ADDENDUM A

OIL RECOGNITION

ADDENDUM A

OIL RECOGNITION

Guidelines for the recognition of some of the common types of oil that could impact the shore.

TYPICAL APPEARANCE OF OIL ON SHORE	POSSIBLE CONDITION AND TYPE OF OIL AND PROBABLE SOURCE
A dark brown or nearly black layer of oil up to 10mm thick, stretching from the high water mark to the water's edge and into the sea, accompanied by a strong smell.	Fresh crude oil escaping from a stranded laden tanker within a few kilometers. If very fresh, this oil can present a fire hazard.
A brown or reddish brown carpet of pasty material 5 – 100mm thick, deposited on the shore from the high water mark to the water's edge, turning dark brown or black in the heat of the sun. A malodour will be present.	Weathered and emulsified crude oil (chocolate mousse) that has escaped from a laden tanker that has suffered hull damage either due to collision, hull failure or grounding. Thicker layers will be encountered nearer to the source, and thinner layers further away.
Black pasty material in the form of individual pats not more than 5mm thick, strewn on the beach from the high water mark to the water's edge. The concentration of these pats can vary from nearly touching each other to pea size pellets 100 – 200 mm apart.	Such an appearance could originate from different types of oil or source. In all cases the oil will be weathered and emulsified with sea water. The source could be from a stranded, laden oil tanker many kilometers away or from a stranded ship or tanker in ballast or even tanker washings from a passing tanker in ballast.
Brown staining of the sand particles of white sandy beaches, with a slight malodour of diesel oil.	Light bunker oil (diesel) from a stranded fishing boat or coasting vessel nearby. Although larger vessels usually carry some light bunker oil, it would usually be incorporated with other spilled oil should it be released during an incident.

NOTE: HEAVY BUNKER OIL

Although the colour of Heavy Bunker Oil on the shore will invariably be black, its appearance will vary considerably, depending on the physical properties of the oil (viscosity, pour point) and the ambient temperature of the sea, energy in the breaker zone it passes through and temperature reached by the oil on the shore.

ADDENDUM B

METHODS FOR COASTAL PROTECTION AND CLEAN-UP

ADDENDUM B

METHODS FOR COASTAL PROTECTION AND CLEAN-UP

INTRODUCTION

Past experience has shown that in many instances, clean-up efforts have only contributed to the environmental damage of an oil spill, and that it is often better to leave it to natural clean-up processes. In situations where some clean-up must be attempted, it is important that the methods selected are those which are least damaging to the environment. Decisions over clean-up will depend on the type of oil, the degree of contamination, and the type of habitat affected. These guidelines are general in nature. Where specific instructions in Section 10 differ from these, the specific instructions will take precedence.

ESTUARIES

On the basis of ecological considerations, estuaries are the most sensitive of the various coastal environments. These considerations include:

- estuaries are utilised by numerous birds, both resident and migrant species;
- they serve as nursery and spawning grounds for a number of fish species;
- they are often rich in bait organisms such as worms, prawns, mussels etc.;
- they have aesthetic and amenity value;
- they provide shelter for boats, launch sites etc.

Furthermore, oil entering estuaries tends to be deposited in the sediments - either by stranding on sand/mudflats, or by actually sinking in deeper water – where it has a minimum residence time of 10 years, but may persist for up to 70 years. Clean-up measures, unless adequately controlled, only tend to add to the damage.

Protection

The first step should be to prevent oil from entering the estuary. The methods by which this may be achieved are dependent on the mouth conditions, of which there are three basic types:

i. Rivers terminating in lagoons which are only occasionally open to the sea:

   Even when lagoons are closed, oil may enter with waves overtopping the barrier dune. To prevent overtopping, the height of the barrier dune should be increased by means of straw bales, sand bags, boards, or additional loose sand. This barrier should then be monitored for the duration of the spill.

ii. Estuaries with mouths which open on a seasonal basis:

If closed, treat as above. If open, the mouth should be closed by building a dyke using sandbags, loose sand etc. Details of materials and equipment needed must be assessed for each river individually. If sufficient sand is not available close to the mouths of gently flowing rivers, it may be possible to close them using barriers made of timber or similar materials.

During construction of a dyke, it may be necessary to include outflow pipes, to prevent flooding of land upstream. Pipe diameter, slope and number to be used are dependent on the volume of flow, and various designs are calculated at the time of preparing the contingency plan. The choice of which design to use is made at the time of construction of the dyke.

Once dykes have been constructed they must be continually maintained for the durations of the incident, as they are subject to the erosion processes of the encroaching sea.

In some cases, it may be possible to release water from dams upstream to maintain flow at the river mouth, and thus prevent entry of the oil. Similarly, if the river is in flood the water flow may prevent entry of oil.

iii. Permanently open estuaries

This group includes those which could not be artificially closed. Some protection may be possible by the use of floating booms, in areas of reduced flow (providing such booms are available). The oil can then be contained, or diverted to less sensitive areas. Details on site deployment of booms are assessed individually for each permanently open estuary. In addition, sensitive areas seaward of the deployed boom may be protected using barriers made of materials of opportunity, such as anchored straw bales.

