NATIONAL OIL SPILL CONTINGENCY PLAN

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ABBREVIATIONS AND ACRONYMS

The following abbreviations and acronyms are used throughout this contingency plan:

AASTMT:	Arab Academy for Science, Technology and Maritime Transport
ARE:	Arab Republic of Egypt
AS:	Administrative Supervisor
CLC:	International Convention on Civil Liability for Oil Pollution Damage, 1992
COR:	Central Operations Room of EEAA
EEAA:	Egyptian Environmental Affairs Agency
EEZ:	Exclusive Economic Zone
EPF:	Environmental Protection Fund established under Law No. 4 of 1994
GCMS:	gas chromatography-mass spectrometry method of analysis
GIS:	Geographic Information System
GOE:	Government of Egypt
ICS:	Incident Command System computer software installed in COR
LfE:	Law for the Environment (Law No. 4 of 1994)
IMO:	International Maritime Organization
IPIECA:	International Petroleum Industry Environmental Conservation Association
ITOPF:	International Tanker Owners Pollution Federation Limited
MARPOL 73/78:	International Convention for the Prevention of Pollution from Ships, 1973, and its Protocol, 1978
MELO:	Media Liaison Officer
MMT:	Ministry of Maritime Transport
MTL:	Marine Team Leader
NC:	National Coordinator
NCPC:	National Contingency Planning Committee
NIOF:	National Institute of Oceanography and Fisheries
NOSCP:	National Oil Spill Contingency Plan
NPD:	National Parks Department

OILPOL:	Oil Pollution Reporting Format
OPRC:	International Convention on Oil Pollution Preparedness, Response and Co-operation, 1990
OSC:	On Scene Commander
OSSC:	Oil Spill Service Centre, Southampton, UK
P&I Clubs:	Professional and Indemnity Clubs
PLA:	Ports and Lighthouses Administration
rpm:	revolutions per minute
SCA:	Suez Canal Authority
SITREPs:	Situation Reports
STL:	Shore Team Leader
SUMED:	Arab Petroleum Pipelines Company

ACKOWLEDGEMENTS

This contingency plan owes a debt to many who have paved the way. In preparing this National Oil Spill Contingency Plan (NOSCP) for Egypt, EEAA has drawn on the experience of experts throughout the world - many of them anonymous - who have drafted similar plans which have provided the inspiration for this one.

Particular acknowledgement is due to the International Tanker Owners Pollution Federation (ITOPF) and its Technical Information Papers and to the International Petroleum Industry Environmental Conservation Association (IPIECA) and its Report Series. The scientific and technical information contained in these series of publications has been evaluated, absorbed and adapted where necessary to Egyptian circumstances.

Within Egypt, EEAA has been assisted in the preparation of this contingency plan by experts from EGPC and the Egyptian petroleum industry meeting regularly in the framework of the EEAA/Industry Liaison Group who have been consulted at every step of the way and whose experience has been invaluable in producing a plan which is workable and acceptable to all concerned parties.

Responsibility for approval of the contents of the NOSCP rests with the National Contingency Planning Committee established by a Decision of the Minister of Public Works and Minister of State for Administrative Development and Environmental Affairs (119/1997). The Committee has been a constructive forum for reaching consensus on difficult issues. EEAA is indebted to its partners for their spirit of co-operation in producing this plan.

Finally, the Government of Egypt acknowledges with gratitude the assistance provided by Danish International Development Assistance (Danida) in funding a project undertaken by the consultancy company COWI to assist EEAA in the updating of the national contingency plan.

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1 INTRODUCTION

1.1 PURPOSE AND OBJECTIVES OF THE NATIONAL OIL SPILL CONTINGENCY PLAN

Oil is transported in the shipping lanes bordering Egypt's coastline in vast quantities. Much of the world's trade in oil is centred on the Middle East, which produces about one quarter of the oil transported globally. Up to 117 million tonnes of crude oil per annum are shipped through the Gulf of Suez to the SUMED terminal at Ain Sukhna and the vast majority of this cargo is trans-shipped to the ultimate customers in the West from the Mediterranean terminal at Sidi Kerir. In addition, about 36 million tonnes of petroleum products are transported annually through the Suez Canal (of which 26 million tonnes is northbound).

Furthermore, about 85% of Egypt's production of oil and gas is located in coastal waters. The production facilities in the Gulf of Suez produce 36 million tonnes of oil and gas annually. Offshore production in the Mediterranean is becoming an increasingly important activity.

In total some 8,940 ship movements are recorded in Egypt's ports. These too account for sources of oil pollution: vessel operations account for one-third of petroleum inputs to the marine environment on a global basis (US Academy of Sciences) even though the majority of incidents may result in spills of less than 7 tonnes arising mainly from bunkering and loading/discharging oil cargo operations.

The purpose of this National Oil Spill Contingency Plan (NOSCP) is to establish the national framework for preparing for and responding to oil spills in Egyptian marine waters. The objective is to provide the basis for more efficient oil spill response operations under the overall authority of the Egyptian Environmental Affairs Agency (EEAA).

In particular, the NOSCP provides the legal basis for implementing the Government of Egypt's (GOE) obligations under the Oil Pollution Preparedness, Response and Co-operation Convention, 1990 (OPRC) (see Annex A). It also implements the Government's obligations under the regional Barcelona and Jeddah Conventions for the protection of the Mediterranean Sea and Red Sea respectively (see Annex C). The NOSCP also implements, in part, EEAA's obligation to prepare an Environmental Disasters Contingency Plan, as required by Article 25 of Law No. 4 of 1994.

1.2 SCOPE AND CONTENT OF THE NOSCP

Scope of the Contingency Plan

The NOSCP describes the policies and operational procedures for the response to oil spills in the marine waters of the Arab Republic of Egypt (ARE), including the organisational relationships of the various bodies involved.

The scope of this contingency plan includes all the marine and coastal waters under the jurisdiction of the ARE, including ports, harbours, internal waters behind the baseline and waters within the Exclusive Economic Zone (EEZ). On land, it includes the foreshore and any adjacent land affected by an oil spill.

The NOSCP does not cover oil spills in Egypt's fresh water system; nor does it cover oil spills on land.

To the extent that it is feasible, this contingency plan also provides the basis for response to marine pollution incidents involving hazardous and noxious substances other than oil.

Content of the Contingency Plan

The contingency plan is divided into four parts:

- Part A : National Strategy
- Part B : Operational Procedures
- Part C : Data Directory
- Annexes

Part A of the NOSCP is addressed to administrators and those who will be responsible for preparing local (Tier One) oil pollution emergency plans. It describes the institutional framework for oil spill preparation and response in Egypt, including the role and responsibilities of EEAA and all support agencies. In particular, Part A of the NOSCP contains all the national policies (eg combat strategy; policy on the use of dispersants; etc) which have been approved by the National Contingency Planning Committee. All local oil pollution emergency plans must be compatible with the policies described in Part A of the NOSCP.

Part B of the NOSCP is of operational character and is addressed to the operators (On Scene Commanders (OSC) and team leaders) who will take command of response actions at the scene of an incident.

Part C of the NOSCP is a data directory containing lists (eg contact points; equipment lists) and summaries of key data (eg specifications of oil types; summaries of wind statistics and current data). It will also contain relevant maps although these may be issued on a restricted basis for reasons of economy.

The Annexes contain supplementary information which may not be necessary to refer to in an oil pollution incident but which nevertheless contain important information for reference (eg a summary of the national and international legal framework; the framework for liability and compensation).

1.3 DEFINITIONS

In this contingency plan:

"Counter pollution operations" means any action taken to prevent, monitor, reduce or combat pollution or the threat of an oil pollution incident at sea and any action to clean-up the shoreline which is contaminated by an oil pollution incident. It shall not include authority to take actions invested in the Government of Egypt by virtue of its accession to the Intervention Convention 1969.

"Incident commander" means the person exercising overall command of an oil pollution incident. Depending on the circumstances, he may be the Chief Executive of EEAA, the National Coordinator or the local On Scene Commander.

"National Coordinator" (NC) means the person appointed by EEAA to be the Incident Commander in a Tier Two oil pollution incident and to assist the Chief Executive of EEAA in a Tier Three oil pollution incident. In a Tier Two or Tier Three incident, he is responsible for nominating an On Scene Commander to take command of response actions at the scene of the incident. The NC will coordinate the activities of the various organisations involved in the response action including the subsequent clean-up operations. The NC has overall decision making responsibility in a Tier Two incident and will be supported by appropriate operational, administrative and scientific personnel. Where necessary, the NC will convene the Emergency Response Committee to assist him in the decision making process.

"National Oil Spill Contingency Plan" (or its abbreviation NOSCP) means the national plan for preparedness and response to oil pollution incidents, including the organisational relationship of the various bodies involved, prepared by EEAA pursuant to Article 25 of Law No. 4 of 1994.

"Oil" means petroleum in any form including crude oil, fuel oil, sludge, oil refuse and refined products.

"Oil pollution emergency plan" means a contingency plan (other than the National Oil Spill Contingency Plan) setting out the arrangements for responding to incidents which cause or may cause marine pollution by oil (including the nomination of an On Scene Commander), with a view to preventing such pollution or reducing or minimising its effect. This plan shall be based on a risk assessment which will form the basis of the oil spill equipment to be provided under the plan.

"Oil pollution incident" means an 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, to the coastline or related interests of the Arab Republic of Egypt, and which requires emergency action or other immediate response.

"On Scene Commander" means the person named in the local oil pollution emergency plan, or the person nominated by the NC in the event of a Tier Two or Tier Three spill, to take command of response actions at the scene of the incident, both at sea and on land. The OSC has overall decision making responsibility for the tactical response to an oil pollution incident and should be supported by appropriate operational, scientific and administrative personnel.

"Overall command" means the full responsibility for the direction of counter pollution operations, both at sea and on land, during an oil pollution incident.

1.4 DISTRIBUTION OF THE NOSCP

All government bodies and private companies which have a role to play or which could be affected by an oil pollution incident will receive a copy of the national contingency plan. A list of the holders of the NOSCP is in Part C.

1.5 PLAN REVISION

The NOSCP is saved in a word processing format (MS Word) and distributed to plan holders in loose-leaf format.

EEAA will be responsible for issuing revisions to the contingency plan whenever necessary and distributing amendments to all plan holders. Revisions to Parts A and B will only be issued when the amendments have been approved by the National Contingency Planning Committee. Amendments to Part C and the Annexes will be issued whenever there is a need to update the information therein.

It is the responsibility of all plan holders to notify EEAA of any changes in the telephone and fax numbers of the contact points listed in Part C, and also of any changes in equipment stockpiles.

Each chapter of this contingency plan has its own specific reference for identification. This comprises the part of the plan (ie A, B or C), followed by the chapter number and finally by the date of issue, eg A1/98-09 in the bottom left-hand corner of each page. Each chapter has its own page numbering system.

Whenever any chapter of the NOSCP is amended, the revised text will be circulated by EEAA to all plan holders accompanied by a revised Table of Contents showing the "current reference" (as described above) of each chapter. It will be the responsibility of each plan holder to incorporate the amendments in the loose-leaf folders provided and to keep his copy of the national contingency plan up to date.

Version: 08/09/98

2 INSTITUTIONAL ARRANGEMENTS FOR THE NOSCP

2.1 ROLE OF EEAA

General

The Egyptian Environmental Affairs Agency (EEAA) established under Law No. 4 of 1994 is responsible for formulating general policy and preparing the necessary plans for the protection and promotion of the environment (Article 5). It is also required to follow up the implementation of such plans in coordination with the competent administrative authorities. In particular, EEAA is required under the law to prepare an Environmental Disasters Contingency Plan to be approved by the Cabinet of Ministers (Article 25). The National Oil Spill Contingency Plan (NOSCP) will form a component of the Environmental Disasters Contingency Plan.

Responsibilities of the Egyptian Environmental Affairs Agency

EEAA shall be responsible for establishing a national system for responding promptly and effectively to oil pollution incidents. In particular:

- EEAA shall be the competent national authority with responsibility for oil pollution preparedness and response;
- EEAA shall be the national operational contact point responsible for the ultimate receipt of oil pollution reports, although other government bodies may receive notification of such reports in the first instance in accordance with the National Oil Spill Contingency Plan;
- EEAA shall be the authority which is entitled to act on behalf of the Government of Egypt to request assistance from external sources or to decide whether to render assistance when requested by a neighbouring State with whom it has bilateral or multilateral agreements;
- EEAA shall be responsible for preparing the National Oil Spill Contingency Plan and keeping it up to date;
- EEAA shall be the government agency responsible for the coordination of Egypt's policy on oil spill preparedness and response, including international affairs;
- EEAA shall be responsible for administering the Environmental Protection Fund. These funds will be available specifically for providing the financial support for responding to oil spills outside the area of jurisdiction of the local oil pollution emergency plan and, in particular, where the polluter is unknown. Procedures will be developed to enable assisting agencies, whether from the private or the public sector, to receive reimbursement of their legitimate expenses incurred when such combating action has been requested by EEAA. The Fund's resources will not be available for facilities to respond to oil pollution incidents of their own making.

- EEAA will assist agencies, whether from the private or the public sector, to fulfil their obligations under this Contingency Plan through training, institutional support and, where appropriate, through financial support.

2.2 NATIONAL CONTINGENCY PLANNING COMMITTEE

To assist it in its task of preparing and maintaining the NOSCP, EEAA will be advised by a National Contingency Planning Committee (NCPC). The membership of the NCPC is shown in Chapter C.2.

Terms of Reference

The terms of reference of the National Contingency Planning Committee are as follows:

1. to assist EEAA to develop a comprehensive National Oil Spill Contingency Plan (NOSCP) for Egyptian coastal waters;
2. to advise, cooperate and take any other action which may be appropriate in order to achieve the long term objective, viz to enable EEAA, and other entities involved in the NOSCP, to respond appropriately to oil spills in Egyptian coastal waters;
3. to keep under review on a permanent basis the procedures of the NOSCP and make appropriate recommendations to EEAA for keeping it up to date.

Members of the Committee should be authorised to accept commitments on behalf of the organisations they represent.

2.3 EMERGENCY RESPONSE COMMITTEE

In the event of a major oil pollution incident (Tier Two or Tier Three), where a designated official of EEAA will act as the Incident Commander in accordance with the procedures of this Contingency Plan, an Emergency Response Committee may be convened to assist and advise the Incident Commander. By virtue of their important roles in the NOSCP, EGPC and the Ministry of Maritime Transport will be standing members of the Committee whenever it is convened.

Apart from this, membership of the Emergency Response Committee will be on an *ad hoc* basis, depending on the nature of the incident and the expertise required. For example, if fisheries resources are threatened by an oil pollution incident, a representative of the National Institute of Oceanography and Fisheries may be called on for advice; if the incident involves a tanker owned by or under charter to a major oil company, the representative of that company in Egypt may be called upon as a member of the Emergency Response Committee. This will be particularly necessary if the Incident Commander decides that it is necessary to call upon the assistance of the oil industry's stockpile of equipment based at Southampton, UK.

Terms of Reference

The terms of reference of the Emergency Response Committee are:

"to assist the Incident Commander of EEAA to coordinate the response to a Tier Two or Tier Three spill in Egyptian coastal waters."

The Committee shall have power to co-opt additional members as it sees fit.

2.4 RESPONSIBILITIES OF SUPPORT AGENCIES

2.4.1 Maritime Transport Sector of the Ministry of Transport

General

The Maritime Transport sector of the Ministry of Transport (MMT) has primary responsibility for:

- the safety of navigation in Egyptian waters, including the establishment of vessel traffic systems and the operation and maintenance of lights, radio beacons and other navigational aids and the safety of shipping, in particular the implementation of the Convention on the Safety of Life at Sea (SOLAS);
- supervision of and co-operation in defining and implementing national policy towards protection of the marine environment within the area of jurisdiction of the port authorities, including private ports (petroleum, tourism and fisheries ports), and responsibility for ensuring implementation in accordance with Law No. 4 of 1994 and Law No. 1 of 1996;
- the prevention of pollution from ships, in particular the implementation of the International Convention for the Prevention of Pollution from Ships 1973, as modified by the Protocol of 1978 (MARPOL 73/78) and, where relevant, discharges from offshore platforms in accordance with Article 57 of Law No. 4;
- ensuring that PLA and port authorities inspect the Oil Record Books of any ships, including those registered in Egypt and flying the flag of countries party to the MARPOL Convention, and inspect the cargo record books of tankers carrying harmful liquid substances in bulk (in accordance with Article 62 of Law No. 4);
- operating and managing Egyptian ports through the medium of autonomous port authorities.

Responsibilities under the Law for the Environment

Section Three of the Law for the Environment (Law No. 4 of 1994) implements the provisions of MARPOL 73/78 in Egyptian national legislation. Article 48 sets out the objectives for protection of the water environment from pollution. It states that "The Minister for Environmental Affairs shall undertake the fulfilment of the mentioned objectives in coordination with the Minister of Maritime Transport and all concerned administrative authorities mentioned in definition Number 38 of Article 1 of this Law, each within their field of competence."

Thus, although the EEAA has an overriding responsibility (on behalf of the Minister for Environmental Affairs) to ensure that the objectives of Article 48 are fulfilled, and to coordinate action where necessary, the day to day administration of the measures to

prevent pollution from ships is the responsibility of MMT or its designated agencies or port authorities.

Responsibilities under the NOSCP

In the context of the NOSCP, the MMT shall have the following rights and responsibilities:

- MMT shall have a general responsibility for coordinating the participation of its agencies (such as the PLA) and the port authorities in the implementation of the NOSCP, including the conduct of surveillance for illegal discharges of oil and other polluting substances from ships;
- MMT shall have a particular responsibility for ensuring that the port authorities under its jurisdiction prepare and implement local (Tier One) oil pollution emergency plans in accordance with the NOSCP;
- MMT shall ensure that the national policy on the use of dispersants is applied by port authorities within their area of jurisdiction;
- in accordance with Article 26 of Law No. 4 of 1994, MMT and its port authorities may be requested to provide prompt assistance and support in order to combat an oil pollution incident. Such assistance will be equitably compensated through the Environmental Protection Fund.
- the MMT shall nominate a representative on the National Contingency Planning Committee.

Ports and Lighthouses Administration

The Ports and Lighthouses Administration (PLA) constitutes one of the major agencies of MMT. It has particular responsibility for the operation and maintenance of lights, radio beacons and other navigational aids to ensure the safety of navigation. It also has responsibilities for surveying the seaworthiness of vessels and inspecting vessels to ensure their compliance with the relevant international conventions.

Responsibilities of PLA under the NOSCP

In the context of the NOSCP, the PLA shall have the following rights and responsibilities:

- PLA shall receive all initial notifications of oil pollution incidents from merchant shipping and the lighthouses and radio reporting centres under its jurisdiction.
- PLA shall notify EEAA immediately about oil pollution incidents and inform MMT:

⇒ by emergency “hot line” in the case of a Tier Two or Tier Three spill

⇒ by fax using the OILPOL format.

- PLA shall nominate a representative on the National Contingency Planning Committee.

2.4.2 Egyptian General Petroleum Corporation

General

The Egyptian General Petroleum Corporation (EGPC) is the State owned oil company of Egypt. As such it is an equal partner in joint venture companies formed in association with foreign oil companies to exploit Egypt's oil and gas resources.

Responsibilities under the Law for the Environment

EGPC is the "competent administrative agency" designated under Law No. 4 (Article 1, paragraph 38) concerning protection of the environment from pollution by the companies operating in oil extraction.

Responsibilities under the NOSCP

In the context of the NOSCP, EGPC shall have the following rights and responsibilities:

- EGPC shall have a general responsibility for coordinating the participation of the petroleum sector in the implementation of the NOSCP;
- EGPC shall have a particular responsibility for ensuring that offshore installations and oil handling installations prepare and implement local (Tier One) oil pollution emergency plans in accordance with the NOSCP;
- EGPC shall ensure that the national policy on the use of dispersants is applied by the petroleum sector;
- EGPC shall be responsible for identifying ways and means of disposal of oily wastes, including recycling, in close co-operation with EEAA;
- EGPC shall ensure that all offshore installations and oil handling installations send oil pollution reports directly to EEAA, using the agreed notification procedures, with a copy to EGPC;
- in the context of EGPC's Tier Two contingency plan for the oil sector, EGPC will nominate an Incident Commander to coordinate the response to a Tier Two oil pollution incident originating in the petroleum sector *unless* EGPC requests the National Coordinator at EEAA to act as Incident Commander;
- in accordance with Article 26 of Law No. 4 of 1994, EGPC may be requested to provide prompt assistance and support in order to combat an oil pollution incident. Such assistance will be equitably compensated through the Environmental Protection Fund.
- EGPC shall nominate a representative on the National Contingency Planning Committee.

2.4.3 Suez Canal Authority

General

The primary responsibilities of the Suez Canal Authority are:

- maintaining the adequacy of the shipping lanes of the Suez Canal and the anchorage areas at the entrances to the Canal;
- implementing the relevant articles of the Law for the Environment (Law No. 4 of 1994) for vessels passing through the Suez Canal and using its anchorage areas;
- receiving reports of oil pollution incidents from ship owners or ships' masters in accordance with the NOSCP.

Responsibilities under the NOSCP

In the context of the NOSCP, the Suez Canal Authority (SCA) shall have the following rights and responsibilities:

- SCA will be responsible for implementing the Tier One oil pollution emergency plan for the Suez Canal and its anchorage areas in accordance with the NOSCP;
- SCA will be responsible for appointing the Incident Commander to combat oil pollution incidents originating from ship accidents in the Suez Canal or its anchorage areas unless it is necessary to request external assistance. In such cases, SCA will be responsible for appointing the On Scene Commander under EEAA;
- SCA shall notify EEAA immediately about oil pollution incidents;
- in accordance with Article 26 of Law No. 4 of 1994, and in the event of EEAA requesting assistance and support to combat an oil pollution incident outside the area of jurisdiction of the SCA, EEAA will reimburse the costs of this assistance in accordance with the SCA's tariff of hire charges;
- SCA shall nominate a representative on the National Contingency Planning Committee.

2.4.4 Ministry of Defence : Navy

General

The Egyptian Navy has primary responsibility for the protection of the waters under Egypt’s jurisdiction (the territorial waters and the exclusive economic zone) in times of peacetime and war. In order to fulfil this mandate, the Egyptian Navy undertakes regular patrol missions in Egyptian coastal waters and international waters.

The Egyptian Navy is invested with powers of arrest and has the authority to escort a vessel observed to be infringing international conventions or Egyptian law to the nearest port.

Responsibilities under the Law for the Environment

Military or support ships of the ARE are not subject to the rules of the MARPOL 73/78 Convention. Nevertheless, military or support ships of the ARE shall take all necessary precautions to prevent polluting the territorial sea or the exclusive economic zone of the ARE (Article 49).

Responsibilities under the NOSCP

In the context of the NOSCP, the Navy shall have the following rights and responsibilities:

- the Navy will instruct all its vessels on routine patrols to report any pollution incidents they observe and any floating oil slicks to their appropriate naval base and naval HQ. The information to be collected by naval vessels shall follow the OILPOL format;
- Naval HQ will notify EEAA about oil pollution incidents:

⇒ by emergency "hot line" in the case of a Tier Two or Tier Three spill

⇒ by fax using the OILPOL format;

- wherever possible, the Navy will take photographs, samples of floating oil for further analysis in accordance with procedures for sample taking to be developed by EEAA, and any other evidence which may be used to prosecute violations of the law;
- the Navy will represent the Ministry of Defence as a member of the National Contingency Planning Committee.

Note: EEAA and the Ministry of Defence will discuss and establish a system for the reimbursement of costs for responding to spills of unknown origin.

4.4.5 Ministry of Defence : Air Force

General

The Egyptian Air Force has primary responsibility for the protection of Egypt's air space in times of peacetime and war. In order to fulfil this mandate, the Egyptian Air Force undertakes regular patrol missions over Egyptian coastal waters and international waters.

Responsibilities under the NOSCP

In the context of the NOSCP, the Air Force shall have the following responsibilities:

- the Air Force will instruct all its aircraft on routine patrols to report any pollution incidents they observe and any floating oil slicks to their appropriate air force base and air force HQ. Wherever possible photographs will be taken as corroborative evidence. To the extent possible, the information to be reported shall follow the OILPOL format;
- [the Air Force will establish a system of routine aerial surveillance, in close co-operation with EEAA, in order to enhance the enforcement of the MARPOL 73/78 Convention and identify polluters of Egyptian coastal waters; *to be agreed*]
- Air Force HQ will notify EEAA about oil pollution incidents:

⇒ by emergency "hot line" in the case of a Tier Two or Tier Three spill

⇒ by fax using the OILPOL format.

Note: EEAA and the Ministry of Defence will discuss and establish a system for the reimbursement of costs for responding to spills of unknown origin.

2.4.6 Ministry of Defence: Search and Rescue

General

The Search and Rescue (SAR) forces are the lead agency for coordinating the response to a marine emergency where the safety of human life is threatened. [To assist them in their task, they have a flight of 3 Beechcraft aircraft.]

Responsibilities under the NOSCP

In the context of the NOSCP, the Search and Rescue forces shall have the following responsibilities *unless* they are engaged on SAR duties:

- when called upon by EEAA in a Tier Two or Tier Three oil pollution incident, the SAR forces shall mobilise aircraft for surveillance duties, especially for monitoring the movement of the oil slick.

Note: EEAA and the Ministry of Defence will discuss and establish a system for the reimbursement of costs for responding to spills of unknown origin.

2.4.7 Ministry of Defence : Coast Guard

General

The Egyptian Coast Guard has primary responsibility for the security of Egypt's coastline and in particular to prevent entry by unauthorised personnel. In order to fulfil this responsibility, the Coast Guard has a network of observation posts along the entire length of Egypt's coastline.

Responsibilities under the NOSCP

In the context of the NOSCP, the Coast Guard shall have the following responsibilities:

- the Coast Guard will instruct all its observation posts to report to HQ any pollution incidents they observe and any floating oil slicks. The information to be reported by Coast Guard stations shall follow the OILPOL format to the extent possible;
- wherever possible, the Coast Guard will take samples of floating oil and beached oil for further analysis in accordance with procedures for sample taking to be developed by EEAA;
- if and when provided with equipment, the Coast Guard forces will deploy shoreline protection equipment when it becomes evident that the coastline is at risk from floating oil;

- Coast Guard HQ will notify EEAA about oil pollution incidents:

⇒ by emergency "hot line" in the case of a Tier Two or Tier Three spill

⇒ by fax using the OILPOL format.

Note: EEAA and the Ministry of Defence will discuss and establish a system for the reimbursement of costs for responding to spills of unknown origin.

2.4.8 Ministry of Defence : Army

General

The Egyptian Army is responsible, *inter alia*, for the defence and security of Egypt's land territory. It has enormous resources of manpower and equipment which could be used for responding to environmental disasters, such as a major oil spill which contaminates Egypt's coastline.

Responsibilities under the NOSCP

In the context of the NOSCP, the Egyptian Army shall have the following responsibilities:

- to assist EEAA when requested in the organisation of manpower and equipment, including communications equipment, especially in the response to shoreline clean-up.

Note: EEAA and the Ministry of Defence will discuss and establish a system for the reimbursement of costs for responding to spills of unknown origin.

2.4.9 Ministry of Interior : Civil Defence

General

The Egyptian Civil Defence forces have primary responsibility for responding as lead agency to catastrophes in accordance with the Law for Civil Defence Organisation (Law No. 148 of 1959 as amended in 1965, 1981 and 1982). This responsibility as lead agency does not extend to the response to marine oil pollution incidents.

Responsibilities under the NOSCP

In the context of the NOSCP, the Civil Defence shall have the following responsibilities:

- to assist EEAA when requested in the organisation of manpower and equipment, including communications equipment, especially in the response to shoreline clean-up.

2.4.10 Governorates

General

Governors are appointed directly by the President. They are the representatives of the President and the Prime Minister within the geographical area of their jurisdiction. In this capacity Governors are in a position of extreme importance with extensive powers for action, especially in cases of emergency.

The Governorates are responsible for implementing at the local level the national policies of the State. Among other things, they are responsible, together with municipalities, for garbage collection and waste disposal.

There are 11 coastal Governorates: Mersa Matrouh, Alexandria, Beheira, Kafr El Sheikh, Dakahlia, Damietta, Port Said, North Sinai, Suez, South Sinai and Red Sea.

Responsibilities under the NOSCP

In the context of the NOSCP, coastal Governorates shall have the following responsibilities:

- in the case of a major pollution of the coastline following an oil spill, the Governor will appoint a representative on the committee coordinating the shoreline clean-up action;
- EEAA will provide an adviser to provide technical guidance and expertise on appropriate clean-up strategies, including the acceptability of expenditure if the costs are to be reimbursed from the Environmental Protection Fund;
- coastal Governorates will be responsible for providing temporary storage facilities for oily wastes and for allocating final disposal sites for the disposal of used oil which is not capable of being delivered to a refinery for treatment.

2.4.11 Arab Academy for Science, Technology and Maritime Transport

The Arab Academy for Science, Technology and Maritime Transport (AASTMT) is Egypt's leading institution in providing, *inter alia*, training in the maritime sector, including training in oil spill response management and techniques.

