

THE NATIONAL PLAN TO COMBAT POLLUTION OF THE SEA BY OIL: by David Kay, Department of Transport and Department of Transport Information Paper 1984

Under the National Plan to Combat Pollution of the Sea by Oil (outlined in the Information Paper attached):

- . responsibilities are defined;
- . a system of providing money is established
- . approximately \$A1.3 million per year is assigned:
 - 30% to administration and training
 - 60% to equipment including updating
 - 10% to pollution incidents where money cannot be recovered.
- . there is a reasonable equipment stockpile.
- . there is a reasonable response capacity.

Within Australia, 11 "regions" have been defined and equipped on the basis of the Bureau of Transport Economics study of oil spill risk. The study concentrated on ports as there have only been two spills outside ports in the last ten years, providing a poor statistical base. Based on the BTE prediction of risk, the Plan aims to cope with 98% of spills in a five year period.

The area in which the National Plan is deficient is that of scientific support. In both the National Plan and State Supplements, Scientific Support Co-ordinators (SSC) have been "designated" but there is insufficient support for them to carry out their appropriate activities.

The SSC could and should act as a "filter" between the scientific community and the On Scene Co-ordinator (SSC). At present, post-impact assessment is not built into the National Plan, although post-spill reporting seeks some of this information through the SSC. There is no requirement for evaluation of the social costs of spills.

Regarding spills of other hazardous materials carried through the Great Barrier Reef Region, the Department of Transport assessment is that the risk is at least an order of magnitude less than that for oil spills. To date, there have been no serious reported spills of hazardous materials in the Great Barrier Reef Region. Although no response plan has been established for other hazardous material spills, the Commonwealth has the power to act under the Protection of the Sea (Powers of Intervention Act) which enables the Minister for Transport to take whatever action he sees fit if a pollution accident threatens the Australian coast.

The Department of Transport has the Chemical Hazard Response Information System (CHRIS) which provides summarised information on hazardous materials, i.e. fire, explosion, exposure, water pollution, hazard classification, physical and chemical properties (Figure 1).

Australian shipping follows international regulations and vessels loading chemical cargoes in Australian ports must lodge their manifest and load plan with the Department of Transport. Most international vessels into Australia follow the international code. No record, however, is available of chemical cargoes of vessels transiting through Australian waters.


Data from oil and hazardous chemical cargo information lodged with the Department of Transport for Queensland, N.S.W. and Victoria are provided below.

CARGO MOVEMENTS: '000 tons loaded and discharged

	Oil	Chemicals
Qld	8060	571
NSW	10917	462
Victoria	13866	536


A breakup of data for Queensland ports is given below. Most of this can be expected to pass through the Great Barrier Reef Region.

