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

Twelfth Meeting of the Focal Points of the Regional Marine Pollution Emergency Response Centre for the Mediterranean Sea (REMPEC)

REMPEC/WG.41/9/Corr.1
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Agenda Item 9

# DATA SHARING, MONITORING AND REPORTING

**Note by the Secretariat**

## Corrigendum
## Document REMPEC/WG.41/9, Annex II

Annex II should read as follows:

**Annex II**

Draft IMAP Indicator Guidance Factsheet for EO9 CI19

**Common Indicator 19 (EO9): Occurrence, origin (where possible), extent of acute pollution events (e.g. slicks from oil, oil products and hazardous substances) and their impact on biota affected by this pollution**

| **Indicator Title** | 19. Occurrence, origin (where possible), extent of acute pollution events (e.g. slicks from oil, oil products and hazardous substances) and their impact on biota affected by this pollution (EO9) | |
|---|---|---|
| **Relevant GES definition** | **Related Operational Objective** | **Proposed Target(s)** |
| Occurrence of acute pollution events is reduced to the minimum. | Acute pollution events are prevented and their impacts are minimized. | 1. Decreasing trend in the occurrences of acute pollution events. |

**Rational**

**Justification for indicator selection**

Oil and Hazardous and Noxious Substances (HNS) products released at sea may impact an environment as follows:

- physical smothering with an impact on physiological functions;
- chemical toxicity giving rise to lethal or sub-lethal effects or causing impairment of cellular functions;
- ecological changes, primarily the loss of key organisms from a community and the takeover of habitats by opportunistic species; and
- indirect effects, such as the loss of habitat or shelter and the consequent elimination of ecologically important species.

In addition, pollution by oil and HNS has socio-economic impact (recreational activities; fisheries, maricultures as well as other activities such as power plants, shipping, salt production or seawater desalination). Occurrence of acute pollution events involving oil or HNS needs to be measured and possible impacts monitored.

**Scientific References**

ITOPF. “Effect of oil pollution on the marine environment”. ITOPF, Technical Information Paper 13.

GESAMP. Report n° 75: “Estimates of Oil Entering the Marine Environment from Sea-Based Activities”, IMO/FAO/UNESCO-IOC/WMO/WHO/IAEA/UN/UNEP Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (2007).

Zeina G. Kassaify, Rana H. El Hajj, Shady K. Hamadeh, Rami Zurayk and Elie K. Barbour. “Impact of Oil Spill in the Mediterranean Sea on Biodiversified Bacteria in Oysters”, Journal of Coastal Research, Vol. 25, No. 2 (2009), pp. 469-473. Published by: Coastal Education & Research Foundation, Inc.

Peterson CH, Rice SD, Short JW, Esler D, Bodkin JL, Ballachey BE, Irons DB. “Longterm ecosystem response to the Exxon Valdez oil spill”. Science 302:2082–2086(2003).

**Policy Context and targets**

**Policy context description**

Acute pollution from oil and other hazardous substances, resulting either from maritime casualties or from ships’ routine operations, is addressed in a number of international conventions under the aegis of the International Maritime Organization (IMO), the United Nations specialized agency with responsibility for the safety and security of shipping and the prevention of marine pollution by ships, some of which provide for stricter regimes in the Mediterranean Sea, including discharges of oil and oily mixtures. At the regional level, the Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (“the Barcelona Convention”) and the Protocol concerning Cooperation in Preventing Pollution from Ships and, in Cases of Emergency, Combating Pollution of the Mediterranean Sea (“the 2002 Prevention and Emergency Protocol”) thereto are crucial

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instruments enabling cooperation and joint action to support all Mediterranean coastal States implementing and enforcing IMO Conventions on pollution prevention and preparedness and response to oil and HNS spills.

The Regional Marine Pollution Emergency Response Centre for the Mediterranean Sea (REMPEC), administered by the IMO in cooperation with the Mediterranean Action Plan (MAP) of the United Nations Environment Programme (UN Environment), also referred to as UN Environment/MAP, is responsible for the implementation of the 2002 Prevention and Emergency Protocol. The Centre has maintained a database on alerts and accidents causing or likely to cause pollution of the sea by oil (since 1977) and by other harmful substances (since 1989) in the Mediterranean Sea. Furthermore, following the adoption by the Contracting Parties to the Barcelona Convention of the Protocol for the Protection of the Mediterranean Sea against Pollution Resulting from Exploration and Exploitation of the Continental Shelf and the Seabed and its Subsoil ("the Offshore Protocol"), Contracting Parties thereto should endeavour to ratify the said Protocol as well as develop and adopt monitoring procedures and programmes for offshore activities, which is envisaged to take place building on the Integrated Monitoring and Assessment Programme of the Mediterranean Sea and Coast and Related Assessment Criteria (IMAP) of the Ecosystem Approach (EcAp).