Responsibilities under the NOSCP

In the context of the NOSCP, AASTMT shall have the following rights and responsibilities:

- AASTMT will provide training in oil spill response principles and techniques, primarily to candidates from the Public Sector nominated by EEAA, in accordance with the Agreement signed between the Academy and EEAA dated 30 March 1997. The precise details of the training courses will be elaborated annually in advance between EEAA and AASTMT based on EEAA's assessment of training needs under the NOSCP;

- AASTMT will provide scientific support for EEAA's Central Operations Room when requested in a Tier Two or Tier Three oil pollution incident;
- AASTMT shall nominate a representative on the National Contingency Planning Committee.

2.4.12 Ministry of Finance : Customs

General

The Customs authorities are responsible for inspecting the import and export of goods to and from Egypt and levying any customs duties or sales tax due.

Responsibilities under the NOSCP

In the context of the NOSCP, the Customs authorities shall have the following responsibilities:

- the Customs authorities shall prepare in advance standing approvals for the temporary import of oil spill combating equipment without delay and without payment of duties;
- when requested by the EEAA Incident Commander in a Tier Three oil pollution incident, the Customs authorities shall nominate an officer to serve on the Emergency Response Committee. This officer shall have the authority to oversee and facilitate the import of equipment from abroad for combating the oil spill.

4.4.13 Ministry of Interior : Immigration authorities

General

The immigration authorities are responsible for controlling the entry into Egypt of all foreign nationals.

Responsibilities under the NOSCP

In the context of the NOSCP, the immigration authorities shall have the following responsibilities:

- the immigration authorities shall prepare in advance standing approvals for the temporary immigration without delay of oil spill strike teams from abroad that are called upon to assist the Government of Egypt in a Tier Three oil pollution incident;
- when requested by the EEAA Incident Commander in a Tier Three oil pollution incident, the immigration authorities shall nominate an officer to serve on the Emergency Response Committee. This officer shall have the authority to oversee and facilitate the necessary visas or other formalities for the entry of foreign strike teams.

2.4.14 Academy of Scientific Research and Technology

General

The Academy of Scientific Research and Technology is composed of three specialist institutes: the National Institute of Oceanography and Fisheries, the National Research Centre and the Institute of Petroleum.

Responsibilities under the NOSCP

In the context of the NOSCP:

- the specialist institutes may be called upon to assist EEAA in setting standards (eg for dispersant testing);
- representatives of the specialist institutes may be co-opted on to the National Contingency Planning Committee as required.

4.4.15 Tourism Development Authority and Ministry of Tourism

The Tourism Development Authority (TDA) is responsible for allocating tourism developments and giving permission to operate. The Ministry of Tourism is responsible for the ongoing management of the development.

Responsibilities under the NOSCP

In the context of the NOSCP, the tourism authorities shall have the following responsibilities:

- to ensure that the operator of each coastal touristic development shall have a contingency plan for collecting tar balls associated with its normal beach cleaning arrangements;
- to ensure that the operator of each coastal touristic development shall notify EEAA of significant oil pollution incidents.

Note: The proposed responsibilities under the NOSCP of the Ministry of Interior (Civil Defence) , coastal Governorates, Ministry of Finance (Customs and Immigration), the Academy of Scientific Research and Technology, the Tourism Development Authority and the Ministry of Tourism have not yet been finalised with the authorities concerned.

3 NOTIFICATION AND REPORTING PROCEDURES

3.1 NOTIFICATION PROCEDURES

Reports of oil pollution at sea - and reports of marine accidents which have caused, or which threaten to cause, pollution - can come from a number of sources:

- as a result of planned surveillance activities
- through the observations of government agencies (eg port authorities, Coast Guard, governorates)
- from passing shipping or overflying commercial aircraft
- from those responsible for the incident
- from the general public.

The EEAA is on call 24 hours a day**.** The procedures for contacting EEAA are set out in sections A3.2 and A3.3 below.

In order to operate effectively, the EEAA must:

- be alerted promptly to any spillages of oil or threatened spillages of oil
- be given adequate and accurate information
- have effective lines of communication with support agencies and the petroleum sector.

A flow diagram illustrating the responsibility matrix for alerting EEAA of pollution incidents is shown in Figure A3.1.

Reports from planned surveillance activities

It is the wish of EEAA to enter into partnership with appropriate agencies in order to establish a national system of surveillance in order to enforce the provisions of the MARPOL 73/78 Convention and to receive early warning of oil slicks. Such surveillance activities, if and when established, will include their own notification procedures for alerting EEAA.

Reports from government agencies

In many cases government agencies will be the first to receive reports of oil pollution incidents. (In this case, government agencies include port authorities, the Coast Guard and civil police, governorates, the Suez Canal Authority). It is imperative that information is transmitted without delay to EEAA in the required format as set out in section A3.2.

Reports from shipping

The International Maritime Organization (IMO) has a standard reporting format and procedures for reporting incidents involving the loss - or likely loss - of dangerous goods, harmful substances and marine pollutants, including oil. These requirements for vessels registered in the Arab Republic of Egypt, and for other ships whilst they are in Egyptian waters, are contained in Article 50 of the Prime Minister's Decree No. 338 of the Year 1995 promulgating the Executive Regulations of the Law for the Environment (Law No. 4 of 1994).

Reports in the same format should also be made, in accordance with this contingency plan, whenever oil (or other harmful substance) is observed at sea or whenever any ship is seen to be discharging oil (or other harmful substance) in contravention of MARPOL 73/78.

All reports from shipping are required to be transmitted in the first instance to the Ports and Lighthouses Administration (PLA) of the Ministry of Maritime Transport. It is the responsibility of the PLA to notify EEAA without delay in the required format as set out in section A3.2.

Reports from aircraft

In accordance with IMO recommendations, arrangements will be made with the Egyptian civil aviation authority to require pilots of aircraft to report to the appropriate air traffic control authority when substantial patches of oil are observed on the surface of the sea. Such reports will then be referred to the EEAA.

Reports from those responsible for the incident (other than ships)

In accordance with Article 50 of the Prime Minister's Decree No. 338 of the Year 1995 promulgating the Executive Regulations of the Law for the Environment (Law No. 4 of 1994), all those responsible for oil transport consignments and companies operating in oil extraction shall notify the competent administrative bodies of every oil leakage incident upon its occurrence. In this context, the competent administrative body is the EEAA to whom reports shall be submitted without delay in the required format as set out in section A3.2.

Obligations for response action

The obligation on government agencies and those responsible for a pollution incident (other than ships) to notify EEAA directly of such incidents does not in any way affect the responsibilities of government agencies and oil handling companies to mount the first response to an incident as prescribed in chapter A4.

Situation Reports

After the initial notification to EEAA of an oil pollution incident (in accordance with section A3.2), any company or authority which retains the responsibility for managing the response to the incident shall continue to keep EEAA informed of developments by means of regular situation reports. There is no prescribed format for such reports.

3.2 OILPOL(Oil Pollution Report Format) EXPLANATORY NOTE

This format is to be used by the reporting agency to inform EEAA about an oil pollution incident, or the threat of an oil pollution incident. Every effort should be made to provide all the information requested. However, the notification of an incident to EEAA should not be delayed simply because not all information is immediately available.

Identity code	Information to be provided	Explanation
A	CLASSIFICATION of Report: - Doubtful - Probable - Confirmed	Delete as appropriate
B	DATE & TIME IDENTITY	Date and time pollution observed Identity of observer/reporter
C	POSITION & EXTENT OF POLLUTION	If possible, state range and bearing of some prominent landmark or Decca position and estimated amount of pollution, eg size of polluted area; number of tonnes of oil spilled. When appropriate, give position of observer relative to pollution.
D	TIDE & WIND	Indicate speed and direction
E	WEATHER CONDITIONS & SEA STATE	Indicate as appropriate
F	CHARACTERISTICS OF POLLUTION	Give type of pollution, eg crude oil or otherwise. Give visual appearance, eg liquid oil; semi-liquid sludge; tarry lumps; weathered oil; discolouration of sea
G	SOURCE & CAUSE OF POLLUTION	eg from vessel, offshore platform or other oil handling facility. If from a vessel, say whether as a result of apparent deliberate discharge or a casualty. If the latter, give a brief description. Where possible, give name, type, size, nationality and Port of Registry of polluting vessel. If vessel is proceeding on its way, give course, speed and destination (if known).
H	VESSELS IN THE AREA	Details of vessels in the area to be

		given if the polluter cannot be identified and the spill is considered to be of recent origin.
J	PHOTOGRAPHS & SAMPLES	State whether photographs have been taken and/or samples for analysis.
K	REMEDIAL ACTION	State any remedial action taken, or intended, to deal with the spillage.
L	POLLUTION FORECAST	Forecast of likely effect of pollution, eg arrival on beach with estimated timing.
M	OTHERS INFORMED	Name other individuals or agencies informed other than EEAA.
N	OTHER INFORMATION	Give any other relevant information, eg names of other witnesses.

CONTACTING EEAA

1. In the event of a Tier Two or Tier Three spill, EEAA should be contacted immediately by telephone.

   Emergency contacts: 24 hr "Hot Lines" (1) Tel: (02) 525 6491

   (2) Tel: (02) 525 6492

   Written confirmation, using the OILPOL format, should be faxed as soon as possible to:

   Fax: (02) 525 6494

2. In the event of a Tier One spill, EEAA should be faxed as soon as possible using the OILPOL format.

OILPOL (Oil Pollution Report Format)

This format is to be used to inform EEAA about an oil pollution incident, or the threat of an oil pollution incident. Every effort should be made to provide all the information requested. However, the notification of an incident to EEAA should not be delayed simply because not all information is immediately available.

Id code	Information to be provided	
A	CLASSIFICATION of Report: - Doubtful - Probable - Confirmed	
B	DATE & TIME IDENTITY	
C	POSITION & EXTENT OF POLLUTION	
D	TIDE WIND	
E	WEATHER CONDITIONS & SEA STATE	
F	CHARACTERISTICS OF POLLUTION	
G	SOURCE & CAUSE OF POLLUTION	

H	VESSELS IN THE AREA	
J	PHOTOGRAPHS & SAMPLES	
K	REMEDIAL ACTION	
L	POLLUTION FORECAST	
M	OTHERS INFORMED	
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CONTACTING EEAA

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   Written confirmation, using the OILPOL format, should be faxed as soon as possible to:

   Fax: (02) 525 6494

2. In the event of a Tier One spill, EEAA should be faxed as soon as possible using the OILPOL format.

1.3 CONTACTING EEAA

Please note the following **direct** telephone and fax lines
for contacting the Central Operations Room of EEAA
which is operational on a 24 hour basis

Telephone: 02 525 6491
02 525 6492

Fax: 02 525 6494

If these numbers are engaged, the COR can also be reached
via the EEAA switchboard on the following extensions:

Telephone: 02 525 6452 ext 8846
02 525 6452 ext 8847
02 525 6452 ext 8848
02 525 6452 ext 8850

4 TIERED RESPONSE CONCEPT AND INITIAL RESPONSE PROCEDURES

4.1 POLICY FOR INITIAL RESPONSE ACTION

The concept of "Tiered Response"

A number of factors need to be taken into account in determining which agency should have responsibility for mounting the initial response action to an oil spill:

- the origin (or source) of the spill
- the geographical location of the spill
- the size of the spill
- the sensitivity of the areas threatened by the spill.

These factors, and in particular their relative importance to each other, can all be taken into account in the "tiered response" concept. This is a widely accepted operational concept that provides a convenient categorisation of response levels and a practical basis for oil spill contingency planning. Tiered response recognises three levels.

Tier One

Tier One is concerned with preparedness and response to a small spill within the capabilities of an individual facility or port authority. The type of incident typically involved would generally be associated with ship transfer or bunkering operations at a jetty, pier or mooring and around waterside storage tanks. The response will be controlled by the company's or the port's operating procedures in accordance with its own site-specific oil pollution emergency plan. The response will be mounted using company or port authority personnel and company-owned or port-owned (or shared) oil spill combating equipment.

The Tier One local oil pollution emergency plan should recognise the need for local operators and port authorities to control events and to establish a rapid response capability aimed at quickly containing and, if possible, recovering the spilled oil. If this is achieved there will be no need to involve other parties apart from meeting any legal, information or notification requirements.

The upper limit - in terms of spill size - to a Tier One response for the purposes of the Egyptian National Oil Spill Contingency Plan will vary and will be specified in each facility's or port's site specific oil pollution emergency plan.

Tier Two

By definition, Tier Two is concerned with preparedness and response to a spill that requires the coordination of more than one source of combating equipment and personnel (strike teams). Incidents necessitating a Tier Two response would typically be associated with shipping accidents in ports and harbours, or in estuaries or coastal

waters, but could also arise from fractured pipelines, tank failures or near shore exploration and production operations.

The concept of Tier Two recognises that an individual company or port authority has limited control over events (apart from mounting the initial response if the incident occurs within their area of jurisdiction) and the geographical area affected by the spill will necessarily be larger than in a Tier One case. In many cases, public amenities will be threatened.

It is envisaged that two types of contingency plan will be developed to respond to a Tier Two incident:

- Local Contingency Plans describing the detailed planning arrangements needed to respond to an oil spill outside the jurisdiction of a Tier One facility and which could affect a wide geographical area;
- sectoral contingency planning arrangements, such as the regional plans for the petroleum sector already developed by the Egyptian General Petroleum Corporation (EGPC).

In principle, EEAA will take responsibility for coordinating the response to a Tier Two incident, although the Agency may delegate its coordinating role to another body (see chapter A5). A Tier Two response originating in the petroleum sector will continue to be directed by the EGPC contingency planning arrangements unless EGPC specifically requests EEAA to act as Incident Commander.

Tier Three

Tier Three is concerned with a major spill - in excess of 1,000 tonnes - requiring the mobilisation of all available national resources and, depending on the circumstances, may involve the mobilisation of assistance through sub-regional cooperation agreements with neighbouring countries or international assistance from the oil industry's support organisation at Southampton, UK (Oil Spill Response Limited) or other industry arrangements. In most cases the spill will involve a major accident involving a laden oil tanker.

Major oil pollution incidents often become high profile and politically sensitive. EEAA will assume control of any Tier Three incident occurring within Egypt's area of jurisdiction. To assist it in its task, EEAA will convene an Emergency Response Committee to provide relevant assistance and advice.

4.2 TIER ONE OIL POLLUTION EMERGENCY PLANS

The Tier One oil pollution emergency plans form the foundation of the National Oil Spill Contingency Plan. It is likely that they will provide the first response in over 80% of oil pollution incidents. They will be site specific plans and will necessarily vary depending on the type and location of the facility concerned. Further information on what will be required of the different facilities is given below.

A THE OIL SECTOR

Offshore oil and gas exploration and production facilities

Offshore oil and gas exploration and production facilities present the risk of oil pollution as a result of blow-outs, rupture of pipelines, accidental or illegal discharges from production water or oil based mud systems, cargo transfer malfunctions or marine incidents such as collisions with passing shipping.

The EEAA will work closely with the petroleum sector to ensure that all operators of offshore units within Egypt's area of jurisdiction prepare or update their oil pollution emergency plans for each facility, in accordance with Article 3(2) of the OPRC Convention. Such emergency plans must be compatible with Egypt's National Oil Spill Contingency Plan and consequently will be subject to inspection by and the approval of EEAA.

Responsibility for responding to oil pollution originating from an offshore facility rests with the operator concerned who must immediately notify EEAA of the circumstances of the incident and the action taken in accordance with the agreed notification procedures (chapter A3). Such notification is additional to any notification requirements which may be agreed within the petroleum sector, eg with EGPC.

Depending on the circumstances, eg size of the spill and resources at risk, EEAA will either:

- leave control of the response action to the operator concerned, or
- will agree that response coordination will be transferred to EGPC, or
- in exceptional circumstances, will itself assume command of the response action.

(Further advice on the policy for initial response to a Tier Two incident in the petroleum sector is contained below).

The appropriate response action will, to the greatest extent possible, be elaborated in advance in the context of the facility's own oil pollution emergency plan.

The SUMED pipeline

The EEAA will work closely with the operator of the SUMED pipeline to update its oil pollution emergency plans for the terminals at the Gulf of Suez (Ain Sukhna) and Mediterranean (Sidi Kerir). Such emergency plans, to be prepared in accordance with Article 3(3) of the OPRC Convention, must be compatible with Egypt's National Oil Spill Contingency Plan and will be subject to the approval of EEAA.

Responsibility for responding to oil pollution at either of the terminals will rest with SUMED, who must immediately notify EEAA of the circumstances of any incident and the action taken in accordance with the agreed notification procedures (see chapter A3). Such notification is additional to any notification requirements which may be agreed within the petroleum sector, eg with EGPC.

In most cases, EEAA will leave control of the response action to SUMED. However, depending on the circumstances, eg size of the spill and resources at risk, EEAA will either:

- leave control of the response action to SUMED, or
- will agree that response coordination will be transferred to EGPC, or
- in exceptional circumstances, will itself assume command of the response action.

The appropriate response action will, to the greatest extent possible, be elaborated in advance in the context of SUMED's own oil pollution emergency plans for its two terminals.

Onshore oil handling facilities

Onshore oil handling facilities fall into various categories: pipeline operators, oil terminals, refineries. The risk of oil pollution varies according to the activity. In the case of pipeline operators and oil terminals, the major risk will be from mistakes in oil handling operations or ruptures of the equipment. In the case of refineries, oily discharges may occur as a result of poor controls and inadequate environmental management procedures. Generally speaking, such incidents will result in small spills.

Responsibility for responding to oil pollution incidents at onshore oil handling facilities will rest with the operators concerned, who must immediately notify EEAA of the circumstances of any incident and the action taken in accordance with the agreed notification procedures (see chapter A3). Such notification is additional to any notification requirements which may be agreed within the petroleum sector, eg with EGPC.

EEAA will consider to what extent specific oil pollution emergency plans are required for onshore oil handling facilities other than the SUMED pipeline.

B THE MARITIME SECTOR

Sea ports

Sea ports represent an oil pollution risk from the various shipping related activities which take place within the approaches to and the confines of a port. Oil pollution may arise following collisions, cargo transfer activities, deballasting operations, or illegal discharges. By the nature of their activities, ports frequently suffer from pollution events. However, in most incidents, the quantity of the oil spilled is relatively small (less than 7 tonnes).

The EEAA will work closely with the Ministry of Maritime Transport (MMT)/Ports and Lighthouses Administration (PLA) to ensure that all port authorities in Egypt prepare or update their oil pollution emergency plans, in accordance with Article 3(3) of the OPRC Convention. Such emergency plans must be compatible with Egypt's National Oil Spill Contingency Plan and will be subject to inspection by and the approval of EEAA.

Responsibility for responding to oil pollution within the jurisdiction of a port authority will rest with that authority. The port authority must immediately notify EEAA of the circumstances of the incident and the action taken in accordance with the agreed notification procedures (see chapter A3).

In most cases (because of the small spill size), EEAA will leave control of the response action to the port authority concerned. However, if the size of the spill is

sufficiently large to require external assistance, the port authority should request EEAA to assume command of the coordinated response required. The conditions under which responsibility is transferred from the port authority to EEAA will be described in detail in each port's own oil pollution emergency plan.

Shipping

The majority of ship-generated oil pollution is small scale. Apart from operations in ports (covered above), there are illegal discharges of bunker oil from all kinds of vessels and illegal cleaning of the cargo tanks of oil tankers. Occasionally such discharges may be accidental in origin.

The appropriate response to such incidents will depend on the location of the spill (eg whether environmentally sensitive resources are at risk) and its size. Responsibility for surveillance of the spill will, in most cases, rest with the nearest port authority or the nearest petroleum sector production unit. The results of the surveillance will be reported to the EEAA (see chapter A3) who will determine the appropriate response action.

The costs of any combating or clean-up action will, in the first instance, be paid out of the Environmental Protection Fund (see Annex B). Where evidence is available, action will be taken by the Government of Egypt to prosecute the offender and apply the penalties prescribed under Law No. 4 of 1994 and recover the costs of clean-up action and any other claims that may arise.

EEAA, in co-operation with the Ministry of Maritime Transport, will take action to require that:

- all ships entitled to fly the flag of the Arab Republic of Egypt and
- all ships in Egyptian ports or at an offshore terminal under the jurisdiction of the Government of Egypt shall have on board a shipboard oil pollution emergency plan, in accordance with Article 6(3) of the OPRC Convention. Such shipboard oil pollution emergency plans shall be as required by and in accordance with the provisions adopted by IMO for this purpose (this refers to regulation 26 of Annex I of MARPOL 73/78, as amended). Such ships will be subject to inspections by officers duly authorised for that purpose in accordance with procedures to be determined by the Government of Egypt.

C THE SUEZ CANAL AUTHORITY

The Suez Canal Authority (SCA) has long established arrangements for responding to oil pollution incidents within the area of its jurisdiction. The EEAA will work closely with the SCA to formulate a written oil pollution emergency plan in order to ensure that the Authority's policies and practices are compatible with the National Oil Spill Contingency Plan.

In accordance with its mandate, responsibility for responding to oil pollution within the Suez Canal rests with the Suez Canal Authority. Under the agreed notification procedures for the NOSCP (see chapter A3), the SCA will nevertheless immediately notify EEAA of the circumstances of any incident and the action taken.

In most cases, control of the response action will remain with the SCA. However, if the size of the spill is sufficiently large to require external assistance, the SCA should request EEAA to assume command of the coordinated response required. The conditions under which responsibility is transferred to EEAA are described in chapter A5.

4.3 TIER TWO CONTINGENCY PLANS

Local Contingency Plans

It is evident that, although many oil pollution incidents in Egypt will be source-related and will therefore be governed by the responsibilities for initial response and subsequent change of command described in chapter A5, there will be occasions when the source of the incident is not identified or when the geographical location of the observed oil spill is outside the defined area of responsibility of the port authorities, the petroleum sector, SUMED or the Suez Canal Authority.

In such cases - when there is no authority charged with initial response under site specific oil pollution emergency plans - responsibility for mounting surveillance of and response to an oil pollution incident will rest with EEAA, or other authorities designated to act on EEAA's behalf. In such circumstances, EEAA will be responsible, both for directing at sea operations and coordinating the shoreline response. In fulfilling this role, EEAA is likely to call upon the assistance of neighbouring facilities with oil spill combating equipment and strike teams. In some circumstances, EEAA may delegate its authority for mounting the at-sea response operation to a nearby facility or to EGPC. In such cases, the costs of mounting surveillance or response action will be reimbursed by EEAA out of the Environmental Protection Fund whenever such action has been specifically authorised and requested by EEAA.

In the longer term, it is the intention of EEAA to elaborate Local Contingency Plans to supplement the NOSCP and to provide more detailed policy and guidelines for coordinating response action in pre-defined geographical regions.

EGPC Contingency Plan

The petroleum sector in Egypt has already developed an oil spill response strategy for confronting spills emanating from its own resources. This strategy is also based on the tiered response concept, with individual facilities being responsible for building up a Tier One response capability and EGPC itself responsible for managing the response to a Tier Two spill (defined as a spill up to 1,000 tonnes). This is achieved by EGPC managing four larger stockpiles of equipment, each of which (apart from Hurghada which is essentially designed for beach cleaning) is designed to respond to an oil spill incident from the petroleum sector up to 1,000 tonne These established arrangements for the petroleum sector will continue**.**

4.4 TIER THREE: NATIONAL OIL SPILL CONTINGENCY PLAN

Responsibility for coordinating the response to a major oil spill - in excess of 1,000 tonnes - will always fall to the EEAA. In most cases, oil spills of this size arise from accidents involving laden oil tankers.

Governments generally have recognised that it is not reasonably practical for owners of deep sea tankers - which voyage world-wide - to make contingency arrangements for dealing with oil spills wherever they may occur. Consequently, the Government of Egypt has decided to accept the responsibility for dealing with spillages of oil at sea from shipping casualties which pose, or may pose, a threat to the marine environment, the Egyptian coastline or related interests. EEAA will coordinate the response action in such an incident, advised by experts on the Emergency Response Committee (see chapter 2.3).

Compensation for the costs of combating and clean-up following such incidents will be reclaimed from the polluter either through the vessel's insurers or through Egypt's present and intended membership of the relevant international conventions.

4.5 TRANSFER OF INCIDENT COMMAND

Guidance on when responsibility for coordinating the response action shall pass from an oil handling company or a port authority to EEAA or EGPC is contained above. Figure A4.1 represents this decision tree in a flowchart.

5 INCIDENT COMMAND PROCEDURES

5.1 DEFINITIONS

The definitions which are important for an understanding of this chapter are contained in chapter A1.3.

5.2 CENTRAL OPERATIONS ROOM

The EEAA has established an Oil Spill Response and Communications Centre within the Central Operations Room (COR) at EEAA Headquarters at Maadi. The COR is manned on a 24-hours basis. The EEAA has established Internal Response Procedures which will be activated in the event of an incident.

All reports of oil pollution should be notified to the COR using the standard OILPOL format (see chapter A3.2).

EEAA's functions of overall command in a Tier Two or Tier Three oil pollution incident will normally be exercised from EEAA's Central Operations Room. When information is received of a major incident, the COR staff (which are on 24-hour duty) will arrange with the EEAA switchboard for all telephone calls relating to the incident to be transferred to the COR.

5.3 TIER ONE INCIDENT COMMAND

The Incident Commander in a Tier One oil pollution incident will be the On Scene Commander designated in the local oil pollution emergency plan of the Suez Canal Authority, the respective port authority, oil handling facility or offshore installation at which the incident originates.

He will be responsible for managing the response to the incident, and reporting to EEAA, in accordance with the Initial Response Procedures of this Contingency Plan (Chapter 4).

5.4 TIER TWO INCIDENT COMMAND

The Incident Commander in a Tier Two oil pollution incident will be the National Coordinator (NC) designated by EEAA in the form of a decree issued by the Chief Executive.

In the absence of the designated NC, his duties will be performed by the most senior official available in the Marine Pollution Control Department. In any particular incident the NC may delegate his responsibilities to a named official in writing and this decision should be promulgated to all concerned in the incident.

The NC will coordinate the national response to the incident from the COR in Maadi. He will designate an On Scene Commander (OSC) to take charge of the response

actions at the scene of the incident. In accordance with Article 26 of Law No. 4 of 1994, the NC may request public and private authorities to provide prompt assistance and support in order to combat the oil pollution incident. Such assistance will be equitably compensated through the Environmental Protection Fund (see also chapter B12).

In the case of an incident which has originated within the area of responsibility of a local oil pollution emergency plan but has escalated beyond the capability of that facility to respond from its own resources, the NC will normally designate the local OSC to continue to direct operations for combating the pollution at sea and preparing shoreline protection. The NC will be responsible for mobilising additional resources from within Egypt to be placed at the disposal of the OSC.

In the case of an oil pollution incident of less than 1,000 tonnes originating in the petroleum sector, EGPC will coordinate the response action - including the nomination of an Incident Commander - in accordance with EGPC's industry contingency plan. However, if it is considered necessary to request co-operation and assistance from outside the petroleum industry, EGPC should formally request EEAA to take responsibility as Incident Commander. In any event, EEAA must be kept fully informed of the counter pollution operations taken by means of regular (at least daily) situation reports.

In the case of an oil pollution incident of unknown origin which has been reported to EEAA, the NC will normally designate the facility nearest the scene of the observed pollution to respond to the spill and nominate its local OSC to direct counter pollution operations.

5.5 TIER THREE INCIDENT COMMAND

The Incident Commander in a Tier Three oil pollution incident will be the Chief Executive of EEAA or, in his absence, his designated representative.

In particular, the Incident Commander will be responsible for taking the decisions to mobilise resources (personnel and equipment) from outside Egypt, either from neighbouring countries in the context of Egypt's membership of various international co-operation agreements or, in close consultation with the petroleum sector in Egypt, from the oil industry's stockpile of equipment based at Southampton, UK.

The Incident Commander will be responsible for briefing the State Minister of the Environment and for all political ramifications of the incident. Ministers will not have an operational role.

The Incident Commander will chair the meetings of the Emergency Response Committee which will always be convened in the event of a Tier Three oil pollution incident.

The Incident Commander will be assisted by the NC who will take responsibility, in particular, for coordinating the operational response actions along the lines indicated in section 5.4. The NC will also act as Incident Commander in the absence of the Chief Executive.

EEAA Liaison Officer

A major incident (Tier Two or Tier Three) may require a professional member of EEAA's staff to locate to the scene of the incident and act as a liaison officer. The function of this liaison officer will be to advise the OSC and act as EEAA's representative at the scene of the incident. It will **not** be the duty of this liaison officer to usurp the role and responsibilities of the OSC; nor, unless specifically designated to do so, to act as the NC.

6 NATIONAL COMBAT STRATEGY

6.1 THE FATE OF OIL SPILLED AT SEA

When oils are spilt on the surface of the sea they undergo a series of changes which are collectively known as weathering. The following paragraphs summarise the characteristics of weathering for the purposes of defining the national combat strategy.

Most oils will initially spread rapidly. The rate of spread will be determined by the volume of oil spilt and the rate of its release. A large, sudden release of oil will spread more rapidly than a slow seepage. In the longer term, the rate of spread and the thickness of the oil film will be determined by the type of oil. The area of sea affected can be considerable as theoretically the oil will spread until its thickness is about 0.1 mm or less, depending on the pourpoint and viscosity of the weathered oil. This means that a spill of 1 tonne of oil will eventually result in a slick covering 14,000 m^2 (equivalent to a circle with a diameter of 130 m). In contrast, some oils which are carried in tankers as heated cargoes or waxy crude oils may solidify in contact with the sea and relatively thick layers of oil, or even lumps, may occur.

