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**Ships and marine technology —  
Marine environment protection  
— Vocabulary relating to oil spill  
response**

*Navires et technologie maritime — Protection de l'environnement  
marin — Vocabulaire relatif à la réponse aux déversements de pétrole*

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## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by ISO/TC 8, *Ships and marine technology*, Subcommittee SC 2, *Marine environment protection*.

This third edition cancels and replaces the second edition (ISO 16165:2013), of which it constitutes a minor revision. The changes compared to the previous edition are as follows:

- the ASTM references have been updated;
- minor typographical corrections;
- removal of “mud” from term and definition 3.10.2.5 to reflect ISO 14688-1:2017;
- modifications in line with the latest edition of the ISO/IEC Directives, Part 2 (2018 ed):
  - the title is changed from “terminology” to “vocabulary”,
  - new [Clause 2](#), Normative references, is inserted, and
  - former [Clause 2](#), and all the entries, are consistently renumbered.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).

## Introduction

Communication is important in the implementation of an effective oil spill response and this communication will be most effective if there is a common understanding of the terms used. Many of the terms and definitions listed here have been widely used for many years, while others are the result of recent experience. The gradual evolution of our understanding of oil spill behaviour and response measures means that oil spill terminology will continue to develop.

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# Ships and marine technology — Marine environment protection — Vocabulary relating to oil spill response

## 1 Scope

This document contains terms and definitions relating to oil spills and their control. This document provides standardized terminology relating to oil spill response, defined as the broad range of activities related to spill cleanup, including surveillance and assessment, containment, recovery, dispersant use, *in situ* burning, shoreline cleanup and disposal.

## 2 Normative references

There are no normative references in this document.

## 3 Terms and definitions

In developing this document, an attempt was made to use existing definitions wherever possible. For example, comprehensive terminology is available on containment booms, performance of recovery skimmers and on bioremediation, as provided by the publications of the American Society for Testing and Materials (ASTM), Committee F20, on Hazardous Substances and Oil Spill Response. Other areas had less coverage by standards organizations and gaps were filled through a review of a variety of sources. In this document, whenever a published source serves as the primary basis for a definition, this source is indicated by an abbreviated code. The complete citations for these codes are provided in the Bibliography.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

### 3.1 Oil/oil slick properties

#### 3.1.1

##### **crude oil**

naturally occurring form of petroleum, mainly occurring in a porous underground formation such as sandstone

[SOURCE: ISO 1998-1:1998, 1.05.005]

#### 3.1.2

##### **emulsification**

process in which microscopic droplets of water are mixed in the oil, or vice versa

#### 3.1.3

##### **emulsion**

mixture of oil and water in which droplets are interspersed in varying concentrations throughout the oil, or vice versa, formed when these fluids are mixed by mechanical or hydraulic action

Note 1 to entry: Emulsions are more precisely referred to as water-in-oil emulsions. Water-in-oil emulsions are sometimes referred to as a "mousse."

**3.1.4**

**environmental fate**

form and location of a material resulting from transport and transformation

[SOURCE: ASTM E943-08(2014), 2.1]

**3.1.5**

**heavy shoreline oiling**

pooled deposits or a layer of surface oil

**3.1.6**

**moderate/light shoreline oiling**

*sheen* (3.1.10) or film of surface oil

**3.1.7**

**petroleum oil**

material consisting of, or derived from, a mixture of liquid or semi-solid organic compounds, principally hydrocarbons

[SOURCE: ISO 1998-1:1998, 1.05.000]

**3.1.8**

**pour point**

lowest temperature at which a sample of petroleum product will continue to flow when it is cooled under specified standard conditions

[SOURCE: ISO 1998-2:1998, 2.10.080]

**3.1.9**

**relative viscosity**

measured viscosity of an *emulsion* (3.1.3) (in any convenient unit) at a given shear rate divided by the measured viscosity of the oil at the same shear rate

Note 1 to entry: It is important to report the shear rate used in the viscosity measurements of the emulsion and the water-free oil.

**3.1.10**

**sheen**

very thin *oil slick* (3.7.3.1) with a silvery or rainbow-coloured appearance and a thickness of less than 0,001 mm

**3.1.11**

**specific gravity**

ratio of the mass of a given volume of liquid at 15 °C to the mass of an equal volume of fresh water at the same temperature

[SOURCE: ASTM D4410-16, 3.1]

**3.1.12**

**viscosity**

measure of the resistance to flow or deformation of a liquid

[SOURCE: ISO 1998-2:1998, 2.10.030]

**3.1.13**

**windrows**

narrow bands of oil, generally aligned with the *wind direction* (3.3.7), typical of an *oil slick* (3.7.3.1) after several hours of exposure (or days for very large spills)

## 3.2 Oil classification

### 3.2.1

#### **group I oil non-persistent oil**

petroleum-based oil that consists of hydrocarbon fractions, at least 50% of which distil at a temperature of 340 °C and at least 95% of which distil at a temperature of 370 °C

### 3.2.2

#### **group II oil**

*persistent oil* (3.2.6) with a *specific gravity* (3.1.11) of less than 0,85

### 3.2.3

#### **group III oil**

*persistent oil* (3.2.6) with a *specific gravity* (3.1.11) equal to or greater than 0,85 and less than 0,95

### 3.2.4

#### **group IV oil**

*persistent oil* (3.2.6) with a *specific gravity* (3.1.11) equal to or greater than 0,95 and less than 1,00

