	ASTM D93, IP 34, BS 2839
Pour Point		Liquids only	ASTM D97, IP 15, BS 4452
Cloud Point		Liquids only. Must be <-5°C	ASTM D2500, IP 219
Water Miscibility			ASTM D1722 -09 or other as appropriate
Solubility			

<sup>1</sup> **Note:** Formally recognised test methods or standards are preferred. But other measurements and/or descriptions can be supplied and will be considered by AMSA, but must come with rationale and evidence.

## 4.2 Product container label

The proposed product label must be supplied to, and agreed by, AMSA before the product will be listed. Labels proposed for containers used for commercial distribution of the product shall be in accordance with the requirements of the *National Code of Practice for the Labelling of Workplace Substances [NOHSC: 2012 (1994)]*. The label must be in the specified format and shall provide all the information required by the guidance note.

The label must be weatherproof, UV stable, not affected by the product, truly permanent and the information noted in Table 1.4 must be provided.

**Table 1.4 OSCA container labelling requirements**

	Label Item	Note
1	Product Name	Name as supplied in Australia and also as sold overseas
2	Product Type	Refer to Table 1.1
3	Manufacturer (and contact details)	Name, address of manufacturer and/or local agent or importer
4	Date of manufacture, batch number and expiry date if applicable	
5	Container volume or weight	
6	List of main or active ingredients	
7	Transport codes and description	<i>Australian Code For The Transport of Dangerous Goods by Road and Rail.</i>
		<i>International Maritime Dangerous Goods Code</i>
		<i>International Air Transport Dangerous Goods Code</i>
		Hazard symbol
8	Warnings as applicable e.g. handling, storage, mixing the product with any other products	
9	Recommended storage instructions	
10	Basic safety instructions or caution and any appropriate chemical hazard signs	

### 4.3 Safety Data Sheet

A Safety Data Sheet (SDS) must accompany every product submitted for testing and should be provided to AMSA at the time of application for product acceptance.

The SDS must be the latest issue for the product.

The format is flexible however it is desirable that it should conform to the requirements of the *Worksafe Guidance Note for Completion of a Material Safety Data Sheet* (NOHSC:3001[1991]) until 31 December 2016, and the *Model Code of Practice - Preparation of Safety Data Sheets for Hazardous Chemicals* from 1 January 2017.

**Note:** Ideally, the SDS should contain toxicity data from both prior overseas testing and any recent results obtained in Australia as part of the OSCA Register Listing application process.

### 4.4 Test Certificates from Approved Laboratory

Any certificates issued by a recognised and National Association of Testing Authorities (NATA) accredited testing laboratory must accompany each application for listing.

These must clearly set out test results for the toxicity, effectiveness and biodegradability of the product as required per Table 1.2 of this Policy. Certificates must clearly indicate compliance with the relevant performance criteria noted in Section 5 of this Policy and efficacy value as specified.

# 5 TEST METHODS

## 5.1 Reference oils

Three reference or test oils are required for testing OSCA efficacies under the Policy – a standard Kuwaiti crude and two marine fuel oils (IFO 180 and IFO 380).

### 5.1.1 Kuwaiti Crude

The Kuwaiti crude reference oil is a medium crude oil. AMSA holds stock of this oil and it can be obtained on request. This oil is similar to that used in the toxicity test and efficacy testing of dispersants and other response agents in the UK. Kuwait crude has been used relatively extensively and studied with regards its toxicity, alone and in association with dispersants and also widely used in efficacy testing. Consequently, it is a good reference base.

It is recognised that crude oils vary slightly and so the particular Kuwait crude oil to be used in the tests required by this Policy is that supplied by AMSA which generally conform to the specifications shown in Table 1.5. The Kuwait crude oil needs to be artificially weathered to 85% of its original volume before being used as reference oil for dispersants in the MacKay Efficiency Tests. It is not identical to the Warren Springs Standard, but is close enough that AMSA accepts it as a suitable substitute.

### 5.1.2 Marine fuels oils

Marine fuels (IFO 180 and IFO 380) represent a significant amount of the persistent oil risk for maritime oil spills within Australian waters. Identifying the performance of OSCAs against real risk oils is therefore of real and practical value. There are currently no standard laboratory references for these oils. So, for the purposes of testing OSCA products for the OSCA Register quantities of the reference fuel oils should be obtained fresh from retail commercial sources around Australia and subsequently held by laboratories in suitable conditions to maintain character. If necessary, the reference fuel oils should be modified, to better fit the specifications in Table 1.5. and when the OSCA efficacy test is performed, the reference fuel oil's final parameters should be recorded and reported along with the OSCA test results.