As the oil spreads, the lighter fractions evaporate, causing the viscosity of the oil to increase. During the process of evaporation and spreading, many oils will absorb sea water and, through wave action, this forms a viscous water-in-oil emulsion known as "chocolate mousse".

Some of the spilt oil will disperse naturally and the rate at which this occurs will depend on the oil type and the sea state. For example, light oils in heavy seas may disperse completely in a few days. Conversely, viscous oils, or those which form viscous emulsions when weathered, will not disperse to any great extent and may persist on the sea surface for weeks.

Evaluation of these factors, and in particular the properties of the oil which has been spilled, will all have to be taken into account by the On-Scene Commander when deciding the most appropriate response action in an individual case. (Further information on the specifications of oil types is contained in Part C.) Nevertheless, certain broad statements concerning Egypt's national combat strategy can be made.

6.2 COMBAT STRATEGY

The national combat strategy will be based on the following principles:

1. Terminate or reduce the outflow of oil from the source.
2. Where marine or coastal resources are not threatened, monitor the oil slick.
3. Attempt control and recovery of the oil at sea by use of mechanical means.
4. Apply dispersants only in accordance with the national policy for dispersant use.

5. Protect sensitive areas according to the priority ranking of the NOSCP.
6. Shoreline clean-up.

Action to terminate or reduce the outflow of oil from the source

The first priority of a ship's captain or the operator of an offshore or onshore oil handling facility must be to terminate the outflow of oil as rapidly as possible. In the case of offshore installations or oil terminals, it is the responsibility of operators:

- to identify the likely sources of oil pollution incidents in their operations and quantify the "most likely" and "worst case" spill scenarios in their Tier One oil pollution emergency plans;
- to ensure that the most efficient equipment is installed and environmental management systems are in place to minimise the likelihood of incidents occurring and in order to reduce their impact if they do occur.

The objective must be to recover the oil as close to the discharge source as possible in order to prevent widespread dispersal and to ensure maximum recovery.

Monitoring the oil slick where marine or coastal resources are not threatened

If no marine or coastal resources are threatened, the decision may be taken to leave the oil to disperse naturally. This is only an option where vessel-source pollution is involved or an oil slick is observed where the pollution source is unknown. Responsibility for monitoring and coordinating the response to such incidents rests with EEAA.

Mechanical recovery of oil at sea

As a general principle, the mechanical recovery of oil at sea is the most favoured response action on the grounds that it causes the least damage to the environment. However, the feasibility of recovering oil by mechanical means will depend on the type and amount of recovery equipment available, weather conditions, the nature of the oil (eg its viscosity), as well as local conditions such as ease of access or the presence of debris. In practice, mechanical recovery will only be worthwhile if the depth of the oil layer can be increased by containing the spillage by the use of booms, thereby allowing equipment to operate at acceptable recovery rates.

Application of dispersants

Natural dispersion is a slow process and cannot be relied upon to remove the threat from large oil slicks. The process can, however, be accelerated by the addition of certain chemicals (dispersants) to the oil. The dispersants work in two ways: they speed up the rate at which small droplets are formed in the water column and they reduce the tendency for the droplets to re-combine and rejoin the slick.

The process of weathering affects both the ability of oil to disperse naturally into the sea and the effectiveness of dispersants. The onset of resistance to dispersion could appear within hours of release or could be delayed by one or more days. As a general rule, fresh, free-flowing crude oils disperse most easily. However, chemical dispersion becomes increasingly difficult, if not impossible, with weathering. (Colour can be a useful indicator of weathering: fresh oil is black whereas emulsions are usually brown, orange or yellow). Most oils form emulsions which are not amenable to dispersants after 48 hours.

It is not possible to apply dispersants to some of the medium grades or any of the heavy grades of fuel oils. Such oils are viscous even when fresh and dispersants will have no effect. These oils will not spread over the surface of the sea but will form sharply defined patches or lumps.

Attempts should not be made to use dispersants on irridescent oil sheens. Such slicks are extremely thin and attempts to apply dispersants will result in excessive overdosing. Although a nuisance because of their appearance and smell, such slicks are harmless and will disappear rapidly in moderate to rough weather. In ports and harbours they will be broken up by normal shipping activity.

Because dispersing oil plumes are hazardous to marine life, and dispersants can themselves damage marine organisms if not used appropriately, the use of dispersants will be strictly controlled by EEAA under the NOSCP. The approved policy governing the use of dispersants in Egyptian waters is contained in chapter A7 and prior approval will have to be obtained from EEAA for their use either as a "standing approval" issued to a port authority or operator on a case by case basis.

Protection of sensitive areas

In the process of updating the NOSCP, extensive surveys have been made of the entire Egyptian coastline, with the co-operation of the National Institute of Oceanography and Fisheries (NIOF) and the National Parks Department. The surveys have had the purpose, *inter alia*, of identifying areas of ecological sensitivity as well as areas of economic importance. The output is the categorisation of the coastline into areas of high, medium and low sensitivity and a ranking system to aid contingency planning.

The ranking system will be used as the basis for identifying appropriate protection strategies, including the provision of adequate and appropriate equipment and trained personnel. Further work may have to be undertaken to identify those areas where floating booms or shoreline barriers could be used to good effect. This is likely to involve detailed current studies. Where it can be shown that booms can be deployed successfully, consideration will be given to installing fixed boom mooring points.

Shoreline clean-up

The priority of the national combat strategy is to deal with the oil at sea, preferably by mechanical recovery means but, where appropriate, by the use of chemical dispersants. The cost and length of time taken to complete beach cleaning and the time for recovery of the coastal environment will all be lessened if the spillage can be dealt with while still on the water.

Nevertheless, it is inevitable that in many cases oil spills will reach the shore. In such cases, it is highly desirable to minimise the amount of oil that reaches the shore and to limit the area of coastline affected. The sensitivity mapping survey referred to above has also classified the Egyptian coastline according to its beach characteristics and has noted information such as shoreline access points. This information will be used to identify “sacrificial beaches”, ie parts of the coastline where beach clean-up activities can be managed more successfully. Where feasible, floating oil will be deflected to such beaches in order to protect more sensitive resources.

Responsibility for dealing with oil pollution when it reaches the shoreline will rest primarily with EEAA, assisted by the coastal governorates. The basis for EEAA’s

leading role is the Agency's overall responsibility for protection of the environment, its responsibility for and access to the Environmental Protection Fund, and its authority to mobilise the necessary clean-up resources. EEAA will determine the appropriate beach clean-up action, depending on factors such as the beach type, its ecological sensitivity, means of access, etc. The governorates will assist to the greatest extent possible in allocating manpower, vehicles and beach clean-up equipment. The governorates will also be responsible for determining the sites for disposal of used oil which is not capable of being delivered to a refinery for treatment.

When the arrangements for drawing upon the Environmental Protection Fund have been established, all oil pollution reaching the shore will be cleaned up and the costs reimbursed from the Fund in the first instance. Where appropriate, the Government will recover the costs from the polluter or through the mechanism of the international compensation funds. EEAA will be responsible for controlling access to the Fund's resources.

6.3 POLICY TOWARDS CLEAN-UP OF EXISTING OIL POLLUTED COASTLINE

The sensitivity mapping survey has shown that there are extensive stretches of the Egyptian coastline which have been adversely affected by long-term oil pollution. It will be EEAA's intention to initiate an action plan, in cooperation with the petroleum sector, to remediate the affected coastline.

6.4 RESPONSE TIMES

All owners of oil spill combating equipment, vessels and strike teams should have the capability to mobilise such resources within one hour.

It is the intention of EEAA to ensure that an appropriate level of response systems are in place in order to mount an effective response to an oil pollution incident commensurate with the risk. For high risk areas, eg the southern part of the Gulf of Suez, the aim will be to establish a response time (= mobilisation time + sailing time) of 3 hours. For low risk areas, eg the southern part of the Red Sea, lower response times will be aimed for. All parts of the Egyptian coastline should be accessible within a response time of 24 hours.

7 POLICY ON THE USE OF DISPERSANTS

7.1 NATIONAL COMBAT STRATEGY

As a general principle, mechanical containment and recovery of oil at sea is the most favoured response action on the grounds that it causes the least damage to the environment. However, it is also the option most limited by wind, current and sea conditions. In some cases, therefore, the application of dispersants may be a viable response option. The following paragraphs define those circumstances and conditions under which the use of dispersants will be allowed in Egyptian coastal waters and clarifies those situations when dispersant use will be prohibited.

Advantages and Disadvantages of Using Dispersants

Some of the advantages and disadvantages of using dispersants in oil spill response are listed below.

ADVANTAGES	DISADVANTAGES
In contrast to containment and mechanical recovery, dispersants can be used in stronger currents and greater sea states.	By introducing the oil into the water column, the process may adversely affect some marine organisms which would not otherwise be reached by oil.
Dispersants are often the quickest response method.	If dispersion of oil is not achieved, the effectiveness of other response methods on oil treated by dispersants *may* decrease.
By removing the oil from the surface, dispersants help to stop the wind effect on the oil slick's movement that may otherwise push the surface slick towards the shoreline.	Dispersants are not effective on all types of oil under all conditions.
Use of dispersants reduces the possibility of contamination of sea birds and mammals.	There is a limited time window when dispersants can be used effectively.
Dispersants inhibit the formation of water-in-oil emulsions ("chocolate mousse").	If used on shore, dispersants may increase the penetration of oil into the sediments.
Dispersants increase the surface area of oil that is available for natural degradation.	Use of dispersants introduces an additional quantity of extraneous substances into the marine environment.

7.2 NET ENVIRONMENTAL BENEFIT

EEAA needs to be satisfied that the use of dispersants will give the greatest overall benefit to the environment compared with other response options. In order to carry out such a net environmental benefit analysis, the ecological and economic resources of Egypt's shoreline and coastal waters have been analysed and the results have been mapped and are stored in the NOSCP GIS database. Both economic and biological resources have been classified into areas of high, medium and low priority and the two systems have also been combined to produce an integrated priority ranking system.

The environmental effects of dispersed oil versus untreated oil for each area have been analysed on the basis of recorded international field experiments comparing chemically dispersed and untreated oil. The conclusions which form the basis of EEAA's policy on dispersant use are summarised below for each ecological resource and economic activity (listed in alphabetical order). More detailed information on the sensitivity of these areas to oil pollution is contained in chapter A8.

Aquaculture

It is undesirable for either untreated oil or dispersed oil to enter aquaculture ponds because of the risk of tainting fish products which can result in serious economic consequences. Access can be temporarily shut off by closing pipes or sluice gates and the oil spill response should concentrate on removing oil from near the water intakes as quickly as possible.

The priority should be for mechanical recovery but dispersant spraying may be an option provided that there is good potential for rapid dilution and and removal of dispersed oil by water movements.

Birds

It is clear that the oiling of birds is disastrous for them, either because the oil destroys the insulating and water repelling properties of their plumage, or because of the toxic effects of the ingestion of oil, or because of the indirect effects of the destruction of habitats or food resources. However, the susceptibility of various groups of birds differs considerably. It is generally assumed that dispersion of oil slicks must be beneficial because it reduces the risk of direct fouling and the risk of birds ingesting oil. However, it is also known that dispersants increase the "wettability" of feathers which can lead to death by hypothermia. This suggests that direct accidental spraying of wildlife with undiluted dispersants will be harmful.

As a general rule, dispersant spraying will not be allowed in areas of national and international importance for birds, which are shown on the GIS. However, decisions will be taken by EEAA on a case by case basis taking into account all the relevant factors including the season of the year. (Around 70% of the bird species in Egypt are migratory and are present in Egypt only on a seasonal basis).

Coral reefs

Coral reefs are highly productive areas which support a diverse group of organisms, including many commercial fish species. In Egypt they are often associated with

commercially important dive sites. Coral reefs are easily damaged if oiled, may take several decades to recover if killed, and are difficult or impossible to clean.

The susceptibility of coral reefs to oil damage depends on a number of factors: eg size of spill, type of oil, type and depth of coral reef, the local wave energy, the current stress of the corals, etc. In many cases oil slicks will float over reefs without causing damage to the submerged corals and associated organisms.

The use of dispersants will not be allowed in shallow water over and near coral reefs because this would increase the exposure of the corals to oil droplets in the water column.

Fish

There is no evidence that oil slicks floating in the open sea above free-swimming fish have ever caused declines in fish populations. The net environmental benefit of using dispersants in open water conditions is neutral: dispersant spraying will not provide any advantages for the fish but neither are there likely to be deleterious effects if the dispersed oil is rapidly diluted in deep water. In shallow water, however, dispersed oil in the water column is more likely to reach concentrations where it may harm or taint fish, particularly young ones.

Dispersant spraying may be an option in open sea conditions. Dispersant spraying will not be allowed in shallow-water spawning and nursery areas.

Mangroves

Mangrove stands are highly productive areas and they provide habitats for a large variety of organisms as well as serving as a nursery ground for many fish and crustacean species. Mangrove trees commonly die when oiled thus resulting in loss of habitats for dependent species. Chemically dispersed oil has minor effects on mangroves compared with their sensitivity to more toxic undispersed crude oils. Damage is effected either through the coverage of breathing spores on the aerial root systems or through oil penetration of the sediments. Mangroves are often associated with coral reef ecosystems and these could be damaged by dispersed oil.

In general, dispersants will not be allowed within the vicinity of mangrove stands unless EEAA judges that there will be a net environmental benefit taking all circumstances into account.

Marine mammals and turtles

Marine mammals are scarce in Egyptian waters and there is no documented evidence of oil spill impacts on dolphins or dugongs, whose main habitats are seagrass beds (see below). Turtles are vunerable to oil, eggs laid in sandy beaches and juveniles swimming in surface waters being their most sensitive stages.

Depending on the season and circumstances, dispersants will not be allowed close to known turtle nesting beaches because of the increased likelihood of oil being incorporated in sediments.

Ports and harbours

Sea conditions in ports, harbours and docks in industrial areas are generally calm. Conditions are therefore relatively good for containment and physical removal of the oil. Furthermore, most oil spills in port areas will be of marine diesel (gas/oil), heavy

fuel oil (eg bunker 6) or intermediates. Spills of gas/oil (commonly used in new vessels) will evaporate or disperse naturally; heavy fuel oils cannot be dispersed; and intermediate products will either evaporate or are not amenable to dispersion.

Dispersants will not usually be allowed within the confines of port areas. Dispersants should only be used in port areas subject to approval by EEAA, either on a "standing approval" or on a case by case basis. Consideration will be given to the use of dispersants in anchorage areas on a case by case basis.

Saltmarshes

Saltmarshes are extremely productive and are valuable habitats for many species, especially birds. Most marsh areas in Egypt are enclosed within the lakes on the Mediterranean coast, which are only connected to the sea through narrow gaps, but are sometimes found in conjunction with mangroves. Saltmarshes are oil traps and recovery times from oiling vary widely, from one or two years to decades. Thus the protection of saltmarshes (where they occur) is a high priority. The emphasis will be on booming the inlets to protect threatened marsh areas.

Decisions on the applicability of dispersants as a response option will be taken by EEAA on a case by case basis.

Seagrass beds

Seagrass beds are important nursery areas for reef fish and shrimps and are also feeding grounds for many fish, for Green Turtle and for dugong. They occur both intertidally and in shallow sub-tidal areas. Seagrass beds have not been mapped systematically in Egypt but the occurrence of seagrass beds off the visited beaches has been noted during the course of the NOSCP sensitivity analysis survey and the results are included in the GIS.

There is a possibility that dispersed oil in the water column could affect submerged seagrasses more than oil slicks floating on the surface above.

Dispersants will not be allowed in the vicinity of seagrass beds in shallow waters.

Shellfish

Oil slicks floating above shellfish areas are unlikely to harm them but exposure to oil - and possible tainting - are likely to increase if dispersed oil enters the water column.

Dispersant application will not be allowed for the treatment of oil slicks in near-shore waters with shellfishery activities.

Tourist resources and amenity areas

Recreational areas, such as bathing beaches and boat marinas, are important economically. Such areas are usually of low importance from the biological point of view.

The appropriate response option, including the use of dispersants, will be evaluated by EEAA on a case by case basis.

Water intakes

Water intakes for desalination plants or cooling systems for power stations or refineries may be damaged by the intake of oil-contaminated water. The use of

dispersants close to water intakes of industrial facilities will increase the risk of oil passing under protective booms and entering the water intakes.

The use of dispersants will not be allowed within the vicinity of water intakes.

Summary

A summary of EEAA's policy on the use of dispersants, based on its net environmental benefit analysis, is set out in Table A7.1.. All those responsible for preparing Tier One Oil Pollution Emergency Plans must take this policy into account in preparing or revising their own Tier One plans.

Resource at risk	**Acceptability of dispersants**	**Resource at risk**	**Acceptability of dispersants**
Aquaculture	Case by case	Ports and harbours Anchorage areas	Generally no but case by case basis Case by case
Bird areas	Generally no but case by case basis	Salt-marshes	Case by case
Coral reefs	No	Seagrass beds	No
Fishing grounds Spawning grounds	Open sea: case by case No	Shellfish beds	No
Mangroves	Generally no but case by case basis	Tourist resources	Case by case
Marine mammals	Generally no	Water intakes	No
Protected Areas under Law No. 102	No		

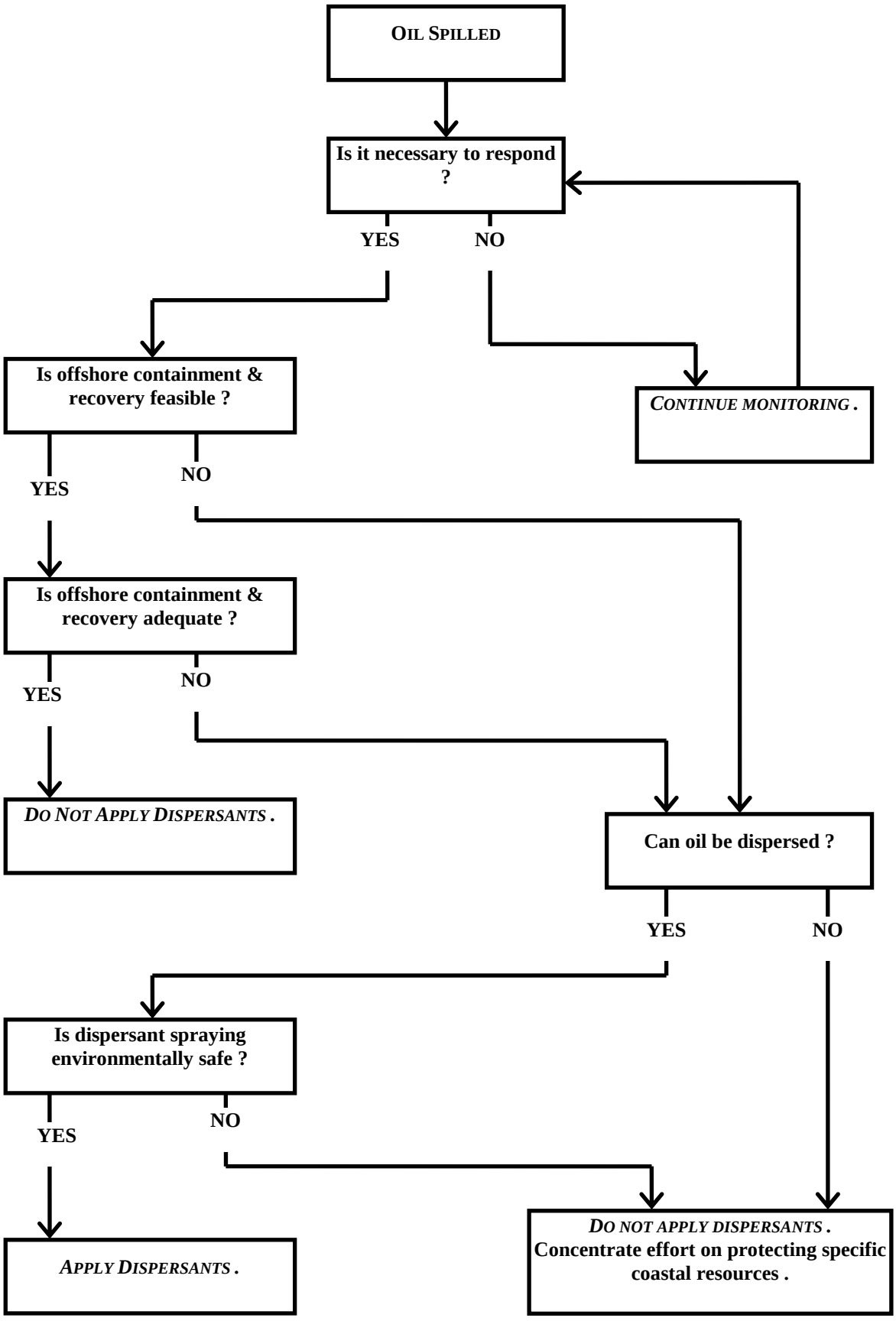
Table A7.1: Summary of the acceptability of the use of dispersants

7.3 PRIOR APPROVAL BY EEAA FOR THE USE OF DISPERSANTS

The guidelines described above set out EEAA's policy governing the use of dispersants in specific situations. In some cases, it will still be necessary for EEAA to take a specific decision in each case depending on the actual circumstances.There will also be other occasions - not covered by the above guidelines or by specific derogations for Tier One Oil Pollution Emergency Plans - where it will be necessary for EEAA to give specific approval before dispersants may be used.

A decision tree which EEAA will follow when assessing whether dispersants may be used on a case by case basis is shown in figure A7.1. The same decision tree should be used by operators when assessing whether to use dispersants in a particular spill, **even**

Figure A7.1: Dispersant Use Decision Tree



when EEAA has given a "standing approval" for dispersant use in a Tier One Oil Pollution Emergency Plan (see below).

The aim of EEAA's spill response strategy as regards the use of dispersants is to reduce the overall environmental impact on both natural and economic resources. Despite the principles outlined above, several elements of the net environmental benefit analysis for a particular area are spill-specific and can only be assessed at the time of the spill. Factors such as the predicted trajectory of the slick, the corresponding fate of the spill, and an assessment of the comparative effects of untreated versus dispersed oil will all need to be taken into account in order to identify which spill response method will minimise the overall environmental impact. A decision checklist which EEAA will follow is at Appendix 1.

7.4 WATER DEPTH LIMITS AND DISTANCE FROM THE SHORELINE

In addition to the areas where dispersants will not be allowed as a response option (Table A7.1), EEAA will also impose a general depth limit.

A number of field studies on the fate of oil and dispersed oil have been carried out internationally. These indicate that hydrocarbon concentrations beneath **untreated** oil slicks measure in the ppb (parts per billion). Under **dispersed** oil slicks, concentrations can be 20 - 50 ppm (parts per million) in the top 5 metres and at depths below approximately 10 metres hydrocarbon concentrations are < 1 ppm.

Mesocosm experiments indicate that the most significant effect of dispersants is an immediate increase in the hydrocarbon exposure to plankton. Acute effects have been observed, but many experiments involved long exposure times. In the open sea, dispersed oil would be diluted much more rapidly than it was in these experiments.

The most useful field experiments on the consequences of dispersant use in intertidal and nearshore areas were three experiments performed in the early 1980s: on Baffin Island in the Canadian Arctic; at a small bay in Maine, USA; and in a tropical bay containing mangroves, seagrass beds and corals in Panama. In all three locations, both dispersed and untreated crude oils were released slightly offshore or intertidally and allowed to strand on the intertidal zone.This is not the place for a full evaluation of these studies. However, as regards the impact of dispersed oil, in Maine and the Canadian Arctic initial impacts were higher in the presence of dispersed oil, but the effect was temporary and conditions returned to normal within one year. In the Panama experiment, the study concluded that there was little or no damage to the mangrove trees from dispersed oil after two years. However, corals, seagrasses and invertebrates were significantly affected by dispersed oil. After 10 years, the corals affected by dispersed oil had fully recovered.

In conclusion, it can be assumed that the use of dispersants will alter the fate of oil so that there is a greater initial effect in the water column than leaving the oil alone, and dispersed oil will also induce impacts in the nearshore subtidal zone.

In order to minimise environmental damage in shallow waters and the nearshore zone, EEAA will not generally allow the use of dispersants:

- **in water depths less than 20 metres except in the Gulf of Suez;**
- **in water depths less than 10 metres in the Gulf of Suez north of 28^{o} North;**
- **within 1 nautical mile (1.852 km) of the coastline or an area where the use of dispersants is prohibited (excluding the 10 or 20 metre water depth limit).**

However, EEAA reserves the right to assess each application to use dispersants on its merits.

Dispersant prohibition zones

The "dispersant prohibition zones" will be marked on maps and shown in the GIS.

7.5 STANDING APPROVALS

Due to weathering of the oil, there is a short "window of opportunity" for effective dispersant spraying. Its duration depends on a number of factors, notably the oil type, but is generally in the order of 24 hours and rarely lasts beyond 2 or 3 days. Most oils (with the important exception of heavy crude oils and fuel oil) can be successfully treated with dispersants in the first 4 to 6 hours of a spill. In order that dispersant spraying can begin as soon as possible, it is essential that the dispersant response option is decided quickly. In the case of On Scene Commanders acting within a Tier One Oil Pollution Emergency Plan, this means obtaining a pre-approval from EEAA.

EEAA will grant "standing approvals" to those responsible for preparing Tier One Oil Pollution Emergency Plans where it can be shown to the satisfaction of EEAA that dispersant spraying is a viable response option for the facility concerned. In considering applications for standing approvals, EEAA will take into account such factors as:

- the circumstances when dispersants will be used instead of the preferred option of containment and mechanical recovery;
- the environmental and economic resources which are threatened;
- the facility's own risk assessment of the "most likely" and "worst case" scenarios;
- the type of oil likely to be spilled and its characteristics (especially its viscosity and pour point);
- the adequacy of approved dispersant stocks at the site and the means of delivery within the time frame for the anticipated spill scenario.

When EEAA is satisfied that the use of dispersants will be a viable response option within the context of a Tier One Oil Pollution Emergency Plan, it will issue a standing approval in writing to the facility concerned, including any conditions or limitations on the use of dispersants. This approval will specify the named dispersant which has been approved. All standing approvals will be valid for 5 years unless circumstances make a shorter period appropriate.

The assessment of applications for standing approvals will take into account any mutual assistance agreements, where such agreements exist. However, in such cases, all partners to the mutual assistance agreement must have individual standing approvals for named products. Furthermore, any response where dispersants may be used under a mutual assistance agreement must specify a single point of control (On Scene Commander) or have clearly defined procedures for nominating such a single point of control.

If a facility has not received a standing approval from EEAA, it must apply to EEAA for specific permission in each case where it proposes to use dispersants.

The terms of EEAA's standing approval, or the absence of an approval, does not prevent the use of dispersants in *force majeure* situations where there is an immediate threat to human life or the safety of an offshore installation or vessel from, for example, fire or explosion.

7.6 APPROVAL SYSTEM FOR DISPERSANTS

Only named products which have been specifically approved by EEAA may be used as dispersants in Egyptian waters.

EEAA intends to develop its own procedures for the testing of dispersants which will be approved for use in Egyptian waters. Subject to further development, these will be:

- an effectiveness test: a laboratory test to determine the proportion (or percentage) of test oil that is dispersed and retained in a water sample under carefully specified conditions;
- a toxicity test: a laboratory test focusing on the effects of the chemically dispersed oil compared with the effects of untreated or physically dispersed oil, ie in order to ensure that the **relative** toxicity of an oil:dispersant mixture is no greater than the toxicity of the oil alone.

Until such time as national test procedures are developed, or until internationally recognised test protocols are developed, EEAA will normally accept documentary evidence to show that a named product has passed a recognised test procedure for both effectiveness and toxicity in another country.

APPENDIX 1

DECISION CHECKLIST ON THE USE OF DISPERSANTS

No.	Question	Decision
1	Will the oil slick abate as a result of evaporation or natural dispersion?	
2	Is containment and mechanical recovery practicable? Sea state? Wind speed and strength? Current speed and direction? Equipment available?	
3	Is the oil of a type and in a condition which is amenable to chemical dispersion?	
4	Is the slick in or approaching a "dispersant prohibition zone"?	
5	Will chemical dispersion be more detrimental than leaving alone and concentrating on shoreline protection?	
6	How effective is dispersant application likely to be? Amount of oil spilled? Amount of dispersant available? Delivery method? Response time? Number of runs available per 24 hrs Estimated application coverage	
7	Is spotter aircraft available to monitor situation?	
8	Will there be simultaneous action on mechanical recovery (in a different part of the oil slick)?	
9	Have shoreline protection measures been initiated?	

8 SENSITIVE AREAS: PRIORITIES FOR PROTECTION

8.1 CORAL REEFS

Coral reefs are considered as priority areas for protection due to their very high species diversity, their uniqueness and their considerable economic importance for the tourist industry and fisheries.

Extensive coral reefs are found in the Red Sea and the Gulf of Aqaba. The dominant reef type is the fringing reef extending almost continuously along the coast. Mostly the fringing reefs are narrow extending only a few tens of metres from the shore. In some areas, especially further south, they commonly extend 1 km to seaward.