### 3.2.5

#### **group V oil**

*persistent oil* (3.2.6) with a *specific gravity* (3.1.11) greater than 1,00

### 3.2.6

#### **persistent oil**

petroleum-based oil that does not meet the distillation criteria for a *group I oil* (3.2.1)

## 3.3 Environmental conditions

### 3.3.1

#### **air temperature**

average or point temperature of the air measured at or near the ground or water surface (°C)

[SOURCE: ASTM F625-94(2017), 2.1.2]

### 3.3.2

#### **current**

average water speed and direction (i.e. velocity) relative to a fixed reference point (m/s)

[SOURCE: ASTM F625-94(2017), 2.1.3]

### 3.3.3

#### **debris**

solid or semisolid substance that could interfere with the operation of a spill control system

[SOURCE: ASTM F625-94(2017), 2.1.4]

### 3.3.4

#### **significant wave height**

average height, measured crest to trough, of one-third highest waves, considering only short-period waves

Note 1 to entry: Short period waves are for a period less than ten seconds (s).

[SOURCE: ASTM F625-94(2017), 2.1.7]

### 3.3.5

#### **significant wave period**

average period of the one-third highest waves, measured in seconds as the elapsed time between crests of succeeding waves past a fixed point(s)

[SOURCE: ASTM F625-94(2017), 2.1.8]

### 3.3.6

#### **water temperature**

average or point temperature (°C) of a water body as measured within the top 300 mm

[SOURCE: ASTM F625-94(2017), 2.1.6]

### 3.3.7

#### **wind direction**

direction from which the wind is blowing

## 3.4 Assessment techniques

### 3.4.1

#### **ladder search**

aerial *surveillance* (3.4.4) to find and delineate *oil slicks* (3.7.3.1), carried out in a direction perpendicular to the wind in order to increase the probability of locating slicks and *windrows* (3.1.13)

### 3.4.2

#### **oil spill modelling**

mathematical prediction of the *environmental fate* (3.1.4) and/or behaviour of an oil spill

### 3.4.3

#### **remote sensing**

use of sensors to find or delineate *oil slicks* (3.7.3.1), potentially utilising mounted sources, such as on ships, aircraft and satellites

### 3.4.4

#### **surveillance**

response activities with the purpose of detecting a spill, determining the extent and behaviour of a spill, optimising countermeasures and/or predicting spill movements and effects

## 3.5 Sampling

### 3.5.1

#### **chain-of-custody documentation**

chronological evidence defining the history of an item, such as a sample, and identifying an individual responsible for custody of the item at each point in time

### 3.5.2

#### **custody**

physical possession or control

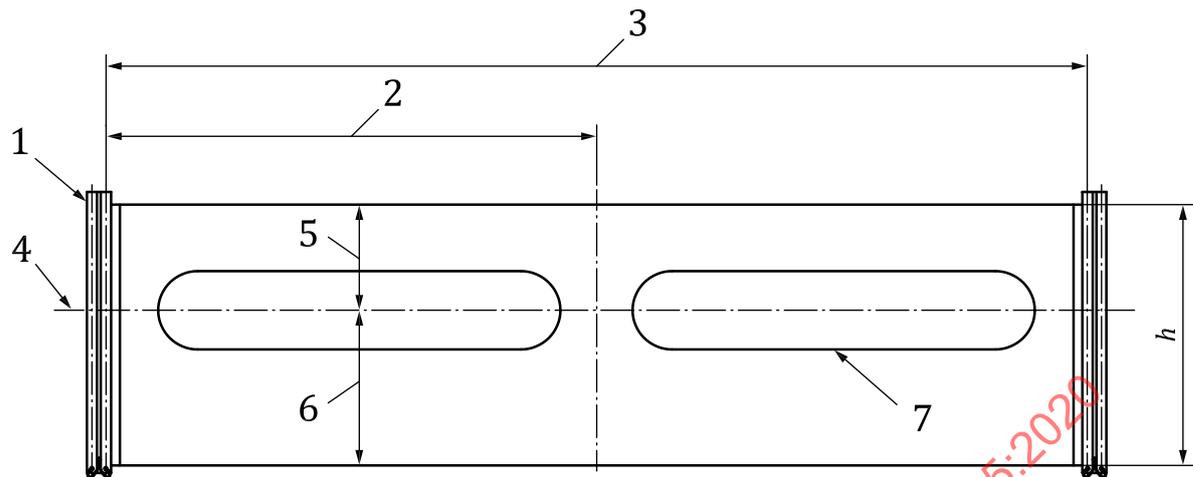
Note 1 to entry: A sample is under custody if it is in possession or under control so as to prevent tampering or alteration of its characteristics.

[SOURCE: ASTM D4840-99(2018)e1, 3.2.1]

## 3.6 Containment

### 3.6.1 Floating boom equipment terminology

[Figure 1](#) shows equipment and terminology associated with a floating *boom* (3.6.1.3).