**Targets**

To measure the trend of occurrence of oil and HNS accidental pollution events, the following indicator can be used: number of pollution events (of 50 cubic metres or more) per year in the marine waters of each Contracting Party to the Barcelona Convention. A target could be a maximum of 1 occurrence per year per Contracting Party to the Barcelona Convention.

Regarding illicit discharges of oil and oily waters (Annex I to the International Convention for the Prevention of Pollution from Ships (MARPOL)), minimum tolerance (near to 0 events) could be considered.

**Policy documents**

**General Policy documents**

i. 19th COP to the Barcelona Convention, Athens, Greece, 2016. Decision IG.22/7 - Integrated Monitoring and Assessment Programme of the Mediterranean Sea and Coast and Related Assessment Criteria (UNEP(DEPI)/MED IG.22/28)
ii. 19th COP to the Barcelona Convention, Athens, Greece, 2016. Integrated Monitoring and Assessment Guidance (UNEP(DEPI)/MED IG.22/Inf.7)
iii. 18th COP to the Barcelona Convention, Istanbul, Turkey, 2013. Decision IG.21/3 - Ecosystems Approach including adopting definitions of Good Environmental Status (GES) and Targets (UNEP(DEPI)/MED IG.21/9)

**Related Policy documents**

iv. 18th COP to the Barcelona Convention, Istanbul, Turkey, 2013. Decision IG.21/9 - Establishment of a Mediterranean Network of Law Enforcement Officials relating to MARPOL within the framework of the Barcelona Convention (UNEP(DEPI)/MED IG.21/9)
v. 2002 Prevention and Emergency Protocol
vi. Offshore Protocol
vii. MARPOL, specifically its Annex I (Regulations for the prevention of pollution by oil), Annex II (Regulations for the control of pollution by noxious liquid substances in bulk) and Annex III (Regulations for the prevention of pollution by harmful substances carried by sea in packaged form)
viii. International Convention on Oil Pollution Preparedness, Response and Co-operation, 1990 (OPRC Convention) and Protocol on Preparedness, Response and Co-operation to Pollution Incidents by Hazardous and Noxious Substances, 2000 (OPRC-HNS Protocol)

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**Indicator analysis methods**

**Indicator Definition**

In the case of oil and HNS acute pollution events, the indicator will be obtained from the information of oil and HNS pollution events recorded and submitted in the Mediterranean Sea each year.

**Methodology for indicator calculation**

Under the 2002 Prevention and Emergency Protocol, Contracting Parties thereto established a reporting procedure (Article 9) whereby the following information (see the format below) should be reported by masters or other persons having charge of ships flying their flags and to the pilots of aircraft registered in their territories:

(1) all incidents which result or may result in a discharge of oil or hazardous and noxious substances; and

(2) the presence, characteristics and extent of spillages of oil or hazardous and noxious substances, including hazardous and noxious substances in packaged form, observed at sea which pose or are likely to pose a threat to the marine environment or to the coast or related interests of one or more of the Contracting Parties.

Moreover, in accordance with Article 10 (Operational Measures) of the said Protocol, any Contracting Party thereto faced with a pollution incident shall, amongst others:

(1) immediately inform all Contracting Parties thereto likely to be affected by the pollution incident of their assessments and of any action which it has taken or intends to take, and simultaneously provide the same information to REMPEC, which shall communicate it to all other Contracting Parties thereto; and

(2) continue to observe the situation for as long as possible and report thereon in accordance with Article 9.

BCRS (Barcelona Convention Reporting System) format:

(a) accident location (latitude and longitude or closest shore location);
(b) accident type* (*cargo transfer failure, contact, collision, engine breakdown, fire/explosion, grounding, foundering/weather, hull structural failure, machinery breakdown, other);
(c) vessel IMO number or vessel name;
(d) vessel flag;
(e) whether any product has been released or not. If yes, the type of product released (Oil/Hazardous and Noxious Substances) should be specified; and
(f) whether any actions have been taken or not. If yes, the actions taken should be specified.

In addition to monitoring pollution events occurrences against the target (incidents involving oil or hazardous substances that are < or = 1 event per year in the waters of each Contracting Party to the Barcelona Convention), it is recommended to carry out a trend analysis in order to measure performance against the target. Data on actual pollution events from ships would be collected every year and compared to the data for the previous year, to calculate a % increase or a % decrease in occurrences yearly frequency.