The coral reefs in the Gulf of Suez are poorly developed. There are little or no corals in the northern half of the Gulf. From Ain Sukhna to the strait of Gûbâl only patchy fringing reefs are found with a limited coral diversity.

Coral reefs are threatened by small chronic oil spills in particular, but larger acute oil spills may also affect coral reefs. Observed biological impacts of oil spills in reef areas range from mass mortality of fish and invertebrates to apparently no effects.

Generally oil floats over the reef. However oil components may come in contact with corals in a number of ways:

- Some reefs are exposed to the air during low tides. Oil can come in contact with corals and cause severe damage on such reefs.
- Waves breaking on the reefs may create droplets of oil that are distributed into the water-column.
- Weathering processes cause oil to sink.
- Oil components can dissolve in water to some extent which exposes the corals to potentially toxic compounds. However, toxic concentrations are only encountered in the uppermost part of the water-column.
- Sand landing on an oil slick during sand storms can cause the oil to sink.
- The use of chemical oil dispersants will increase the dispersion of the oil into the water, thus increasing the potential for contact with the corals.

Based on these considerations coral reefs can be ranked with respect to sensitivity as indicated in Table A8.1.

The extent of coral reefs is shown on the maps in the GIS. Very shallow reefs identified during the field surveys are indicated on the maps. The ranking indicated in Table A8.1 has not been used on the sensitivity maps in the present version of the GIS. The various types of reefs have been ranked equal for the National Contingency Plan, for which the present ranking in the GIS has been prepared. For local plans dealing with smaller areas, further ranking of the various types of reefs should be applied.

Degree of vulnerability	Reef Type
Very vulnerable reefs	A. Reefs on very shallow water where the reef edge and reef flats may be exposed to air during low tide. There is a high risk of direct contact between corals and oil and the reef can be severely damaged.
	B: Reefs in sheltered shallow waters where high concentrations of dissolved oil may persist for quite a long time.
	C. Reefs on shallow waters which are already stressed by pollution, sedimentation, tourism etc.
Reefs of medium vulnerability	Reefs on shallow water. High concentrations of dissolved toxic oil components may be encountered in the water around the corals beneath large fresh oil slicks on such reefs.
Reefs of low vulnerability	Reefs on deeper waters. Oil floats over the reef and dilution reduces oil concentrations around the corals to below acute toxic levels.

Table A8.1: Sensitivity of various types of coral reefs.

8.2 MANGROVES

Mangroves are well known for being particularly sensitive to oil spills and are considered as priority areas for protection.

Mangroves are encountered in the Red Sea region, particularly in the southern part. There are only a few isolated mangrove stands in the northern Red Sea. Here the mangroves are at the northern most limits of their range. The dominating mangrove tree in the Red Sea is *Avicennia marina*.

Mangroves are highly productive ecosystems providing food and shelter for a large number of species. They are important breeding and nursery areas for fish and crustaceans and they are essential habitats for numerous birds.

Mangroves typically grow in more or less anaerobic sediments. They receive oxygen through aerial roots protruding from the sediment surface. There are pores on the aerial roots through which oxygen passes. This root system makes mangroves highly susceptible to oiling. Oil slicks may enter mangroves when the tide is high and are

deposited on the aerial roots and sediment surface as the tide recedes. The pores in the aerial roots become clogged by the oil and, if many roots are oiled, the respiratory system collapses and the trees die. Mangroves can also be killed due to toxic effects of oil components, especially low boiling aromatics. The toxicity of oil gradually decreases because the toxic aromatics evaporate. Toxic effects therefore mainly arise from newly spilled oil.

Oil easily gets trapped in the mangroves and usually persists for a very long time. The oil is subject to microbial degradation which may be a rather rapid process in aerobic environments. However, if the oil is buried within the anaerobic sediments bio-degradation proceeds very slowly.

The locations of mangroves are shown on the maps in the GIS and there is a database attached to each mangrove symbol containing information on: site name, geographical coordinates of the site, national legal status, international status and ecological significance of the site.

It should be noted that there are extensive areas of mangroves along the Red Sea coast between Shalateen and the Sudan border and that the exact locations of these mangroves are not known in detail. The GEF Red Sea Project may provide more detailed information from recent surveys.

8.3 SALTMARSHES

Saltmarshes are also sensitive to oil pollution. There are various types of saltmarsh vegetation. Reed marshes are dominated by *Phragmites australis* and *Typha domingensis*. Marshes are extremely productive and are valuable habitats for many species. They are essential habitats for numerous birds, both as roosting and breeding sites for resident species and stopover and feeding grounds for migrants. Large reed marshes are found in the coastal lakes along the Mediterranean shore. However, these marsh areas are enclosed within the lakes which are only connected to the sea through narrow gaps.

The location of marsh areas is shown in the GIS.

8.4 BIRD SITES

Around 70% of the bird species encountered in Egypt are migratory species which are found in Egypt only on a seasonal basis. The coasts of Egypt are situated along extremely important migration routes for birds and there are very important wintering areas for water birds along the coast.

The migrating birds pass a number of internationally important bottlenecks along the Mediterranean and Red Sea Coast (Zaranik, Ras Mohammed, Suez, Ain Sukhna and Gabel Zeit). Very large concentrations of migrants can be found in the spring and autumn in these areas including a high percentage of the world population of several species.

The lakes along the Mediterranean shores of Egypt and the Bitter Lakes are among the most important areas for migrating and wintering waterbirds in the Black Sea/Eastern Mediterranean region and the entire continent of Africa. Significant concentrations of the world populations of a number of species are found in these wetlands.

The islands in the Red Sea are important breeding grounds for birds, especially gulls and terns, including the globally threatened White-eyed Gull (*Larus leucophthalmus*). This species only breeds on the Red Sea Islands. In the early 1980s it was estimated that over 30% of the world population of White-eyed Gull breeds on Egypt's northern Red Sea islands.

The mangroves in the Red Sea are important habitats for birds. Several species of birds are residents of the mangroves, the most prominent being the Spoonbill, Reef Heron, Green Heron and Ospreys. Many migratory and wintering shore birds use the mangroves for food and shelter, which is, otherwise, extremely scarce along the arid Egyptian Red Sea coast.

Waterbirds are perhaps the most prominent victims of oil spills at sea. There are three types of effects:

- Effects caused by the sticky nature of oil. Stains of oil on the plumage may destroy the insulating and water repelling property which may ultimately cause the death of the bird.
- Toxic effects after the ingestion of oil during preening, ingestion of oiled prey, inhalation of oil fumes or absorption of oil through skin or eggs.
- Indirect effects resulting from destruction of bird habitats or food resources.

The sensitivity to oil for various groups of birds differs considerably. Table A8.2 gives a ranking of the vulnerability to oil spills of various groups of water birds.

The risk of oil pollution to bird species not normally associated with water is, of course, much lower than that of waterbirds. However, certain migrating non-water birds, such as birds of prey and storks, can be affected. During migration birds often land to rest along the shoreline or to soak their feet in the tidal zone to cool down.

The risk of oil pollution in Egyptian coastal lakes is much lower than in the marine environment proper; however, the impacts of oil pollution could be potentially more severe as there are much greater numbers of birds utilising the lakes.

Areas of national and international importance for birds which may be affected by an oil spill are shown on the maps in the GIS. A database is attached to the symbols on the map. The database contains information on: site name, positions, area of site, habitats utilised by birds, national legal status of the site, international status of the site, significance for birds including remarks on seasons, occurrence of globally threatened species, groups of birds encountered at the site, most important species of birds present and remarks on internationally important numbers of birds on the site.

Vulnerability to oil	Group	Remarks
High vulnerability	**Diving coastal birds** Diving ducks, Grebes, Boobies **Waterfowl** Dabbling ducks	These birds stay on the water most of the time. The risk of contact with oil-slicks is high and the birds do not avoid oiled areas. Direct mortality from oil slicks can be very high. Dabbling ducks also stay on the water and are therefore highly at risk but they are less vulnerable than diving birds because they prefer shallow habitats with a reduced risk of spill occurrence (Such as the Mediterranean coastal lakes which are only connected to the sea via a few very narrow gaps)
Moderate vulnerability	**Diving pelagic seabirds** Skuas	These birds do not spend much time on the water surface. Risk of direct mortality due to exposure to oil is therefore smaller. Effects on reproduction from oiling and ingestion of oil has occurred.
	Shorebirds	Shorebirds rarely enter the water. Risk of direct mortality during an oil spill is therefore generally low. Indirect effects from either reduced or contaminated prey are more likely because they feed in intertidal habitats where oil strands
	Wading birds Herons	Do not immerse into the oil. However, wading birds feed in shallow areas which are usually oiled during a spill. Therefore indirect effects can occur from ingestion of oiled prey and from loss of food sources.
	Birds of Prey Eagles, ospreys, falcons	Birds of prey may become oiled via consumption of oiled prey
Low vulnerability	**Gulls and terns**	Gulls and tern are able to readily avoid oil spills

Table A8.2: Relative vulnerability of various groups of water birds

8.5 TURTLES

Sea turtles are listed as globally threatened species and they are very sensitive to oil pollution. Nesting sites are particularly vulnerable and are therefore considered to be priority areas for protection.

Three species are known to breed in Egypt: the Loggerhead Turtle (*Caretta caretta*), the Green Turtle (*Chelonia mydas*) and the Hawksbill Turtle (*Eretmochelys imbricata*). Leatherback Turtle (*Dermochelys coriacea*) and Olive (Ridley) Turtle (*Lepidochelys olivaccea*) are also known from Egyptian waters. The status for these species is indicated in Table A8.3.

The Red Sea seems to be more important for nesting sea turtles than the Mediterranean. The Red sea Islands are especially important. However, it should be stressed that sea turtles have not yet been adequately surveyed in Egypt. Surveys for sea turtles are particularly needed along the Delta and North Sinai coasts as well as the Red Sea.

Table A8.3: Status of Sea Turtles in Egypt

Species	Status in Egypt	Global Status*	National Legal Status	Areas of importance to species
Hawksbill Turtle (*Eretmochelys imbricata*)	Uncommon breeding species in the Red Sea (most common breeding Turtle in Egypt)	Endangered	Protected	Red Sea (Islands)
Green Turtle (*Chelona mydas*)	Scarce breeding species along the Mediterranean and Red Sea Coasts	Endangered	Protected	Mediterranean and the Red Sea Islands
Leatherback Turtle (*Dermochelys coriacea*)	Rare visitor on the Mediterranean coast and uncommon visitor to the Red Sea	Endangered		Mediterranean and Red Sea Islands
Olive (Ridley) Turtle (*Lepidochelys olivaccea*)	Rare visitor to the Red Sea	Endangered		Red Sea
Loggerhead Turtle (*Caretta caretta*)	Scarce breeder on the Mediterranean coast and very rare visitor to the Red Sea	Vulnerable		Mediterranean

* Globally threatened status as specified by the 1990 IUCN Red Data Book (WCMC 1990).:

Endangered: Species in danger of extinction and whose survival is unlikely if the causal factors continue operating.

Vulnerable: Species believed likely to move into the "Endangered" species category in the near future if the causal factors continue operating.

Turtles lay their eggs on sandy beaches during summer. The peak nesting period is June-July. The females bury the eggs in the sand. The nests are normally located above the high tide level and the turtles prefer nesting on isolated beaches.

After a 50-70 day incubation period, hatchlings emerge and move rapidly to the sea. In the first period at sea, the juveniles stay in the pelagic zone where they are carried by the currents. Later the juveniles leave the pelagic and move to benthic foraging grounds.

Green turtles feed on sea-grasses and are consequently mainly found at sea-grass beds. Hawksbill turtles are encountered at coral reefs where they feed on sponges and soft corals.

Turtles are vulnerable to oil, eggs and juveniles being the most sensitive stages.

The hatchlings are especially at risk when they dig their way out of the nest and enter the water. If oil is stranded on a nesting beach the juveniles inevitably have to cross an oiled part of the beach and they become smeared in oil. This may cause skin irritation and surface lesions which may weaken them. In severe cases they may die.

During their first period in the sea the young juveniles stay in surface waters and the risk of encounter with oil slicks is therefore high. Young turtles which have been exposed to oil in water may suffer from a wide number of injuries (disturbed diving

and respiratory patterns, decreased blood glucose levels, reddening and sloughing off of the skin and dysfunctioning of the salt glands). These injuries may eventually cause the death of the animal.

The eggs are also very vulnerable to oil when buried in the sand. Fresh crude oil on the sand surface significantly affects the hatching success of eggs. If eggs are exposed to a light dosage of oil mixed in sand, the hatchlings become considerably smaller in terms of weight and size than normal. Fortunately, in cases of stranding of oil on the beach, direct oiling of eggs is not likely except during storms because the eggs are usually laid above the high tide mark.

Adults may experience skin irritation or surface lesions if coated with oil. They may also consume tar balls which coat their mouth hampering feeding ability.

The locations of known turtle nesting sites are indicated on the maps in the GIS by a symbol. A database is attached to each symbol with information on: site name, position, species and number of breeding turtles on the site.

8.6 MARINE MAMMALS

Data on occurrence of marine mammals in Egyptian waters are scarce. Dolphins and dugong (*Dugong dugong*) occur in the Red Sea. Dolphins are seldom directly impacted by oil spills. There are no documented accounts of oil spill impacts on dugongs, but as the dugong is a globally threatened species, dugong habitats should be protected from oil spills. The dugong is a rare resident of the Egyptian part of the Red Sea. The main areas for dugongs are large sea-grass beds on which they feed.

The locations of known dugong sites are indicated on the maps in the GIS by a symbol. A database containing site name, position and remarks is attached to each symbol.

8.7 PROTECTED AREAS

Protected areas and endangered species have a high priority for protection during an oil spill.

The Law concerning Natural Protectorates (Law No.102 of 1983) created the framework for the establishment of natural protectorates in Egypt. The National Parks Department of EEAA is responsible for implementation of Law No. 102 and supervising the national network of parks. To date, 17 Protected Areas have been established in Egypt representing a wide range of critical ecosystems. Two National Parks, five Protected Areas and one Biosphere Reserve are found along Egypt's Mediterranean and Red Sea coasts. These are:

- The Ras Mohammed and the Elba National Parks
- The Ashtun El Gamal, the Zaranik, the El Arash , the Abu Ghalum and the Nabq Protected Areas
- The El Omayad Biosphere Reserve

According to Law 102/1983, all fauna and flora found in the Protected Areas is strictly protected. The law prohibits "any activity or practice leading to the destruction,

degradation and spoiling to the natural ecology or any harm to the terrestrial, aquatic or plant life or causes any damage to the aesthetics of the area."

The protected areas are indicated on the maps in the GIS. Attached databases contain information on: site name, positions, area, national legal status, international status, significance for plants and animals in general, significance for birds and remarks.

8.8 SEA-GRASS BEDS

In the Gulf of Suez, Gulf of Aqaba and in the Red Sea sea-grass occurs within the lagoons in the coral fringe. Sea-grass beds are important nursery areas for reef fish and shrimps. They are also feeding grounds for many fish, for Green Turtles and for Dugong.

Sea-grass beds have not been mapped systematically in Egypt. During the field survey carried out for the NOSCP project, the survey teams noted the occurrence of sea-grass off the visited beaches. The data collected during the beach survey is the main source of information for the mapping. A little information was also found in the literature.

In most cases oil will flow above the sea-grass without causing damage. However sea-grass beds may be affected if oil is brought in contact with sea-grass. Various types sea-grass beds can be ranked with respect to sensitivity to oil as indicated in Table A8.4.

Degree of vulnerability	Reef Type
Highly vulnerable beds	A. Sea-grass on very shallow water where oil may come in direct contact with the plants during low tide
	B: Sea-grass in sheltered shallow waters where high concentrations of dissolved oil may persist for quite a long time.
Seagrass beds of medium vulnerability	Sea-grass on shallow water. High concentrations of dissolved toxic oil components may be encountered in the water around the sea-grass beneath large fresh oil slicks on such beds.
Sea-grass beds of low vulnerability	Sea-grass beds on deeper waters. Oil floats over the beds and dilution reduce oil concentrations around the plants to below acute toxic levels.

Table A8.4: Sensitivity of various types of sea-grass beds

The sites where sea-grass were observed during the field survey are indicated on the maps in the GIS. Locations mentioned in the literature are also marked. The ranking of sea-grass beds indicated in Table A8.4 has not been used on the sensitivity maps in the GIS. All sea-grass beds have been ranked equal for the National Contingency Plan for which the present ranking in the GIS has been prepared. For local plans dealing with smaller geographical areas the ranking according to high, medium and low vulnerability could be applied.

8.9 FISH

Oil components are toxic to fish. However, the toxicity varies a great deal with the life-stage of the fish:

- larvae are by far the most vulnerable;
- eggs are less sensitive and
- adults are the least vulnerable. In addition, adults are able to actively avoid oil slicks.

Generally, toxic concentrations of oil components are confined to the uppermost parts of the water column beneath an oil slick. Larvae, eggs, juveniles and adults at risk are those encountered in the upper water masses. However, in cases where oil is actively dispersed by the application of dispersants, the risk of toxic effects in deeper water increases. In addition the toxicity increases.

Red Sea

In the Red Sea and the Gulf of Aqaba most fish are associated with the coral reefs. There is a vast amount of species. In the Red Sea as a whole 800 different species of fish are encountered. The number of species decreases from the south to the north. In the Gulf of Suez, the abundance of reef fish is small due to the scarcity of coral reefs.

Most of the fish on the reef lay pelagic eggs and the larvae are also planktonic. Eggs and larvae stay on shallow water on the reefs and are therefore highly vulnerable to an oil spill.

Generally reef fish are not migrating. Spawning therefore takes place all along the coast of the Red Sea and the Gulf of Aqaba. The spawning periods for the most important fish families associated with coral reefs are indicated in Table A8.5.

Group	J	F	M	A	M	J	J	A	S	O	N	D
Mullets (Mugilidae)	x	x	x	x	x	x	x	x	x	x	x	x
Angelfish (Chaetodontidae)				x	x	x	x	x				
Barracuda (Spyraenidae)			x	x	x							
Bluefish (Pomatomidae)			x	x	x							
Butterflyfish (Chaetodontidae)				x	x	x	x	x	x	x	x	
Damselfish (Pomacentridae)				x	x	x	x	x				
Jacks & Pompano (Carangidae)					x	x	x	x	x	x	x	x
Parrotfish (Scaridae)				x	x	x	x	x	x			
Seabass (Serranidae)	x	x	x	x	x	x					x	x
Snappers (Lutjanidae)							x	x	x	x	x	x

Table A8.5: Spawning periods for various families of coral reef fish

The abundance of fish on coral reefs is largest on the upper part of the reef front and on the shallow lagoons towards the coast (i.e. generally on waters less than 2 m depth). Adult fish are therefore also at risk in the case of an oil slick entering the reef .

Mediterranean Sea

The number of fish species in the Mediterranean Sea is less, but there are a number of commercially very important species.

Many fish species, the commercially most important being Mullet and Sea Bass, use the brackish water at the Nile estuary as spawning and nursery grounds. Spawning takes place immediately offshore and the young fish grow up in the river mouths before migrating to the sea.

Lake Manzala and the other coastal lakes with connection to the sea are very important spawning and nursery areas for a number of fish species (sea-bass, sea-bream and mullet) and for shrimps.

Known spawning and nursery areas for fish not associated with coral reefs are indicated with symbols on the GIS.

8.10 HUMAN USE RESOURCES

Tourism

The tourism industry plays a vital role in the national economy of Egypt and is planned to be significantly further developed.

An oil spill may cause economic loss to the tourism industry. Tourist areas have been given a high priority in the priority ranking for protection and clean-up, due to the great importance for the Egyptian economy.

Fortunately tourist beaches are usually easy to clean; they are generally composed of fine grained sand and good access roads to the beaches are available. Impacts on coral reefs which are important for the tourism industry may be more serious.

Stretches of coastline which are exploited by the tourism industry are shown on the maps in the GIS. The information was collected during the field surveys in December 1996 - March 1997 and is subject to change as more sites are developed. Diving sites which are important for tourism are also indicated on the GIS.

Aquaculture and fisheries

There are large fish farms between Damietta and Port Said. Ponds for the breeding of Tilapia, sea-bream and mullet have been constructed in the area between the sea and Lake Manzala. The ponds are connected to the sea via canals which provide renewal of the water in the ponds. There are similar fish farms east of Alexandria and at Lake Burullus.

These facilities are very vulnerable to oil spills. If oil contaminated water enters a fish pond, the fish may become tainted and unsuitable for human consumption. Larger amounts of oil could destroy the pond and repair would be very costly. On the other hand, if the farm owners are warned in due time, it is not too difficult to prevent severe damage.

The most important fishery areas in Egyptian waters are located in the Mediterranean and the Gulf of Suez. In the Mediterranean there are important fishing grounds close to the shore between Alexandria and Al Arish, i.e off the Nile Delta and the coastal lakes. Fishing mainly takes place in water depths of 10-50 m and is carried out with trawl, purse seine, beach seine, gill nets and trammel nets. Fish, shrimps and Donax

mussels are caught. The Gulf of Suez is also an important fishing area. Trawl and purse seine are the most common types of gear. Both fish and shrimps are caught.

The location of fish farms, fishing grounds and fish landing sites are indicated on the maps in the GIS.

Other Human Uses

An oil spill may cause damage in urban areas, harbours and ports. Oiling of seawater intakes of desalination plants will especially cause severe problems.

The location of urban areas, industrial areas and harbours are shown on the maps in the GIS.

9 MEDIA RELATIONS PLAN

9.1 OBJECTIVES FOR RELATIONS WITH THE MEDIA

EEAA recognises that in the event of a major (Tier Two or Tier Three) oil pollution incident there will be a lot of media interest, particularly if touristic or ecological resources are threatened. Environmental pressure groups may also be concerned.

EEAA's policy aim is:

- to provide the media (radio, TV, newspapers) with honest and accurate information at regular intervals throughout the incident;
- to establish good relations with the media in order to ensure that the flow of information is controlled and the presentation of facts is not distorted.

EEAA's objectives for dealing with the media during an oil pollution incident will be:

⇒ to establish the competent authorities as a helpful, reliable and knowledgeable source of information

⇒ to present an efficient and environmentally caring face to the media

⇒ to demonstrate a responsible approach and show that an efficient response strategy has been set in place

⇒ to influence what the media write or say.

9.2 APPOINTMENT OF EEAA MEDIA LIAISON OFFICER

The Media Liaison Officer (MELO) will have important functions during an incident since, in most cases, he will be the "public face" of EEAA. It is recognised that responsibility for dealing with the media during a Tier Two or Tier Three incident should be managed by a separate officer as the Incident Commander will be too busily concerned with the practical arrangements of responding to the incident.

During an incident, the MELO will have:

- sole responsibility for handling the relations with the media;
- no responsibility for combat operations.

However, in order that he can fulfil his task effectively, it will be important that the MELO is closely involved with, and fully informed about, the combat response decisions. The MELO will therefore be a member of the core Management Team of the Central Operations Room in EEAA (see chapter B10).

The Media Liaison Officer will be the EEAA Press Officer, Mr Mohamed Mahmoud. In the event of a major oil pollution incident, Dr Fawzi will be responsible for clearing technical issues; Mr Mohamed Mahmoud will be responsible for press liaison; both under the personal supervision of the Chief Executive, Dr Ibrahim Abd El-Gelil.

Media Liaison Officer	**Mr Mohamed Mahmoud**
Telephone	**(02) 525 6452 or 525 6482 ext 8835**
Fax	**(02) 525 6490**

9.3 APPOINTMENT OF A MEDIA LIAISON OFFICER AT THE SCENE OF THE INCIDENT

In the event of a major oil pollution incident, there will be a lot of pressure from the media on the authorities who are leading the response action at the scene of the incident to make statements about the reasons for the spill, the combat measures, etc. In order to ensure that conflicting views are not presented to the media, it will be important to present a unified approach, whether it is from EEAA or the authority on scene.

It is therefore essential that the locally appointed Media Liaison Officer should establish contact with the MELO at EEAA in order to ensure a consistency of approach before issuing press releases or conducting interviews with the media.

Further guidelines on the role and responsibilities of the local Media Liaison Officer are given in chapter B8.

Guidelines on how to handle publicity and relations with the media are given in chapter B11.

10 TRAINING AND EXERCISES

To meet its obligations under the OPRC Convention, Egypt is obliged to establish a programme of training and exercises. Article 6(2) of OPRC states that "... each Party, within its capabilities either individually or through bilateral or multilateral co-operation and, as appropriate, in co-operation with the oil and shipping industries, port authorities and other relevant entities, shall establish .... a programme of exercises for oil pollution response organizations and training of relevant personnel."

10.1 TRAINING

Training is an essential activity of EEAA's national contingency plan in order to enhance the capabilities of personnel working at different levels and in different organisations - both in the public and private sector - within Egypt.

On 30 March 1997 EEAA and the Arab Academy for Science, Technology and Maritime Transport (AASTMT) executed an Agreement on training. The purpose of the Agreement is that, through co-operation between EEAA and AASTMT, AASTMT will provide training in oil spill response principles and techniques, primarily to candidates from the public sector nominated by EEAA. The Agreement shall be valid for a period of 10 years, but subject to review every 2 years.

The training courses will be officially conducted by AASTMT under the auspices of EEAA. The precise details of the training courses will be elaborated annually in advance between EEAA and AASTMT based on EEAA's assessment of training needs under the NOSCP. The content of each training course will be a matter of negotiation between EEAA and AASTMT. Where appropriate, the training course content will take account of "model" training course material which is being developed by IMO in the framework of the OPRC Convention.

Each training course will train a minimum of 15 and a maximum of 25 participants. The duration of each training course will be subject to agreement between EEAA and AASTMT taking into account relevant factors such as the nature of the training to be provided. However, training courses will not normally exceed 6 days' duration.

EEAA will be responsible for selecting candidates to participate in each training course. The emphasis will be on training candidates from the public sector. Under the terms of the Agreement, AASTMT has undertaken to provide training for candidates from the public sector at a substantial discount to its full fees.

A limited number of trainees from the private sector may attend the EEAA training courses, including trainees from the petroleum sector invited by EEAA. The proportion of participants from the private sector should not normally exceed 40% of the total number of trainees on a training course. However, it is an objective of the NOSCP that participants from both the public and private sector in Egypt should be

trained together in order to enhance the national "team spirit" and develop and strengthen the personal relationships that are so important in times of emergency.

10.2 EXERCISES

The ultimate test of any contingency plan is measured by its performance in a real oil pollution incident. It is vital that a programme for developing and strengthening the NOSCP should include an annual exercise programme to test the national contingency plan through realistic exercises. Those responsible for Tier One and Tier Two oil pollution emergency plans should also regularly conduct exercises for ensuring that personnel understand their responsibilities and that the operational procedures of the plan are effective and workable in a real emergency.

There are many benefits from conducting exercises regularly. Response teams are provided with the opportunity to practice skills that will be required in an oil pollution incident, to work together closely and develop personal relationships (sometimes with colleagues from different companies and organisations), and to make complex decisions under stressful circumstances. Contingency plans, equipment and operational procedures will be tested and, with proper feedback, lessons will be learned and recommendations will be made for improvements to the oil spill response systems. This applies both to the national contingency plan and local (Tier One) oil pollution emergency plans.

Four different types of exercise can be identified: notification exercises, tabletop exercises, equipment deployment exercises and incident management exercises.

Notification exercises

Notification exercises test the procedures to alert and call out the response teams and are conducted through telephone, fax and other means of communication. They can be used to test communications systems, check the availability of personnel and the agreed emergency (24 hour) notification arrangements, and assess the ability to transmit information quickly and accurately. Such an exercise will typically last one or two hours and may be held at any time, day or night, and either announced in advance or held unannounced.

Tabletop exercises

Tabletop exercises normally consist of interactive discussions based on a simulated exercise scenario among the members of a response team, but they do not necessarily involve the mobilisation of personnel or equipment. They are usually conducted in a conference room or series of rooms connected by telephone lines. Tabletop exercises focus on the roles and actions of the individuals with specific tasks as defined in the contingency plan or local oil pollution emergency plan, the interactions between the various parties, and the development of response strategies. A tabletop exercise might typically last between half a day and a full day and should be organised in advance in order to ensure the availability of personnel.

Equipment deployment exercises

Equipment deployment exercises involve the deployment of oil spill response equipment at particular locations in response to an exercise scenario. Among other things, the aim is to test the response strategies in the plan for a particular oil spill scenario. These exercises test the capability of a local team to respond to a Tier One or Tier Two type incident. They provide experience of local conditions and of different spill scenarios, and they enhance individual skills and teamwork. It is important that all the parties who would normally be part of such a response, such as providers of boats, barges and trucks, should be involved so that their availabilities and capabilities can be assessed as a contribution to the effectiveness of the plan.

Equipment deployment exercises typically last for a whole day. Such exercises should be repeated frequently to ensure that response teams are familiar with the equipment and to ensure that practical skills are not forgotten. Equipment deployment exercises also provide a good opportunity to check that the condition and maintenance of equipment is in good working order. In some cases an equipment deployment exercise might be run in conjunction with a tabletop exercise or incident management exercise.