<u>IMPORTANT</u>

Prevention activities should not disturb the environment.

Materials such as sediment and brushwood should not be obtained from within the estuary, or from stable, vegetated dunes.

Dispersants should never be used in an estuary.

Clean-up

All clean-up operations in an estuary should be undertaken using manual labour – not machinery – and must be done under strict supervision of the DEA Shore Controller (See section 8.2). It is virtually impossible to remove all oil from mudflats, saltmarshes and other estuarine environments without causing extensive damage. Therefore, the minimum amount of labour is to be used, and tracks, once established should be adhered to. No heavy machinery should be utilised. Oil entering the estuary is to be contained within booms or straw barriers, or diverted to corners from where it can be collected. Contained oil can be skimmed and transferred to temporary storage on shore. Oil may be removed by flushing the marsh with estuarine water under low pressure, and directing the oil so removed to a collecting pond. Large pockets of oil may be removed by pumping, preferably using hypocycloidal pumps, or vacuum tankers. Temporary storage sites must be carefully selected so as to avoid further damage.

Heavy oiled reed and grass may be cut, and the contaminated stems removed, but only on the advice of the DEA Shore Controller (See Section 8.2).

Oil stranded on sand or mudflats is to be lifted off using flat spades – taking care not to trample oil into the sediment.

Oil that has sunk to the estuary bottom should be removed by diver operated suction pumps.

DO NOT – Attempt clean-up with inadequate supervision.
DO NOT – Spray dispersants.
DO NOT – Use heavy machinery or trample sand and mudflats.
DO NOT – Disturb the sediments in the estuary.

MARINAS AND HARBOURS / INDUSTRIAL INTAKES

With some exceptions, spill damage in these areas will be socio-economic rather than biological.

Protection

Entry of oil should be prevented by the use of floating booms or air barriers (bubble curtains). Boats should be removed from the water where possible. Similar protection should be given to industrial seawater intakes, or, alternatively, the industrial plant should be shut down while the threat persists.

Clean-up

Oil entering the area should be contained, skimmed and removed. Recovered oil should be deposited into containers such as 200 litre drums, and the oil allowed to rise to the surface. For emulsified oil (chocolate mousse), emulsion breakers may be used to facilitate this separation. The clean, underlying water can then be drained off through an oleophilic (oil absorbent) filter.

Slipways should be cleaned using high pressure water jets. Contaminated jetties should be cleaned by hand.

COASTLINE / SHORELINE

The coastline can be divided into 3 types – rocky, sandy and pebble beaches – each having a different degree of sensitivity to oil contamination.

Rocky areas are the least sensitive. Around cliffs, oil is generally prevented from coming ashore by wave reflection, while in other areas the heavy surf action tends to promote natural cleansing.

Sandy beaches have a medium sensitivity. Fine grain beaches especially, have limited oil penetration, and can be relatively easily cleaned.

Pebble beaches are more sensitive than sandy beaches, as oil penetrates them readily. Clean-up is difficult, and can lead to destabilisation of the beach.

Protection

The only way in which oil can be prevented from coming ashore over a long stretch of coastline, is by the use of dispersants when the oil is still at sea. However, more local protective actions may be warranted in particular areas. For example, straw bales or other absorbents may be used to protect pebble beaches, sandy beaches with overwash pools in the backbeach area, or bird nesting areas. These will both limit penetration of oil, and facilitate clean-up.

Clean-up

Rocky Shores:

WHEN TO CLEAN

Clean-up should only be attempted in amenity area and other areas that have been subject to heavy oiling.

HOW TO CLEAN

Partial removal of oil may be achieved by washing down rocks with seawater pumped through pressure hoses. Where oil or oily water has collected in rock pools, it can be pumped or bailed out to temporary storage sites. Any remaining oil that is still somewhat mobile, can be removed by using straw or proprietary brands of sorbents. The straw or sorbents are rubbed or trampled into the oil, and then brushed or lifted off. Such sorbents, even if contaminated with oil, will float on the water surface, and can be lifted off. Skimmers can be used for large pools.

DO NOT – Use dispersants
DO NOT – Wash with fresh water
DO NOT – Sand blast

Sandy Beaches:

WHEN TO CLEAN

Amenity beaches must always be cleaned. Non-amenity beaches should be cleaned only where there is a heavy oiling, or in cases when the oil is likely to be refloated and transported to adjacent areas by longshore currents.

Inaccessible, unutilised beaches should be left to natural cleansing unless otherwise advised, in specific circumstances.