Figure 1*

AMN		AMMONIUM NITRATE									
Common Synonyms Nitram		Solid pellets or flakes White to light gray or brown Odorless									
		Sinks and mixes with water.									
Call Fire department: Keep people away. Evacuate area in case of large discharge. Isolate and remove discharged material. Notify local health and pollution control agencies.											
Fire	May cause fire and explode on contact with combustibles. CONTAINERS MAY EXPLODE IN FIRE. POISONOUS GASES MAY BE PRODUCED WHEN HEATED. Wear self-contained breathing apparatus. Evacuate surrounding area. Combat fires from protected location with unmanned hose holder or monitor nozzle. Flood discharge area with water. Cool exposed containers with water. Continue cooling after fire has been extinguished.										
Exposure	CALL FOR MEDICAL AID. DUST Irritating to eyes, nose, and throat. If inhaled, may cause coughing or difficult breathing. Move to fresh air. If in eyes, hold eyelids open and flush with plenty of water. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen.										
Water Pollution	Effect of low concentrations on aquatic life is unknown. May be dangerous if it enters water intakes. Notify local health and wildlife officials. Notify operation of nearby water intakes.										
1. RESPONSE TO DISCHARGE (See Response Methods Handbook, CG 444-1) Disperse and flush		2. LABEL 									
3. CHEMICAL DESIGNATIONS 3.1 Synonyms: Nitram 3.2 Coast Guard Compatibility Classification: Ammonia 3.3 Chemical Formula: NH4NO3 3.4 IMCO United Nations Numerical Designation: 2.1 1943		4. OBSERVABLE CHARACTERISTICS 4.1 Physical State (as shipped): Solid 4.2 Color: Colorless (pellets) to gray or brown (fertilizer grades) 4.3 Odor: None									
5. HEALTH HAZARDS 5.1 Personal Protective Equipment: Wear self-contained breathing apparatus 5.2 Symptoms Following Exposure: Irritation of eyes and mucous membranes. Absorption via ingestion or inhalation causes urination and acid urine. Large amount causes systemic acidosis and methemoglobinemia (abnormal hemoglobin). 5.3 Treatment for Exposure: Remove from exposure — symptoms reversible. 5.4 Toxicity by Inhalation (Threshold Limit Value): Not pertinent 5.5 Short-Term Inhalation Limits: Not pertinent 5.6 Toxicity by Ingestion: Data not available 5.7 Late Toxicity: Data not available 5.8 Vapor (Gas) Irritant Characteristics: Not pertinent 5.9 Liquid or Solid Irritant Characteristics: None 5.10 Odor Threshold: Not pertinent											
6. FIRE HAZARDS 6.1 Flash Point: Not flammable 6.2 Flammable Limits in Air: Not flammable 6.3 Fire Extinguishing Agents: Use flooding amounts of water in early stages of fire. When large quantities are involved in massive fires, control efforts should be confined to protecting from explosion. 6.4 Fire Extinguishing Agents Not to be Used: Not pertinent 6.5 Special Hazards of Combustion Products: Decomposes, giving off extremely toxic oxides of nitrogen 6.6 Behavior in Fire: May explode in fire. Supports combustion of common organic fuels. 6.7 Ignition Temperature: Not flammable 6.8 Electrical Hazard: Not pertinent 6.9 Burning Rate: Not flammable		7. CHEMICAL REACTIVITY 7.1 Reactivity with Water: No reaction 7.2 Reactivity with Common Materials: No reaction 7.3 Stability During Transport: If heated strongly, decomposes, giving off toxic gases and oxides which support combustion. Undergoes detonation if heated under confinement 7.4 Neutralizing Agents for Acids and Caustics: Not pertinent 7.5 Polymerization: Not pertinent 7.6 Inhibitor of Polymerization: Not pertinent									
8. WATER POLLUTION 8.1 Aquatic Toxicity: Data not available 8.2 Waterfowl Toxicity: Data not available 8.3 Biological Oxygen Demand (BOD): Data not available 8.4 Food Chain Concentration Potential: None		9. SELECTED MANUFACTURERS 1. Allied Chemical Corp. Agricultural Div. Morristown, N.J. 07960 2. Hercules Inc. Explosives & Chemical Propulsion Dept. Bessemer, Ala. 35020 3. Monanto Co. Monanto Commercial Products Co. Agricultural Div. 800 North Lindbergh Blvd. St. Louis, Mo. 63166									
10. SHIPPING INFORMATION 10.1 Grades or Purity: Pure grade; fertilizer grade (33.5% nitrogen) 10.2 Storage Temperature: Data not available 10.3 Inert Atmosphere: Data not available 10.4 Venting: Data not available		11. HAZARD ASSESSMENT CODE (See Hazard Assessment Handbook, CG 444-3) SS									
12. HAZARD CLASSIFICATIONS 12.1 Code of Federal Regulations: Oxidizing material 12.2 NAS Hazard Rating for Bulk Water Transportation: Not listed 12.3 NFPA Hazard Classifications: <table><tr><th>Category</th><th>Classification*</th></tr><tr><td>Health Hazard (Blue)</td><td>0 2</td></tr><tr><td>Flammability (Red)</td><td>1 1</td></tr><tr><td>Reactivity (Yellow)</td><td>3 3</td></tr></table> *First column refers to non-fire situation		Category	Classification*	Health Hazard (Blue)	0 2	Flammability (Red)	1 1	Reactivity (Yellow)	3 3	13. PHYSICAL AND CHEMICAL PROPERTIES 13.1 Physical State at 15°C and 1 atm: Solid 13.2 Molecular Weight: 80.05 13.3 Boiling Point at 1 atm: Not pertinent 13.4 Freezing Point: 33.2 °F = 169.9 °C = 443.1 °K 13.5 Critical Temperature: Not pertinent 13.6 Critical Pressure: Not pertinent 13.7 Specific Gravity: 1.72 at 20°C (solid) 13.8 Liquid Surface Tension: Not pertinent 13.9 Liquid-Water Interfacial Tension: Not pertinent 13.10 Vapor (Gas) Specific Gravity: Not pertinent 13.11 Ratio of Specific Heats of Vapor (Gas): Not pertinent 13.12 Latent Heat of Vaporization: Not pertinent 13.13 Heat of Combustion: Not pertinent 13.14 Heat of Decomposition: Not pertinent 13.15 Heat of Solution: Not pertinent 13.16 Heat of Polymerization: Not pertinent	
Category	Classification*										
Health Hazard (Blue)	0 2										
Flammability (Red)	1 1										
Reactivity (Yellow)	3 3										
NOTES (Continued on pages 1 and 6)											