The character of the reference oils is as follows:

**Table 1.5 Parameters of reference oils for OSCA testing**

Reference Oil	Parameter	Range	Test Method
<b>Australian Kuwait Crude</b>	Density @15°C	0.9124	ASTM D1298
	Asphaltenes % by weight	4.2	MA-1221
	Wax %	1.9	ASTM D2887
	Kinematic viscosity cSt@20°C	86.0	ASTM D445
	Pour Point °C	-3.0	ASTM D97
<b>IFO 180</b>	Density @15°C	0.98	ASTM D1298
	Asphaltenes % by weight	10	MA-1221
	Wax %	<0.5	ASTM 2887
	Kinematic viscosity cSt@50°C	180	ASTM D445
	Pour Point °C	-10	ASTM D97
<b>IFO 380</b>	Density @15°C	0.99	ASTM D1298
	Asphaltenes % by weight	6.0	MA-1221
	Wax %	-	ASTM 2887
	Kinematic viscosity cSt@50°C	380	ASTM D445
	Pour Point °C	<5	ASTM D97
<b>Kerosene</b> (to modify the above)	Odourless kerosene	As per BS2869 Ams 1 and 2, Class C1	

**Note:** The values provided are the Australian Reference Kuwait Crude Oil (85% volumetric reduction). The Australian Kuwait Crude Reference Oil is that supplied by AMSA and held by AMOSC on AMSA's behalf. To obtain a sample of the Australian Reference Kuwait Crude Oil, please contact either AMSA or AMOSC with your requirements. The Australian Reference Kuwait Crude Oil needs to be reduced in volume (weathered) to 85% of its original volume before testing. The methodology used for this reduction (weathering) is available from the AMSA OSCA website.

## 5.2 Efficacy (effectiveness) testing

Standard methods for testing the efficacy of OSCAs are listed in Table 1.6. It should be noted that the extent of testing will depend on:

- The type of OSCA.
- Intended use of the OSCA (at sea, or on, or near, shorelines).

**Table 1.6 Test methods and performance criteria for efficacy testing of OSCAs**

OSCA Type	Code	Product Description		Test Status	Method		Performance Criteria (Pass/Fail)	Policy Section Reference
1	OSD	Oil spill dispersants (All types)		Mandatory	Kuwaiti Crude	Mackay test See Attachment 2	50% effective under specified conditions and dose rate at the 5Q test.	5.2.1
				Mandatory	IFO 180	Mackay test See Attachment 2	50% effective under specified conditions and dose rate at the 5Q test.	
				Mandatory	IFO 380	Mackay test See Attachment 2	50% effective under specified conditions and dose rate at the 5Q test.	
2	SCA	Surface cleaners or washing agents		NA	Kuwaiti Crude	Fingas et al. 1995b	None	5.2.2
3	OBA	Bioremediation agents		Discretionary	Kuwaiti Crude	-	None	5.2.3
4	OSS	Loose sorbents	Adsorbants	Mandatory	Kuwaiti Crude	ASTM F726-06	Sinking – no more than 10%	5.2.4
			Absorbants			ASTM F716-09	Sinking – no more than 10%	
5	ODA	Degreasers – not recommended for marine response use		NA	-	-	None	5.2.5
6	OSA	Solidifying or gelling agents – not recommended for marine response use		Discretionary	-	Fingas et al. 2011	None	5.2.6
7	EBA	Emulsion breakers		Mandatory	Kuwaiti Crude	Fingas et al. 1995a	None	5.2.7
8	OHA	Herding Agents		Not required	-	-	None	5.2.8
9	OWA	Wicking Agents		Not required	-	-	None	5.2.9

Fingas, M (ed) 2011, Oil Spill Science and Technology, p723, Appendix 22.1

Fingas et al. 1995a Development of a Test for Water-in-Oil Emulsion Breakers. [http://www.boemre.gov/tarprojects/160/160\(AW\).PDF](http://www.boemre.gov/tarprojects/160/160(AW).PDF)

Fingas et al. 1995b The Effectiveness Testing of Oil Spill-Treating Agents. In The Use of Chemicals in Oil Spill Response, ASTM STP 1252, Peter Lane, Ed., American

Society for Testing and Materials, Philadelphia.