HOW TO CLEAN

Fresh Oil: On beaches with large volumes of fresh liquid oil coming ashore, trenches can be dug just above the high tide mark and lined with plastic sheeting. Oil coming ashore can be "swept" into these trenches using "flat rakes" – pieces of timber 0,5 to 1metre long, 75 to 100mm high and 10mm thick, secured to a broom pole, or transported there in buckets. The oil can then be pumped out and disposed of later. If necessary, emulsion breakers can be used to separate oil/water mixtures before final disposal.

Weathered Oil and Oily Debris: After a spill, oil may continue to wash ashore sporadically over several days. Once the oil has stopped coming ashore, the top contaminated layer of sand, together with any tarballs and oil debris, can be manually removed suing flat spades. It should be piled into heaps, above the high water mark, and then carted away to dump sites. On the wet parts of the beach, the oil can be gathered using flat rakes. During these processes, an absolute minimum of sand should be removed, and care should be taken to avoid churning oil into sand. The general principle is to work from a clean area towards a polluted area.

Removal: Trucks or tankers are obviously essential for the removal of oily waste from collection points on the beach. During this operation, access tracks to polluted beaches should be demarcated by stones or other markers, and drivers should not be permitted to depart from the assigned tracks.

DO NOT – Use conventional rakes.
DO NOT – Use heavy mechanical equipment to clean the beach (only for removal of oil from collection points).
DO NOT – Spray dispersants.

Pebble Beaches:

Pebble beaches are best left to natural cleansing processes if there has been no attempt at protection. Clean-up efforts generally result in forcing the oil deeper into the beach, or if pebbles are removed, in destabilising the beach.

If straw bales or other sorbents have been applied, they should be removed once saturated, or when the oil has stopped coming ashore.

ADDENDUM C

TEMPORARY STORAGE AND TRANSPORT OF OILY WASTE

ADDENDUM C

TEMPORARY STORAGE AND TRANSPORT OF COLLECTED OIL

INTRODUCTION

Oil deposited on the coast will vary in compositions and fluidity, depending on the time it has been exposed to the effects of weathering – sun, wind, waves etc. Fresh liquid oil only reaches the coast if the source is within a kilometer or so of the shore. A more common form is known as "chocolate mousse", which is a water-in-oil emulsion, containing up to 80% water. This is a stable semi-solid, which will cover the beaches in sheets or patches. Another form is "tarballs", somewhat like road tar, and varying in size from that of a pea, to larger than a football. Oily waste can also contain sand, seaweed, plastics, dead birds, and other beach debris.

TRANSPORTATION OF RECOVERED OIL

Any conventional vehicle used for conveying liquids, such as vacuum tankers, sludge gulpers, tank trailers or farm tank trucks, can be used for transporting liquid oil. Improvisation, however, may be necessary, and vehicles such as flat bed lorries carrying open drums, fitted with temporary covers, may have to be used instead. Care should always be taken to ensure that oil does not leak out to the conveying vehicle, spreading the pollution further afield.

Water-in-oil emulsions (chocolate mousse) tend to solidify or become very viscous with time, making removal from tanks very difficult. Deep bodied trucks are therefore best suited to the transportation of emulsions and other oily waste and debris. Oil seepage must be prevented, by lining the trucks with heavy duty plastic sheeting. For emulsions, chemical emulsion breakers may sometimes be used to separate the oil and water prior to transportation, thus lessening the volume that has to be transported.

Front-end loaders are most suitable for the transportation of weathered oil and oily debris, collected from the beaches, to the temporary storage areas, but use of heavy machinery on the beaches must be kept to a minimum.

TEMPORARY STORAGE

As a first stage, emergency storage should be provided in a position of easy access to the beach, but well clear of the tidal area. Relatively cheap and simple storage can be quickly provided by digging pits in the ground and lining them with heavy duty PVC polyethylene or oil resistant rubber sheeting. Long narrow pits are the most practical shape, as they are easy to dig, fill and empty with simple equipment. In situations where the digging of pits is precluded, storage can be provided by constructing retaining walls, using suitable quality soil. This is built up into sloping walls, usually having a flat top, with a wall angle ratio of 3:2 horizontal to vertical. The finished storage can be square or rectangular.

The choice of sites for these temporary storage pits must take the following points into consideration:

- damage to sand dunes should be avoided;
- sand blowing into the pits will reduce storage space and further contaminate oily waste;
- areas adjacent to the pits are likely to become contaminated, so sensitive sites should be avoided;
- sites chosen should be such that after final disposal, they are able to be restored to their original condition.

Liquid oil may be stored temporarily in 200 litre drums, porta pools, or any other convenient receptacle, depending on the quantity of oil present.

Oiled debris and sand may be stacked in heaps on plastic or other impervious material, to prevent drainage of oil into the ground beneath. If plastic bags are used for the collection of oily wastes, care should be taken to ensure that they are not exposed to hot sun for any length of time as the plastic may become brittle and split open.

