

**Survey of Waste Reception Facilities in
Australian Ports, Boat Harbours and
Marinas:
Summary Report**

September 1996

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Membership of Working Group on Waste Management from Shipping and Boating

Preface

The survey work was carried out on behalf of the Working Group by Maunsell Pty Ltd through a consultancy. A comprehensive report *Survey of Waste Reception Facilities in Australian Ports, Boat Harbours and Marinas: Main Report* has been prepared. This *Summary Report* is a summary of the findings of the survey and an assessment of MARPOL, 73/78 compliance. Subsequent to this survey, AMSA published an information booklet *Waste Reception Facilities in Australian Ports* (April 1996) provided at each port for the use of the shipping industry. AMSA will also consider a similar booklet for the boating community.

Abbreviations and definitions

The following abbreviations are used throughout this report:

AMSA:	Australian Maritime Safety Authority
ANMA:	Australian National Maritime Association (now the Australian Shipowners Association (ASA))
ANMA Review:	ANMA review of waste reception facilities in Australian Ports, August 1992 and revised September 1993
ANZECC:	Australian and New Zealand Environment and Conservation Council
AQIS:	Australian Quarantine and Inspection Service, Department of Primary Industries and Energy
BIMCO Report:	Reference Manual on Port Reception facilities compiled by the Baltic and International Maritime Council (BIMCO) in conjunction with International Chamber of Shipping (ICS), 1994
Facility:	Waste Reception Facility
IMO Manual:	International Maritime Organization's Comprehensive Manual on Port Reception Facilities
MARPOL, 73/78:	International Convention for the Prevention of Pollution from Ships 1973, and as modified by the Protocol 1978
Noxious Liquids:	Noxious liquid substances carried in bulk (sometimes referred to as chemicals)
Port Authority:	Includes Port Authorities, Port Corporations, Marine Boards and Managers
RAN	Royal Australian Navy

Abbreviations and definitions continued

There are four waste groups of interest that are referred to in this report: oil, noxious liquids, sewage and garbage.

Unless noted otherwise, this report uses the following classification of these wastes taken from MARPOL, 73/78:

Oils (Annex I)

Oil means petroleum in any form including crude oil, fuel oil, sludge, oil refuse and refined products. Oily wastes are grouped into four sections for this survey: oil slops, oily water, oily bilge water and oil sludge.

Slops (tank washings) - After discharge of cargo from an oil tanker, there are residues of the cargo left in the tanks, pumps and pipelines. These oily residues can be removed by tank washing, with the waste being discharged at sea after separation or into port reception facilities. Tank washing is necessary to provide adequate entry to, and maintenance of, the cargo tanks, as well as to prepare the tanker to receive different cargoes on successive voyages.

Oily water mixtures containing chemicals (noxious liquids) - contamination of oily water mixtures by chemicals is a consequence of using detergents, degreasers and other cleaning agents to clean, for example, engine rooms and cargo tanks.

Oily bilge water - This is produced by most ships regardless of type and is the result of periodically cleaning out the oily drainings which may have accumulated in the bilges of the machinery spaces, eg. engine room. This mixture may consist of lubricating oils, fuel oils and other noxious substances.

Oil sludge (from purification of fuel oil) Heavy bunker fuel for diesel engines is centrifuged before use to remove water and suspended solids (sludge), generally found to be about 0.5%. It is estimated that over a year this represents an average of 30 tonnes for a tanker and about 5 tonnes per ship for non-tankers. Under MARPOL 73/78, every ship over 400 tons gross tonnage (GRT) should have tanks of sufficient capacity to receive sludge waste.

Noxious liquids (Annex II)

- a) *Category A*: Noxious liquid substances which if discharged into the sea from tank cleaning or deballasting operations would present a major hazard to either marine resources or human health or cause serious harm to amenities or other legitimate uses of the sea and therefore justify the application of stringent anti-pollution measures.

Abbreviations and definitions continued

- b) *Category B*: Noxious liquid substances which if discharged into the sea from tank cleaning or deballasting operations would present a hazard to either marine resources or human health or cause harm to amenities or other legitimate uses of the sea and therefore justify the application of special anti-pollution measures.
- c) *Category C*: Noxious liquid substances which if discharged into the sea from tank cleaning or deballasting operations would present a minor hazard to either marine resources or human health or cause minor harm to amenities or other legitimate uses of the sea and therefore require special operational conditions.
- d) *Category D*: Noxious liquid substances which if discharged into the sea from tank cleaning or deballasting operations would present a recognisable hazard to either marine resources or human health or cause minimal harm to amenities or other legitimate uses of the sea and therefore require some attention in operational conditions.

Sewage (Annex IV)

Sewage means:

- drainage and other wastes from any form of toilets, urinals, and WC scuppers;
- drainage from medical premises (dispensary, sick bay, etc.) via wash basins, wash tubs and scuppers located in such premises;
- drainage from spaces containing living animals; or
- other waste waters when mixed with the drainage defined above.