* GBRMPA thanks the US Coast Guard for permission to reproduce these charts from the CHRIS Manual.

Figure 1 (cont.)

AMH		AMMONIUM HYDROXIDE ($\leq 28\%$ AQUEOUS AMMONIA)	
Common Synonyms Ammoniac water Aqueous ammonia		Watery Liquid	Colorless Ammoniac odor
		Plants and mixes with water. Irritating vapor is produced.	
Avoid contact with liquid and vapor. Keep people away. Wear goggles, self-contained breathing apparatus, and rubber overclothing (including gloves). Stop discharge if possible. Spray and use water spray to "knock down" vapor. Isolate and remove discharged material. Notify local health and pollution control agencies.			
Fire	Not flammable.		
Exposure	CALL FOR MEDICAL AID. VAPOR Irritating to skin, eyes, nose and throat. If inhaled, will cause nausea, vomiting, difficult breathing, or loss of consciousness. Move to fresh air. IF IN EYES, hold eyelids open and flush with plenty of water. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen. LIQUID Will burn skin and eyes. Harmful if swallowed. Remove contaminated clothing and shoes. Flush affected areas with plenty of water. IF IN EYES, hold eyelids open and flush with plenty of water. IF SWALLOWED and victim is CONSCIOUS, have victim drink water or milk.		
Water Pollution	HARMFUL TO AQUATIC LIFE IN VERY LOW CONCENTRATIONS. May be dangerous if it enters water intakes. Notify local health and wildlife officials. Notify operators of nearby water intakes.		
1. RESPONSE TO DISCHARGE (See Response Manual Handbook, CG 446-4) Issue warning—air contaminant Restrict access Disperse and flush		2. LABEL 	
3. CHEMICAL DESIGNATIONS 3.1 Synonyms: Ammonia water Aqueous ammonia Household ammonia 3.2 Coast Guard Competibility Classification: Ammonia 3.3 Chemical Formula: $\text{NH}_4\text{OH}-\text{H}_2\text{O}$ 3.4 IMCO United Nations Numerical Designation: 2.1005		4. OBSERVABLE CHARACTERISTICS 4.1 Physical State (as shipped): Liquid 4.2 Color: Colorless 4.3 Odor: Pungent	
5. HEALTH HAZARDS 5.1 Personal Protective Equipment: Rubber boots, gloves, apron, and coat, broad-brimmed rubber or felt hat; safety goggles. Use of protective oil will reduce skin irritation from ammonia. 5.2 Symptoms Following Exposure: Contact of liquid or vapor with skin, mucous membranes, lungs, or gastrointestinal tract causes marked local irritation. Ingestion causes burning pain in mouth, throat, stomach, and thorax, constriction of throat, and coughing. This is soon followed by vomiting of blood or by passage of loose stools containing blood. Breathing difficulty, convulsions, and shock may result. Brief exposure to 5000 ppm or ingestion of 3-4 ml may be fatal. 5.3 Treatment for Exposure: INHALATION: give artificial respiration and oxygen if needed, enforce rest. INGESTION: do NOT induce vomiting; lavage stomach with water or lemon juice, milk, or demulcents; delay may cause perforation of esophagus or stomach, vomiting of blood may necessitate tracheotomy. EYES OR SKIN: wash with plenty of water. 