FINAL DISPOSAL

There are a number of methods available for the final disposal of oil and oily waste. Although the choice of disposal method will be dependent on the circumstances prevailing at the time, a brief description of each method is given below.

Direct Disposal

One method of direct disposal is to transport the recovered oil to possible recipients such as oil refineries, recycling contractors or certain installations that can burn fuel oil. Oil refineries are unlikely to accept recovered oil except for certain crudes and further with a salt content of less that 0,1% and virtually free of solids. Fuel oils with a salt content up to 0,5% and low in solids could possibly be blended into other fuel oil.

The other method of direct disposal listed in the literature is that of dumping as landfill or burial above the high tide mark. This method is not generally acceptable in South Africa. The possible health implications, impact on the environment, possible contamination of water supplies, transportation costs and quantity of oil to be disposed of are to be assessed in relation to the other disposal options available. The contingency plan lists disposal sites and any limiting conditions of these sites.

Stabilisation

Oily sand which does not contain large amounts of other debris can be mixed with quicklime to produce a stabilised material which limits oil leaking from it. As such, it can possibly be disposed of under less stringent conditions, such as low load bearing road foundations and embankments, sports ground construction, land fill etc.

Burning

The direct, uncontrolled in situ burning of oil debris is usually not advised, as complete combustion is not attainable. However, it may be possible to use portable oil burner equipment or portable incinerators if the oil is not unduly contaminated. Purpose built incinerators, reaching high combustion efficiency, are available commercially. These may be an option in areas with limited accessibility.

Extraction

Extraction processes are not oil disposal methods in themselves, but employment of an extraction process might facilitate recovery of the oil in a form that may permit use of another disposal technique. A hot water fluidisation process for cleaning oil contaminated beach sand has been researched, but the effectiveness of the operation is dependent on the range of distribution of sand particle sizes.

If a high pressure water washing technique has been used to remove oil adhering to surfaces, the oily material can be extracted by a conventional oil/water separator.

The oil can in certain circumstances be extracted from water-in-oil emulsions by the use of emulsion breakers.

Biodegradation

Sludge farming is a process whereby the oily material is spread on the ground, fertilised and tilled. The process requires one hectare of land to dispose of 400 tonnes of oil. The choice of land would have to meet health, environmental and other requirements.

Composting oil, by addition to domestic waste tips has been used satisfactorily, provided certain conditions are met. The suitability of domestic waste tips for the disposal of oily waste is to be assessed during contingency planning.

ADDENDUM D

COLLECTION OF OILED SEABIRDS

ADDENDUM D

COLLECTION OF OILED SEABIRDS

1. INTRODUCTION

Seabirds, particularly those which spend a large portion of their time in the water, are vulnerable to contamination by oil. This affects them adversely, either by destroying the waterproofing of the plumage, or by direct toxicity of ingested oil.

The distribution of seabirds around the coast is patchy, being concentrated mainly on the offshore islands. Island breeding colonies are especially susceptible to oil pollution. The major risk areas are St Croix and Bird Islands in Algoa Bay; Dyer, Dassen and the Saldanha Bay Islands; and Bird Island in Lamberts Bay.

In the event of an oiled bird incident, it is the function of Marine Development to oversee the collection, temporary holding and transport of the oiled birds to rehabilitation centres; S.A. National Foundation for the Conservation of Coastal Birds (SANCCOB) in Cape Town, the Centre for the Rehabilitation of Wildlife (CROW) in Durban and possibly the Port Elizabeth Museum. At these centres the oiled birds are washed to remove the oil, rinsed and kept in captivity until the waterproofing of the feathers has been restored. This is a specialised procedure which should only be carried out by skilled personnel, and not attempted by novices in the field. It is stressed that inexperienced persons should not attempt to feed, clean or render medical aid to oiled birds, as this is likely to result in further harm to the birds.

During an oil spill incident, however, oiled birds may arrive on the shoreline, particularly in the vicinity of offshore breeding islands. In such cases, if Marine Development personnel are not immediately available, local authorities may be required to provide temporary holding facilities for the birds. Procedures for the capture, selection and holding of these birds are outlined below.

2. REPORTING

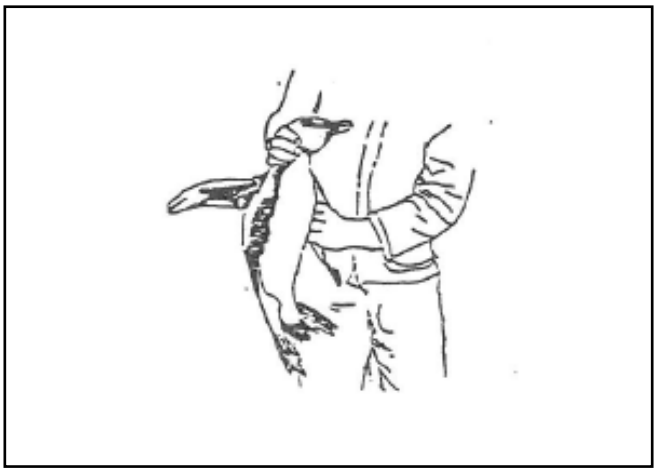
In the event of oiled birds being found on the shoreline, at least one of the persons from the Department of Environmental Affairs listed in Section 13 must be informed immediately.