**Key**

1	boom end connector	5	freeboard
2	boom segment	6	draught
3	boom section	7	buoyancy chamber
4	water line	$h$	overall height

**Figure 1 — Containment boom equipment****3.6.1.1****anchor point**

structural point on the *end connector* (3.6.1.8) or along the length of a *boom* (3.6.1.3) section designed for the attachment of anchor or mooring lines

**3.6.1.2****barrier**

means of controlling the movement of oil or other substances on the water or in the water column

**3.6.1.3****boom**

floating *barrier* (3.6.1.2) used to control the movement of substances that float

**3.6.1.4****boom section**

length of *boom* (3.6.1.3) between two *end connectors* (3.6.1.8)

**3.6.1.5****boom segment**

repetitive and similar portion of the *boom section* (3.6.1.4)

**3.6.1.6****bridle**

device attached to a *boom* (3.6.1.3) to distribute the load exerted by towing or anchoring the boom

**3.6.1.7****curtain boom**

*boom* (3.6.1.3) consisting of a flexible skirt supported by vertical centreline floatation

**3.6.1.8****end connector**

device attached to the *boom* (3.6.1.3) used for joining *boom sections* (3.6.1.4) to one another or to accessory devices

**3.6.1.9**

**fence boom**

*boom* (3.6.1.3) consisting of a self-supporting or stiffened membrane supported by floating devices

**3.6.1.10**

**fire resistant boom**

*boom* (3.6.1.3) intended for containment of burning *oil slicks* (3.7.3.1)

**3.6.1.11**

**inflatable boom**

*boom* (3.6.1.3) that uses inflatable chambers, self- or manually-inflatable, as the floatation devices

**3.6.1.12**

**shore sealing boom**

*boom* (3.6.1.3) that, when grounded, seals against the shoreline

**3.6.1.13**

**sorbent boom**

*boom* (3.6.1.3) containing material or arranged in a form that has absorptive or adsorptive capabilities

Note 1 to entry: See 3.7.1.3 for definitions of sorbent, absorbent and adsorbent.

**3.6.1.14**

**special purpose boom**

*boom* (3.6.1.3) which differs in design and/or purpose from a *curtain boom* (3.6.1.7), *fence boom* (3.6.1.9), *fire resistant boom* (3.6.1.10), *inflatable boom* (3.6.1.11), *shore sealing boom* (3.6.1.12) or *sorbent boom* (3.6.1.13)

**3.6.2 Other containment equipment terminology**

**3.6.2.1**

**bubble barrier**

in-water *barrier* (3.6.1.2) created by the use of compressed air delivered through a perforated air hose and/or pipe laid sub-surface to produce a controlled stream of air bubbles that rise and expand to form a subsurface air curtain

Note 1 to entry: This produces a disturbed surface which combined with the air curtain contains and/or deflects the oil both on the surface and/or in the water column.

**3.6.3 Engineering terminology**

**3.6.3.1**

**buoyancy chamber**

enclosed compartment of air or other buoyant material providing floatation for the *boom* (3.6.1.3)

**3.6.3.2**

**gross buoyancy**

weight of fresh water displaced by an entire *boom section* (3.6.1.4) when totally submerged

**3.6.3.3**

**gross buoyancy to weight ratio**

*gross buoyancy* (3.6.3.2) divided by *boom* (3.6.1.3) weight

**3.6.3.4**

**operational draught**

minimum vertical depth of the *boom* (3.6.1.3) below the water-line in the working condition

**3.6.3.5**

**operational freeboard**

minimum vertical height of the *boom* (3.6.1.3) above the water-line in the working condition

**3.6.3.6****operational height**

sum of *operational draught* (3.6.3.4) and operational freeboard

**3.6.3.7****overall height**

maximum vertical dimension of a *boom* (3.6.1.3)

**3.6.3.8****reserve buoyancy**

*gross buoyancy* (3.6.3.2) minus *boom* (3.6.1.3) weight

**3.6.4 Operational terminology****3.6.4.1****boom planing**

heeling over a *boom* (3.6.1.3) with a resultant loss of draught

**3.6.4.2****boom submergence**

containment failure due to loss of freeboard

**3.6.4.3****bridging failure**

portions of a *boom* (3.6.1.3) emerging from the water due to poor wave conformance, with resulting containment failure

**3.6.4.4****cascading booms**

booming configuration formed by positioning two or more *booms* (3.6.1.3) in a deflection mode such that successive booms progressively move oil into the desired area

**3.6.4.5****catenary configuration**

booming configuration formed by towing or anchoring each end of a length of *boom* (3.6.1.3) resulting in a characteristic "J" or "U" shape

**3.6.4.6****catenary drag force**

longitudinal load imposed on a *boom* (3.6.1.3), deployed in a *catenary configuration* (3.6.4.5), resulting from towing, *current* (3.3.2) and/or wind forces

**3.6.4.7****diversion mode**

placement of a *boom* (3.6.1.3) to redirect the movement of an *oil slick* (3.7.3.1)

**3.6.4.8****drainage loss**

oil lost due to the accumulation of oil against a *boom* (3.6.1.3) pushing down and escaping under the skirt

**3.6.4.9****entrainment loss**

oil pulled under a *boom* (3.6.1.3) by the flow of water

EXAMPLE An example of the flow of water are high *current* (3.3.2) conditions.

**3.6.4.10****exclusion booming**

placement of a *boom* (3.6.1.3) to protect an area from the entry of an *oil slick* (3.7.3.1)

**3.6.4.11**

**first-loss tow current velocity**

lowest velocity of water flow measured perpendicular to the *boom* (3.6.1.3) at which oil starts to escape under the boom

Note 1 to entry: This velocity may be produced by either the natural water flow or by towing a boom, or a combination of both.