**Note:** AMSA may also accept overseas efficacy testing for some products if the test oils are similar and the test method employed is calibrated (with evidence) against the Australian test method requirements. This is discussed below.



### 5.2.1 Oil Spill Dispersants

#### Mandatory efficacy testing

All dispersants intended for use in Australia must be tested against all three reference oils (Kuwait crude and the IFO 180 and IFO 380 marine fuel oils) using the adapted Mackay method outlined in Attachment 2.

AMSA may also accept overseas efficacy testing for dispersants, if the test oils are substantially similar and the test method employed (if not the Australian adapted Mackay method) is calibrated (with evidence) against the Australian test method requirements.

Dispersants must meet the performance criteria for at least one of the three mandatory reference oils set out in Table 1.6 using the adapted Mackay method at a water temperature of 20°C. All results will be recorded and supplied.

#### Discretionary efficacy testing

There is no discretionary efficacy testing for dispersants.

### 5.2.2 Surface Cleaning or Washing Agents

#### Mandatory efficacy testing

No mandatory efficacy testing of these products is required. Washing agents are used only on shorelines and structures. The effectiveness of washing agents is largely dependent on the substratum oiled, the vigor of associated cleaning and the weathered character of the oil.

### 5.2.3 Bioremediation agents

#### Mandatory efficacy testing

No mandatory efficacy testing of these products is required. Bioremediation products are not used in the marine environment.

The effectiveness of shoreline or land-based bioremediation agents is largely dependent on does rate, oil type and sediment conditions, such as aeration.

### 5.2.4 Loose sorbents

Commercial sorbents must be tested against all three reference oils. The pass/fail performance criteria are the ASTM Standard test requirements for sinking (i.e. no more than 10% by volume sinks).

**Note:** Sorbents should be tested dry and also in, or on, seawater.

### 5.2.5 Degreasers

These products are not recommended for use at sea or in areas where they or contaminated oily residues can enter the marine environment. Consult with AMSA regarding test requirements.

### 5.2.6 Solidifying and gelling agents

These products are not recommended for use at sea or in areas where they or contaminated oily residues can enter the marine environment. Consult with AMSA regarding test requirements.

### 5.2.7 Emulsion breakers

Testing is mandatory as per Fingas et. al., 1995a (see Table 1.6). There is no performance pass/fail criterion.

### 5.2.8 Herding agents

There is currently no standard test for assessing the efficacy of Herding Agents. Testing is not required.

### 5.2.9 Wicking agents

There is currently no test for assessing the efficacy of Wicking Agents. Testing is not required.

### 5.3 Toxicity Testing

Testing must be undertaken in a NATA (or equivalent) accredited laboratory. Tests must be ANZECC compliant or consistent.

#### 5.3.1 Required testing

All OSCAs except sorbents must be tested for toxicity. The extent and type of testing will depend on their anticipated use. The testing requirements are summarised in Table 1.7.

Manufacturers or suppliers can chose which applications they are seeking acceptance for.

**Table 1.7 Toxicological test requirements for acceptance of OSCAs**

OSCA			Intended application (Test Regime)	
OSCA Type	Code	Product Description	At Sea	Shorelines
			Seawater Tests	Rocky Shore Test
1	OSD	Oil Spill Dispersants	Yes	Yes <sup>1</sup>
2	SCA	Surface Cleaner/Washing Agents	NA	D <sup>2</sup>
3	OBA	Bioremediation Agents	D <sup>2</sup>	D <sup>2</sup>
4	OSA	Loose Sorbents	D <sup>3</sup>	D <sup>3</sup>
5	ODA	Degreasers	NA	D <sup>2</sup>
6	OSA	Solidifying or Gelling Agents	D <sup>1</sup>	D <sup>2</sup>
7	EBA	Emulsion breakers	Yes <sup>1</sup>	Yes <sup>2</sup>
8	OHA	Herding Agents	D <sup>1</sup>	D <sup>2</sup>
9	OWA	Wicking Agents	No	No

<sup>1</sup> If acceptance is sought for proposed use of an OSCA product at sea, where it could affect a shoreline, then a mixture of relevant shoreline and/or marine toxicity tests may be required – consult with AMSA.