Incident management exercises

Incident management exercises are more complex in that they simulate several different aspects of an oil spill incident simultaneously and usually involve third parties outside the organisation which is being tested. Such an exercise may be of "limited scope" with organisations using their own personnel to role-play the main external parties. However, it is more beneficial for such exercises to be "full scope" when outside agencies and organisations are invited to play their own roles within the exercise. Although "limited scope" exercises are beneficial in the early stages of team development, it is only by exercising with the actual people who would be involved in a real emergency that a response team can be properly tested and trained.

Incident management exercises require significant planning in terms of availability of personnel, the development of an appropriate exercise scenario and the physical arrangements for staging such events, especially when combined with an equipment deployment exercise. Incident management exercises usually last one long day (typically 10 - 14 hours), followed by a debriefing session on the second day.

10.3 DECISIONS OF THE NATIONAL CONTINGENCY PLANNING COMMITTEE ON EXERCISES

The National Contingency Planning Committee has agreed that EEAA should organise notification exercises at least every 3 months in order to ensure that the alert procedures of the NOSCP are understood and followed by all concerned parties.

The Committee has also agreed that, in addition to testing notification procedures, the readiness of parties to respond to an oil spill and mobilise equipment should also be tested on a regular basis. The Committee therefore agreed that EEAA should organise a national alarm exercise every year and that each party playing a role in the exercise

will bear its own costs. The national alarm exercise will be a combination of an incident management exercise and an equipment deployment exercise.

All exercise communications shall carry the heading:

EXERCISE - EXERCISE - EXERCISE

to avoid any confusion with a real pollution incident.

All exercise communications must be acknowledged by the recipient.

1 SPILL ASSESSMENT AND SURVEILLANCE

1.2 AERIAL RECONNAISSANCE

Aerial reconnaissance is essential for an effective response to oil spills, both to facilitate the location of oil at sea and to improve the control of response operations. However, finding the oil and then interpreting its appearance in terms of amount and type is often difficult. The resemblance between floating oil and other phenomena is frequently deceptive. This chapter provides guidance on a methodology to follow.

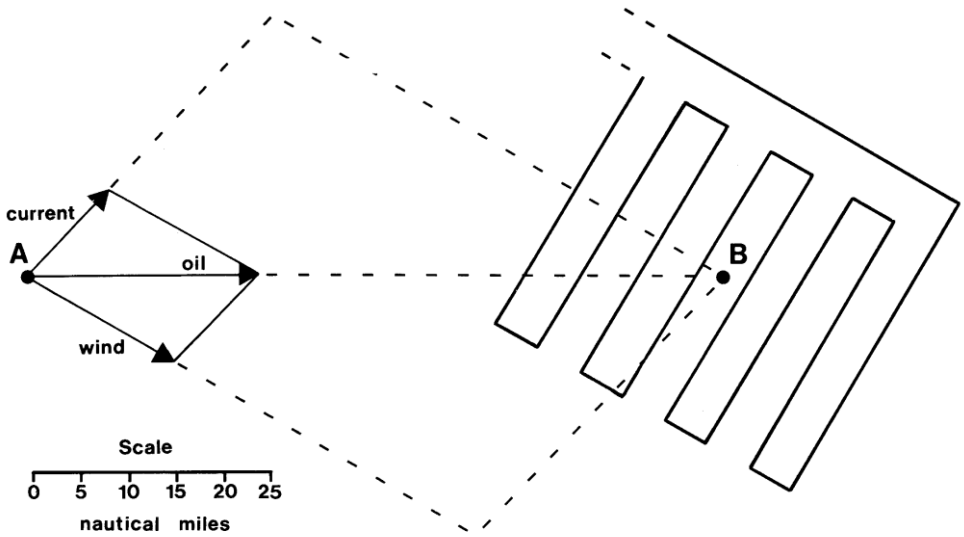
The aircraft chosen for aerial observation must feature good all round visibility and carry suitable navigation aids. Over nearshore waters, the flexibility of helicopters may be an advantage. For extensive surveys over remote sea areas, the extra margin of safety afforded by a twin or multi-engined aircraft is essential.

A flight plan should be prepared in advance using a chart of appropriate scale and taking account of any available information (eg from the notification to EEAA) which may reduce the search area as much as possible. To avoid confusion it is often advisable to draw a grid on the chart so that any position can be positively identified by a grid reference. For example, the grid squares may each represent one square kilometre. The task of forecasting the position of the oil is simplified if data on winds and currents are available since both contribute to the movement of floating oil (see chapter B2 for further guidelines on oil slick prediction).

It is usually necessary to plan a systematic aerial search to ascertain the presence or absence of oil over a large sea area. A "ladder search" is frequently the most economical method of surveying an area (see Figure B1.1) provided that due attention is paid to visibility, flight altitude, flight duration, fuel availability, and any other advice the pilot may give. It is advisable to arrange a ladder search across the direction of the prevailing wind to increase the chances of oil detection because floating oil has a tendency to become aligned in long and narrow windrows parallel to the direction of the wind.

Another consideration is the possibility of haze and dazzle off the sea which often affects visibility. Depending on the position of the sun, it may prove more profitable to fly a search pattern in the opposite direction to the one originally planned. Sun glasses will give the observer some relief from eye strain caused by strong light and, indeed, glasses with polarising lenses will actively assist the detection of oil at sea under certain light conditions on account of the polarisation differences in light reflectance off oil and off water.

The search altitude is generally determined by the prevailing visibility. In clear weather, 500 metres (1500 feet) frequently proves to be optimum for maximising the scanning area without losing visual resolution. However, it will be necessary to drop to half this height or lower in order to confirm any sightings of floating oil or to analyse its appearance.



Movement of oil from last known position (A) to predicted position 3 days later (B). Wind speeds of 25 knots and current speeds of 0.5 knots prevail in the directions indicated. Arrow lengths represent distances applicable to movement during 24 hours. A cross-wind ladder search over B is shown with a flight path separation of 5 miles.

Figure B1.1: A Ladder Search Flight Plan

(Source: ITOPF Technical Information Paper No. 1)

1.2 APPEARANCE OF OIL AT SEA

From the air it is very difficult to distinguish between oil from oil spills and a variety of other unrelated phenomena. These include:

◊ cloud shadows

◊ ripples on the sea surface

◊ seaweed (seagrass) patches in shallow water

◊ differences in the colour of two adjacent water masses

◊ sewage discharges

It is necessary, therefore, to verify initial sightings of suspected oil by overflying the area at sufficiently low altitude to allow positive identification.

Crude oils or fuel oils spilt at sea undergo marked changes in appearance with the passage of time in response to processes which are known as "weathering". Most oils spread laterally under the combined influence of gravity and surface tension, forming continuous slicks of thick dark oil which gradually thin into irridescent or silvery sheen at the edges. Some crude oils and heavy fuel oils are exceptionally viscous and tend not to spread much but remain in rounded patches surrounded by little or no sheen. Slicks are soon broken up into windrows typically 30 - 50 m apart and lying roughly parallel to the wind direction. Spills of crude oil and some fuel oils rapidly

form water-in-oil emulsions which are often characterised by a brown/orange colour and a cohesive appearance ("chocolate mousse").

1.3 QUANTIFYING FLOATING OIL

An accurate assessment of the quantity of any oil observed at sea is virtually impossible due to the difficulty of gauging the thickness and coverage of floating oil. At best, a correct order of magnitude can be estimated by considering certain factors. The gravity-assisted spread of spilt oil is quite rapid and most liquid oils will soon reach an equilibrium thickness of about 0.1 mm characterised by a black or dark brown appearance. Similarly, the colour of sheen roughly indicates its thickness (see Table B1.1).

Oil Type	**Appearance**	**Approximate Thickness**	**Approximate Volume (m^3/km^2)**
Oil sheen	silvery	>0.0001 mm	0.1
Oil sheen	irridescent (rainbow)	>0.0003 mm	0.3
Crude and fuel oil	black/dark brown	>0.1 mm	100.0
Water-in-oil emulsions ("mousse")	brown/orange	>1 mm	1,000.0

Table B1.1: A Guide to the Relation between the Appearance, Thickness and Volume of Floating Oil

The figures in Table B1.1 show how important it is for the observer to distinguish between sheen and thicker oil. Although sheen may cover a relatively large area of sea surface it makes a negligible contribution to the volume of oil present.

A reliable estimate of water content in a "mousse" is not possible without laboratory analysis but, accepting that figures of 50% to 70% are typical, approximate calculations of oil quantities can be made given that most typical floating "mousses" are about 1mm thick. However, it should be emphasised that the thickness of "mousse" and other viscous oils is particularly difficult to gauge because of their limited spreading.

In order to estimate the amount of floating oil it is necessary not only to gauge thickness but also to determine the surface area of the various types of oil pollution observed. Accurate estimates are made more complicated by the patchy incidence of floating oil. In order to avoid distorted views it is necessary to look vertically down on the oil when assessing its distribution. By estimating the percentage coverage of the oil type in question, the actual area covered relative to the total sea area affected can be calculated from timed overflights at constant speed. Photographs will sometimes allow the percentage of floating oil to be calculated more accurately and the use of images from a high resolution digital camera (which could be transmitted by e-mail to the EEAA's Central Operations Room) would be particularly valuable.

The following example illustrates the process of estimating oil quantities from aerial reconnaissance.

"An aerial reconnaissance was flown at a constant speed of 150 knots. Crude oil "mousse" and silver sheen were observed floating on the sea surface. It took 65 seconds to overfly the length of the slick and 35 seconds to overfly its width. The percentage cover of "mousse" patches within the contaminated sea area was estimated at 10% and the percentage cover of sheen was estimated at 90%."

From this information it can be calculated that the length of the contaminated area of sea measured is:

$$\frac{65 \text{ (seconds)} \times 150 \text{ (knots)}}{3600 \text{ (seconds in one hour)}} = 2.7 \text{ nautical miles}$$

Similarly, the width of the sea area measured is:

$$\frac{35 \times 150}{3600} = 1.5 \text{ nautical miles}$$

This gives a total area of approximately 4 square miles (2.7 x 1.5) or 14 square kilometres. The volume of "mousse" can be calculated as 10% (percentage coverage) of 14 (square kilometres) x 1000 (approximate volume in m^3 per km^2 - from Table B2.1), ie 1,400 m^3. As 50 - 70% of this "mousse" would be water, the volume of oil present would amount to approximately 420 - 700 m^3. A similar calculation for the volume of sheen is: 90% of 14 x 0.1 which is equivalent to approximately 1.25 m^3 of oil: a reminder that although sheen covers a large sea area it only contributes a minor contribution to the total volume of oil present.

1.4 RECOGNITION OF OIL ON SHORELINES

In cases of large spills the source of oil stranded on the shoreline is obvious, but the question of identification often arises when a small amount of oil is involved and compensation is sought for damage or clean-up costs.

Accidental spills from oil rigs, pipelines and tankers can involve large volumes of crude oil which is typically a black liquid when fresh. As the lighter components evaporate, the viscosity increases and eventually the residue of stranded oil assumes a consistency more like tar or pitch.

At the same time, many crude oils are prone to take up water and form viscous water-in-oil emulsions which are usually brown, red or orange in colour. It should be noted that, under a hot sun, stranded emulsions often release water and revert to the appearance of black oil.

Spills from ships can also involve fuel oil carried either as cargo or bunker oil (ie the ship's own fuel). Without chemical analysis it can be difficult to distinguish between heavy fuel oil and weathered crude oil, particularly since fuel oil may also form stable emulsions. After a tanker casualty, both types of oil may be washed ashore, either separately or as a mixture.

Most of the other refined petroleum products shipped in bulk are relatively light and are unlikely to persist very long when spilt because of their rapid spreading and high evaporation rates. Lubricating oils are relatively involatile and are therefore an exception; they can be identified by their resemblance to car engine oil and a tendency to form discrete lenses.

Discharges of bilge water from any vessel can lead to shoreline pollution because of the lubricating oils, greases, hydraulic fluids and other waste oils which accumulate in the bilges. The resulting oil mixture often arrives ashore in the form of viscous patches or tarry lumps. Other sources of tar balls are tank washings from vessels cleaning out their fuel tanks, or ballast water discharges from tankers not following proper oil/water separation procedures. Tank washings typically contain high concentrations of sludge and waxes which tend to solidify on contact with water, often forming tar balls. Generally tar balls are very resistant to weathering processes but, under a strong sun, they may melt down and become more amenable to degradation.

Unless the contamination is very heavy, oil pollution on the shoreline is seldom uniform in either thickness or coverage. Winds, waves and currents cause oil to be deposited ashore in streaks or patches rather than as a continuous cover.

It should be noted that oil which initially coats a sandy beach can soon be partly covered with sand by wave action. Digging may reveal one or several layers of oil which have become covered by clean sand. Liquid oils with a low viscosity will soak into sand to some extent depending on its grain size, composition and moisture content: oil will penetrate dry, coarse grained beaches more deeply than fine grained compact sandy beaches. If oil becomes buried in a sandy beach it is protected from wave action as well as from degradation processes due to the lack of oxygen.

1.5 QUANTIFYING OIL STRANDED ON SHORELINES

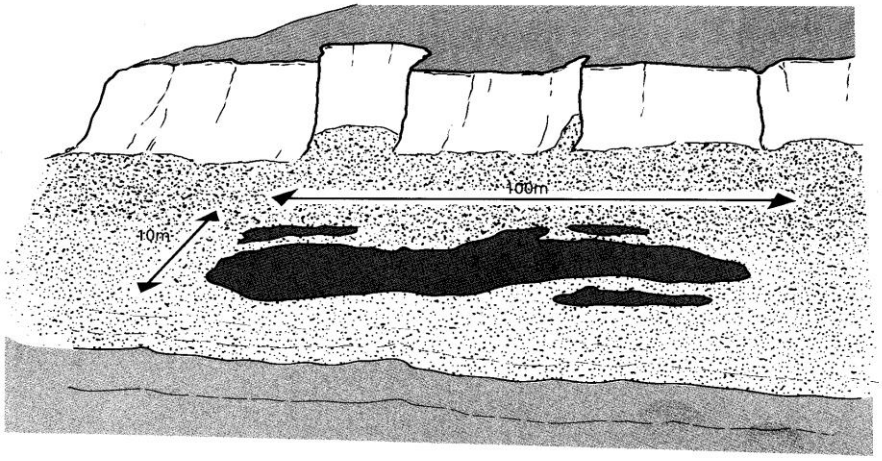
In order to organise shoreline clean-up in the most cost-effective and practical way it is necessary to assess how much oil is present on a given stretch of coastline. The variable distribution of the oil can cause serious errors unless the task of estimating the quantity of stranded oil is approached with care.

First, the overall extent of the contamination should be estimated and marked on a large scale chart or map. In the case of a major spill, an overflight by helicopter is usually the most efficient and convenient way of gaining a general impression and identifying the worst affected areas (a fixed-wing aircraft generally travels too fast for a good visual inspection at low altitude). The aerial surveillance should be followed up by spot checks on foot to confirm the findings of the aerial observation.

The second stage of quantifying stranded oil involves selecting representative samples of shoreline for a calculation of the amount of oil present. The sample chosen should be small enough to allow an accurate estimation of oil volume in a reasonable time, yet large enough to be representative of the whole shoreline section which is similarly affected. The exercise should be repeated on each beach or section of shoreline where the degree of coverage is different in order to build up a composite picture.

In the example shown in Figure B1.2, the length of beach contaminated by oil is measured or estimated to be 100 m and the width is 10 m. The oil thickness is

measured at 0.01 mm which would result in a total oil volume of 10 m^3. However, a visual assessment of the total area of beach contaminated is put at 70%, resulting in an estimate of 7 m^3 of oil.



Length x Width x Depth = Volume
100m x 10m x 0.01m = $10m^3$
Coverage = $10m^3$ x 70%
∴ Volume of oil on beach = $7m^3$

Figure B1.2: Calculation for Amount of Stranded Oil

(Source: Marine Pollution Control Unit, UK Department of Transport)

2 OIL SLICK PREDICTION GUIDELINES

Whenever a significant oil spill occurs at sea there is usually an urgent need to predict its movement and estimate whether or not shoreline pollution is likely to occur. If so, it is necessary to calculate the most likely point of impact.

To predict the movement of an oil slick it is necessary to know:

1. wind speed and direction
2. current speed and direction

It is known that oil will travel downwind at 3% of the wind speed. Where there are surface currents, an additional movement of the oil proportional to 100% of the current speed will be superimposed on the effect of the wind-driven movement. Thus, with the relevant nautical chart, a set of dividers and information on wind and current speed and direction, it is possible to make rough predictions of oil slick movement by drawing vector diagrams (see Figure B2.1). Close to land, the strength and direction of any tidal currents must be considered when predicting oil movement, whereas further out to sea the contribution is less significant in view of the cyclical nature of tidal movement.

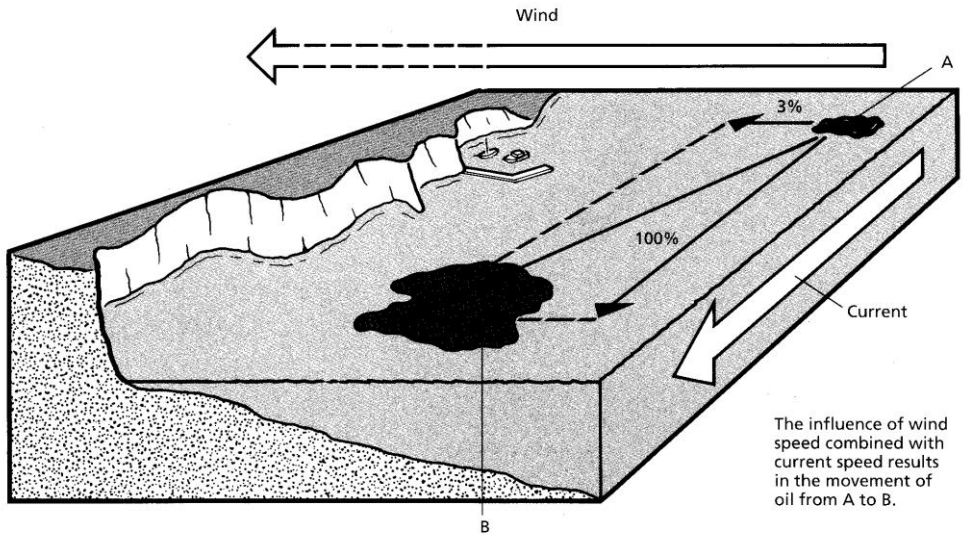


Figure B2.1: Oil Slick Movement Vector **(Source: Marine Pollution Control Unit, UK)**

Notes: Multiply speed of metre/second x 2 = speed in knots
1 minute of latitude = 1 nautical mile

3 DISPERSANT APPLICATION GUIDELINES

3.1 PRIOR APPROVAL OF EEAA

The use of dispersants under the NOSCP is permitted under certain clearly defined circumstances (see chapters A6 and A7). However, in each case before dispersants may be used, the user must have obtained prior approval from EEAA. This can be in one of two ways:

1. By obtaining a "standing approval" from EEAA. If an operator or port authority has applied for and received a "standing approval" to use named dispersants under clearly defined circumstances as part of that operator's or authority's (Tier One) local oil pollution emergency plan, then permission to use dispersants does not have to be obtained from EEAA on each occasion.
2. In all other cases the permission of EEAA to use dispersants must be obtained on a case by case basis. EEAA's decision on whether dispersants may be allowed in a specific incident will be determined by its assessment of the net environmental benefit of using dispersants compared with other response options, taking into account the agreed policy on dispersant use (chapter A7).

The following sections provide guidance on the feasibility - and limitations - of using dispersants which operators and port authorities should take into account in considering the role of dispersants in their own local oil pollution emergency plans.

3.2 TYPES OF DISPERSANT

Chemical dispersants work in two ways: they speed up the rate at which small oil droplets will be suspended in the water and they reduce the tendency for the droplets to re-combine and rejoin the slick. The key component of a dispersant is a surface-active agent (surfactant) to reduce interfacial tension between oil and water and promote the formation of finely dispersed oil droplets. To ensure the effective distribution of the surfactant throughout the oil, most dispersants contain a suitable solvent system which penetrates the oil and acts as a carrier for the surfactant.

Dispersants are generally of three types depending on the major solvents used in the formulation:

- **water-based dispersants.** These may be diluted with water but are the least effective types and are generally not preferred.
- **conventional dispersants** which are based on hydrocarbon solvents and contain between 15 - 25% surfactant. They are intended for neat application to oil and should not be pre-diluted with sea water since this renders them ineffective. Typical dose rates are between 1:1 and 1:3 (dispersant : oil).
- **concentrates** based on hydrocarbons and/or alcohol or glycol ether solvents. They usually contain a higher concentration of surfactant components than conventional

dispersants. They can be applied either neat or pre-diluted with sea water. Typical dose rates are between 1:5 and 1:30 (neat dispersant : oil).

Application guidelines for the main dispersant types are shown in Table B3.1.

Conventional dispersants and concentrates which are pre-diluted with sea water require thorough mixing with the oil after application to produce a satisfactory dispersion and this may have to be achieved by mechanical means (see Table B3.1). However, if concentrates are sprayed directly on to the oil they do not require the same degree of mixing; usually the natural movement of the sea is sufficient to break up a treated slick into droplets.

Concentrates have largely superseded conventional dispersants for application at sea. The main reason for this is the lower application rates required for concentrates which increases the amount of an oil slick which can be treated with a given capacity of dispersants, especially if sprayed from aircraft.

3.3 AERIAL APPLICATION OF DISPERSANTS

Where available, fixed-wing aircraft ensure the most cost-effective use of dispersant because of their advantages of rapid response and the capability to deliver a high treatment rate. In the case of a very large spill in the open sea, the aerial application of dispersants may be the only response method to deal with large quantities of floating oil and prevent contamination of the shoreline.

Aircraft used for dispersant spraying fall into two categories: those (usually single-engined aircraft)designed for agricultural or pest control spraying operations, and those (generally larger, multi-engined aircraft) which have been converted. The payload capacity varies considerably; for example, the application of 200 tonnes of dispersant to a 4000 tonne oil spill could be achieved most effectively by a DC6, which is equivalent to the simultaneous operation of 10 Piper Aztecs or 20 Piper Pawnees. (Further details of the different characteristics of typical aircraft used for dispersant spraying are contained in ITOPF Technical Information Paper No. 3).

Although larger multi-engined aircraft may offer the best chance of treating large spills offshore, smaller fixed wing aircraft with lower fuel consumption and more rapid turn round times may be the best option for small spills or fragmented oil slicks closer to shore but beyond the dispersant prohibition zone of 1 nautical mile from the shore. In Egypt, such tasks are more likely to be filled by the use of helicopters carrying a "bucket" spray system.

Application rates

Only concentrates which are applied neat are suitable for aerial spraying since they require no additional mixing beyond that provided by the natural movement of the sea. They also make the best use of the available payload. For most concentrates, the ratio of dispersant to oil required for effective dispersal varies between 1:5 and 1:30 depending on the type of oil and prevailing conditions. Thick patches may require an increase of the application rate or multiple application in order to achieve the required dosage. The application rate can be controlled in flight by varying aircraft speed and dispersant flow rate.

		Approximate Dispersant Dosage (Dispersant : Oil)			
Dispersant Type	**Application**	**Oil <1000 cp**	**Oil 1000 - 2000 cp**	**Oil >2000 cp**	**Possible Usage (with permission)**
1 Conventional	Neat	1 : 3	1 : 1	Ineffective	Boat (using breaker boards) Beach (good for emulsified oil) Not suitable for aerial spraying
2 Diluted Concentrate	0 - 20% salt water dilution at time of application	Variable ratio	Ineffective	Ineffective	Boat (using breaker boards) Beach (not as efficient as type 3) Not suitable for aerial spraying
3 Concentrate	Neat	1 : 30	1 : 20	Ineffective	Boat (bow mounted spraying) Beach Air

Table B3.1 : Application Guidelines for Dispersants (Source: Oil Spill Service Centre)

In order to calculate the application rate (in litres/hectare), the average thickness of the oil must be assessed (see chapter B1). As a general rule, most liquid oils on the sea surface will spread to reach an average thickness of 0.1 mm (10^{-4} metres) within a few hours. At this thickness, the volume of oil in one hectare would be:

10^{-4} m x 10^{4} m^2 = 1 m^3 or 1000 litres.

For a dose rate of 1:20, the appropriate application rate would then be 50 litres/hectare.

With an effective swath width of 15 m, an aircraft flying at 90 knots over the sea (45 m/s) can apply dispersant at 50 litres/hectare (0.005 l/m^2) if dispersant is discharged at a rate calculated as follows:

application rate x swath width x speed = discharge rate

0.005 x 15 x 45 = 3.37 litre/second (202 litre/minute)

Although application rates of the order of 50 litres/hectare have been found to be appropriate in many situations, adjustment may be required to compensate for variations in thickness of the floating oil.

3.4 APPLICATION OF DISPERSANTS FROM VESSELS

Whereas aircraft will only apply neat concentrate, vessels can be used to apply conventional dispersants and diluted or neat concentrate.

The methods for dispersant application from boats include specialised spraying equipment or, when this is not available, the fire pumps and hoses fitted to most vessels can be used to achieve simultaneous application and mixing of concentratte dispersants. Boats of various types (workboats, tugs, offshore supply vessels, barges, etc) are widely used as vehicles from which to apply dispersants. However, they are relatively slow (eg less than 10 knots or 18.5 km/hr) and cover a limited swath width.

Only relatively small spills can be treated adequately in this manner. For example, a boat operating at the speed of 10 knots and having equipment spraying a swath of 12.2 metres can treat only about 260 hectares (or 2.6 km^2) in a 12 hour day. This assumes that the workboat has dispersant storage capacity and fuel capacity to operate the entire day without having to interrupt spraying operations. In this example, at an average thickness of 0.1 mm, the volume of oil treated by dispersant in one day would be 260 m^3.

When conventional dispersants or diluted concentrates are to be applied from vessel-mounted spray booms, it will be necessary to achieve the required mixing by towing surface agitation boards through the treated slick. In practice, this will restrict the speed of the vessel to between 4 and 10 knots, as this is the operating range of the surface agitation boards. Vessels should enter the oil at 4 knots and, if the oil is dispersing satisfactorily, then the speed of the boat can be increased by 1 knot at a time to find the optimum speed for dispersion.

Individual oil droplets are usually invisible to the naked eye. However, if good dispersion is achieved it produces a "smoke plume" in the water. The dispersion will vary in colour between dark brown and light brown, depending on the type of oil and

the time it has weathered. After treatment, if large oil droplets (>10 mm) can be seen, then dispersion of the oil is not taking place.

The problem can be avoided by using more effective concentrate dispersants, used undiluted, which can be sprayed directly from spray booms mounted at the bow of the vessel, which overcomes problems caused by the bow wave pushing the oil beyond the dispersant's spray width. Equipment currently available for applying neat concentrate has increased effective swath widths to between 30 and 40 metres with flow rates ranging from 36 to 220 litres/minute. However, such high capacity spray systems also have the potential for excessive application rates leading to wastage of dispersant and it may be necessary to interchange nozzles in order to achieve the optimum application rate.

Despite improvements, vessel spraying techniques will always have serious limitations particularly due to the low treatment rate compared with aerial application of dispersants and the difficulties of locating from the vessel those slicks which pose the most significant threat. Furthermore, as time passes and oil slicks become more fragmented or form narrow windrows, it is inevitable that some dispersant will be sprayed on to clean sea. These problems can be overcome to some extent by using spotter aircraft to direct the vessels to the heaviest concentrations of oil.

3.5 APPLICATION OF DISPERSANTS ON THE SHORE

In certain circumstances, EEAA may permit dispersants to be used on some shorelines, especially during the final stages of clean-up (see chapter B7).

Both conventional dispersants and concentrates may be used for shore cleaning although the former may be more effective with viscous oils because of the greater penetration achieved by the hydrocarbon solvent. It is difficult to predict how effective dispersants will be against stranded oil and it will be necessary to carry out a small scale field test before mounting a large scale operation. When permitted by EEAA, dispersant application rates on the shoreline should be in the same range as for use at sea.

The most appropriate equipment for application depends on the type of beach material to be cleaned, the ease of access and the scale of the operation. For small operations, portable back-pack sprayers are the most suitable. Dispersants can also be used - with EEAA permission - to clean rocks, sea walls and other man-made structures. It is often necessary to use brushes to aid mixing and high pressure hoses to remove treated oil from vertical surfaces and the underside of rocks.

4 COLLECTION AND HANDLING OF OIL SAMPLES

4.1 LEGAL BACKGROUND

Foreign and Egyptian ships are forbidden to discharge oil or oily mixtures into the territorial sea or the exclusive economic zone (EEZ) of the Arab Republic of Egypt (ARE). This is in accordance with Article 49 of Law No. 4 of 1994 in implementation of the MARPOL 73/78 Convention. Similarly, companies extracting or exploiting offshore oil fields and other natural marine resources, including oil transport facilities, are forbidden to discharge any polluting materials resulting from drilling, exploration, testing of wells, or production activities, into the territorial sea or the EEZ of the ARE (Article 52 of Law No. 4).

In accordance with Article 48 of Law No. 4, responsibility for the implementation of these measures rests with the State Minister for Environmental Affairs in coordination with the Minister of Maritime Transport and all concerned administrative authorities mentioned in definition Number 38 of Article 1, each within their field of competence.