3. CAPTURE

The aim is to capture and restrain birds with the least disturbance possible. Catchers should move slowly and carefully, avoiding rapid movement if possible. If oiled birds are chased too much, they become exhausted, and their chances of survival decreases.

Catchers should operate in teams of two or three, and should be protected against injury by birds with gloves and glasses. This is essential, as a person afraid of injury is unlikely to handle birds correctly. Catchers should position themselves between the bird and its escape route, usually the sea. If long-handled nets are available, these are most useful.

Catchers should not capture oiled birds if the operation disturbs nesting birds, especially those in the process of nest-building. The same applies to searching for oiled birds. For example, an oiled penguin in a nesting colony should not be caught at all as it will cause losses of eggs and chicks. The losses to gulls and nest desertion will probably far exceed the alternative loss of one oiled bird.



a) Jackass Penguin

Penguins may be caught with long-handled scoop nets, or by hand, suitably protected with gloves. Birds should be approached cautiously until the final lunge with net or hands. Penguins should be held by the base of the neck and base of a flipper, or by the base of both flippers (see Fig. A1.)

Figure A1

b) Cape Gannets

Gannets may be caught with a gannet pole (a long-handled crook) if available, or by a long-handled scoop net, or by hand, suitably protected by gloves. Catchers must be particularly careful of their eyes, as gannets can lunge forwards with their sharp beaks. Gannets should be held firmly around the base of the head, and with the wings pinned under the arm.
(See Fig. A2).

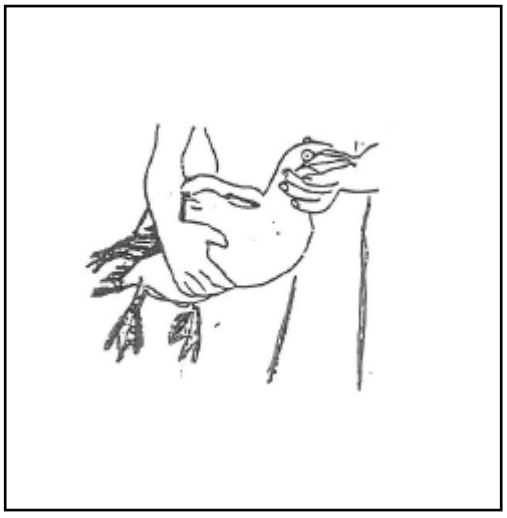
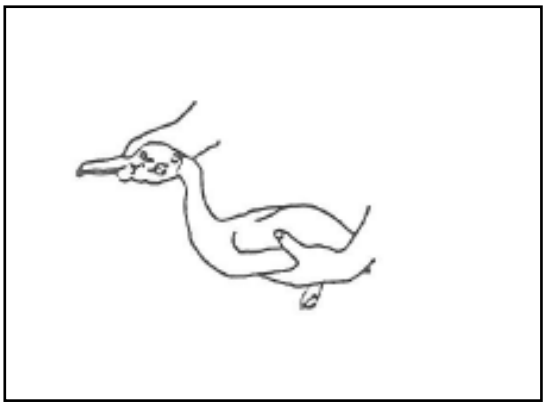


Figure A2

c) Cormorants and other species



Cormorants and other species should be caught with a long-handled scoop net or by hand, suitably protected by gloves. The method of holding birds is shown in Fig. A3.

The beak and wings should be firmly held, without squeezing the bird's body. The smaller the bird, the more vulnerable it is to injury and the less likely it is to survive rehabilitation.

Figure A3

4. SELECTION

Not all oiled birds need to be captured for rehabilitation, as natural weathering will remove the oil in time.

(a) Jackass Penguin

Oiled penguins should be captured and examined. If the oil has penetrated to the down, and has oiled an area of down larger than half the size of a closed fist, it should be kept for cleaning at the rehabilitation centre. Otherwise it should be released.

(b) Cape Gannet

Oil is very obvious on the white plumage. However, gannets need only be captured if the plumage is obviously heavily matted with oil, so that gaps in the surface layer are readily apparent. Unless the oil has penetrated to the down and oiled an area as large as a closed fist, the birds should not be collected. Gannets may show a distinct "high-water" mark of oil across the front and down the sides of the breast. Most of these birds do not require collecting.

(c) Cormorants and other species

These birds can only be captured when severely oiled. If it is possible to catch the bird, it is in need of cleaning.