**3.6.4.12**

**gap ratio**

*sweep width* (3.6.4.17) divided by *boom* (3.6.1.3) length

**3.6.4.13**

**loss rate**

rate at which oil is lost under a *boom* (3.6.1.3), in m<sup>3</sup>/h

**3.6.4.14**

**splash-over**

oil passing over the top of the *boom* (3.6.1.3)

**3.6.4.15**

**straight line drag force**

longitudinal drag force that results from towing a *boom* (3.6.1.3) from one end

**3.6.4.16**

**structural failure**

breakage of a *boom* (3.6.1.3) that occurs when an external force acting on the boom exceeds the strength of the boom

**3.6.4.17**

**sweep width**

width intercepted by a *boom* (3.6.1.3) in collection mode, the projected distance perpendicular to the direction of travel or *current* (3.3.2) between the ends of a boom deployed in a "J", "U" or "V" configuration

**3.6.4.18**

**tear resistance**

ability to withstand the force required to tear the *boom* (3.6.1.3) material and a measure of the boom fabric strength

Note 1 to entry: Tear resistance has an important relevance for attachments to the fabric.

**3.6.4.19**

**tensile strength**

force required to stretch *boom* (3.6.1.3) components to the point where a failure occurs

**3.6.4.20**

**vortex loss**

oil escaping past a *boom* (3.6.1.3) due to vortices produced at the boom

**3.6.4.21**

**"J" configuration**

*boom* (3.6.1.3) positioned in a "J" shape

**3.6.4.22**

**"U" configuration**

*boom* (3.6.1.3) positioned in a "U" shape

**3.6.4.23**

**"V" configuration**

*boom* (3.6.1.3) positioned in a "V" shape

## 3.7 Recovery

### 3.7.1 Equipment terminology

#### 3.7.1.1

##### **dedicated response equipment**

spill response equipment dedicated to an area, port, facility or any other designated place or organisation

#### 3.7.1.2

##### **skimmer**

mechanical device used to remove oil from the water surface

#### 3.7.1.3

##### **sorbent**

insoluble material or mixture of materials used to recover fluids through the mechanisms of absorption or adsorption or both

##### 3.7.1.3.1

##### **absorbent**

material that picks up and retains a liquid distributed throughout its molecular structure causing the solid to swell (50 % or more) and that must be at least 70% insoluble in excess fluid

##### 3.7.1.3.2

##### **adsorbent**

insoluble material that is coated by a liquid on its surface including pores and capillaries without the solid swelling more than 50 % in excess liquid

#### 3.7.1.4

##### **vessel-of-opportunity**

water craft which normally have duties other than spill response, but are put into service for response or *surveillance* (3.4.4) activities when required and as available

### 3.7.2 Skimmer performance terminology

#### 3.7.2.1

##### **derating factor**

reduction factor, applied to *nameplate recovery rates* (3.7.2.3), to account for less than optimum performance due to less than ideal *oil slick* (3.7.3.1) and environmental conditions

#### 3.7.2.2

##### **fluid recovery rate**

volume of all fluids recovered by a *skimmer* (3.7.1.2) per unit time, in m<sup>3</sup>/h

#### 3.7.2.3

##### **nameplate recovery rate**

maximum volume of fluid that can be recovered by a *skimmer* (3.7.1.2) per unit time, in m<sup>3</sup>/h, as stated by the manufacturer

#### 3.7.2.4

##### **oil recovery rate**

##### **ORR**

volume of test fluid (oil or *emulsion* (3.1.3) recovered by a *skimmer* (3.7.1.2) per unit time, in m<sup>3</sup>/h

### 3.7.3 Operational performance terminology

#### 3.7.3.1

##### **oil slick**

oily fluid floating on the surface of the water

**3.7.3.2**

**oil slick encounter rate**

volume of *oil slick* (3.7.3.1) per unit time actively encountered by the oil spill response system, and therefore available for containment and recovery, in m<sup>3</sup>/h

**3.7.3.3**

**oil slick recovery efficiency**

ratio of originating fluid (oil or *emulsion* (3.1.3)) compared to the total volume of oil recovered

Note 1 to entry: *oil slick* (3.7.3.1) recovery is expressed as a percentage.

**3.7.3.4**

**oil slick recovery rate**

volume of oil removed from the slick per unit time, in m<sup>3</sup>/h

**3.7.3.5**

**oil spill recovery system**

combination of devices that operate together to recover spilled oil

Note 1 to entry: The system would include, but is not limited to, some or all of the following components: floating boom (3.6.1.3); skimmer (3.7.1.2); support vessels to deploy and operate the boom and skimmer; discharge/transfer pumps; oil/water separator; *temporary storage devices* (3.7.4.6); and shore based storage/disposal.

**3.7.3.6**

**recovery efficiency**

volume of oil recovered compared to the total volume of fluids recovered

EXAMPLE An example of fluids are oil, *emulsion* (3.1.3), and sea water.

Note 1 to entry: Recovery efficiency is expressed as a percentage.

[SOURCE: ASTM F631-15, 3.1.6]

**3.7.3.7**

**response time**

time interval between the time of notification of a spill *incident* (3.12.2.7) and the start of cleanup operations

**3.7.3.8**

**throughput efficiency**

volume of oil recovered compared to the volume of oil encountered

Note 1 to entry: Throughput efficiency is expressed as a percentage.