5.4 Toxicity by Inhalation (Threshold Limit Value): 1 ppm 5.5 Short-Term Inhalation Limits: (ammonia gas) 100 ppm for 30 min.; 500 ppm for 10 min. 5.6 Toxicity by Ingestion: Grade 3; oral rat, $\text{LD}_{50} = 350 \text{ mg/kg}$ 5.7 Late Toxicity: Data not available 5.8 Vapor (Gas) Irritant Characteristics: Vapor causes moderate irritation such that personnel will find high concentrations intolerable. The effect is temporary 5.9 Liquid or Solid Irritant Characteristics: Causes smarting of the skin and first-degree burns on short exposure; may cause second-degree burns on long exposure. 5.10 Odor Threshold: 50 ppm			
6. FIRE HAZARDS 6.1 Flash Point: Not flammable 6.2 Flammable Limits in Air: Not flammable 6.3 Fire Extinguishing Agents: Not pertinent 6.4 Fire Extinguishing Agents Not to be Used: Not pertinent 6.5 Special Hazards of Combustion Products: Not pertinent 6.6 Behavior in Fire: Not pertinent 6.7 Ignition Temperature: Not flammable 6.8 Electrical Hazard: Data not available 6.9 Burning Rate: Not flammable		8. WATER POLLUTION 8.1 Aquatic Toxicity: 6.25 ppm/24 hr. trout lethal; fresh water; 15 ppm/48 hr. sunfish; TL_m : Phala tap water 8.2 Waterlow Toxicity: Data not available 8.3 Biological Oxygen Demand (BOD): Data not available 8.4 Food Chain Concentration Potential: None	
7. CHEMICAL REACTIVITY 7.1 Reactivity with Water: Mild liberation of heat 7.2 Reactivity with Common Materials: Corrosive to copper, copper alloys, aluminum alloys, galvanized surfaces 7.3 Stability During Transport: Stable 7.4 Neutralizing Agents for Acids and Caustics: Dilute with water 7.5 Polymerization: Not pertinent 7.6 Inhibitor of Polymerization: Not pertinent		9. SELECTED MANUFACTURERS 1. American Oil Co. 910 S. Michigan Ave. Chicago, Ill. 60605 2. CF Industries, Inc. 100 S. Wacker Drive Chicago, Ill. 60606 3. Williams Companies Agrico Chemical Division 5050 Poplar Ave. Memphis, Tenn. 38101	
11. HAZARD ASSESSMENT CODE (See Hazard Assessment Handbook, CG 446-2) A-P-R-S		10. SHIPPING INFORMATION 10.1 Grades or Purity: Grade A: 29.4% NH_3 ; B: 25%; C: 15%; USP: 27 to 29%; CP: 28% 10.2 Storage Temperature: Ambient 10.3 Inert Atmosphere: No requirement 10.4 Venting: Pressure-vacuum	
12. HAZARD CLASSIFICATIONS 12.1 Code of Federal Regulations: Corrosive Material 12.2 HAS Hazard Rating for Bulk Water Transportation: Not listed 12.3 NFPA Hazard Classifications: Not listed		13. PHYSICAL AND CHEMICAL PROPERTIES 13.1 Physical State at 15°C and 1 atm: Liquid 13.2 Molecular Weight: Not pertinent 13.3 Boiling Point at 1 atm: Not pertinent 13.4 Freezing Point: Not pertinent 13.5 Critical Temperature: Not pertinent 13.6 Critical Pressure: Not pertinent 13.7 Specific Gravity: 0.89 at 20°C (liquid) 13.8 Liquid Surface Tension: Not pertinent 13.9 Liquid-Water Interfacial Tension: Not pertinent 13.10 Vapor (Gas) Specific Gravity: Not pertinent 13.11 Ratio of Specific Heats of Vapor (Gas): Not pertinent 13.12 Latent Heat of Vaporization: Not pertinent 13.13 Heat of Combustion: Not pertinent 13.14 Heat of Decomposition: Not pertinent 13.15 Heat of Solution: Not pertinent 13.16 Heat of Polymerization: Not pertinent	
NOTES			