<sup>2</sup> If acceptance is sought for potential use on shorelines or other surfaces, where proposed OSCA product (or cleaning residues) could migrate into adjacent marine waters, then a mixture of relevant shoreline and/or marine toxicity tests may be required – consult with AMSA.

<sup>3</sup> If acceptance is sought for sorbent material, depending on the nature of the material.

NA – Generally not accepted for this use. No test required unless intended for application in the specified environment.

D – Discretionary to AMSA, depending on the nature of the proposed sorbent product.

### 5.3.2 Test species

Only Australian test species are to be used. However, some species are only available seasonally, and Australia has a distinctive bio-geographical (east/west and north/south) species diversity. So, similar or analogous species, other than those listed in Tables 1.8 and 1.9, can be used for testing to address these shortcomings, but only with prior approval from AMSA.

Test results must be accompanied by QA/QC validation (i.e. the result for the concurrent reference toxicant test is given against the two standard deviations of the running mean for the CUSUM chart, as accepted by NATA and the ISO Standard).

#### Seawater Test

Species for the Seawater Test must include:

- Two different crustacean species, one temperate and one tropical species from Group 1 in Table 1.8.
- Two different juvenile fish species (Group 2 in Table 1.8), one temperate species and one tropical species.
- At least three additional species selected from Group 3 to 7 in Table 1.8 provided that;
  - At least one species is from Group 3 or 4.
  - At least one species is from Group 6 or 7.

**Table 1.8 Marine toxicity test species**

Ref.	Taxonomic Group	Species Name	Type		NATA endorsed test as per ISO17025
			Temp.	Trop.	
1	Crustacean	Penaeus monodon (Tiger Prawn)		X	96hr acute
		Allorchestes compressa (Amphipod)	X		96hr acute
		Melita plumulosa (Amphipod)	X		96hr acute
2	Fish larvae	Pagrus auratus (Pink Snapper)	X	X	96hr Fish Imbalance Test
		Serolia lalandi (Yellow Tail Kingfish)	X	X	96h Fish Imbalance Test
		Lates calarifer (Barramundi)		X	96hr Fish Imbalance Test
		Macquaria novemaculeata (Australian Bass)	X		96hr Fish Imbalance Test
		Acanthopagrus butcheri (Black Bream)	X		96hr Fish Imbalance Test
		Acanthochromis polycanthus (Spiny Chromis, Damselfish)		X	96h Fish Imbalance Test
3	Algae/ Phytoplankton	Nitzschia closterium (Unicellular diatom)	X		72hr growth inhibition
		Isochrysis aff. galbana (Unicellular Flagellate)		X	72hr growth inhibition
4	Macroalgae/ seaweeds	Ecklonia radiata (Kelp)	X		72hr germination
		Hormosira banksii (Neptunes Necklace)	X		72hr germination
6	Bivalve larvae/ zooplankton	Mimachlamys asperima (Doughboy Scallop)	X		48hr larval development
7	Zooplankton/ sea urchin larvae	Heliocidaris tuberculata (Sea urchin)	X		72hr larval development or 1hr fertilisation success

The pass/fail criteria apply to the tests for Group 1 and 2 test species only.

The OSCA tested should have a EC<sub>50</sub> value (or equivalent within the relevant test) of 10mg/litre (10ppm) or above for Group 1 and Group 2 test species.

If one Group 1 or 2 test species fails to meet the required 10ppm threshold, then AMSA may, at its sole discretion, accept a result for that species of greater than 1mg/litre (1ppm), subject to an overall assessment of the likely toxicological relevance of that OSCA (i.e. all three other indicative test species results must score at least 10mg/litre (10ppm) in their respective tests to show general low toxicity). In this case, a species sensitivity distribution (SSD) across all the seven test results should be presented with the toxicity results for the application.

### Rocky shore tests

Test species must include:

- At least one NATA endorsed bivalve species from Group 8 in Table 1.9 tested under both temperate and tropical conditions (i.e. separately under a suitable temperate temperature and a suitable tropical temperature).
- At least one other species tested under either temperate or tropical conditions.

**Table 1.9 Rocky shore test toxicity test species**

Reference	Taxonomic Group	Species Name	Type		NATA endorsed test as per ISO17025
			Temp	Trop	
8	Zooplankton/ bivalve larvae	Saccostrea glomerata (Rock Oyster)	X	X	48hr larval development
		Saccostrea echinata (Milky Oyster)		X	48hr larval development
		Mytilus edulis (Blue Mussel)	X		48hr larval development

The pass/fail criteria apply to these two Group 8 species tests only. The OSCA tested must have a test result value of 10 mg/litre (10ppm) or above for Group 8 test species within a particular test regime.