When an oil pollution incident is thought to have arisen from an illegal operational discharge, an effort should be made to collect a sample of the of the oil and, if possible, matching samples from the suspect ship or other source of oil pollution for analysis, comparison and possible use in legal proceedings.

4.2 SAMPLING FROM THE SEA AND SHORELINE

Following an incident attempts may be made to infer that not all the oil pollution came from one vessel and that some of it came from other sources. Therefore, where an oiled beach is being sampled, a careful and detailed examination of the beach should be made to determine the uniformity of the oil deposit and the extent to which it is polluted by more than one type of oil. In particular, if there are any tarry, semi-solid lumps or wet tarry patches, their presence should be recorded and some idea of their extent should be obtained. In addition, samples of such pollution should be retained.

In cases where samples have been taken at intervals along the beach, these should be clearly identified as sequential samples of what might be an oil slick (see section 4.7 on labelling). In this way, material is thus available for examination at a later stage if needs be and the analytical laboratory will not get overburdened with an unnecessary number of analysis reports of the same material.

It is desirable that samples of oil are taken in the area where the oil is first washed ashore. This is important because the fresher the oil, the easier it is to identify by laboratory techniques.

4.3 NUMBER OF SAMPLES

If samples are likely to be used in connection with legal proceedings, the following number of samples should be taken:

- offshore spill: minimum of 3 samples / slick / day
- onshore spill: minimum of 3 samples / 1 km shoreline / day.

The samples will be distributed as follows:

⇒ EEAA: two samples (one to be sent for analysis; one to be retained as a spare)

⇒ one to be handed to the owner or master of the suspect vessel or the operator of the offshore installation or oil handling facility.

4.4 SIZE OF SAMPLES

An oil sample for analysis should be as large as is reasonably practicable. The recommended amounts needed for full analysis are:

Unweathered oils that are liquid and substantially free of water	100 ml
Oil exposed to sea's surface and forming water-in-oil emulsion ("chocolate mousse")	500 ml
Water discharges from ships where contravention of the 100 ppm or 15 ppm is suspected	2.5 - 5 litres of the discharge
Tarry lumps as found on beaches	20 - 50 grammes

A sample should not be withheld simply because the recommended quantity cannot be obtained since much smaller samples can give useful results. In cases of pollution within the waters under Egypt's jurisdiction, when it is only necessary to prove that some oil has been discharged and to relate the discharge to the polluter, a smaller sample might be sufficient.

4.5 METHODS OF COLLECTING SAMPLES

When liquid samples are skimmed off the surface of the sea, care should be taken to ensure that the sample contains sufficient oil and is not water or water with a thin film of oil on the top. If the latter is the case, only the top layer of a large should be obtained.

Care should be taken to minimise contamination of liquid samples by solid matter. Oil deposited on rocks or other impervious materials should be scraped off and placed directly into the sample container. Lumps of tarry or waxy pollutant should be placed directly into sample containers; no attempt should be made to heat or melt these samples to enable them to flow into a container.

4.6 BOTTLING, SEALING, PACKAGING AND BOXING OF CONTAINERS

All samples should be securely packed and sealed using screw-topped containers and sufficient packing to prevent breakage in transit.

As proof against unauthorised opening, the sample container should be sealed with wire and a lead or sealing wax seal. Alternatively, adhesive labels with a signature on the paper stuck on the bottle top in such a way that they have to be broken to open the bottle are acceptable.

The bottle should then be placed inside a plastic bag. This should be sealed with a further adhesive label in the same way as for the sample bottle to ensure that it is not tampered with.

If it is necessary to take an oil sample where one of the standard containers in section 4.4 above is not available, the receptacle should be of glass with a screw-cover and a seal which would not be affected by the oil (eg no wax cap inserts). Wide necked bottles make sampling easier.

The use of closed metal receptacles or plastic jars is not adequate as contact with metal or plastic can, in some cases, interfere with the analysis. The use of any metal tool made of nickel or vanadium based alloys should be avoided as these metals occur naturally in crude oils and refined products; their levels in the sample could, therefore, assist in the identification of the sample.

Whenever possible, samples should be stored in refrigerators (or cold rooms at less than 5^{o} C in the dark). These precautions are particularly important for samples containing water or sediment, but are less so for bulk oil samples.

4.7 LABELLING AND ADDRESSING OF SAMPLES

Care should be taken to ensure that every sample bottle is not only suitably sealed but clearly labelled before being submitted to EEAA. It is important that each sample is clearly identified because there may be several samples taken during an incident. The label on each container should therefore provide the following details:

◊ An identifying number

◊ Date of sample taking:

year	2 digits
month	2 digits
day	2 digits
time	4 digits

◊ Name, address and telephone number of the official in charge of taking the samples

◊ Name, address and telephone number of any independent witness

◊ Description of sample

◊ Position from which sample was taken (geographical coordinates if possible)

◊ Suspected source (eg name of vessel), if known

◊ Whether or not dispersants have been used (if known) and, if so, the name of the dispersant

In addition, the following information would also be helpful, if available:

◊ Wind direction and velocity at time of sampling

◊ Air and water temperature (celsius)

◊ Sample description, eg viscosity; colour; any contaminants

◊ Description of the oil spill, eg distribution of the oil; consistency

4.8 ANALYSIS OF SAMPLES

Samples should be analysed in triplicate according to Standard Methods. The methods used in extraction, analysis and validation should be listed in the analytical report.

The report should contain the Carbon Numbers remaining, their concentration and cadmium : vanadium ratio of the sample analysed.

The type of oil used as a reference oil should be stated and its data sheet should be included with the analytical report.

5 POLICY ON SHORELINE CLEAN-UP

Whenever oil comes ashore in significant quantities, then the consequences can be serious - tourist beaches, wildlife, fisheries, industrial and biologically sensitive coastal resources can all be adversely affected.

The objective of the national combat strategy is to treat oil as close to the source as possible and minimise the amount which reaches the shore and limit the length of coastline affected. The financial cost and length of time taken to complete shoreline cleaning, and the recovery time of the coastal environment affected, will all be lessened if the spillage can be dealt with while the oil is still on the water. However, it is inevitable that in most spills of significant size some oil will reach the shoreline and clean-up operations will be necessary.

The principal aims of EEAA's shoreline clean-up policy are:

- to reduce the pollution to a tolerable level;
- to restore the coastline with the least impact on the environment.

The pollution impact will depend on the type of shoreline as well as other local factors. The appropriate clean-up technique will also depend on the resources that are affected. In some cases clean-up action would be detrimental to the environment and stranded oil will have to be left to degrade naturally.

Where it is decided that a clean-up operation is necessary, the main options are to recover the oil by physical means, to use chemical dispersants, or a combination of the two. The correct approach will depend on the location, type and amount of oil, and the facilities available to deal with it. The use of dispersants in beach clean-up operations will only be permitted after an evaluation of the net environmental benefit by EEAA. If, after bulk removal of the beached oil, the remaining oil layer is less than 6 mm (which is the maximum depth of oil that can be treated effectively by dispersants), then dispersants may be permitted by EEAA as a “final polishing” technique.

A survey of shoreline types in Egypt and their sensitivity to oil pollution has been carried out under the NOSCP (see chapter A8) and the results are mapped in the GIS. A summary of the preferred clean-up techniques and also methods to avoid is shown in Table B5.1.

Table B5.1 : Shoreline Clean-Up Guidelines

Shoreline Type	Preferred Method	Possible Techniques	Techniques to Avoid
Mangroves	Natural cleaning (leave alone) Works best where natural flushing and drainage are good. Natural flushing can be enhanced by careful opening up of channels.	Absorbents for collecting free oil. Low pressure flushing of free oil from the sediment surface and mangrove aerial roots into areas where oil may be collected.	Substrate removal Vegetation removal High pressure flushing (seawater) Chemical dispersants Beach cleaning machines
Coral reef flats	Natural cleaning (leave alone)	Low pressure flushing to aid natural removal. Manual collection. Vacuum pumping to remove thicker oil layers and oil pockets.	Warm water flushing Substrate removal Chemical dispersants
Saltmarshes	Natural cleaning (leave alone)	Absorbents: rapid deployment could reduce penetration of oil. Low pressure water flushing if oil has remained on the sediment surface.	Substrate removal Vegetation removal High pressure flushing (seawater) Chemical dispersants Beach cleaning machines
Soft sand beaches and mud flats	Natural cleaning (leave alone) Sediments may be too soft to allow access	Low pressure water flushing to float off more viscous oils in first days before penetration. Manual removal especially for cleaning oil patches.	Substrate removal Beach cleaning machines Substrate displacement High tide tilling High pressure flushing
Firm sand beaches	Beach cleaning machines to scrape oil into collection areas above high water level and removal by truck. Manual collection especially for cleaning oil patches.	Low pressure flushing on fairly thin layers of emulsion. Absorbents. Natural cleaning (leave alone) in exposed beaches.	Substrate removal Substrate displacement High tide tilling High pressure flushing
Cobble/pebble shores	Natural cleaning (leave alone).	Substrate removal down to clean	Chemical dispersants

	Manual collection using hand tools and shovelled into bins or bags. Beach cleaning machines	pebbles. Low pressure flushing. High tide tilling.	High pressure flushing (seawater) Warm water flushing
Rocky shores	Natural cleaning (leave alone): will rapidly remove oil from most rocky shores, especially exposed shores.	Low pressure flushing with ambient temperature seawater. Suction devices and sorbent pads to remove oil in rock pools. Dispersants or beach cleaning agents if approved by EEAA.	High pressure flushing (seawater) Hot water/steam cleaning Warm water flushing Vegetation removal
Exposed cliffs	Natural cleaning (leave alone)	Low pressure flushing High pressure flushing (seawater)	Substrate removal Hot water/steam cleaning Chemical dispersants
Concrete man-made structures eg jetties, piers, etc	High pressure flushing (seawater) Low pressure flushing	Dispersants if approved by EEAA Hot water/steam cleaning	

Notes: 1. Substrate removal should never be carried out in areas prone to erosionnless the substrate is replaced with clean material of the same type.

2. "Tilling" means turning the contaminated soil over in order to increase the oxygen supply (and hence biodegradability) of oily sediments.

6 TRANSPORT AND DISPOSAL OF RECOVERED OIL AND OILY DEBRIS

Final disposal is one of the most difficult problems associated with the clean-up of oil spills as in many cases the volume of contaminated material far exceeds the original quantity of spilled oil. EEAA's preferred hierarchy for disposal is as follows:

1) **recovery of oil for re-use;**
2) **stabilisation of the oily waste;**
3) **destruction or decomposition of the oil;**
4) **landfill of oily residues.**

For large quantities of wastes, it may be necessary to employ several disposal options, even for the same material.

6.1 TEMPORARY STORAGE OF RECOVERED OIL

The overall rate of disposal of oil and oily waste must match the rate at which it is recovered from the water or the shoreline. However, in the short term it is inevitable that temporary storage near to the recovery site will be necessary, probably throughout the clean-up operation. Those responsible for preparing local (Tier One) oil pollution emergency plans should identify suitable sites for temporary storage in their plans. It is recognised, however, that the final location of temporary storage sites will depend on the specific circumstances of each spill, eg the location of the spill will be an important determining factor.

Temporary storage sites will need to take into account ease of access, both from the shoreline and to the nearest road. Storage sites will need to be on reasonably firm ground with good access for vehicles coming from the shoreline which is being cleaned and for vehicles removing oil and waste for final disposal.

In the case of material resulting from shoreline clean-up, temporary storage at the back of the beach enables the transportation to be undertaken in two stages: from the beach to the temporary storage site and then, at some future time, from temporary storage to the final disposal site. (This reduces the risk of spreading contamination by ensuring that vehicles working on the beach do not come into contact with roads).

Methods of storage

Skips, which are usually used for builders' rubble and domestic wastes, are useful for storing small quantities of recovered oil or oily debris. The skips should be lined with plastic sheeting to prevent leakages to the environment.

For larger quantities, proprietary "Fastanks" (10 m^3 capacity) are available from oil spill combating equipment suppliers and should be a component of every equipment stockpile. Fastanks are easily assembled in a matter of minutes.

For still larger amounts, excavated pits lined with heavy duty plastic sheets may be used to receive oil. Plastic sheets can be obtained to allow for a pit size of about 15.3 m x 3.1 m x 1.8 m deep, giving a capacity of 85 m^3. Pits may be sited on the back of a beach at a convenient point above high water level, or any area where the sand is reasonably firm.

Where the land adjacent to the spill site is not suitable for pits to be dug in the ground for temporary storage, it may be necessary to consider constructing "bund" walls using suitable quality soil which may have to be brought into the area. In order to avoid the risk of wall breakage, the bund should be built with sloping walls, usually having a flat top, with typical wall angles in the ratio 3:2 horizontal to vertical. The base and walls should be lined with plastic sheeting or other oil-impervious material.

If the ground is unstable, it may be necessary to shore up the sides of pits and bunds with wooden boards.

Pits and bunds for the temporary storage of oil must be filled in after complete removal of the oil and, as far as possible, the area should be restored to its original state.

Barges can also be used as temporary storage vessels, either for oil recovered from the sea or for contaminated material recovered from the shoreline.

Plastic bags should be regarded as a means of transporting oily material rather than storage since they tend to deteriorate under the effect of sunlight, releasing their contents.

6.2 PREPARATION FOR DISPOSAL

The transport of material to its final disposal site can become a major cost item. It is therefore beneficial to reduce the amount of material to be transported by separating oil from water and oil from sand during the period of temporary storage. As far as possible, bulk oil should be stored separately from oily debris so that different methods of treatment and disposal can be followed.

Oil collected from the sea is likely to be the easiest to prepare for processing since it will usually only be necessary to separate any water associated with it. This separation can frequently be effected by gravity either in collection devices such as vacuum trucks or in tanks on board skimming vessels, the water being removed by pumping or running off the bottom layer.

The extraction of water from water-in-oil emulsions (mousse) will be more difficult. Unstable emulsions can usually be broken by heat treatment to a maximum temperature of 80^{o} C and allowing the oil and water to separate by gravity. In the climatic conditions of Egypt, the heat of the sun may be sufficient.

Many oil spills will result in the formation of stable, viscous, water-in-oil emulsions which have to be collected from the sea or the shore. The emulsions may contain as much as 50 - 80% water and are very stable because a mechanically strong film, composed of naturally occurring oil components, surrounds each water droplet. This

film must be destroyed before an emulsion will separate back into oil and water. Chemical demulsifiers that can destroy this film are available commercially.

The use of demulsifiers to separate seawater from the oil as soon as possible after collection is recommended because:

- oil is much more likely to be accepted by an oil refinery if it contains only small amounts of contaminants such as seawater and sand;
- transport costs can be reduced if 50 - 80% of the material is separated before oil is taken away from the beach area;
- emulsions are difficult to handle and pump, whereas separation into two phases reduces such difficulties.

On occasions it may be possible to recover oil from contaminated beach material. For further information see chapterB7.

6.3 RECOVERY OF OILS

The recovery of oils for eventual processing or blending with fuel oils should always be the first option to be considered. Possible recipients for processing or blending are refineries, oil recovery contractors who specialise in recycling waste oils (where they exist), power stations and cement works.

However, the quality of the recovered material must be good as most plants can only operate with feedstocks meeting a narrow oil specification. For example, the oil should be pumpable, low in solids and have a salt content of less than 0.1% for processing through a refinery or less than 0.5% for blending into fuel oil. Small pieces of debris can be removed by passing the oil through a wire mesh screen.

6.4 STABILISATION

The aim of this treatment is to render the waste physically and chemically suitable for use as a filling agent or to be disposed of in a stabilised condition. Thorough mixing of binding agents and oily sand produces an inert, clean, easily handled material which can be readily transported and stored. It can be compacted and used directly, or stored and used subsequently in road building and other civil engineering works.

Quicklime (calcium oxide), which can usually be obtained from cement works, is one of the best binding agents. One advantage of quicklime over other materials is that the heat generated by its reaction with water in the waste reduces the viscosity of the oil which in turn facilitates absorption. Ordinary quicklime may be used with or without additives such as aluminium sulphate or phospho-gypsum.

Alternative binding agents include a mixture of quicklime with pulverised fuel ash from power stations, or a mixture of cement/pulverised fuel ash. Stabilisation may also be achieved with a variety of proprietary hydraulic binding agents (eg Chemfix, Petrifix, Sialosalc). These often come with a special mixing unit which produces mixed material in the form of powder or solid blocks which are stable and practically insoluble.

The optimum amount of binding agent required is primarily dependent on the water content of the waste rather than the amount of oil and is best determined experimentally on site. For quicklime, the amount required is between 5 and 20% weight of the bulk material to be treated. Treatment can be carried out using either a mixing plant or a layering technique. The former method requires a continuous drum mixer; smaller quantities can be treated in batches using standard cement mixers. Alternatively, provided there is sufficient space, the layering technique is probably more cost effective. The waste is spread out to a depth of about 0.2 - 0.3 m and mixed using a pulverising mixer (such as road making milling machines) to incorporate the lime into the bed of waste.

6.5 LAND FARMING

This method has been applied successfully to oil refinery wastes and can make a limited contribution to the disposal of relatively fresh, unweathered oils following an oil spill, provided that suitable sites are available.

Many oil components (especially the lighter fractions) are degraded by micro-organisms provided that sufficient oxygen - and sometimes nutrients - are supplied. In the dry environment of Egypt, the addition of water to oil/sand mixtures may be necessary to speed up microbial degradation.

In land farming, the process is as follows:

◊ Prepare the site: clear obstructions, loosen topsoil.

◊ Spread oily waste in an even layer 20 to 100 mm thick to contain no more than 100 tonnes of oil per hectare (40 tons/acre). Leave it to weather (for days or weeks) until it is no longer sticky.

◊ Plough into the soil to increase aeration and hence the rate of decomposition and repeat monthly, reducing to three-monthly intervals after 6 months.

◊ If necessary, lime may be added to increase soil pH above 6.5. Fertilisers such as urea and ammonium phosphate, though rarely necessary, will encourage oil degradation rates.

◊ Liquid wastes may be applied from vacuum trucks. Solid wastes can be distributed on the site by dumper trucks and spread by bulldozers to a uniform thickness.

◊ The site should be ready for cultivation of further applications of waste in two to three years (sooner if the waste has a low oil content).

The potential environmental impacts of land farming are evaporation of volatile oil components from the field and the leaching of water soluble compounds to groundwater or nearby surface water. Due to the potential evaporation, land farms should not be sited close to inhabited areas. To avoid water pollution, areas with primary groundwater interests or adjacent to lakes and vulnerable beaches should be avoided. After treatment, the undegradable (tar) fractions of the oil will remain in the soil. Since these fractions are non-volatile and have a very low water solubility, they do not pose any direct environmental risk. However, after closure of the land farm,

the area should be covered with clean sand or soil and food crops should not be grown.

6.6 BIOREMEDIATION

There a number of products on the market which contain oil degrading bacteria and other micro-organisms. Some are intended for direct application to oil on shorelines together with nutrients to support the degradation process. Bioremediation techniques have been the subject of much research in recent years. Although the method is not yet widely accepted, there are promising signs that some techniques will accelerate the process of natural degradation.

6.7 INCINERATION

Uncontrolled combustion is not satisfactory except in small quantities and in remote areas because of:

- the smoke and tar residues produced;
- the risk of hot oils spreading and leaching into the substrate due to reduced viscosity;
- the lack of suitable equipment for dealing with tarry residues from the combustion process.

Incineration cannot be regarded as a general method for tackling the products of a major oil pollution incident in Egypt. Emulsions should be treated with a demulsifier rather than burnt as the high water content prevents combustion without additional fuel.

6.8 LANDFILL

Landfill sites may be used for solid or semi-solid beach material with a maximum oil content of about 20%. Sites for the landfill of oily wastes should be located away from fissured or porous strata to avoid the risk of contamination of groundwater particularly if this is abstracted for domestic or industrial use.

The co-disposal of oil and domestic waste may be an acceptable disposal method, even though degradation of the oil is likely to be slow due to the lack of oxygen. However, oil appears to remain firmly absorbed by all types of domestic waste with little tendency to leach out. The oily waste should be deposited on top of at least 4 m of domestic refuse. Each layer of oily waste should be covered by at least 2 m of domestic refuse.

In the case of shorelines which are lightly contaminated with oily debris or tar balls it may be feasible to bury the collected material at the back of the beach provided that:

- there is no risk of damage to vegetation;

- the beach is not used for amenity purposes;
- there is no risk that the oil will be uncovered. A covering of at least one metre of clean sand should be sufficient to ensure that this criterion is met.

6.9 APPROVAL OF EEAA

Decisions on the final disposals of oil and oily wastes following an oil spill must be approved by EEAA to ensure that the best practicable environmental option is chosen.

A summary of the various options for separation and disposal of oil and debris is shown in Table B6.1.

Type of Material		Separation Methods	Disposal Methods
LIQUIDS	***Non-emulsified oils***	Gravity separation of free water	Use of recovered oil as fuel or refinery feedstock
	Emulsified oils	Emulsion broken to release water by: › heat treatment › emulsion breaking chemicals › mixing with sand	Use of recovered oil as fuel or refinery feedstock Return of separated sand to source
SOLIDS	***Oil mixed with sand***	› collection of liquid oil leaching from sand during temporary storage › extraction of oil from sand by washing with water or solvent › removal of solid oils by sieving	Use of recovered liquid oil as fuel or refinery feedstock Stabilisation with inorganic material Degradation through land farming Landfill
	Oil mixed with cobbles, pebbles or shingle	› collection of liquid oil leaching from beach material during temporary storage › extraction of oil from beach material by washing with water or solvent (see chapter A13.1)	Landfill
	Oil mixed with wood, plastics, seaweed and sorbents	› collection of liquid oil leaching from debris during temporary storage › flushing of oil from debris with water	Degradation through land farming for oil mixed with seaweed or natural sorbents Landfill
	Tar balls	› separation from sand by sieving	Landfill Burning under controlled conditions

Table B6.1: Options for Separation and Disposal of Oil and Debris

7 RESTORATION OF AFFECTED AREAS AND POST-SPILL MONITORING

7.1 RESTORATION

It is the policy of EEAA that, in so far as it is feasible, measures should be taken to restore the environment to a situation approximating to that which existed before the spill occurred. It is clear from the definition of *pollution damage* in the 1992 Civil Liability Convention (CLC) that the costs of reasonable measures to reinstate the contaminated environment will be accepted by insurers (for further information see Annex B and chapter B12).

The appropriate action to be taken to reinstate the contaminated environment will be taken by EEAA on a case by case basis. Where appropriate, and especially where reinstatement is necessary in Protected Areas under the authority of the National Parks Department (NPD), action will be taken in close consultation with NPD who may, in certain cases, take the lead role in coordinating reinstatement measures.

The following paragraphs provide policy guidance on the type of restoration measures that might be appropriate for the different habitats found along the Egyptian coastline.

Sand and pebble beaches

In addition to the oil that seeps through into the substrate, it is inevitable that some beach material will become soiled in the process of oil recovery during shoreline clean-up (see chapter B5 for guidance on shoreline clean-up methods). Leaving oiled material on the beach will generally be unacceptable, especially in tourist resort areas, and the use of chemical dispersants may be either ineffective or environmentally harmful. In these cases it will be necessary to collect the oiled material and wash it.

Earth-moving equipment with shovels or loaders should be used to carry batches of oily sand, pebbles, etc off the beach onto a nearby hard surface where the washing is to be carried out. A suggested arrangement of equipment for beach material washing is shown schematically in Figure B7.1.

A supply of fresh seawater is needed, contained in skips or "Fastanks" and pumped into the mixer. An excavator or similar vehicle is also required to load beach material and barrels of kerosene into the mixer, preferably via a feed hopper which is mounted on scaffolding just above the chute to the mixer.

A typical mixer has a capacity of $6m^3$ and will take about 10 to 20 minutes to load. The total time from loading to discharge is typically 1½ hours for a full load of around 10 tonnes, ie about 6 tonnes/hour of washed material.

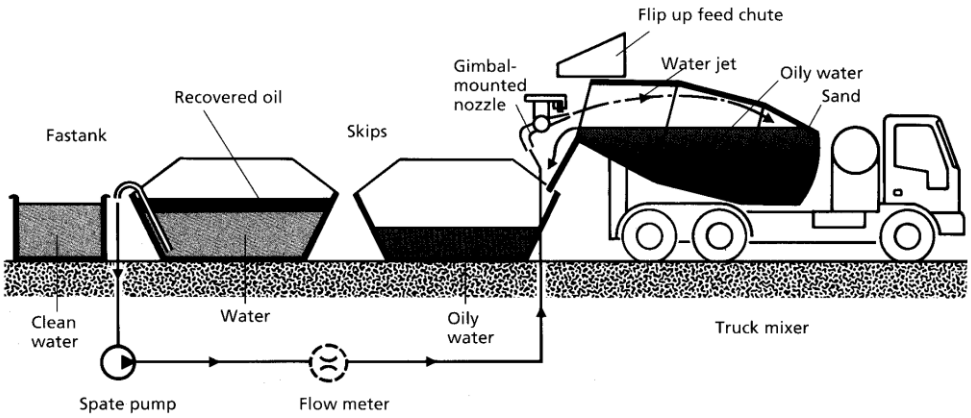


Figure B7.1: Arrangement of the Beach Material Washing Equipment
(Source: Marine Pollution Control Unit, UK)

For lightly oiled material (up to about 1% oil), mixing and washing with seawater may be sufficient. However, for more heavily oiled sand, conditioning with kerosene is necessary. The volume of kerosene required will vary according to the degree of contamination but 100 litres for a full load will generally be sufficient.

The mixer is run for four to five minutes at a speed of about 10 to 15 rpm. The mixer is then slowed to about 2 rpm while water is pumped to fill it up. Oil or emulsion should appear at the surface and the mixer may be run faster for a minute to free all of the oil from the sand. To wash the sand thoroughly, the speed should now be reduced to about 0.25 rpm and fresh seawater pumped in to the exposed part of the base of the mixer at a flow rate of about 0.14 m^3/minute. This encourages the floating oil to overflow out of the mixer into a skip.

The process is allowed to run for about an hour, by which time the oil content of the sand or pebbles should have been reduced to acceptable levels of 0.01% or less. Between 0.5 and 1.0 m^3 of seawater is required per tonne of sand. The oily water is left to separate out and the oil recovered using skimmers or other devices. The remaining water should be recycled to wash subsequent batches of beach material, keeping the total amount of fresh seawater used to a minimum. Batches of very heavily oiled material may have to be washed more than once but the efficiency of this technique is generally very good.

When the washing is complete, the sand or pebbles can be returned to the beach, usually by discharging the mixer and using a front-end loader to distribute the material.

If large quantities of beach material are to be washed, the process can be made semi-continuous - and hence faster - by using a spiral classifier (if available), a machine which is commonly used for washing stones and gravel. The main difference in washing oiled beach material with a spiral classifier is that the wash water must be collected and recycled. Rates of washing will depend on the speed and size of the equipment but may be from between 20 - 200 tonnes/hr.

Wherever they are dug on beaches, pits and bunds for the temporary storage of oil (see chapter B6) must be filled in after complete removal of the oil and, as far as possible, the area should be restored to its original state.

Saltmarshes

Saltmarshes are oil traps and recovery times from oiling vary widely, from one or two years to decades. Experience from around the world shows that successful saltmarsh restoration is possible in appropriate environments. With respect to sites that have been damaged by an oil spill, a restoration scheme will be considered if it is predicted that natural recovery will take an unacceptably long time, or if clean-up has included stripping of vegetation and sediments. It is of crucial importance that the sediments to be planted are at an appropriate height relative to the tidal pattern, and in some cases backfilling with suitable sediments may be an option for achieving this.

Experience has shown that clean-up operations which are too aggressive can lower the marsh surface to the extent that plant growth is not possible. By contrast, marshes from which oily sediments had been stripped to a depth of not more than 10 cm have been successfully replanted (with *Spartina* grass). The removal of the 10 cm layer removed most of the oil (which in high concentrations killed plants) and the oil residues remaining in the soil did not preclude good plant growth. In cases of doubt, initial small-scale planting can indicate if the sediments are suitable for full-scale planting.

Re-vegetation may be accomplished using seeds, young "bare root" nursery seedlings, or older potted nursery seedlings which are planted into the sediments in biodegradable pots thus avoiding root damage. The use of stocks from a nursery avoids the damage which would be caused by digging plants out of existing local healthy marsh. However, the original propagation material used by the nursery should be local as far as possible because there is considerable geographical variability in most saltmarsh species. Depending on local nutrient conditions, it may be advantageous to apply slow-release fertiliser to the planting site.

Older potted seedlings are more costly but are more resistant to erosion than seeds or young seedlings; they are also more vigorous and have a higher survival rate. Costs will be influenced by the density of planting; for example, a one metre planting grid may be suitable for a sheltered marsh whereas a denser pattern may be preferable in cases where the marsh is more exposed to wave action or tidal currents. The monitoring of transplant performance should always be included in the restoration programme.

Coral reef ecosystems

Biological productivity per square metre of coral reef is usually 50 to 100 times more than in the surrounding oceanic waters. On a local scale, reef areas are an important fishery resource, are a barrier to coastal erosion, and their amenity value is often the basis of tourism development. Serious damage to corals can result from oil pollution (see chapter A8).