5. CARE DURING TEMPORARY CAPTIVITY

Birds must be kept until transport is ready to deliver them from the collection point to the rehabilitation centre. Birds should be kept in comfort, with minimal disturbance, and out of sight of people. Ideally they should not be kept for longer than 48 hours from time of collection to the time of arrival at the rehabilitation centre.

Medical care and feeding should not be attempted at this stage. There is little point in attempting to prevent the birds from ingesting oil on their plumage, as they will already have done so. If the oil is toxic, the damage will already have been done.

(a) Jackass Penguin

Penguins should be kept in well-ventilated store-rooms, or enclosures with walls or wire sides. The floor should be cement, or rapidly draining sand. No more than 50 penguins should be kept in a 6m x 6m enclosure. The mesh should be 60mm or less diamond mesh, and the penguins should not be able to burrow underneath. The walls should be at least 1 m high. Protection against sun, wind and rain should be provided. Drinking water must be available. Under hot conditions, birds should be lightly sprayed with water. If birds gape their beaks wide and pant, spraying is essential as the birds are overheating.

(b) Cape Gannet

Follow procedures described for penguins, except that not more than 30 gannets should be confined to a 6 m x 6 m enclosure. The enclosure should be roofed, and if the enclosure is wire, the mesh should be 30mm or less.

(c) Cormorants and other species

Follow procedures described for penguins. Greater numbers of birds can be accommodated than gannets e.g. 50 Cape Cormorants in a 6m x 6m enclosure. Wire enclosures are not suitable unless the mesh is very fine. Enclosures should be roofed.

6. HELPERS

Helpers should be aware of the potential hazards to both their health, and that of the birds.

Helpers should be well protected against injury by birds, as fear of injury is likely to result in mishandling of birds. All cuts and scratches should be washed with soap, hot water and preferably antiseptic after handling birds.

Some avian diseases are potentially hazardous to humans. Birds suspected of disease should be handled with gloves, and isolated to prevent infection of others. Helpers should be immunised against tetanus. Some human diseases are harmful to birds, so helpers should be in good health.

7. TRANSPORT

Transportation of the oiled birds from the holding area to the rehabilitation centre should only be undertaken under the supervision of experienced personnel. It is vital that birds should have adequate ventilation otherwise deaths through overheating and asphyxiation could occur.

ADDENDUM E

OIL SAMPLING PROCEDURES

ADDENDUM E

OIL SAMPLING PROCEDURES

INTRODUCTION

Both in the case of prosecution for contravention of the Prevention and Combating of Pollution at Sea by Oil Act, (Act 6 of 1981) and in the case of the Government claiming recompense for the cost of clean-up of the beaches from an identifiable spill, it will be necessary to relate the offending oil to the cargo or fuel of a particular ship. Since only a relatively fresh sample of oil can be compared with a sample taken from the ship, it is essential that the samples be collected as soon as possible after the spillage. In the case of stranding oil, the Local Authorities are often the first persons to arrive on the scene, and it is therefore recommended that they collect samples of oil immediately.

SOURCES

Oil coming ashore may be deposited on rocks, in rock pools, or on the sand. The best and easiest way to obtain a sample for analysis is from the water surface (probably in a rock pool). Should there be no floating oil, samples must be taken of whatever is available.

- Water: Since oil tends to spread on water, the sample should be skimmed off the surface directly into the container so as to obtain as much oil and as little water as possible.

- Sand: Certain refined petroleum products, fresh light bunker oil and most crude oils tend to sink into a sandy beach. The sample should consist of sand with obvious signs of staining.

- After prolonged weathering at sea, oil tends to form blackish, rounded, almost solid lumps. These "tarballs" can vary in size from less than a pin head to over 300mm in diameter. Those larger than about 10mm can be collected and placed into sample containers.

- Rocks with more viscous oils, the deposited material can be scraped off rocks, concrete or other impervious surfaces, and placed directly into the sample container.

- Debris: Oil adhering to seaweed, small pieces of wood, vegetation or other debris may be collected by placing the complete specimen, comprising oil and support material, into the sample container. In the case of dead birds, a small sample of oil-matted feathers may be removed and placed into the sample container.

It may also be necessary to take samples for insurance purposes, from live birds which are being treated at SANCCOB. The number of samples which will need to be taken will depend on the number of birds being treated and the requirements of the insurers. This could range from between 5% and 20% of the birds. Great care should be taken when collecting oil samples from the feathers of live birds.

NOTE:
Ships and tankers carry various types of oil, both as cargo and as fuel. In the event of serious damage, therefore, several types of oil may be released from a single ship. For this reason, it is recommended that, during sampling of an oiled beach, a careful examination of the beach be made to determine the uniformity of the oil deposit. Should there appear to be two or more types of oil, samples of each type should be retained, and some idea of their extent be recorded as in Section 7.1.1(c).