**3.7.4 Storage terminology**

**3.7.4.1**

**frame tank**

oil resistant reinforced open top containment bag held in position and upright by means of a metal structure or space-framed sections slotted together

**3.7.4.2**

**open pool**

pool in the ground, lined or unlined, used to store recovered fluids

**3.7.4.3**

**open-topped tank**

open-top container used to recover fluids

EXAMPLE An example of an open-top container is an international bulk container tank.

**3.7.4.4****pillow tank**

closed, rectangular, cylindrical or round coated fabric receptacle, which can be used either on the ground or afloat

**3.7.4.5****self erecting open top flexible tank**

open top, non-framed receptacle, which is self-erecting due to an "in-built" buoyancy collar which raises the tank walls as the tank is filled with fluids

Note 1 to entry: It may also be referred to as a self-erecting "onion" tank.

**3.7.4.6****temporary storage device**

receptacle used to hold recovered fluids until they can be transported for further treatment

**3.7.4.7****towable flexible tank**

floating receptacle with towing gear characterized by its long flexible cylindrical shape with a volume significantly greater than a floating *pillow tank* (3.7.4.4)

Note 1 to entry: It may also be called a "dracone" tank.

**3.7.4.8****towable open tank**

open, inflatable, barge-type vessel that resembles a large inflatable boat, characterised by a portion of the top surface being open to atmosphere

**3.8 Dispersant use****3.8.1****application efficiency**

volume of *dispersant* (3.8.4) that is deposited on the target slick compared to the total volume as dispersant applied

Note 1 to entry: Application efficiency is expressed as a percentage.

**3.8.2****application rate**

volume of *dispersant* (3.8.4) applied per unit area, in m<sup>3</sup>/h

**3.8.3****approved dispersant**

*dispersant* (3.8.4) accepted and listed for use by the relevant national regulatory authorities

**3.8.4****dispersant**

surface-active agent used to decrease the interfacial tension between oil and water and to enhance the dispersal of the oil into fine droplets in the water column

**3.8.5****dispersant effectiveness**

percentage of oil that is dispersed into the water column, for a given slick or area

**3.8.6****dispersant exclusion zone**

areas in which the use of any *dispersant* (3.8.4) is not permitted

**3.8.7****dosage ratio**

volume of *dispersant* (3.8.4) applied per volume of oil

**3.8.8**

**effects monitoring**

assessment of any effects on relevant target species resulting from *dispersant* (3.8.4) application

**3.8.9**

**effectiveness monitoring**

visual observations or other assessments to determine the effectiveness of the *dispersant* (3.8.4) after application

**3.8.10**

**emulsion breakers**

chemicals used to separate *emulsions* (3.1.3)

**3.8.11**

**herding**

concentration of floating oil into a smaller surface area caused by increasing surface tension following the application of chemicals

**3.8.12**

**pre-approved zones**

areas that have received pre-approval, having met all required regulatory criteria, for the use of *dispersants* (3.8.4), *bioremediation agents* (3.10.4.4), *in situ* burning or other techniques for responding to marine oil spills

**3.8.13**

**spray drift**

movement of airborne spray particles from the intended application (target) area

**3.9 Removal by *in situ* burning**

**3.9.1**

**burn rate**

volume of oil removed from the water surface by combustion per unit time, in m<sup>3</sup>/h

**3.9.2**

**combustion promoter**

substance added to an *oil slick* (3.7.3.1) to increase the efficiency of *in situ* burning

Note 1 to entry: These substances typically act as either a wicking agent or an insulator between the water substrate, or a combination of the two.

**3.9.3**

**igniter**

device or system used to initiate an *in situ* burn

**3.9.4**

**ignition promoter**

substance added to an *oil slick* (3.7.3.1) to increase the ignitability of the slick or to promote spreading of flame over the un-ignited oil

**3.9.5**

***in situ* burning efficiency**

volume of oil that was removed by burning compared to the total volume of oil that was originally ignited

Note 1 to entry: *In situ* burning efficiency is expressed as a percentage.

Note 2 to entry: The value is calculated as the initial volume of oil minus the volume remaining as residue, divided by the initial volume.

**3.9.6*****in situ* burn residue**

material remaining after an *in situ* burn

**3.9.7*****in situ* controlled burning**

"in place" burning application that is started and can be stopped by human intervention

**3.9.8****overall burning removal rate**

volume of oil burned per unit time for a given burn application, in m<sup>3</sup>/h

**3.9.9****uncontrolled burning**

burning of oil that cannot be controlled by human intervention and may cause or have unforeseen consequences

**3.10 Shoreline cleanup****3.10.1 Shoreline terminology****3.10.1.1****asphalt pavement**

naturally formed cohesive mixture of *weathered oil* (3.10.3.6) and sediments

Note 1 to entry: Sediments in the mixture are usually in the *sand* (3.10.2.4)/granule/pebble size range. In appearance, natural asphalt pavement may resemble the mixture artificially created to surface roads.

**3.10.1.2****ecological recovery**

progressive change of an *ecosystem* (3.10.1.3) towards the natural range of dominance, diversity, abundance and zonation characteristics of the local unaffected ecosystems

Note 1 to entry: A shore is in a "recovered" condition when the natural biota has been established and is within the range and diversity and abundance expected for the habitat.