CARGO MOVEMENTS '000 TONS (QUEENSLAND PORTS)

	Oil	Chemicals
Brisbane	5313	47
Bundaberg	70	4 aqua ammonia
Cairns	333	
Gladstone	65	422 caustic soda
		sulphuric acid
Lucinda	-	7 aqua ammonia
Mackay	230	44 industrial
		alcohol and
		aqua ammonia
Maryborough	61	-
Rockhampton	81	21 ammonium
		nitrate
Townsville	711	24 aqua ammonia

CARGOES" '000 TONS (QUEENSLAND PORTS)

Caustic soda	418
Aqua ammonia	41
Industrial alcohol	38
Ammonia nitrate	21
Sulphuric acid	4
Not specified	48

Hazard profiles for the substances listed above are given below. It is evident that the majority of substances carried are not among the most hazardous in terms of potential impact to the environment.

Hazard profiles

- Column 1 - Bioaccumulation +2.0
 2 - Damage to living Resources 4-0
 3 - Hazard to human health (oral) 4-0
 4 - Hazard to human health (skin contact
 and inhalation) II I 0
 5 - Reduction of amenities XXX XX X 0

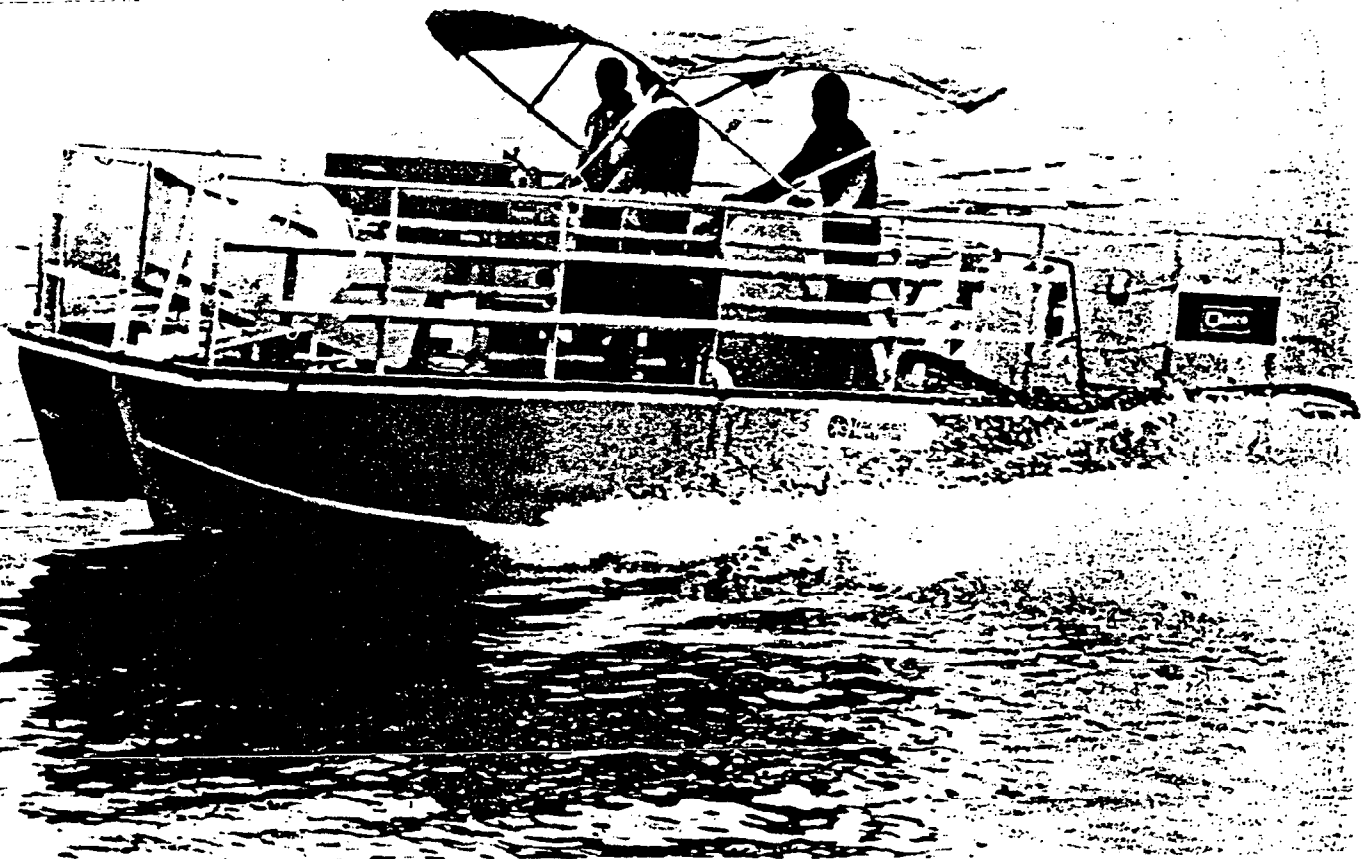
	Bioaccumulation	Damage to living resources	Human health hazard (oral)	Human health hazard (skin & inhalation)	Amenity reduction	MARMPOL Rating*
Aqueous ammonia	0	2	1	I	X	C
Ammonium nitrate	0	1	1	O	O	D
Ethyl alcohol	0	0	0	O	O	-
Sodium hydroxide	0	2	1	I	O	C
Sulphuric Acid	0	2	1	I	O	C