**Indicator units**

The Guidelines for Co-operation in Combating Marine Oil Pollution in the Mediterranean (UNEP/IG.74/5, UNEP/MAP, 1987) recommended Contracting Parties to the Barcelona Convention to report to REMPEC all spillages or discharges of oil in excess of 100 cubic metres. To align with the revised reporting formats for a mandatory reporting system under MARPOL ("one-line" entry format) adopted by IMO in 1996 (see MEPC/Circ.318), the Joint Session of MED POL and REMPEC Focal Points Meetings, which was held in Attard, Malta on 17 June 2015, discussed the appropriate threshold and concluded that spills of 50 cubic metres should be reported, whereas countries could also opt to report on spillages of lower amounts.

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**List of guidance documents and protocols available**

i. ITOPF. "*Aerial Observation of Marine Oil Spills*", Technical Information Paper 1.
ii. ITOPF. "*Recognition of Oil on Shorelines*", Technical Information Paper 6.
iii. ITOPF. "*Fate of Marine Oil Spills*", Technical Information Paper 2.
iv. ITOPF. "*Response to Marine Chemical Incidents*", Technical Information Paper 17.
v. Bonn Agreement. "*Bonn Agreement Oil Appearance Code*".
vi. IPIECA/IMO/IOGP/CEDRE. "*Aerial Observation of Oil Spills at Sea: Good practice guidelines for incident management and emergency response personnel*" (February 2015).
vii. CEDRE. "*Surveying Sites Polluted by Oil: An Operational Guide for Conducting an Assessment of Coastal Pollution*" (March 2006).
viii. REMPEC. "*Mediterranean Guidelines on Oiled Shorelines Assessment*" (September 2009).
ix. GESAMP. "*Revised GESAMP Hazard Evaluation Procedure for Chemical Substances Carried by Ships"* (2014).
x. IMO Codes:
- For packaged goods: International Maritime Dangerous Goods (IMDG) Code.
- For Bulk liquids: International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (IBC Code).
- For Gases: International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk (IGC Code).
- For solids in bulk: International Maritime Solid Bulk Cargoes (IMSBC Code).

**Data confidence and uncertainties**

Although characterisation of impact of oil and oily products at sea and on shore is well documented and response strategies well defined, there has been much less investment in research for HNS spills. Chemical spills occur at a much lower frequency than spills of oil and involve a very large variety of products with different physical and toxicity properties. Therefore, the characterisation of impacts from HNS pollution due to maritime casualties is more complex and response strategies and indicators will vary according to the specific chemical product involved.

**Methodology for monitoring, temporal and spatial scope**

**Available methodologies for monitoring and monitoring protocols**

As oil and HNS accidental spills and discharges from ships take the form of acute pollution events, there are no specific pollution methodologies for systematic oil and HNS pollution surveillance in IMO Conventions and guidance documents, where monitoring is essentially addressed from the perspective of ships' compliance monitoring (flag State surveys; coastal State and port State controls) or in the context of pollution response operations. In this latter case, a monitoring protocol was developed to detect and survey pollution events.

Pollution events are monitored using the following methods/protocols:

- **Oil:**

- Expert human eye observation;
- Aerial observation (human eye observation and/or remote sensing equipment);
- Satellite imagery analysis; and
- Sampling and analysis.

Monitoring at sea will provide the following information:
- Volume of oil: use ITOPF guidance based on oil type and appearance to assess thickness (mm) and volume of oil ($m^3/km^2$) at sea, or the guidance of the Bonn Agreement Oil Appearance Code (BAOAC) identifying the following relations between oil appearances and oil volume:
    1. sheen, 0.15-0.3 $m^3/km^2$;
    2. rainbow, 0.3-5 $m^3/km^2$;
    3. metallic, 5-50 $m^3/km^2$;
    4. discontinuous true colour, 50-200 $m^3/km^2$; and

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5. continuous true colour, > 200 $m^3/km^2$.

- Location and coverage of slick at sea (latitude and longitude - GPS);
- Oil characteristics (persistent vs. non persistent / viscosity); and
- Origin of slick (if visible, ship name and IMO number, offshore installations ID number).

On-shore monitoring will be used to assess the extent of impacted shorelines, type and degree of contamination as well as impact on habitats and wildlife casualties.