**3.10.1.3****ecosystem**

combination of populations of different species that live together and interact with each other and the physical and chemical factors making up its environment

**3.10.1.4****environmental sensitivity**

susceptibility of a local environment or area to any disturbance which might decrease its stability or result in either short or long-term adverse effects

Note 1 to entry: Environmental sensitivity generally includes physical, biological and socio-economic parameters.

**3.10.2 Sediment sizes****3.10.2.1****boulder**

component of a sediment with a diameter greater than 200 mm

**3.10.2.2****cobble**

component of a sediment with a diameter greater than 63 mm to 200 mm

**3.10.2.3**

**gravel**

component of a sediment with a diameter greater than 2 mm to 63 mm

**3.10.2.4**

**sand**

component of a sediment with a diameter of 0,63 mm to 2 mm

**3.10.2.5**

**silt**

**clay**

component of a sediment with a diameter of less than 0,63 mm

Note 1 to entry: See ISO 14688-1:2017, 5.1.1.

**3.10.3 Shore zones**

**3.10.3.1**

**foreshore zone**

area below mean low tide

**3.10.3.2**

**intertidal zone**

shoreline between the low tide mark and the high tide mark which is covered by water at some time during the tide cycle

Note 1 to entry: The size of the intertidal zone varies with the tidal characteristics of a given region as well as the shoreline characteristics.

**3.10.3.3**

**supratidal zone**

area above the mean high tide that experiences wave activity occasionally

Note 1 to entry: Supratidal zone is also known as backshore zone.

[SOURCE: ASTM F1687-16, 3.1.2.3]

**3.10.3.4**

**shoreline cleanup assessment technique**

**SCAT**

systematic approach used to survey the area affected by a spill to provide rapid accurate geo-referenced documentation of shoreline oiling conditions

Note 1 to entry: This information can be used to develop real-time decisions and to expedite shoreline treatment planning and response operations.

[SOURCE: UK MCA 2007]

**3.10.3.5**

**special use habitat**

area of critical concern due to the presence of marine mammals, birds or endangered species

Note 1 to entry: Its designation may be seasonal.

Note 2 to entry: Definitions of special habitat and conservation site terminology vary from country to country and region to region.

**3.10.3.6**

**weathered oil**

oil that has had an alteration of physical or chemical properties, or both, through a natural process such as evaporation, dissolution, oxidation, *emulsification* ([3.1.2](#)) or *biodegradation* ([3.10.4.2](#))

### 3.10.4 Cleanup method terminology

#### 3.10.4.1

##### **bioaugmentation**

addition of microorganisms (predominantly bacteria) to increase the *biodegradation* (3.10.4.2) rate of target pollutants

#### 3.10.4.2

##### **biodegradation**

chemical alteration and breakdown of a substance to usually smaller products caused by microorganisms or their enzymes

#### 3.10.4.3

##### **bioremediation**

enhancement of *biodegradation* (3.10.4.2)

#### 3.10.4.4

##### **bioremediation agents**

inorganic and organic compounds and microorganisms that enhance biological degradation processes, predominantly by microorganism decomposition

#### 3.10.4.5

##### **cleaning level 1**

shoreline condition that results from a decision not to clean

#### 3.10.4.6

##### **cleaning level 2**

shoreline condition that results from a decision not to clean to a minimum level

Note 1 to entry: Removal of floating and bulk of oil is an example of cleaning to a minimum level.

#### 3.10.4.7

##### **cleaning level 3**

shoreline condition that results from a decision to clean to full restoration

#### 3.10.4.8

##### **cleaning level 4**

shoreline condition that results from a decision to clean to a pristine level

Note 1 to entry: This is cleaning beyond the existing background concentration for oil on the shoreline.

#### 3.10.4.9

##### **cleaning stage 1**

initial phase in a shoreline treatment operation involving the removal of bulk oil and oiled beach sediments

#### 3.10.4.10

##### **cleaning stage 2**

intermediate phase in a shoreline treatment operation involving the removal of the majority of oiled beach sediments and floating oil

#### 3.10.4.11

##### **cleaning stage 3**

final or restorative treatment phase in a shoreline treatment operation

#### 3.10.4.12

##### **high pressure flushing**

removing oil from a shoreline with water streams at a pressure high enough to cause transport of beach sediments and organisms

Note 1 to entry: This pressure is generally higher than 0,7 mPa.

**3.10.4.13**

**low pressure flushing**

removing oil from a shoreline using water streams at a pressure low enough that beach sediments and organisms are not moved

Note 1 to entry: This pressure is generally lower than 0,7 mPa.

**3.10.4.14**

**manual removal**

removal of oil and contaminated *debris* (3.3.3) by hand tools such as rakes, scrapers, hoses, shovels and buckets

**3.10.4.15**

**natural biodegradation**

type of *natural cleansing* (3.10.4.16) characterised by the reduction in concentration of chemical(s) of concern through naturally occurring microbial activity

[SOURCE: ASTM E1739-95(2015), 3.1.21]

**3.10.4.16**

**natural cleansing**

natural physical, chemical or biological mechanisms such as wind and wave action, sunlight and natural microbial action that promote the removal, breakdown and dispersal of oil

**3.10.4.17**

**shoreline cleanup**

actions taken to remove oil from a shoreline with the objective of enhancing the process of *ecological recovery* (3.10.1.2)

Note 1 to entry: Shoreline cleanup options could include flushing and removal of oil, displacement or removal of oiled sediments or natural cleansing.