**Note:** this relates only to products intended for use on shore and a “fail” on the rocky shore test does not preclude acceptance for use at sea.

### 5.3.3 Test Methods

The salinity of all test media should be 35ppt in all tests.

The temperatures for tropical and temperate tests should follow the relevant NATA test protocols. Tests should conform to the normal requirements of bioassay procedures.

Full details of the test animals, acclimation procedures, test conditions and derivation of results should be reported. OSCA concentrations can be reported as nominal (added) values, because the qualification of exposure concentrations would require detailed analyses beyond the scope of most laboratories.

## 5.4 Testing for Biodegradability

### 5.4.1 Conditions under which Biodegradability Testing may be required

AMSA may require an OSCA to undergo testing for biodegradability (see Table 1.2). This may be required if either of the following applies:

- Dilution is unlikely to occur, e.g. the OSCA is designed for use in low energy shorelines, such as wetlands.
- The OSCA is to be used in environments where it may persist, e.g. due to penetration into sediments (mudflats, wetlands).

### 5.4.1 Test Methods

The method to be used is AS 4351.1 Biodegradability - Organic compounds in an aqueous medium - Method for determining and reporting biodegradability Part 6, and must meet the 'pass' criteria as described in AS 4351.1 Part 6.2.2 or Part 6.3.2.

An internationally recognised analogue test may be used, with evidence presented to show how the test and results are consistent with the AS4351.1 test.

# Attachment 1 – Application form for listing a product on the Australian National Plan Oil Spill Control Agent Register



Australian Government  
 Australian Maritime Safety Authority

## Application for Listing Under the Australian National Plan to Combat Pollution of the Sea by Oil and Other Noxious and Hazardous Substances (The National Plan)

### Part A: Instructions

All Applicants should read the instructions before completing the Form.

- 1 Application may be made by manufacturers, distributors or intended users of the Oil Spill Control Agent.
- 2 If an OSCA is sold, distributed or used under different name to the one under which it accepted then a new application must be made. In such circumstances retesting is not required provided the product formulation and intended use have not changed
- 3 All new products submitted for approval must be tested as required in the AMSA OSCA Protocol. This may include efficacy, toxicity and biodegradation testing.
- 4 Tests must be undertaken at an AMSA approved laboratory.
- 5 Costs of testing and other acceptance costs must be paid by the Applicant.
- 6 Note: Acceptance of the OSCA, labelling and packaging by AMSA does not alter the need for the product, packaging and labelling to conform to other legislative requirements.
- 7 AMSA will maintain an electronic register of products currently listed for use under the National Plan on the AMSA website.

### Part B: Applicant's Details

Title	First name	Initial	Surname
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

#### Company

Name

ABN No.	ACN No.
<input type="text"/>	<input type="text"/>

#### Address

Level/Unit	Number	Street		
City/Town		State	Country	Postcode

#### Contact

Telephone	Mobile	Facsimile
Email <input type="text"/>		

**Part C: Purpose of Application**

Product name

Type (Refer to OSCA Policy Table 1.1)

Sub-type

Environment in which product is to be used

At sea     On shore     Other (specify)

**Part D: Manufacturer's Details**

Title

First name

Initial

Surname





**Company**

Name

ABN No.

ACN No.

Address

Level/Unit	Number	Street			
City/Town		State	Country		Postcode

Contact

Telephone	Mobile	Facsimile
Email		

Name and address of plant where product is to be made



**Part E: Product Description**

Product name

Other names under which product is, or has been, distributed (e.g. overseas)

Colour

Clarity

Form

Liquid    Liquid concentrate    Powder    Granules/Pellets

Other (specify)

Density

Viscosity @20°C

Kinematic   cSt   or    Dynamic   cP

Flash point

 °C

Pour point

 °C

Cloud point

 °C

Miscibility in water

Solubility in water

Product formulation (in confidence)

Storage requirements

Special handling requirements (include PPE etc)

Intended method of application

Recommended dose or application rate (product: oil volume or product volume or weight per unit area)

**Part F: Previous Testing**

Has product been previously submitted for assessment by AMSA?

No  Yes  If yes: Name under which product was submitted for assessment Date submitted

D	D	M	M	Y	Y	Y	Y

Has product been tested under overseas national approvals procedures?