CONTAINERS

When oil pollution of the beaches is anticipated, it is prudent to ensure that the proper containers for collecting the samples are available. The use of adventitious containers such as tins, bottles, plastic bags etc. picked up off the beach is not acceptable, as they may cause contamination of the sample. Ideally, clean glass jars should be used. Glass jars of about 1 litre capacity - usually used for the preservation of fruit and vegetables - are most suitable.

In most cases, the samples will be required either for prosecution or litigation purposes, and it is, therefore, necessary that, prior to use, the jars be certified clean of hydrocarbon contamination by a qualified chemist (jars can be cleaned by rinsing thoroughly with an organic solvent). Once the sample has been collected, the jars should be sealed - preferably in the presence of someone with authority e.g. a policeman. They should then be packed into a wooden box with suitable packing material (e.g. polystyrene foam), for transit to the laboratory, and the packing box sealed by the person taking the samples.

The correct storage and transport of samples is important. Before dispatch it is advisable to verify that sufficient space has been allowed for any expansion of the sample that might occur. It is also necessary to comply with any safety regulations that apply to the transport of hydrocarbon materials. If possible, air should be excluded from the filled sample containers by displacement with an inert gas (nitrogen or carbon dioxide).

Having obtained the sample, it should be sent to the SAMSA which is responsible for the analysis arrangements.

LABELLING

Clear labeling and identification of samples after collection are essential. All samples that are collected should be clearly identified with a label that is not likely to become readily separated from the sample jar. The label should give the following information:

i. Ownership of sample (e.g. Margate Municipality - Zone X).

ii. Description of sample (e.g. heavy, viscous oil, tarry residue).

iii. Location from which sample was taken (e.g. Durban South Beach, scraped from rocks or collected from water surface etc.).

iv. Date and time of sampling.

v. Date and time of stranding on beach.

vi. Reference to any written or photographic record taken at the time of sampling.

vii. Name, telephone number and address of person taking sample, and those of witnesses.

ANALYSIS

Samples taken for use as evidence in court proceedings to obtain prosecution in terms of the Prevention and Combating of Pollution of the Sea by Oil Act will be analysed immediately. Those for use in litigation may need to be stored for up to two years, in which case they should be refrigerated at not higher than 5^0C.

The South African Maritime Safety Authority will be responsible for the arrangements for analysis.

ADDENDUM F

POLICY ON THE USE OF OIL SPILL DISPERSANTS IN SOUTH AFRICAN WATERS

ADDENDUM F

POLICY ON THE USE OF OIL SPILL DISPERSANTS IN SOUTH AFRICAN WATERS

1. INTRODUCTION

Oil spills may have adverse effects on various marine and coastal resources both natural and socio-economic. The objective of countermeasures is to minimise such effects.

Oil spill dispersants have frequently been used as such a measure during response operations. Their use, however, is controversial, as it has both advantages and disadvantages. Disadvantages include the fact that application of dispersants results in increased concentrations of oil in the water column, and that oil/dispersant mixtures are generally more toxic than the oil itself. Moreover, dispersants are only effective on certain types of oil, and even then only within a limited time span after the spill. It is very important, therefore, that their use is properly controlled; that they are used only when physical containment and removal is not possible, and that their use results in a net environmental benefit.

The objective of the guidelines below is to set out the criteria necessary for making rational decisions on the use /non-use of dispersants. It should be pointed out, however, that in general the decision to use dispersants should only be taken by the governmental authority responsible for the co-ordination of oil spill response i.e. the Department of Environmental Affairs DEA). A list of DEA Pollution Officers to be contacted in this regard can be found in Appendix I.

2. CONDITIONS FOR USE

Oil spill dispersants should only be used when it has been decided by the authorities concerned (the DEA On-Scene Co-ordinator) - in consultation with the scientific advisors - during a spill incident) that such use will minimise the overall environmental impact.

Only oil spill dispersants bearing the SABS mark of approval and which have passed the SFRI approved toxicity/ efficiency tests may be used. The specifications for the SABS mark are contained in SABS 1234-1978 (Amendment No. 1:3 November, 1982). It does not include dispersants and detergents approved by SABS for purposes other than oil spill dispersion. Details of the SFRI tests, and a list of dispersants which have passed the test, can be obtained from the Pollution Officer.

All use of dispersants should be documented (see Appendix II), so that relevant information can be used to improve predictions of effectiveness in field situations.

3. RESTRICTIONS ON USE

In general terms, dispersants should only be used in waters more than 5 nautical miles offshore, and/or with a depth of more than 30 metres. Use within these limits must be approved by a Pollution Officer of DEA, except in circumstances of extreme emergency where dispersant use is specifically recommended (see Section 4), or where approval for dispersant use has been incorporated into the relevant contingency plan. The Pollution Officer must then be informed of such use without delay.