Research has shown that coral reefs can regenerate by natural processes after being oiled but there is still not a good understanding of the mechanisms and time scale involved. Recovery times can range from a few months for some species to effects

lasting several years in cases of substantial damage caused by oil, especially when the corals are subjected to continual slow leaching of oil from nearby sediments. Some longer term studies have indicated that, while immediate mortalities in coral communities are rarely observed, coral death may in fact be observed several months after impact for reasons which remain unclear, although there is a correlation with coral depth. Furthermore, because of the difficulties of interpreting the true field significance of possible sublethal effects, corals affected by an oil spill require careful post-spill monitoring.

There seems to be little that man can do to aid nature's restoration process.

Mangroves

Natural regeneration of oil-killed mangrove forest can be expected to occur but the process may be slow as a consequence of residual oil toxicity or because "propagules" of mangroves (ie seedlings growing out of the fruits while still attached to the tree), which are ordinarily dispersed by tidal waters, may be unable to reach the sites affected by oil because of barriers of fallen branches from the killed mangrove forest. In some cases regeneration may be slow because there are not enough live trees left to provide an adequate seed supply.

Regeneration, either by natural recruitment or by artificial replanting, immediately after an oil spill would be unlikely to restore the mangrove forest. The time that must elapse after an oil spill for the soil to become sufficiently non-toxic for natural propagules or replanted mangroves to survive will depend on factors such as the kind of oil spilled, the type of soil, and local tidal flushing and rainfall conditions. However, the compact nature of mangrove sediments, combined with the anoxic conditions of subsurface soils, suggest that oil which penetrates the mangrove sediments will tend to be persistent because of the lack of oxygen needed for the biodegradation of hydrocarbons. Experience suggests that artificial planting should be delayed for at least 9 months for the propagules to have a chance of survival; the delay will avoid wasted effort by planting too soon when the conditions which killed the mangroves in the first place are still present in the soil.

However, mangroves can become established and apparently grow normally at oil spill sites even where there is residual weathered oil. (This may be indicated by the disturbed soil giving off an odour of crude oil and an oil sheen appearing on the water surface; such evidence of past spills may persist in mangrove soils for more than a decade). One method of artificial replanting is to remove cylinders of oiled mangrove soil by use of diggers for digging post holes. The holes created are then either filled with uncontaminated soil and propagules are planted, or the holes are filled with nursery-grown seedlings. In both cases the developing roots of the seedling plants are protected from residual oil in the soil by a buffer of non-oiled soil in which the roots of the seedling can grow while the toxicity of the oil in the surrounding soil continues to decrease through weathering and tidal washing. As an aid to restoring a mangrove forest as rapidly as possible, it would be useful to set up a nursery where mangroves can be grown in order to have plants ready to plant out in the field when the oil toxicity has reduced.

7.2 POST-SPILL MONITORING

Physical and chemical processes underpin the ecological impact of any oil spill. These processes determine the amounts of oil that enter and remain in different ecosystems. Equally important, water movements transport oil to specific geographical locations. For an oil spill which is characterised by a floating oil slick, most of the physical processes are dominated by the transport of the oil on the sea surface, the stranding of the oil on different types of shoreline, and the subsequent physical/chemical/biological degradation and other natural changes. In cases where most of the oil is transported into the water column, either by natural or chemical dispersion, dispersed oil may be absorbed by submarine sediments even in relatively distant deeper water areas.

The purpose of post-spill monitoring is to measure the short and long-term effects of the oil spill on different ecosystems and assess both the immediate and likely long-term impact of the spill. At the time of a major oil pollution incident, there are very many urgent tasks which require the attention of the Incident Commander. It is therefore important that the Scientific Adviser at the scene of the incident (see chapter B8) should liaise closely with the Environment Group at EEAA's Central Operations Room (see chapter B10) on determining what post-spill environmental monitoring studies will be required and when action should be initiated.

The following paragraphs provide guidance on the monitoring programmes which might be established. The need for post-spill monitoring and the extent of the monitoring programme to be established will depend on circumstances, in particular on the size and likely environmental impact of the spill. In principle, in order to qualify for compensation under the CLC, monitoring programmes should be designed to assess the immediate and long-term impact of the oil pollution rather than for the purpose of simply broadening the general information base.

Oil concentrations in water

Water samples should be taken by research vessels at various water depths and at different distances from the source of the oil spill. Comparisons should be made with background levels where these are known from the scientific literature. It will be important to establish a time sequence, commencing with samples on a daily basis and lengthening the time sequence to weekly samples until background concentrations are reached.

Oil concentrations in sediments

Sediment samples should be screened for hydrocarbon content by fluorescence spectrometry techniques. Those with high levels of hydrocarbons can then be analysed in more detail by gas chromatography-mass spectrometry (GCMS) if required in order to establish the identity of the oil. Depending on the size and nature of the spill, it may be necessary to take sediment samples as far as 50 km downstream of the spill location.

Impact on fish

Attempts should be made to assess the impact of the spill on fish. Samples should be collected from commercial catches to be analysed for hydrocarbon contamination. Where it is likely that fishermen's interests will be adversely affected by the spill, fish samples should be tested by a tasting panel to determine whether there is any oily tainting of the fish.

Where there is high contamination of sediments, it will be necessary to pay particular attention to bottom feeders and flatfish in particular.

Shellfish should be sampled for hydrocarbon levels and for taint in areas affected by the spill.

Shoreline communities

Quantitative studies should be made of the shoreline plant and animal communities in order to assess the extent of spill damage. Sublethal effects may only become apparent in the longer term and it may therefore be necessary to establish a monitoring programme to chart the recovery of affected habitats and species and to record any subsequent effects.

It may be relevant to survey diatom populations from both oiled and unoiled sites during the first week of an incident.

8. RESPONSIBILITIES OF THE MEMBERS OF THE OIL SPILL RESPONSE TEAM

The following is a checklist of duties required of the oil spill response team. For ease of reference, it recalls the responsibilities of the National Coordinator in the event of a Tier Two or Tier Three oil pollution incident, as set out in chapter A1.3. It also constitutes a checklist for organisations establishing their own local oil pollution emergency plans.

Names and contact numbers of key personnel are listed in Chapter 1 of the Data Directory (Part C of the NOSCP).

National Coordinator

The National Cordinator (NC) is the person appointed by EEAA to be the Incident Commander in a Tier Two oil pollution incident and to assist the Chief Executive of EEAA in a Tier Three oil pollution incident. He is responsible for nominating an On Scene Commander (OSC) to take command of response actions at the scene of the incident. The NC will coordinate the activities of the various organisations involved in the response action including the subsequent clean-up operations. The NC has overall decision making responsibility in a Tier Two incident and will be supported by appropriate operational, administrative and scientific personnel. Where necessary, the NC will convene the Emergency Response Committee to assist him in the decision making process.

The duties of the NC include:

1. To assess the spill in the light of information received by telephone or the OILPOL reporting format, and define its potential impact and the probable spill area.
2. To nominate an On Scene Commander to take command of response actions at the scene in a Tier Two or Tier Three incident.
3. To activate the procedures for mobilising EEAA's resources and the Oil Spill Response and Communications Centre in the Central Operations Room.
4. To consider requests for assistance from the OSC and to coordinate the mobilisation of additional resources (personnel and equipment) in accordance with the NOSCP.
5. To convene the Emergency Response Committee, if required.
6. To liaise with the OSC and take decisions which fall to EEAA to decide.

On Scene Commander

The On Scene Commander (OSC) is the person named in the local oil pollution emergency plan, or is nominated by the NC in the event of a Tier Two or Tier Three spill, to direct the overall response operation both at sea and on land. The OSC has overall decision making responsibility for the tactical response to an oil pollution incident and should be supported by appropriate operational, scientific and administrative personnel. The duties of the OSC are:

To assess the spill and define its potential impact and the probable spill area.

To determine the level of response and the scale of the response team required (the potential explosive and fire hazard should also be considered).

To notify EEAA by telephone or fax in accordance with the NOSCP notification procedures and to keep EEAA informed of developments.

If the origin of the spill is unknown, to arrange for the collection of samples for identification.

To appoint Team Leaders to take command of the response actions at sea and for shoreline protection respectively.

To set up an Emergency Operations Centre (EOC).

To initiate and direct response measures to stop and contain the spill and to recover oil (both within and outside containment areas).

To determine whether to use dispersants in accordance with the approved oil pollution emergency plan. If it is decided to use dispersants, and if prior approval has not been obtained from EEAA, it will be necessary to obtain EEAA's approval through the NC.

To activate the aerial application of dispersants if this is part of the response strategy.

To arrange for shoreline protection measures if the spill is likely to impact the coastline.

To ensure that the original spill area is recorded on a marine survey chart with date, time, wind velocity and direction, tides, and equipment mobilised (booms, vessels, etc). This chart should be updated as required.

To arrange for survey of the spill area by marine or aerial observations, including photographic or video records.

To arrange for a photographic record of:

the origin of the spill

the spill area

property damaged through the spill (boats, fishing nets, tourist amenities, etc)

impacted shorelines (beaches, rocks, walls, etc)

the EOC action boards

spill clean-up equipment in use

his record may be needed as evidence in support of claims for compensation.

To initiate the appropriate level of documentation needed for effective cost recovery action. This will include the accurate logging of quantities of recovered oil and removed oily sand and beach material. The condition of all oil spill combating equipment should be known and recorded before the spill; the condition of the equipment on completion of the recovery operations should be recorded.

To organise daily debriefing sessions with all key members of the response team.

To ensure that situation reports (SITREPs) are provided at regular intervals (at least every 24 hours during response actions) and are transmitted by fax to EEAA.

To ensure timely release of press notices through the Media Liaison Officer.

To prepare daily work plans, shift rosters for personnel, etc with the Team Leaders.

To decide when to scale down and/or terminate the response activity. These decisions may be different for the marine and shoreline operations.

To ensure cleaning up and return of equipment in good order.

To prepare a report covering all aspects of the spill and response operation and submit a copy to EEAA.

Marine Team Leader

The Marine Team Leader (MTL) is responsible for all waterborne activities undertaken in connection with the spill. His tasks will be related to the containment of the oil at sea, the spraying of dispersants from vessels where this has been approved by EEAA, and the protection of the coastline by the deployment of booms. The duties of the MTL are:

To provide advice and recommendations to the OSC on offshore response tactics within the spill area.

To make recommendations to the OSC on the appropriate vessels and offshore oil spill response equipment needed. This may require the OSC or the NC seeking assistance from other equipment stockpiles.

To allocate boat crews and ensure the safety of personnel.

To advise the OSC regularly on the progress of the offshore operations and make recommendations on developments as they occur.

To ensure that adequate information is provided to the Administrative Supervisor who will maintain a documentary record of the spill.

To prepare for refuelling and servicing of equipment throughout the day and, after use, at night.

To regularly check that the deployment of vessels and equipment is being used to best possible effect.

To participate in the daily debriefing sessions.

Shore Team Leader

The Shore Team Leader (STL) is responsible for all activities undertaken on the foreshore for the protection of sensitive resources. He is also responsible for the coordination of shoreline clean-up activities, including the temporary and ultimate disposal of collected oil and waste materials. The duties of the STL are:

To provide advice and recommendations to the OSC on foreshore response tactics within the area affected by the spill.

To make recommendations to the OSC on the appropriate shoreline clean-up equipment needed, including manpower resources. This may require the OSC or the NC seeking assistance from other equipment stockpiles and response teams.

To organise shoreline clean-up teams and ensure the safety of personnel.

To ensure that all clean-up measures are undertaken with environmental considerations in mind. This means taking into account any clean-up guidelines (including prohibited techniques) issued by EEAA.

To ensure that temporary arrangements are made for the separate collection of oil which may be reprocessed and oil contaminated material.

To arrange for the transfer of oil to a refinery for processing.

To arrange for the final disposal of any oil contaminated material in consultation with EEAA and the coastal Governorate.

To advise the OSC regularly on the progress of clean-up operations and make recommendations on developments as they occur.

To ensure that adequate information is provided to the Administrative Supervisor who will maintain a documentary record of the spill.

To prepare for refuelling and servicing of equipment throughout the day and, after use, at night.

To regularly check that the deployment of personnel and equipment is being used to best possible effect.

To participate in the daily debriefing sessions.

Administrative Supervisor

The Administrative Supervisor (AS) is responsible to the OSC for the provision of financial, record keeping, procurement and clerical services required in connection with the oil spill response. The AS will direct a team specifically tasked to provide clerical and administrative support. The size and complexity of the team will depend on the size and complexity of the spill. The AS will be required to set up an office with adequate staff and equipment at the EOC. In the event of a Tier Two or Tier Three spill which is under the overall command of the NC, the on-scene AS will need to liaise closely with the Finance Group at the Central Operations Room (COR) at EEAA. The duties of the AS are:

To keep account of all manpower, equipment and materials used in the response. He should ensure that he receives all necessary information for record keeping purposes from the MTL and the STL. He should compile daily record sheets of the manpower resources and equipment used at **each** separate location where personnel and equipment are deployed.

To maintain the action boards in the EOC with updated information on personnel and equipment deployed, etc.

To consult the NOSCP for information on additional equipment and resources which may be available if requested.

To arrange the delivery point for equipment and manpower resources brought in from outside. To arrange for the issue of all security passes and accommodation for assisting external personnel.

To check the condition of equipment brought in from outside on arrival and arrange storage area.

To arrange security protection for all equipment overnight where necessary.

To ensure that all business agreements are formalised (purchases, hiring, leases, etc).

To set up a system for processing claims for damages, taking account of any advice from EEAA.

To obtain names and addresses of property owners affected by the spill (water frontages, boat owners, etc) and details of the damage incurred.

To arrange entry to private or military property if required for shoreline protection or clean-up purposes.

To ensure that adequate medical resources are on hand and that the location of the nearest hospital and ambulance station are known.

To arrange fresh water supplies, food and drink facilities for all combating personnel.

To participate in the daily debriefing sessions.

Communications Supervisor

The Communications Supervisor (CS) is responsible for the coordination of all communications aspects connected with the spill. The duties of the CS are:

To obtain adequate communications equipment for distribution to personnel at sea and on shore and ensure that personnel know how to use them.

To appoint a VHF radio operator(s) at the EOC.

To ensure that effective communications links are maintained between the EOC and the on-scene coordination units.

To transmit and receive all radio messages as required by EOC personnel.

To ensure that all information is being logged.

To set up a communications network board.

To arrange radio battery replacement and overnight charging and repairs.

To ensure that the EOC radio is manned during all marine and onshore operations.

To participate in the daily debriefing sessions.

Scientific Adviser

The Scientific Adviser (SA) is responsible for providing the OSC with scientific expertise in respect of environmental issues and priorities. The duties of the SA are:

To assess the spill's potential impact on environmental resources.

To provide the OSC with a balanced assessment of environmental priorities within the area under threat, taking account of the priority ranking of the sensitivity analysis carried out under the NOSCP.

To coordinate any external information received from outside scientific and environmental interests.

To assist in the designation of suitable disposal sites, taking account of environmental considerations.

To coordinate the cleaning of any birds and wildlife that are injured by the spill.

To compile a report on the environmental implications of the spill for inclusion in the spill report to be compiled by the OSC.

To coordinate any post-spill environmental monitoring studies that are required.

To participate in the daily debriefing sessions.

Media Liaison Officer

In the case of a large oil spill where public interest will be aroused, it will be necessary to appoint a Media Liaison Officer (MELO) to act as the focal point for all communications with the media. He will be responsible for coordinating all media statements and the issue of press releases. The duties of the MELO are:

To obtain SITREPs from the OSC and prepare a draft press release.

To establish contact with the MELO at EEAA in order to ensure a consistency of approach.

To arrange a press room for media representatives to work equipped with tables, telephones, fax machines and support information.

To ensure with the site security staff that the arrival of media representatives is reported to the MELO and that they are escorted to the press room.

To prepare material for press conference listing:

- all desirable points for publication
- points of doubtful value (note positive aspects)
- undesirable points (questions to be avoided)

To arrange participants for press conference.

To keep OSC informed of scope of press briefings and report back on questions raised.

To arrange personal contact with and the release of information to private organisations (eg hotels threatened by the incident) and public bodies concerned (eg the Governorate).

To arrange for recorded copies of radio and television bulletins or comments on the incident.

To keep a press record book of all published reports on the incident in newspapaers or journals.

To ensure that public warning notices are erected where necessary.

9 COMMUNICATIONS PLAN

9.1 ROUTINE EXCHANGE OF INFORMATION

For routine communications, the **public switched networks** should normally be used. The use of **telefax** should be given preference as this provides a permanent record of the communication. However, **telephone** and **mobile phones** (when in range) provide a more rapid and effective two-way means of communication.

In the event of breakdown of the public network (eg due to earthquake), the **INMARSAT** system will be used by EEAA as the reserve means of communication. The use of INMARSAT is considerably more expensive than either the public network or mobile phones.

The use of **e-mail** can be helpful to transmit digital information, eg images of an incident recorded with a digital camera. It should be remembered that an e-mail mail box may not be accessed for some time and therefore e-mail should not be used for transmitting urgent information without warning the recipient by some other means of communication.

The communications coordinates of EEAA are given below.

Means of communication	Numbers
Central Operations Room emergency "hot lines"	(02) 525 6491 (02) 525 6492
Central Operations Room emergency fax line	(02) 525 6494
Central Operations Room alternative telephone lines	(02) 525 6452 or 6482 ext 8846 / 8847 / 8848 / 8850
COR INMARSAT	
Marine Pollution Control Department mobile phones	012 214 7518 012 313 5338
Marine Pollution Control Department telephone	(02) 525 6452 or 6482 ext 7309 or 8312
Marine Pollution Control Department fax	(02) 525 6483
Marine Pollution Control Department e-mail	noscp@intouch.com

9.2 OPERATIONAL COMMUNICATIONS DURING RESPONSE OPERATIONS

Efficient communications and smooth message traffic during response operations should facilitate effective performance of functions related to the operational command of the incident. The following definitions may help to clarify what is meant by this.

Incident command means the overall coordination of all involved personnel and equipment means and will be exercised by the Incident Commander (see chapter A5).

Operational control means direct control over personnel, means and units performing response operations at the scene of the oil pollution incident and will be exercised by the On Scene Commander (OSC) (see chapter B8).

Tactical command means directing and supervising the execution of specific tasks by work teams and units and will be exercised by Marine Team Leaders and Shoreline Team Leaders (see chapter B8).

9.2.1 Incident Command

The overall command of a Tier Two or Tier Three incident will normally be exercised by the Incident Commander at EEAA (see chapter A5) working out of the Central Operations Room (COR) at EEAA headquarters. However, in the case of a Tier One oil pollution incident, the On Scene Commander will be the Incident Commander and the following procedures should be adapted accordingly.

For transmission of his orders, the EEAA Incident Commander will use:

1. **Public switched networks (telephone and fax)** for all shore-to-shore communications including communication with the OSC and other parties. All telephone contact with the COR is recorded for subsequent record keeping, especially in the event of claims for compensation and clean-up costs.
2. **Mobile phones** only when it is not possible to use the public switched network and provided there is coverage.
3. **INMARSAT** only when it is not possible to use the public switched network or mobile phones.
4. **VHF radio** for use within the Greater Cairo area (range about 35 km) and, exceptionally, for shore-to-sea communications by the EEAA liaison officer if one is appointed to maintain close contact at the scene of the incident (see chapter A5).

9.2.2 Operational Control

Instructions for conducting response operations and for transmitting other relevant information will be communicated to marine response units and shoreline teams by the On Scene Commander.

For transmission of his orders, the OSC should use:

1. **Public switched networks (telephone and fax)** for all shore-to-shore communications including communication with EEAA and other parties.
2. **VHF radio stations** (mobile or installed on board vessels and aircraft) for sea-shore and sea-to-sea communications between vessels.

3. **Mobile phones**, where their coverage is sufficient, for shore-shore and shore-sea communications.
4. **Coastal radio stations** on MF frequencies when communicating to vessels outside the VHF range.

9.2.3 Tactical Command

Communications at the scene of response operations between vessels, aircraft and response personnel on the ground should be maintained using:

1. **VHF radio** (portable/mobile or installed on board vessels and aircraft) for shore-shore, shore-sea, sea-sea, sea-air and air-air traffic.
2. **Mobile phones**, where their coverage is sufficient, for shore-shore and shore-sea traffic.

9.3 SPECIFIC ADVICE FOR AIRCRAFT

For communications between sea or shore, on the one hand, and aircraft used for either surveillance or dispersant spraying, on the other, **marine band VHF** communication should be used. For this purpose, observers on board aircraft (see chapter B1) should be provided with portable VHF stations. These stations should be able to operate on all channels indicated in Table B9.1.

Maximum height for the use of marine band VHF equipment on board aircraft should not exceed 1,000 feet (300 metres).

As a rule, mobile phones should not be used on board aircraft.

9.4 VHF CHANNELS AND RADIO FREQUENCIES

Channel	10	67	73	16	6	8
Frequency [MHz]	156.500	156.375	156.675	156.800	156.300	156.400
Use	Pollution response	Pollution response	Pollution response	Distress/ safety	SAR	Intership

Table B9.1: VHF Channels for Use in Response Operations

Coastal Radio Station	**Frequency for Use in Pollution**	**Ordinary Frequency**	**Ordinary Frequency**

	Response (Tx/Rx-carrier)	**(Back-up) MF(Tx-carrier)**	**(Back-up) HF (Tx-carrier)**
Alexandria radio	2652/3200 kHz	2662 kHz	4408 kHz
Port Said radio	2652/3200 kHz	2870 kHz	--
Suez radio			
Cyprus radio	2652/3200 kHz	2679 kHz	4372 kHz
Haifa radio	2652/3200 kHz	2649 kHz	4366 kHz

Table B9.2: MF frequencies that can be used for communication in case of oil spill response operations

10. MANAGEMENT OF THE CENTRAL OPERATIONS ROOM

The National Coordinator (NC) will be the Incident Commander in the case of a Tier Two oil pollution incident and will assist the Chief Executive of EEAA in a Tier Three incident.

The NC's functions in a Tier Two or Tier Three oil pollution incident will normally be exercised from EEAA's Central Operations Room. When information is received about a major incident, the COR staff (which are on 24-hour duty) will arrange with the EEAA switchboard for all telephone calls relating to the incident to be transferred to the COR.

The NC will be supported by members of the Environmental Management Sector who will take responsibility for different tasks to facilitate the smooth running of the counter pollution operations. Many of the tasks can be performed with the assistance of the Incident Command System (ICS) software in the computer system, which is identical to the ICS software and database held in the Arab Academy for Science, Technology and Maritime Transport (AASTMT) at Alexandria which can be accessed, if necessary, for further support.

After a major oil pollution incident, a claim for the reimbursement of combating and clean-up costs will be made against the polluter. In the case of an incident involving the offshore industry, the claim will be made against the petroleum company involved. In the case of a shipping incident, the claim will be made against the ship owner's insurance - the P & I Club. If the oil is from a tanker, and if Egypt becomes a member of the International Oil Pollution Compensation Fund, claims will be made against the Fund. In any event, in order to substantiate the claims - if necessary in a court of law - it will be essential to keep detailed records of the incident. This is one of the most important functions of the COR.

Management Levels within the COR

Experience has shown that the establishment of *functional* groups, with clearly defined responsibilities, is essential in order to carry out effectively the various tasks of responding to a major oil pollution incident. The management structure will consist of a main core of three specific teams responsible for the conduct of operations, assisted by a number of support groups. This is shown in figure B.10.1.

The responsibilities of the three core teams can be defined briefly as follows:

Management Team:	responsible for policy decisions
Technical Team:	responsible for technical decisions on combating action at sea and shoreline clean-up methods
Procurement Team:	responsible for procuring equipment

The principal roles of these core teams are described below.

Management Team

The Management Team operates at the policy level and is responsible for:

General principles of strategy, such as deciding on the use of dispersants (if no standing approval has been given in advance), determining the order for priority action in protecting sensitive areas (based on the NOSCP sensitivity maps), and determining the priorities for clean-up of polluted shorelines.

The general financial aspects of the counter pollution operations, including decisions on the hiring of equipment and other resources.

Interaction with the State Minister for the Environment, other Ministries of the central government, the Governorates affected by the incident, the public and the media.

Preparing regular situation reports concerning the conduct of operations for circulation to all interested parties. (These will be based on briefings supplied by the Technical Team).

Chairman:	National Coordinator (Chief Executive of EEAA if Tier Three incident)
Members:	Leader of Technical Team Media Liaison Officer Leader of Procurement Team Head of Environment Group Head of Finance Group Head of Administration Group

In the case of a major incident where the Emergency Response Committee has been convened by EEAA, this Committee will take over the role of the Management Team.

Technical Team

The Technical Team reports to the Management Team and is responsible for dealing with the conduct of counter pollution operations, in close consultation with the On Scene Commander:

Liaison with the OSC on the tactics for combating the oil pollution at sea.

Determining the level of additional resources required based on requests from the OSC and the priorities determined by the Management Team.

Liaison with the OSC on the priorities for shoreline protection, based on the decisions of the Management Team.

Determining the sources of the additional resources required for combating at sea and shoreline protection and instructing the Procurement Team.

When oil has come ashore, liaison with the Management Team and the On Scene Commander on the clean-up strategy.

Determining the level of additional resources required for shoreline clean-up.

Determining the sources of additional resources required for shoreline clean-up, including the possibilities of the armed forces and private contractors, and instructing the Procurement Team.

Monitoring the progress of operations. At the end of each day, to assess the day's work and produce a revised workplan for the Management Team.

Briefing the Management Team on the conduct and progress of operations, including any resource shortfalls.

Leader: Head of Marine Pollution Control Department

Members: Head of Procurement Team
Head of Environment Group

Procurement Team

The Procurement Team reports to the Technical Team on specifically allocated tasks and is responsible for:

Ascertaining the availability and the financial costs of the additional resources requested by the Technical Team. (Note: when additional resources are to be paid for by EEAA out of the Environmental Protection Fund they can only be procured when prior written approval has been obtained from the NC or the Chief Executive of EEAA.)

Preparing standard forms of contract for the hiring of equipment and other resources.

When approved by the Management Team, making the necessary arrangements for:

procuring the required equipment from the suppliers;

delivery of the equipment to the scene of the incident.

Monitoring the levels of deployed resources at the various locations and updating the COR Information Boards.

In consultation with the Technical Team, redeploying resources as they become surplus to requirements at the various sites.

Standing down hired equipment and resources when the Management Team decides they are no longer required.

Arranging for inspection of the condition of hired equipment (together with photographic evidence) before it is returned to the owners.

Environment Group

The Environment Group will liaise with both the Management and Technical Teams and will be responsible for:

Providing advice, as requested, on all environmental matters concerning sensitivity of the affected coastline (taking account of the NOSCP sensitivity data), priorities for protection of sensitive sites and the environmental effect of clean-up methods.

Providing assessments on the environmental impact as the incident develops, for the information of the Management Team and for possible inclusion in media briefings.

Acting as the liaison with interested environmental bodies (eg wildlife response teams for the cleaning of birds).

Finance Group

The Finance Group will liaise closely with the Management and Procurement Teams and will be responsible for:

Monitoring expenditure during the incident.

Collating invoices with expenditure to support claims for compensation made against insurers.

Keeping a record of all EEAA expenditure incurred, including claims for staff time.

Liaising with the Administrative Supervisor at the scene of the incident (see Chapter B.8) concerning expenditure incurred by the on scene response team.

Providing the Management Team with a daily summary of expenditure incurred.

Administration Group

The Administration Group will be responsible for the general management of the Central Operations Room and especially for:

Providing communication links within the COR:

Distribution of message traffic within the COR

The receipt and transmission of all message traffic into and out of the COR

Keeping a log of all message traffic

Keeping a duplicate photocopy of all incoming and outgoing faxes and filing in chronological order.

Minute taking during the Management Team and Technical Team discussions.

Logging and updating of Information Boards and Operational Maps.

Providing catering to the staff of the COR.

Security, especially control of access to the COR.

11 GUIDELINES FOR PUBLICITY AND RELATIONS WITH THE MEDIA

11.1 GENERAL PRINCIPLES

The media will be on site immediately following a disaster. The media will often hear of a disaster at the same time as the emergency services, and they often arrive with them. On arrival, the media will expect to have access to the facilities they require. They will also expect an instant response to their requests for information and briefing. If these demands are anticipated, the media are less likely to add to what will already be a confused situation.

What do the media want?

It must be remembered that the media's objectives are not the same as the competent authority's. In general, the media has a hierarchy of priorities:

1. to arouse the readers'/listeners'/viewers' interest;
2. to get the facts right;
3. to get their stories in on time to meet their deadlines.

What does the public want to know?

It must be remembered that the media is acting as the voice of the general public. They will be asking the questions that the man in the street would like to ask. In general, their information needs will be straightforward:

1. What happened?
2. Why did it happen?
3. What are the authorities doing?
4. Will there be further developments?
5. What will be done to prevent such an incident from happening again?

It should be remembered that, in general, the representatives of the media will not be experts in oil spill response matters. The Media Liaison Officer appointed by the competent authorities will therefore have an in-built advantage in that:

- he will have a basic knowledge of the principles of oil spill response and will therefore be able to answer questions with an air of authority and competence;
- he will be closer to the sources of information and will himself be briefed on the competent authority's combat and response strategies.