No  Yes  If yes, give details of assessment

Efficacy: Yes  No  Details

Toxicity: Yes  No  Details

Other : Yes  No  Details

**Part G: Supporting Documentation Checklist**

- Completed Application Form (this form)
- Product description (Part E)
- Proposed Product Container Label (See Table 1.4 of the OSCA Policy)
- Materials Safety Data Sheet (MSDS) (See Section 4.3 of the OSCA Policy)
- National Plan Test Reports (As per Section 5 of the OSCA Policy)
- Other (overseas testing reports if available)
- Fee

**Part H: Declaration**

**Before signing this declaration make sure that the information provided in this form is complete and correct and that the required supporting documents have been attached.**

I agree that if my application is approved my company name and address and product name and type will be entered on a public register of accepted products.

I agree that the testing information can be supplied to combat agencies, as defined within the National Plan, to inform decision making during oil spill response operations.

Signature .....

Printed Name ..... Date ..... / ..... /20.....

**Please return this form to:**

Manager, Marine Environment Pollution Response  
 Marine Environment Division  
 Australian Maritime Safety Authority  
 GPO Box 2181  
 Canberra ACT 2601

**Additional Comments or Requests**

## Attachment 2 – Adapted Mackay Dispersant Efficacy Performance Test using the Mackay, Nadeau, Steelman (MNS) Test Apparatus

The Mackay dispersant performance test is used to determine:

- How well various chemical dispersants work on various types of oil under given energy conditions, water salinities and temperatures.
- The relative performance of different chemical dispersants under the same conditions.

The Mackay test uses a circulating air current to impart energy to the water surface, to simulate ocean turbulence conditions more accurately than do shaking, stirring or pumping methods. This method does not attempt to simulate subsurface ocean hydrodynamics. The focus is on approximating the mixing at the surface, since this is where oil dispersal occurs.

Details of the test methodology and the MNS (Mackay, Nadeau, Steelman) test apparatus are given below.

<b>Performance criteria</b>	The dispersant shall be more than 50% efficient at an application ratio of 20:1 (twenty parts oil to one part dispersant) when tested by the Mackay dispersant performance test as measured at the Quiescent 5 minute sample (5Q sample) at point 9 below.
<b>Test oil</b>	The AMSA reference oils (85% Kuwaiti crude, IFO180, IFO380) must be used.
<b>Air circulation energy</b>	The energy imparted by the circulating air currents should be the equivalent of a 15knot wind (i.e. 8m/s) or as close as can be calibrated using the method outlined at point 13 below.
<b>Water temperature</b>	20°C
<b>Test Method</b>	<p>The equipment and procedures described below are those developed by Dr Donald Mackay of the University of Toronto and reported in Mackay et al (1980).</p> <ol style="list-style-type: none"><li>1. The test vessel must be positioned in another vessel in which temperature controlled water is circulated to provide 20°C test conditions.</li><li>2. Temperature controlled airflow from a variable flow air pump is circulated through the test vessel.</li><li>3. Six litres of synthetic seawater or fresh filtered seawater (adjusted) to a specified salinity is used in the test (35 ppm).</li><li>4. When the seawater temperature in the test vessel has stabilised to within 1°C of that specified, air is circulated through at the required velocity (15 knots or 8m/s equivalent).</li><li>5. When the air temperature is within 1°C of that specified and wave motion in the vessel is established and stable, the 10 ml of the test oil is introduced into the vessel and released in the containment ring.</li><li>6. The desired amount of dispersant under test is applied to the oil surface and is allowed to penetrate through the oil film for one minute.</li><li>7. The containment ring is then lifted and dipped into the water two or three times to dislodge as much adhering oil as possible.</li><li>8. After ten minutes the airflow is stopped and a 500 ml sample of the oil, dispersant and water mixture is taken through the sample tube the inlet of which is positioned 45mm above the bottom of the test vessel. Discard the first 50 ml and retain the balance as the test sample. This is sample 10A.</li><li>9. After a further five minutes with no further energy (wind) input, a second 500 ml sample is taken and the first 50ml is discarded as before. This is sample Q5. This is the sample that determines the test result.</li><li>10. The samples are treated with dichloromethane (<math>\text{CH}_2\text{Cl}_2</math>), and filtered through anhydrous sodium sulphate (<math>\text{Na}_2\text{SO}_4</math>).</li><li>11. The concentration of oil in the sample(s) is determined by UV-spectrophotometer. The values obtained are compared to a calibration curve. 100% effectiveness corresponds to an ideal situation where all of the oil has been dispersed into the water column.</li></ol>