- **HNS:**

Detection of HNS pollution events and assessment of impacts are primarily achieved on site by expert human eye observation, complemented with real time monitoring, sampling and analysis, as well as the use of modelling tools. Conclusions of any risk assessment for HNS will be based on a number of information including identification of incident circumstances and location; identification of the involved chemical, its properties/toxicity, and its form (packaged/bulk) as well as identification of sensitive neighbouring areas and environment conditions.

Furthermore, Article 18 (Mutual Assistance in cases of Emergency) of the Offshore Protocol states that in cases of emergency, a Contracting Party thereto, which is also a Contracting Party to the Protocol Concerning Co-operation in Combating Pollution of the Mediterranean Sea by Oil and other Harmful Substances in Cases of Emergency ("the 1976 Emergency Protocol"), shall apply the pertinent provisions of the said Protocol.

**Available data sources**

Because pollution events originating from ships must lead to response operations and investigations, there are a number of reporting obligations and reporting protocols that are useful for the purpose of determining the frequency of occurrences and assess trends:

(1) Contents and forms of reports that ships must send following maritime casualties involving oil and other hazardous substances are detailed in MARPOL Annex I. In addition, IMO developed the "General Principles for Ship Reporting Systems and Ship Reporting Requirements, including Guidelines for Reporting Incidents Involving Dangerous Goods, Harmful Substances and/or Marine Pollutants", containing recommendations on reporting requirements (when to report, information required, whom to report to).
(2) At regional level, the standard pollution accidents reporting format (POLREP) and related procedures provided under MARPOL are used between Contracting Parties to the 2002 Prevention and Emergency Protocol and between these Contracting Parties and REMPEC for exchanging information when pollution of the sea has occurred or when a threat of such is present.
(3) With respect to illegal discharges of oil from ships, REMPEC organised pilot projects on surveillance and monitoring of oil discharges at sea in the past. These initiatives led to the establishment of the Mediterranean Network of Law Enforcement Officials relating to MARPOL within the framework of the Barcelona Convention (MENELAS). This network works as a forum where information is exchanged and it is expected that data on pollution incidents (as well as on investigation and prosecution as the case may be) will be collected. REMPEC acts as the MENELAS Secretariat and the possible development of a MENELAS database on illicit ship pollution discharges in the Mediterranean and related reporting format are being looked into.
(4) The BCRS also requests information on spill incidents that occurred during a biennium.

**Databases available:**

**- Mediterranean Alerts and Accidents Database** maintained by REMPEC, available in the following versions:

- On-line database (accidents can be sorted by: date; accident location (country); vessel type; release quantity and type);
- Report containing the data and statistical analysis; and
- A Geographical Information System (GIS).

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| **- Mediterranean Integrated Geographical Information System on Marine Pollution Risk Assessment and Response (MEDGIS-MAR) 2012-2015** (http://medgismar.rempec.org/) provides data (private access) on offshore, marine incidents, oil handling facilities, and response equipment.<br>**- Global Integrated Shipping Information System (GISIS)** (http://gisis.imo.org) maintained by IMO, with a module on marine casualties and incidents. | |
| **Spatial scope guidance and selection of monitoring stations**<br><br>REMPEC will continue to be the central organisation coordinating and maintaining data on oil and HNS acute events and pollution surveillance in the Mediterranean Sea. REMPEC has implemented pilot projects involving aerial surveillance exercises and satellite imagery analysis jointly with Mediterranean coastal States and this effort should be strengthened. | |
| **Temporal Scope guidance**<br><br>As oil and HNS pollution incidents from ships occurs unexpectedly (as a consequence of maritime casualties) or are not systematic (MARPOL illicit discharges), it is expected that pollution monitoring will continue to essentially take place “in real time” when pollution incidents actually happen or are detected. | |
| **Data analysis and assessment outputs** | |
| **Statistical analysis and basis for aggregation**<br><br>Frequencies and quantitative statistical analysis. The basis for aggregation would be a “nested approach” over a geographical scale. Trend analysis to calculate the percentage of occurrences for oil and HNS incidents over a period of time (yearly) in the Mediterranean Sea. | |
| **Expected assessments outputs**<br><br>Temporal trends analysis and distribution maps. If possible, this trend should be related to the maritime traffic crossing the Mediterranean Sea. | |
| **Known gaps and uncertainties in the Mediterranean**<br><br>While Contracting Parties to the Barcelona Convention and to the 2002 Prevention and Emergency Protocol have a pollution monitoring and reporting obligation, data submitted to REMPEC are still scarce. Thus the main aim during the initial phase of the IMAP will be to strengthen monitoring efforts towards this already existing obligation. | |
| **Contacts and version Date** | |
| http://www.rempec.org | |

| **Version No** | **Date** | **Author** |
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