Although the above provides some data on hazardous chemicals, it is evident that more work is needed on the nature of chemicals travelling around Australia. There is also a need to establish which agency/agencies should/will take the lead role regarding response to hazardous chemical spills. The Department of Transport view is that adequate controls on shipping will reduce the need for a major effort in organising for response to spills.

DEPARTMENT OF TRANSPORT

National Plan To Combat Pollution Of The Sea By Oil

The following document has been provided by the Department of Transport.



1984

NATIONAL PLAN TO COMBAT POLLUTION OF THE SEA BY OIL

INFORMATION PAPER

INTRODUCTION

The National Plan to Combat Pollution of the Sea by Oil, "National Plan", has been in operation since October 1973. It represents a combined effort by Commonwealth and State governments, with the assistance of the oil industry, to help provide a solution to the threat posed to the coastal environment by oil spills from ships.

BACKGROUND

The grounding of the OCEANIC GRANDEUR in Torres Strait in 1970 accelerated the implementation of a nationwide plan to ensure that Australia would be prepared to respond to ship sourced pollution incidents, not only from oil tankers, but also from large bulk carriers and container vessels which may be carrying significant quantities of bunker fuel.

At a meeting between Commonwealth and State ministers in September 1971, agreement was reached on the basic divisions of responsibility for combating pollution of the sea by oil from ships.