**Wind Energy Calibration** The shearing and mixing forces necessary to break up the dispersant treated oil and drive it into the water column in finely divided droplets are generated by the wind driven wave action created by the flow of air over the water's surface. To give a quantitative measurement of the mixing energy, and to correlate the energy level to sea state, oxygen transfer coefficients are determined. Oxygen transfer coefficients are, in the main, dependent on the amount of air flow immediately over the water's surface.

1. First deoxygenate the water to about 10% saturation. This is achieved by either bubbling nitrogen through the water or by the addition of a small amount of a saturated solution of sodium sulphite ( $\text{Na}_2\text{SO}_3$ ).
2. To determine energy levels and associated airflows, a range of airflows of known velocity are circulated through the chamber. Using a dissolved oxygen meter, oxygen concentrations are plotted as a function of time. This is done for all desired energy levels.

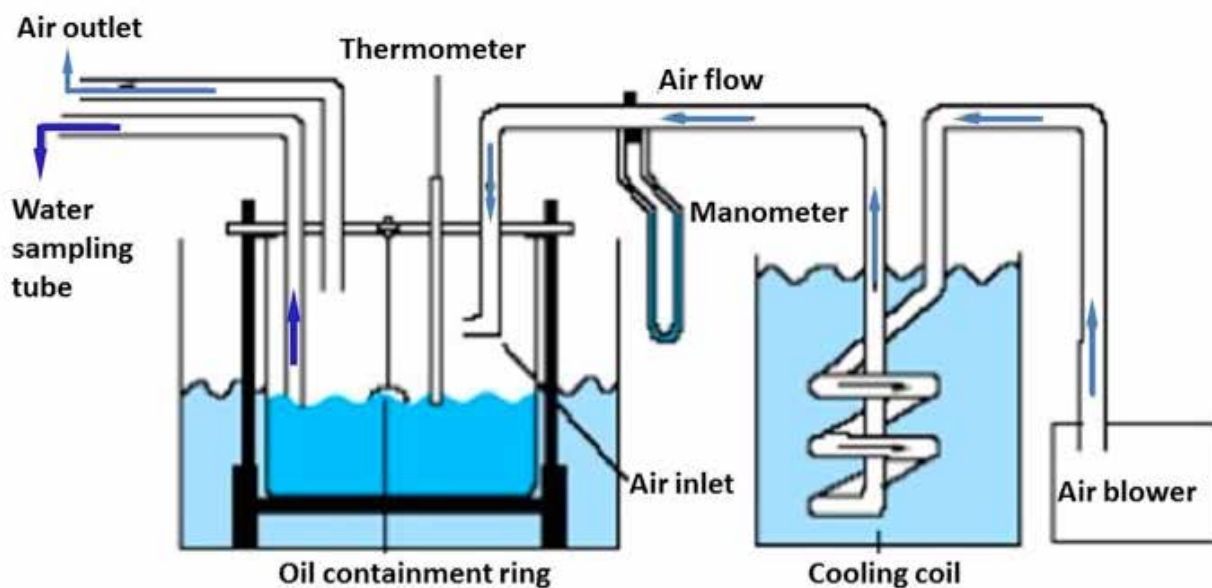
Mackay, D.; Mascarenhas, R.; Hossain, K.; McGee, T. 1980: "The effectiveness of chemical dispersants at low temperatures and in the presence of ice". In Proceedings of the Arctic Marine Oil Spill Program Technical Seminar: Environment Canada, Ottawa, pp. 317-327.

### The Mackay, Nadeau and Steelman (MNS) test apparatus

The MNS tester consists of a cylindrical glass vessel with an internal diameter of 300 mm and a height of 300 mm. The vessel is covered with a plexi-glass lid which is fitted with a gasket to provide a good seal between the lid and vessel. Lugs on the lid ensure that it is located concentrically on the vessel. In the lid are:

- Air inlet and outlet tubes
- Ports through which oil and dispersant are introduced into the test chamber
- Glass sampling tube
- Oil containment ring and rod

The containment ring prevents uncontrolled spreading of oil over the water surface inside the test vessel prior to the introduction of the dispersant under test.



[end of document]