In situations where the use of dispersants is being considered, the following restrictions also apply:

A. Dispersants should **only** be utilised in circumstances where they are likely to prove **effective**.

(i) Type and state of the oil: Dispersants should **not** be used on:

- slicks $\geq$ 0,5 cm in thickness
- slicks that appear as sheen or colour bands
- diesel or light fuel oil heavy fuel oil
- viscous, weathered or emulsified oil oils with pour points at or above ambient temperature
- small offshore spills

Dispersants are most effective on fresh crude oils, but it is good practise to test the effectiveness of the dispersant on the particular oil in the laboratory before application at sea, where this is practical. Should the tests prove favourable, dispersants should **still only** be used when all other requirements are met.

(ii) Weather conditions: Dispersants require a certain amount of mixing energy to be effective, and are therefore not effective in flat calm conditions, unless energy is supplied during application. On the other hand, in turbulent sea conditions the oil will be dispersed naturally. For these purposes, turbulent conditions are considered to be sea states 4, or Beaufort No's 4-5. In winds greater than Beaufort No. 5, dispersant application will be impossible.

(iii) Time limitations: Immediately oil has spilled it begins to change as a result of processes such as evaporation, dissolution, biodegradation, photochemical breakdown etc. As stated above, dispersants are not effective on weathered oil. They should, therefore, only be used if they can be applied preferably within ~two hours, or, at a maximum, 24 hours after the oil's release. These time limitations may be modified either way should careful monitoring of the operation indicate so.

Ideally, oil should be sprayed as near to the source as is possible.

(iv) Application: There are a number of methods for the application of dispersants. Dispersants should not be used unless suitable equipment is available to apply it at the rate recommended by the manufacturers. Generally, the volume of dispersant used should never exceed 20 - 30% of the volume of oil treated.

B. Dispersants should only be utilised where their use will result in a **net environmental benefit.**

They should **not** be used in the following situations:

(i) in areas of low water volume and a limited rate of exchange e.g., bays, estuaries etc.
(ii) near shellfish resources
(iii) in fresh water
(iv) on established fish breeding grounds and in migratory areas
(v) in the vicinity of industrial water intakes
(vi) in areas far offshore where there is little ashore
(vii) on the shoreline.
(viii) where there is a likelihood of the oil coming ashore

4. USE IN EMERGENCIES

At the present time, dispersant use is recommended for use on fresh crude oil when:

i. the slick is approaching islands/rocks supporting large seabird colonies, especially if these colonies include species that are rare or endangered.
ii. the slick, although just beyond the 5 nautical mile offshore limit, is moving rapidly onshore (winds or currents onshore) into
    - an area with ecologically sensitive coastal features e.g. estuaries or bays which it would not be possible to close artificially (e.g. Langebaan).
    - an area with important socio-economic features, which could not be protected from impact, e.g. heavily utilised bathing beaches at the height of the holiday season.

As stipulated above, the DEA Pollution Officers must be informed of any such use of dispersants as soon as possible and by the quickest means available (preferably telephonically).

5. DECISION MAKING

As mentioned above, the decision to use/not use dispersants involves weighing up the advantages and disadvantages. This can be facilitated using the decision tree shown in Figure 1.

APPENDIX 1

DEA Pollution Officers

* Pollution Officers:	Tel:	Fax:	Email	Cell:
Dr Yazeed Petersen (DD)	021 819 2450	021 819 2445	ypeterson@environment.gov.za	083 530 3127
Feroza Albertus-Stanley (AD)	021 819 2457	021 819 2445	feroza@environment.gov.za	072 173 6234

APPENDIX II

SAMPLE FORM for report on the use of dispersants

(a) Details of the spill location
- Data and time of the spill
- Source and type of oil
- Estimated amount, slick area, and thickness
- Appearance of the oil

(b) Environmental conditions
- Air and water temperature
- Wind, waves, currents
- Water depth
- Shoreline under threat

(c) Dispersant applications
- Rationale
- Type of dispersant
- Amount used
- Application and mixing methods
- Application rate
- Date and time commenced and ceased
- Amount of oil treated

(d) Observations

- Visual, photographic, remote sensing, sampling
- Estimated amount of oil left on water surface
- Rate of dispersed oil
- Effects on birds, fish etc.
- Persistence of effects

(e) Were other countermeasures used?
Were they successful?

Reports should be sent to:

Deputy Director: Marine & Coastal Pollution Management, Department of Environmental Affairs, PO Box 52126, V&A Waterfront, Cape Town, 8002

Approved oil spill dispersants (passed SABS and SFRI tests)

Chemserve OSE 750
Chemserve OSE 760
Chemserve OSE 770
Shell 208/84
Shell 209/84
Shell 109/85
Shell 10/85
Shell 11/85
Shell VDC plus
INIPOL IP 80
INIPOL IP 90
Oil Technics Sc-500
Slickgone LT2
Chemrite OSD
Drew Ameroid Marine OSD / LT
Planisol NT4
Veclean 1:20
Veclean 1:40
HSC 8 630
Marinekleen 2
ASC 7