COMMONWEALTH/STATE ADMINISTRATIVE ARRANGEMENTS

An initial requirement for the successful handling of oil spill incidents in Australia was a clear definition of the responsibilities of the two major participants, the Commonwealth and the States. This was provided in a set of Commonwealth/State administrative arrangements which includes such matters as access to Commonwealth stockpiles, financial arrangements and joint use of resources. Based on these arrangements the prescribed role of the Commonwealth, through the Department of Transport, is one of coordination, training, and the provision of technical and logistic support, materials, equipment and finance.

DIVISIONS OF RESPONSIBILITY

Based on the capacity to take action to prevent or clean up pollution by oil from ships, the Commonwealth/State administrative arrangements provide that the responsible authority may request another authority to accept prime responsibility for action. This concept has been implemented already in certain territorial seas. Prime responsibility for action lies with:

(1) within a port or harbour:

the administrative authority of that port or harbour

(2) on beaches and foreshores:

the relevant State government or Territorial authority

(3) in territorial seas:

- (a) in Western Australia, Victoria and Tasmania, the relevant State government authority
- (b) in all other States and the Northern Territory, the Commonwealth Government authority (represented by Commonwealth regional authorities), at the request of the relevant State government or Territorial authorities

(4) on the high seas:

the Commonwealth Government authority, represented by Commonwealth regional authorities.

Responsible authority is defined as that authority having the appropriate legislative jurisdiction over a pollution incident.

Prime responsibility for action is defined as the responsibility for controlling and coordinating operations to combat a pollution incident.

OPERATION

The basic concept of the plan was to provide spraying equipment and dispersant material at strategic locations around the coast. This has since been supplemented by the purchase of control and recovery devices and a central stockpile of ship-to-ship cargo transfer equipment.

Stockpiles of dispersant and associated spraying equipment are established at Cairns, Brisbane, Sydney, Melbourne, Hobart, Devonport, Adelaide, Perth, Port Hedland and Darwin. The dispersant used is BP-AB and the spraying equipment, based on the British Warren Spring Laboratory equipment, is designed for use aboard fishing vessels, harbour tugs and other similar-sized craft.

Use of dispersants will, however, be limited to incidents where the damage to the coastal and marine environments by the oil would be greater than that caused by any dispersant/oil mixture.

In the event of a major oil spill, a depleted stockpile can be replaced from any or all of the other stockpiles with further supplies available from commercial sources.

The ship-to-ship transfer equipment, located in Sydney, is for use in lightening vessels in the event of a collision, stranding or similar incident. It consists of submersible pumps, hoses, fenders, lighting and power generating equipment.

Oil control booms of varying capacities are held at strategic stockpile locations together with a number of self propelled oil recovery vessels and static oil recovery devices. All are used in exercises at regular intervals. This equipment is complemented by equipment held by port authorities and oil companies.

In the event of a major oil spill this country could call upon assistance from overseas as has been done in similar incidents abroad. Provision has been made for speedy entry into the country of equipment and manpower from overseas if required.

Although technology may develop better methods of dealing with oil spills, each incident is unique and requires the development of its own plan of action.

An Operations and Procedures Manual sets down the various procedures required to implement the National Plan and is complemented in each State by an appropriate supplement.

FUNDING

The National Plan is based on the "polluter pays" principle and to achieve this a levy similar to that applied to maintain navigational aids is imposed on commercial shipping using Australian ports.

In addition to providing funds for maintenance and administration of the Plan the levy provides contingency funds to cover those costs which:

- (1) could not be attributed to the polluter; or
- (2) upon conviction, the polluter proved unable to meet.

Where a ship sourced incident involves the use of more than 500 litres of dispersant, or where costs of clean up are in excess of \$500, the cost of combating the incident is borne by the National Plan pending recovery from the polluter.