The objectives of the competent authority

The primary objective of the competent authority is, of course, to respond to the oil spill in the most practical and efficient way possible. However, it needs to be recognised that the authorities will, in fact, be fighting two battles simultaneously:

1. the appropriate response to the oil spill situation either at sea and/or on shore;
2. the relations with the media.

In many respects the media "battle" will be the more important of the two. In the long term, nature will itself correct not only the immediate consequences of oil spill damage, but also any errors on the part of the responding authorities in the execution of their combat strategy. Furthermore, the newsworthiness of the incident will quickly recede as it is overtaken by more interesting public events. This means that long-term clean-up operations are unlikely to be the source of much media interest.

The importance of the public relations aspects cannot be over emphasised. Even if the response to an incident works like clockwork in accordance with the contingency plan, it will be seen as a failure if the relations with the media have not been handled well. In many cases (most cases?), the response to an oil spill does not work precisely according to plan for a variety of reasons: some good, some bad. In such cases, good relations with the media are essential in order to ensure that the flow of information is controlled and the presentation of facts is not distorted.

11.2 DUTIES OF MEDIA LIAISON OFFICER

There are a number of details which need to be decided in advance of an incident and recorded in the contingency plan. These include the following:

1. Plan in advance where news conferences will be held.
2. Allocate a Press Room which will be used by the MELO as long as is necessary during the incident.
3. Allocate in advance the telephone and fax numbers on which the MELO can be reached by the media.
4. Find out in advance the telephone and fax numbers of the local and national newspapers, TV and radio stations. If possible, find out in advance the names of the correspondents who are likely to be sent to cover any oil pollution incident because of their areas of expertise. It is important to ascertain this information in advance so that the competent authorities can take a proactive line in defining their relations with the media rather than simply reacting to events.
5. Decide in advance the timing of daily news conferences. This is one less decision that has to be taken on the day.

Good preparation is more likely to lead to successful relations with the media. However, not everything can be determined in advance and it is good to adopt a watchword: **be flexible**.

11.3 THE PRESS RELEASE

It is important to adopt a proactive approach in dealing with the media. This ensures that the competent authorities are able to demonstrate that they are in command of the situation and ensure that they convey the right message to the media. It also avoids the media picking up a distorted story from other sources - or at least, it renders this less likely.

A principal means of conveying information to the media is through the Press Release. The press release can be given out at the daily press conference or faxed in advance to the media correspondents.

There are a number of basic guidelines in preparing a good press release:

⇒ keep it short - one side of a page if possible

⇒ give the basic facts in short, uncomplicated sentences

⇒ try and say something positive, i.e. what is being done to prevent pollution affecting sensitive areas

⇒ be clear about the role of the authorities and what action they are taking

⇒ put a contact name, address, telephone/fax number who can be contacted for further information.

In general, there are certain lines to avoid in issuing a press release. This is because they do not necessarily advance the cause of providing factual information and may, especially if they are subsequently proved to be wrong, damage the credibility of the competent authority. Therefore the press release should:

* not speculate about the cause of the incident

* not apportion blame to a particular person - this may well be the responsibility of the courts

* not admit liability for the incident

* not use technical jargon which will not be understood by the media or the public.

11.4 INTERVIEW GUIDELINES

The press release may be the best means that a competent authority has of conveying simply the basic facts about a pollution incident and may be the best opportunity to place on record what the authorities are doing in response to the incident. However, there are situations when the press release alone will not be sufficient. Journalists may wish to ask more detailed questions and the competent authorities should make every effort to ensure that they are answered fully and honestly.

In addition, the radio and TV will frequently wish to interview a responsible person from the competent authorities about the facts of the incident. The fundamentals of dealing with the media as described in the preceding paragraphs will all apply but, in addition, certain interview guidelines should be observed if the Media Liaison Officer is to give an effective performance:

⇒ The information should be short and to the point. Long-winded statements annoy journalists and create problems for radio and TV editors.

⇒ Write out in advance a list of the points you want to make and do not be afraid to repeat them if necessary, in response to questions.

⇒ Keep the answers to questions short and simple.

⇒ Memorise your most important statement and say it without referring to your notes.

⇒ Stick to the facts: avoid conjecture and guesswork.

⇒ Leave out unnecessary adjectives. A "small" spill of crude oil in industry terms is a "large" spill in journalistic ones.

⇒ Remain on your guard at all times and consider every word you say as "on the record". A good journalist is never off duty.

⇒ Keep your cool and pause to think before answering difficult questions. If you do not know the answer, say so and do not guess. If appropriate, offer to obtain the information as soon as possible.

⇒ Remain in charge. Do not get flustered if the questions are difficult. If you think you have already answered a question, say so.

⇒ Remember that journalists are not experts in this field. Be patient and calm. Answer questions in simple language and avoid technical jargon.

⇒ Do not lose your temper even if provoked by aggressive questions.

⇒ If necessary, have a blackboard or flip chart available to explain a complex point.

⇒ If you are saying something and are interrupted, complete the point you were making before replying.

⇒ If you did not clearly hear a question, or cannot understand a question, ask for it to be repeated. Do not answer until you have a clear understanding of what is being asked.

⇒ Be natural but do not relax too much. Guard against lapses in concentration.

The above guidance is also applicable to handling press conferences where several journalists may be present, as well as conducting interviews with the radio and TV. At such press conferences, it may be appropriate to be assisted by specific experts to answer technical questions. But the experts should not take over the news conference; access to the views of experts should be channelled through the MELO who should normally chair the press conference. In this way it should be possible to guard against the emergence of contradictory messages.

12 GUIDELINES FOR MAKING CLAIMS FOR COMPENSATION

12.1 PRESENTING A CLAIM

Egypt is a Contracting Party to the 1969 International Convention on Civil Liability for Oil Pollution Damage (CLC) and its 1992 Protocol. The 1992 Protocol provides higher limits of compensation and a wider scope of application than the 1969 Convention.

Article 14 of the Law for the Environment (Law No. 4 of 1994) establishes an Environmental Protection Fund (EPF). The Regulations for the administration of this Fund have not yet been finalised but it is intended that one of the purposes of the Fund should be to reimburse the costs of clean-up operations and combating actions in the case of oil pollution incidents, including oil pollution from unknown sources.

The role of the Civil Liability Convention

Under the 1969 Civil Liability Convention and its 1992 Protocol, claims for compensation for oil pollution damage may be brought against the owner of the ship which caused the damage (or his insurer).

Under the 1969 Civil Liability Convention, the shipowner has "strict liability" for pollution damage caused by the escape or discharge of persistent oil from his ship. This means that he is liable even in the absence of fault on his part.

The shipowner is obliged to maintain insurance to cover his liability under the 1969 Civil Liability Convention. This obligation does not apply to ships carrying less than 2 000 tonnes of oil as cargo.

The role of the Environmental Protection Fund

Article 8 of the Executive Regulations for implementing Law No. 4 of 1994 states that the resources of the Environmental Protection Fund established by Article 14 of Law No. 4 shall be used "to achieve its objectives" and itemises a number of tasks of the Agency which are "particularly" envisaged to receive the benefit of the Fund's resources. This list includes two objectives which are pertinent to the National Oil Spill Contingency Plan. These are:

- confronting environmental disasters;
- confronting pollution from unknown sources.

Of these, the problem of confronting pollution from unknown sources is perhaps the most important from the point of view of marine oil spills because it is a persistent problem. It is evident that much marine oil pollution in Egyptian waters emanates from "unknown sources". It is probable that the majority is discharged illegally by passing ships. In the past, there has been no mechanism - and in particular no financial mechanism - to reimburse the costs of any agency responding to sightings of oil spills from unknown sources. This deficiency was clearly recognised by EEAA in

the drafting of Law No. 4 and its Executive Regulations. It is clear that the legislation specifically envisages the Environmental Protection Fund's resources being used for confronting oil spills from unknown sources.

In the event of an oil spill in Egypt, it is likely that the EPF will be used in the first instance to reimburse costs for clean-up action. Where the polluter is identified, the costs will then be reclaimed from the ship owner's or the oil company's insurance.

It should be recognised that responding to oil spills from unknown sources is likely to be a drain on the Environmental Protection Fund with little chance of recompense, at least until surveillance and enforcement procedures are improved. However, it should also be remembered that "confronting pollution from unknown sources" is one of the clearly stated purposes of the Fund.

In addition to the persistent problem of responding to oil spills from unknown sources, the second area in which EEAA will be called upon to take action is in the case of a major oil spill which is beyond the resources of local facilities to deal with (ie a Tier Two or Tier Three spill). It is probable that the sources of major oil spills will be clearly identifiable. In most cases they will involve an accident with a laden oil tanker, although a major disaster at an offshore petroleum installation could also be envisaged.

In order to respond to major oil spills it is likely that EEAA, as the coordinating agency, will have to call on the resources of major stockpiles of equipment from the private sector, or the resources of neighbouring States with which Egypt has cooperation agreements. In both cases the providers of equipment will reasonably expect to be reimbursed for their services. It is therefore essential, in order to ensure a swift and effective response, that a designated official in EEAA has prior written authority to call upon such equipment and commit Egypt to the reimbursement of the response costs out of the Environmental Protection Fund.

In the case of major oil spills the Government of Egypt will be able to reclaim all the costs of combating the spill and any economic damage caused by initiating claims against the polluter. The costs will probably be reimbursed out of the vessel's or the petroleum sector's insurance.

Law No. 4 imposes strict financial penalties on any merchant shipping which is shown to be in breach of the Law and its Executive Regulations. The fines vary according to the nature of the offence but range between 150,000 and 500,000 L.E. for discharges of oil or oily mixtures into the sea. Article 7 of the Executive Regulations makes it clear that "fines and compensations by court rulings or which are agreed upon for damages affecting the environment" will be paid into the Environmental Protection Fund.

Who is entitled to compensation?

Anyone who has suffered pollution damage in a State which is a Contracting Party to the CLC may make a claim for compensation. Claimants may be private individuals, partnerships, companies, private organisations or public bodies, including States or local authorities. If several claimants suffer similar damage, they may find it more convenient to submit co-ordinated claims. This can facilitate claims handling.

Compensation is also payable for the cost of reasonable measures to prevent or minimise pollution damage wherever these measures are taken, even on the high seas.

For example, if a response on the high seas to an oil spill succeeds in preventing or reducing pollution damage within the territorial sea or exclusive economic zone of Egypt, the response would in principle qualify for compensation under the CLC.

Under Law No.4, anyone who takes measures to combat pollution at sea, or clean up pollution when it has reached the shoreline, would in principle have the costs of their action reimbursed by the EPF if that action had been requested by EEAA.

To whom should a claim be addressed?

Claims for compensation under the Environmental Protection Fund should be sent to:

Environmental Management Sector
Egyptian Environmental Affairs Agency
30 Misr-Helwan Agricultural Road
Maadi
Tel/fax: (02) 525 6483

EEAA will decide on the admissibility of claims under the Environmental Protection Fund.

Claims for compensation under the Civil Liability Convention should be brought against the shipowner liable for the damage, or directly against his insurer. The insurer will normally be one of the Protection and Indemnity Associations (P & I Clubs) which insure the third-party liabilities of shipowners.

The P & I Club concerned will usually investigate the incident and assess the damage. Full supporting documentation should be submitted either to the shipowner or his P & I Club.

In some cases, claims are channelled through the office of a designated local surveyor. Claimants should in such cases submit their claims to that office, for forwarding to the P & I Club for decision. Details of claims offices are given in the local press. All claims are referred to the P & I Club for a decision on their admissibility. Neither a designated local surveyors nor a local claims office may decide on the admissibility of claims.

Within what period should a claim be made?

Claimants should submit their claims as soon as possible after the damage has occurred. If a formal claim cannot be made shortly after an incident, EEAA and insurers would appreciate being notified as soon as possible of a claimant's intention to present a claim at a later stage.

Claimants will ultimately lose their right to compensation under the 1969 or 1992 Civil Liability Convention unless they bring court action within three years of the date on which the *damage occurred*, or make formal notification of a court action against the shipowner or his insurer within that three-year period. Although damage may occur some time after an incident takes place, court action must in any case be brought within six years of the *date of the incident*. Claimants are recommended to seek legal advice on the formal requirements of court actions, to avoid their claims becoming time-barred.

Insurers endeavour to settle claims out of court. However, claimants are advised to present any claims well in advance of the expiry dates of the periods mentioned above. This allows time for claims to be examined and settled out of court, but also ensures

that claimants will be able to sue the insurers for compensation and prevent their claims from being time-barred if they are unable to agree on amicable settlements of the claims.

How should a claim be presented?

Claims should be made in writing (including telefax or telex). A claim should be presented clearly and with sufficient detail to assess the amount of the damage or the claim for reimbursement of costs on the basis of the facts and the supporting documentation presented. Each item of a claim must be substantiated by an invoice or other relevant supporting documentation, such as work sheets, explanatory notes, accounts and photographs. It is the responsibility of claimants to submit evidence supporting their claims.

The insurers usually appoint surveyors and technical advisers to investigate the technical merit of claims. Claims can be settled promptly only if claimants co-operate fully with these surveyors and advisers and provide all information relevant to the assessment of the claims.

The speed with which claims are settled depends largely on how long it takes for claimants to provide the insurers with the required information. Claimants are therefore advised to follow these Guidelines as closely as possible. If the documentation in support of a claim is likely to be considerable, claimants should contact the P & I Club concerned (or where appropriate the designated surveyor or local claims office) as soon as possible after the incident to discuss claim presentation.

The working language of the inurance companies is English. Claim settlement will proceed more quickly if claims, or at least claim summaries, are submitted in English.

Claims against the Environmental Protection Fund should also follow these Guidelines. If there is no likelihood of a claim being made against an insurer or a P & I Club, claims against the EPF can be submitted in Arabic.

What information should a claim contain?

Each claim should contain the following basic information:

- the name and address of the claimant, and of any representative
- the identity of the ship involved in the incident
- the date, place and specific details of the incident, if known to the claimant
- the type of pollution damage sustained
- the amount of compensation claimed.

Additional information may be required for specific types of claim. This is described in more detail below.

12.2 ADMISSIBLE CLAIMS

Claims policy

Insurers will accept only those claims which fall within the definitions of *pollution damage* and *preventive measures* laid down in the Civil Liability Convention. A uniform interpretation of the definitions is essential for the functioning of the system of compensation established by the Conventions, including the International Oil Pollution Compensation Fund. The policy on the admissibility of claims for compensation under the Fund Convention has been established by the Governments of Member States and this policy tends to be followed by insurers working under the terms of the CLC.

However, each claim has its own particular characteristics, and it is therefore necessary to consider each claim on the basis of its own merits, in the light of the particular circumstances of the case. The adopted criteria therefore allow for a certain degree of flexibility.

General criteria

The following general criteria apply to all claims:

- any expense/loss must actually have been incurred
- any expense must relate to measures which are deemed reasonable and justifiable
- a claimant's expense/loss or damage is admissible only if and to the extent that it can be considered as caused by contamination
- there must be a link of causation between the expense/loss or damage covered by the claim and the contamination caused by the spill
- a claimant is entitled to compensation only if he has suffered a quantifiable economic loss
- a claimant has to prove the amount of his loss or damage by producing appropriate documents or other evidence.

A claim is thus admissible only to the extent that the amount of the loss or damage is actually demonstrated. A certain flexibility is nevertheless exercised in respect of the requirement to present documents, taking into account the particular circumstances of the claimant or industry concerned or of the country in question. All elements of proof are considered, but the evidence provided must give the insurers the possibility of forming their own opinion on the amount of the loss or damage actually suffered.

EEAA will apply these general criteria to the acceptability of claims made under the Environmental Protection Fund.

Clean-up operations and property damage

Clean-up operations on shore and at sea, and property damage

Clean-up operations on shore and at sea would in most cases be considered as *preventive measures*, ie measures to prevent or minimise *pollution damage* as defined in the Civil Liability Convention.

Insurers will compensate the cost of reasonable measures taken to combat the oil at sea, to defend sensitive resources and to clean shorelines and coastal installations. EEAA will reimburse from the Environmental Protection Fund the costs of the measures taken by public authorities and private companies to combat pollution at sea or clean up pollution on shorelines *provided* that such action has been officially requested by EEAA in response to a reported oil pollution incident.

Loss or damage caused by measures to prevent or minimise pollution is also compensated. For example, if clean-up measures result in damage to roads, piers and embankments, the cost of the resulting necessary repairs is admissible. However, claims for work which involves improvements rather than the repair of damage resulting from a spill will not be accepted.

Claims for measures to prevent or minimise pollution damage are assessed on the basis of objective criteria. The fact that a government or other public body decides to take certain measures does not in itself mean that the measures are reasonable for the purpose of the Conventions. The technical reasonableness is assessed on the basis of the facts available at the time of the decision to take the measures. However, those in charge of the operations should continually reappraise their decisions in the light of developments and further technical advice.

Claims for costs are not accepted when it could have been foreseen that the measures taken would be ineffective. On the other hand, the fact that the measures prove to be ineffective is not in itself a reason for rejection of a claim for the costs incurred. The costs incurred, and the relationship between these costs and the benefits derived or expected, should be reasonable. In the assessment, the insurers take account of the particular circumstances of the incident.

Claims for clean-up operations may include the cost of personnel and the hire or purchase of equipment and materials. The reasonable costs of cleaning and repairing clean-up equipment and of replacing materials consumed during the operations are accepted. If the equipment used was purchased for a particular spill, deductions are made for the residual value when the amount of compensation is assessed. If a public authority has purchased and maintained materials or equipment so that they are immediately available if an incident occurs, compensation is paid for a reasonable part of the purchase price of the materials and equipment actually used.

Salvage and preventive measures

Salvage operations may in some cases include an element of preventive measures. Such operations can be considered as *preventive measures* only if the primary purpose is to prevent *pollution damage*. If the operations have another purpose, such as salving hull and cargo, the costs incurred are not admissible under the Conventions. If the activities are undertaken for the purpose of both preventing pollution and salving the ship and cargo, but it is not possible to establish with any certainty the primary purpose of the operations, the costs are apportioned between pollution prevention and other activities. The assessment of compensation for activities which are considered to be *preventive measures* is not made on the basis of the criteria applied for assessing salvage awards; the compensation is limited to costs, including a reasonable element of profit.

Disposal of collected material

Clean-up operations frequently result in considerable quantities of oil and oily debris being collected. Reasonable costs for disposing of the collected material are admissible. If a claimant has received any extra income following the sale of recovered oil, these proceeds would be deducted from any compensation to be paid.

Property damage

Claims for the cost of cleaning or repairing property which has been contaminated by oil (for example boats, yachts and fishing gear) are accepted. If it is not possible for the property to be cleaned or repaired, then replacement costs are accepted, though with a reduction for wear and tear.

Cost of studies

Expenses for studies are compensated only if the studies are carried out as a direct consequence of a particular oil spill, and as a part of the oil spill response or to quantify the level of loss or damage. Insurers will not pay for studies of a general or purely scientific character.

Post-spill environmental studies are sometimes carried out to establish the precise nature and extent of the pollution damage caused by an oil spill and/or the need for reinstatement measures. Insurers may contribute to the cost of such studies, provided that the studies concern damage which falls within the definition of *pollution damage* laid down in the Conventions as interpreted by the IOPC Funds, including reasonable measures to reinstate the environment. In such cases, the P & I Club should be given the possibility of becoming involved at an early stage in the selection of the experts who will carry out the studies, and in the determination of the mandate of these experts. The studies should be practical and likely to deliver the required data. Their scale should not be out of proportion to the extent of the contamination and the predictable effects. The extent of the studies and associated costs should also be reasonable from an objective point of view and the costs incurred should be reasonable.

Fixed costs

Clean-up operations are often carried out by public authorities which use permanently employed personnel, or vessels, vehicles and equipment owned by those authorities. The authorities may then incur *additional costs*, ie expenses which arise solely as a result of the incident and which would not have been incurred had the incident and related operations not taken place. Reasonable *additional costs* are acceptable.

Authorities may claim compensation for so-called *fixed costs*, ie costs which would have arisen for the authorities concerned even if the incident had not occurred, such as normal salaries for permanently employed personnel and capital costs of vessels owned by the authorities. Insurers accept a reasonable proportion of *fixed costs*, provided that these costs correspond closely to the clean-up period in question and do not include remote overhead charges.

Claim presentation

It is essential that supporting documentation shows how the expenses for clean-up operations are linked with the actions taken at specified work sites.

Major expenditures may be incurred for the use of aircraft, vessels, specialised equipment, heavy machines, trucks and personnel. Some of these may be government-owned; others may be the subject of contractual arrangements. Claimants should keep comprehensive records of all operations and expenditures resulting from an incident. Supervisory personnel should daily record the operations in progress, the equipment in use, where and how it is being used, the number of personnel employed, how and where they are deployed and the materials consumed. Standard work sheets, designed to suit the particular circumstances of the spill and the response organisation

in the country concerned, are useful for such records. It is useful to appoint a financial controller to keep adequate records and control expenditure.

Claims for *clean-up operations* and *preventive measures* should be itemised as follows:

- Delineation of the area affected, describing the extent of the pollution and identifying those areas most heavily contaminated (for example using maps or nautical charts, supported by photographs or video tapes)
- Analytical and/or other evidence linking the oil pollution with the ship involved in the incident (such as chemical analysis of oil samples, relevant wind, tide and current data, observation and plotting of floating oil movements)
- Summary of events, including a description and justification of the work carried out at sea, in coastal waters and on shore, together with an explanation of why the various working methods were selected
- Dates on which work was carried out at each site
- Labour costs at each site (number and categories of response personnel, regular or overtime rates of pay, hours or days worked, other costs)
- Travel, accommodation and living costs for response personnel
- Equipment costs at each site (types of equipment used, rate of hire or cost of purchase, quantity used, period of use)
- Consumable materials (description, quantity, unit cost and where used)
- Any remaining value at the end of the operations of equipment and materials purchased
- Age of equipment not purchased but used in the incident
- Transport costs (number and types of vehicles, vessels or aircraft used, number of hours or days operated, rate of hire or operating cost)
- Cost of temporary storage (if applicable) and of final disposal of recovered oil and oily material.

Claims for *damage to property* should be itemised as follows:

- Extent of pollution damage to property and an explanation of how the damage occurred
- Description and photographs of items destroyed, damaged or needing replacement, repair or cleaning (for example boats, fishing gear, roads, clothing), including their location
- Cost of repair work, cleaning or replacement of items
- Age of items to be replaced
- Cost of restoration after clean-up, such as repair of roads, piers and embankments damaged by the clean-up operations, with information on normal repair schedules.

Consequential loss

Insurers accept in principle claims for loss of earnings suffered by the owners or users of property contaminated as a result of a spill (*consequential loss*). One example of consequential loss is a fisherman's loss of income as a result of his nets becoming polluted. He would be compensated for his loss of income as well as receiving compensation for the damage to his property.

Pure economic loss

An important group of claims are those relating to *pure economic loss*, ie loss of earnings sustained by persons whose property has not been polluted. A fisherman whose boat and nets have not been contaminated may be prevented from fishing because the area of the sea where he normally fishes is polluted and he cannot fish elsewhere. Similarly, a hotelier or restaurateur whose premises are close to a contaminated public beach may suffer loss of profit because the number of guests falls during the period of pollution.

Claims for pure economic loss are admissible only if they are for loss or damage caused by contamination. The starting point is the pollution, not the incident itself.

To qualify for compensation for pure economic loss, there must be a reasonable degree of proximity between the contamination and the loss or damage sustained by the claimant. A claim is not admissible for the *sole* reason that the loss or damage would not have occurred had the oil spill not happened. When considering whether the criterion of reasonable proximity is fulfilled, the following elements are taken into account:

- the geographic proximity between the claimant's activity and the contamination
- the degree to which a claimant was economically dependent on an affected resource
- the extent to which a claimant had alternative sources of supply or business opportunities
- the extent to which a claimant's business formed an integral part of the economic activity within the area affected by the spill.

Insurers also take into account the extent to which a claimant was able to mitigate his loss.

The assessment of a claim for pure economic loss is based on the actual financial results of the individual claimant for appropriate periods during the years before the incident. The assessment is not based on budgeted figures. Insurers take into account the particular circumstances of the claimant and consider any evidence presented. The criterion is whether the claimant's business as a whole has suffered economic loss as a result of the contamination.

Any saved overheads or other normal expenses not incurred as a result of the incident should be subtracted from the loss suffered by the claimant, for both consequential loss and pure economic loss.

Measures to prevent pure economic loss

Claims for the cost of measures to prevent pure economic loss may be admissible if they fulfil the following requirements:

- the cost of the proposed measures is reasonable
- the cost of the measures is not disproportionate to the further damage or loss which they are intended to mitigate

- the measures are appropriate and offer a reasonable prospect of being successful
- in the case of a marketing campaign, the measures relate to actual targeted markets.

To be admissible, the costs should relate to measures to prevent or minimise losses which, if sustained, would qualify for compensation under the Conventions. Claims for the cost of marketing campaigns or similar activities are accepted only if the activities undertaken are in addition to measures normally carried out for this purpose. In other words, compensation is granted only for the additional costs resulting from the need to counteract the negative effects of the pollution.

The criterion of *reasonableness* is assessed in the light of the particular circumstances of the case, taking into account the interests involved. The assessment is made on the basis of the facts known at the time that the measures are taken. As for marketing campaigns, measures of too general a nature are not accepted.

Insurers do not normally accept claims for measures to prevent pure economic loss until they have been carried out. Insurers are also cautious about advance payments for such measures since they will not take on the role of a claimant's banker.

When considering the admissibility of claims for the cost of an organisation's marketing activities, insurers take into account the organisation's attitude towards the media after the incident and, in particular, whether that attitude increased the negative effects of the pollution.

Contamination of fisheries and aquaculture produce

If there are mortalities in fish and aquaculture stocks following an incident, the claimant should document the loss by preserving samples and using photographic and other forms of recording to demonstrate the nature and extent of the loss.

Insurers and the IOPC Fund have in the past received claims for compensation based on the destruction of farmed fish and shellfish as a result of orders issued by public authorities in the form of fishing bans or exclusion zones. The IOPC Funds and insurers do not consider a fishing ban or exclusion zone imposed by a public authority as conclusive justification for destroying produce affected by a ban. Such claims are admissible if and to the extent that the destruction of the produce was reasonable on the basis of the scientific and other evidence available.

When assessing whether the destruction of produce was reasonable, the following points will be considered:

- whether the produce was contaminated
- the likelihood that the contamination would disappear before the normal harvesting time
- whether the retention of the produce in the water would prevent further production
- the likelihood that the produce would be marketable at the time of normal harvesting.

Since the assessment of whether the destruction was reasonable is based on scientific and other evidence, it is important that sampling and testing are carried out, in particular testing for taint. Samples from an area affected by the spill (*suspect* samples) and *control* samples from a nearby commercial outlet outside the polluted area should be tested at the same time. The two groups of samples should be of equal numbers. Taste testers should not be able to identify whether the sample being tasted is a suspect or a control sample (ie it must be a *blind* testing).

Claim presentation for consequential loss and pure economic loss

Claimants should substantiate their loss with appropriate documents or other evidence.

Claims for *consequential loss* and *pure economic loss* should include the following information:

- Nature of loss, including proof that the alleged loss resulted from the contamination
- Comparative figures for earnings in previous periods and during the period when economic loss was suffered, for example in the form of audited accounts or tax returns
- Comparison with similar areas outside the area affected by the oil spill
- Method of assessment of loss
- Saved overheads.

Claimants should indicate whether they have received any extra income as a result of the incident. For instance, fishermen who take part in clean-up operations may have been paid for their participation. Similarly, claimants should indicate whether they have received any aid or payments from public authorities or other international organisations in connection with the incident.

Claimants may wish to use advisers to assist them in presenting claims for compensation. Insurers will consider reasonable costs for work carried out by advisers in connection with the presentation of claims falling within the scope of the Conventions. The question of whether and to what extent costs are payable is assessed in connection with the examination of the particular claim for compensation. Insurers take into account the necessity for the claimant to use expert advice, the usefulness of the work carried out by the adviser, the quality of the work, the time reasonably needed and the normal rate for work of that kind. Excessive costs billed by advisers will not be reimbursed.

Environmental damage

It is clear from the revised definition of *pollution damage* in the 1992 Conventions that only costs incurred for reasonable measures to reinstate the contaminated environment may be accepted by the 1992 IOPC Fund and by insurers.

Costs for measures taken to reinstate the marine environment after an oil spill may be accepted under certain conditions. To be admissible for compensation, such measures should fulfil the following criteria:

- the cost of the measures should be reasonable
- the cost of the measures should not be disproportionate to the results achieved or the results which could reasonably be expected
- the measures should be appropriate and offer a reasonable prospect of success.

The measures should be reasonable from an objective point of view in the light of the information available when the specific measures are taken. In most cases a major oil spill will not cause permanent damage to the environment, as the marine environment has a great potential for natural recovery. There are also limits to what man can actually do in taking measures to improve on the natural process.

Compensation is paid by insurers only for measures actually undertaken or to be undertaken.

The above criteria apply to claims under the CLC. The EEAA considers that polluters should pay compensation for environmental damage and is preparing procedures to apply a formula to assess pollution damage based on criteria such as the size of the spill, the environmental sensitivity of the area affected and the length of the coastline impacted.