**3.10.4.18**

**steam cleaning**

using steam or high temperature water under pressure to remove oil from solid surfaces

**3.10.4.19**

**substrate displacement**

moving oiled sediment to the lower *intertidal zone* (3.10.3.2) to be reworked and cleaned by natural processes

**3.10.4.20**

**substrate removal**

use of equipment such as bulldozers, backhoes and graders to remove oiled substrate

Note 1 to entry: Oiled materials are subsequently transported to a disposal site.

**3.11 Disposal**

**3.11.1**

**incineration**

controlled burning of waste products or other combustible materials in an *incinerator* (3.11.2) or similar apparatus

**3.11.2**

**incinerator**

device constructed for the purpose of disposing of materials through thermal oxidation

**3.11.3****land farming**

controlled and usually regulated method of spreading a known amount of oil in a nominally uniform layer thickness into a designed land area for the purpose of biological decomposition

Note 1 to entry: The decomposition process can be accelerated by mixing the oil layer with the top few inches of soil, aerating the soil by occasional ploughing and adding fertilizers that include nitrogen and potassium to increase the oil decomposition rate.

**3.11.4****landfill**

disposal technique that uses excavated pits to contain the oil spill waste materials, where the waste is placed in the excavation, covered over and left to degrade

**3.11.5****open burning**

process of burning materials without the aid of an *incinerator* (3.11.2)

**3.11.6****recycling**

disposal method that uses oil spill waste materials in some manner other than originally intended

Note 1 to entry: Examples are road oiling and direct use as a fuel supplement.

**3.11.7****reprocessing**

reclaiming spilled oil from oil spill waste material by a treatment technique that returns the oil into a product that can be used

Note 1 to entry: Reprocessing is defined as *recycling* (3.11.6) in Europe.

**3.12 Spill management****3.12.1 Contingency planning****3.12.1.1****area/region/national contingency plan**

initial governmental organization structure and mode prepared and provided in anticipation in of an oil spill and the actions to be taken during a response

**3.12.1.2****contingency plan**

plan of action prepared in anticipation of an oil spill and the actions to be taken during a response

Note 1 to entry: A contingency plan usually consists of guidelines developed for a specific facility or region to prepare for, and facilitate a rapid, effective and efficient cleanup operation in the event of an oil spill, and, simultaneously, to protect areas of biological, social and economic importance.

**3.12.1.3****oil pollution incident**

occurrence or series of occurrences having the same origin, which results or may result in a discharge of oil and which poses or may pose a threat to the marine environment or to the coastline related interests of one or more areas and which requires emergency action or other immediate response

[SOURCE: OPRC 1990, Article 2(2)]

**3.12.1.4****oil spill cooperative**

organization in a given area for the purpose of pooling equipment and/or training personnel to combat oil spills

### 3.12.1.5

#### **public/press/media liaison or information officer**

person nominated in the relevant *contingency plan* (3.12.1.2) or assigned from within the command centre during an *incident* (3.12.2.7) to disseminate appropriate and timely information in relation to the response to the oil spill to the relevant parties

Note 1 to entry: This role is not to be confused with the communications officer whose role is to coordinate communications within the command centre.

### 3.12.1.6

#### **sensitivity maps**

maps used by the oil spill response team which designate areas of biological, social and economic importance in a given region

Note 1 to entry: These maps often rank sensitive areas so that in the event of an extensive spill, these areas can be protected or cleaned up first.

Note 2 to entry: Sensitivity maps usually contain other information useful to the response team such as the location of shoreline access areas, landing strips, roads, communities and the characteristics of the shoreline area.

Note 3 to entry: Maps of this type form an integral part of local or regional *contingency plans* (3.12.1.2).

### 3.12.1.7

#### **stakeholder**

individuals or entities, such as communities, landowners or special interest groups, that have substantial interests in affected areas

## 3.12.2 Incident command system (ICS)

### 3.12.2.1

#### **chain of command**

series of management positions within an organization in order of authority

### 3.12.2.2

#### **command**

act of directing and/or controlling resources within an organization by virtue of explicit legal or delegated authority

### 3.12.2.3

#### **delegation of authority**

statement to the *incident commander* (3.12.2.9) by the executive delegating authority and assigning responsibility

Note 1 to entry: The delegation of authority can include objectives, priorities, expectations, constraints and other considerations or guidelines as needed.

Note 2 to entry: Many agencies require written delegation of authority prior to their assuming *command* (3.12.2.2) on larger *incidents* (3.12.2.7).

### 3.12.2.4

#### **emergency operations centre/incident command centre**

#### **EOC/ICC**

preferably a pre-designated facility established to coordinate the overall management to a response and support to any associated emergency

### 3.12.2.5

#### **finance/administration section**

section responsible for financial aspects and administrative support to the incident command

### 3.12.2.6 function

five major activities in an *incident command system* (3.12.2.11), i.e. *command* (3.12.2.2), operations, planning, logistics and finance/administration

Note 1 to entry: The term "function" is also used when describing the activity involved, for example, the planning function.

### 3.12.2.7 incident

occurrence, caused by a human or natural phenomenon, that requires notification, assessment, and may require action to prevent or minimize loss of life or damage to property and/or natural resources

### 3.12.2.8 incident action plan

objectives, reflecting the overall *incident* (3.12.2.7) strategy and specific tactical actions and supporting information for the next operational period

Note 1 to entry: The plan may be oral or written. When written, the plan may have a number of forms as attachments (e.g. traffic plan, safety plan, communications plan, map, etc.).