LEGISLATION

In November 1972, the 'Pollution of the Sea by Oil (Shipping Levy) Act 1972' and the 'Pollution of the Sea by Oil (Shipping Levy Collection) Act 1972' were passed by the Australian Parliament. These Acts were replaced by the 'Protection of the Sea (Shipping Levy) Act 1981' and the 'Protection of the Sea (Shipping Levy Collection) Act 1981' which were proclaimed in 1982,

in Acts apply to vessels which are in excess of 100 net registered tons, having at least 10 tonnes of oil onboard.

Regulations made under the legislation have set the current rate of levy at 2 cents per net registered ton per quarter and have also set the minimum levy at \$10 per quarter.

The levy was first imposed on 1 October 1973, the date on which the National Plan became operational. The rate of levy is reviewed annually.

Related pollution legislation has recently been proclaimed. The Protection of the Sea (Civil Liability) Act 1981 and its Regulations impose strict liability on ships carrying oil in bulk as cargo for oil pollution damage caused by the ship. Shipowners are able to limit their liability and in certain cases must take out insurance for this purpose.

The Protection of the Sea (Powers of Intervention) Act 1981 and Regulations authorizes the Minister or his delegate to take necessary measures to prevent or limit pollution damage caused by a ship in Australian territorial waters or on the high seas.

SUPPORT ORGAISATION

To ensure maximum involvement of those concerned with the effective combat of oil spills in all areas of responsibility and to maintain an awareness of developments in the state of the art and equipment technology, the National Plan receives input from two committees. A Working Group on the National Plan (WGNP) established under the auspices of the Marine and Ports Council of Australia makes decisions on funding, equipment and training. The WGNP includes representatives from relevant operational areas of Commonwealth and State governments and meets at regular intervals.

The Maritime Services Advisory Committee - Marine Pollution, with representatives from Commonwealth Government departments and the oil and shipping industries, provides advice of a more scientific nature and may be required to nominate areas of research for the ongoing development of the Plan.

TRAINING

Three levels of oil spill response training are conducted.

- (1) Oil spill clean up operations: personnel from port and marine authorities and the oil industry are trained in the operation of equipment available in their area and are shown the basic techniques for combat of a spill.
- (2) On scene coordination: officers who may be required to assume the duties of an on scene coordinator attend a forum at which all aspects of clean up management are addressed.
- (3) Contingency planning: this training explores the various requirements for protection of a section of coastline, grades the area according to sensitivity and assesses the resources necessary to mount a combat operation. Local involvement of Shire councils, press, police and emergency services organisations is encouraged.

SELECTED POLLUTION EQUIPMENT AVAILABILITY REGISTER

The Selected Pollution Equipment Availability Register (SPEAR) is a computer based register of selected oil spill combat equipment available in Australia. It contains details of equipment held at National Plan stockpiles as well as equipment owned by State and port authorities, the oil industry and others, including distribution agencies. SPEAR is incorporated in CSIRONET, the CSIRO's national computer network, and may be searched by an on scene coordinator to determine the location and availability of equipment to assist with combat operations.

OIL POLLUTION RISK ANALYSIS

A detailed oil pollution risk analysis has been carried out by the Bureau of Transport Economics (BTE). The purpose of the analysis was to provide an assessment of the desirable distribution of anti-pollution material and equipment around Australia during the 1980's and an indication of stockpile holdings. Utilising all available data the analysis aimed at identifying the most appropriate statistical distributions governing Australian oil spills.

ON SCENE SPILL MODEL

The On Scene Spill Model (OSSM) is a computer model, also accessible via CSIRONET, which simulates the movement of oil spills. Developed in the United States the model enables authorities to take countermeasures to minimise damage to the marine environment. Utilising forecasts of wind, tide and current movements, and taking into account the nature of the oil, OSSM indicates where the oil will spread for several days ahead and what form it will be in. The assessment is continually updated as weather and other conditions change.

The model has been used successfully in the United States and was first used, on a test basis at an actual spill, in Australia following the grounding of the container ship ANRO ASIA in October 1981.

A segment on OSSM is incorporated in the National Plan training courses.

MARINE POLLUTION OPERATIONS

Department of Transport

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