### 3.12.2.9 incident commander

individual responsible for the management of all incident operations at the *incident* (3.12.2.7) site

### 3.12.2.10 incident command post ICP

location at which the primary command *functions* (3.12.2.6) are executed

Note 1 to entry: The ICP may be collocated with the *incident* (3.12.2.7) base or other incident facilities.

### 3.12.2.11 incident command system ICS

standardised on-scene emergency management concept specifically designed to allow its user(s) to adopt an integrated organisational structure equal to the complexity and demands of single or multiple *incidents* (3.12.2.7), without being hindered by jurisdictional boundaries

### 3.12.2.12 incident objectives

statements of guidance and direction necessary for the selection of appropriate strategy(ies) and tactical direction of organisational resources

Note 1 to entry: Incident objectives are based on realistic expectations of what can be accomplished when all allocated resources have been effectively deployed. Incident objectives are achievable and measurable, yet flexible enough to allow for strategic and tactical alternatives.

### 3.12.2.13 logistics section

section responsible for providing facilities, services and materials for the *incident* (3.12.2.7)

### 3.12.2.14 mutual aid agreement

written agreement between agencies and/or jurisdictions and/or organisations in which they agree to assist one another upon request by furnishing personnel and equipment resources

### 3.12.2.15 operations section

section responsible for all tactical operations at the *incident* (3.12.2.7)

### 3.12.2.16

#### **planning section**

section responsible for the collection, evaluation and dissemination of tactical information related to the *incident* (3.12.2.7), and for the preparation and documentation of *incident action plans* (3.12.2.8)

Note 1 to entry: The section also maintains information on the current and forecasted situation and on the status of resources assigned to the incident.

### 3.12.2.17

#### **staging area**

locations set up at an *incident* (3.12.2.7) where resources can be placed while awaiting a tactical assignment

Note 1 to entry: The *operations section* (3.12.2.15) manages staging areas.

### 3.12.2.18

#### **unified command**

unified team effort which allows all agencies with responsibility for the *incident* (3.12.2.7), either geographical or functional, to manage an incident by establishing a common set of *incident objectives* (3.12.2.12) or strategies

Note 1 to entry: This is accomplished without losing or abdicating agency authority, responsibility or accountability.

## 3.12.3 Safety

### 3.12.3.1

#### **ceiling limit**

exposure which shall not be exceeded during any part of the working day

Note 1 to entry: If instantaneous monitoring is not feasible, then the ceiling limit shall be assessed as a time-weighted average exposure of 15 min not to be exceeded at any time over a working day, except for substances which cause immediate irritation upon short exposure.

[SOURCE: ASTM E1542-20a, 3.2.1]

### 3.12.3.2

#### **confined space**

enclosed space or area, such as a tank, compartment or pit where ventilation or access, or both, may be limited

### 3.12.3.3

#### **green zone**

#### **support zone**

minimal exposure area maintained as an uncontaminated location for support functions

EXAMPLE Food service areas, clean equipment storage and financial offices are examples of a green zone.

### 3.12.3.4

#### **hyperthermia**

medical condition involving an abnormally high body temperature caused by exposure to elevated temperatures or radiant heat or both

### 3.12.3.5

#### **hypothermia**

medical condition involving an abnormally low body temperature caused by exposure to cold air or water

**3.12.3.6****occupational exposure limit**

maximum time-weighted average (TWA) concentration to which nearly all workers may be repeatedly subjected for a normal working day of 8 h to 10 h and a normal working week of 40 h without known adverse effects

Note 1 to entry: These concentrations are determined by national legislation.

[SOURCE: ASTM E1542-20a, 3.2.2]

**3.12.3.7****personal protective equipment****PPE**

equipment used to shield or insulate a person from chemical, physical or thermal hazard

Note 1 to entry: Personal protective equipment is available for skin, eyes, face, hands, ears and the respiratory system, as appropriate.

**3.12.3.8****red zone****early response zone**

area where there are potential exposure hazards

Note 1 to entry: Airborne concentrations of hazardous substances may require respiratory protection in addition to other personal protective equipment.

**3.12.3.9****short-term exposure limit****STEL**

time-weighted average exposure of 15 min not to be exceeded at any time during a working day, even if the *occupational exposure limit* ([3.12.3.6](#)) is not exceeded

Note 1 to entry: Exposures above the occupational exposure limit up to the STEL should not be any longer than 15 min and should not occur more than four times per day. The minimum interval between these exposures should be 60 min.

[SOURCE: ASTM E1542-20a, 3.2.3]

**3.12.3.10****site safety and health plan**

framework that defines safety and health considerations and strategy for a specific site

**3.12.3.11****site safety and health supervisor**

individual in the field responsible for ensuring that the *site safety and health plan* ([3.12.3.10](#)) is implemented as prescribed

**3.12.3.12****yellow zone****contamination reduction zone**

area where oil is present but in a generally weathered state

Note 1 to entry: In addition to decontamination and equipment decommissioning areas, contaminated shorelines containing *weathered oil* ([3.10.3.6](#)) with vapour levels below respiratory protective equipment requirements are considered yellow zones for the purposes of this document.