Definition adopted from MARPOL 73/78: sewage is deemed to be untreated compared to sludge and effluent which are the treated products of sewage treatment.

Sewage sludge means the mainly solid residue resulting from sewage treatment that has occurred within a boat/ship.

Treated sewage effluent means the mainly liquid component resulting from sewage treatment that has occurred within a boat/ship.

Garbage (Annex V)

Garbage means:

Plastics includes, but is not limited to, synthetic ropes, synthetic fishing nets and plastic bags.

Abbreviations and definitions continued

Garbage means all kind of food, domestic and operational waste excluding fresh fish and parts thereof, generated during the normal operation of the ship and liable to be disposed of continuously or periodically except those substances which are defined or listed in other parts of this survey.

Quarantinable wastes include: waste food, food packaging, plant or animal waste products, organic refuse, galley scraps and other associated waste products from a foreign source. (Source: AQIS).

This report divides waste reception facilities into one of two types:

Mobile (on demand) eg. a truck collection or barging operation direct from the ship; and

Fixed (onsite) eg. a storage waste tank or a number of tanks in one location in the port. Eventual waste disposal offsite may be by truck.

Details for mobile and fixed facilities have been provided separately as far as possible, except for sewage, where the distinction between mobile and fixed was more difficult to define.

1 Introduction

1.1 Background

In early 1992 the ANZECC Standing Committee on Environment Protection established a Task Force to investigate issues associated with Maritime Accidents and Pollution. Recommendations of the Task Force were adopted by the ANZECC Council in April 1994. The ANZECC Maritime Accidents and Pollution Implementation Group was established to develop the recommendations into a strategy and oversee implementation of the strategy. The strategy *Working together to reduce impacts from shipping operations: ANZECC strategy to protect the marine environment* (referred to hereafter as the Strategy) was released by ANZECC in June 1996.

One of the priority issues identified in the Strategy was that waste generated by shipping and boating was a major cause of marine pollution. The Strategy recommends that all ANZECC jurisdictions adopt and implement the International Maritime Organization's (IMO) *Comprehensive Manual on Port Reception Facilities* (1992) as a starting point for compliance with the requirements of MARPOL, 73/78 (the International Convention for the Prevention of Pollution from Ships 1973, and its Protocol of 1978).

The introduction to the IMO's Manual contains the following statement "MARPOL, 73/78 provisions require the government of each signatory to ensure the provision of adequate port reception facilities without causing undue delay". As a signatory to MARPOL, 73/78, Australia is required to comply with the above statement. MARPOL, 73/78 applies to large and small ships. The IMO's manual goes on to explain "A port reception facility is anything which can receive shipboard residues and mixtures containing oil or noxious liquids, or garbage. Type and size of the facility depends on the ships visiting a port. Where a simple garbage bin and a barrel for waste oil may suffice in one port, another will need large storage tanks for the reception of residues and mixtures containing oil or noxious liquids".

Queensland was delegated the responsibility of setting up a national working group to progress the implementation in Australia of the waste reception manual. This working group is entitled the Working Group on Waste Management from Shipping and Boating. Membership of the Working Group is listed at the end of the report.

The first task on the working group agenda was to carry out additional survey work to ascertain the precise situation for waste reception in ports and harbours in Australia.

Ballast water from segregated tanks has not been addressed in this report as it is being addressed in other forums.

Introduction continued

1.2 Objectives

The terms of reference for the study set out the following four tasks to be undertaken in respect of the survey of port, boat harbour and marina waste reception facilities in Australia.

1. Design a questionnaire and carry out a survey to ascertain the precise situation in relation to waste reception facilities currently provided in ports, boat harbours and marinas for each of oil, noxious liquids, sewage and garbage, including:
 - who provides the facilities;
 - the types of waste handled;
 - the capacity for reception of each waste type;
 - other facilities that may be available;
 - any physical constraints on waste removal;
 - the availability of a quarantine-rated incinerator at the port and who operates it;
 - the cost of waste disposal;
 - any time constraints in removal of waste from the ship/boat;
 - any conditions of use, such as requirement for advance notice; and
 - the contact details for company or agency providing facilities.
2. Using the principles set out in chapter 7 of the IMO *Comprehensive Manual on Port Reception Facilities*, identify the present and likely future use of reception facilities in each port, boat harbour and marina and estimate the quantities of wastes to be handled by reception facilities and frequency of such use.
3. Assess the adequacy of existing facilities and tabulate the nature and extent of non-compliance with MARPOL in the context of this study.
4. Identify the issues concerning compliance with MARPOL in the context of this study which need to be further addressed.

Introduction continued

1.3 Methodology

The methodology adopted centred around seven main activities as set out below:

Activity 1 - Review of existing information

Existing information was reviewed, including:

- the 1993 ANMA review of waste reception facilities which included 43 (mainly large commercial mixed, general and bulk) ports in Australia;
- International Convention for the Prevention of Pollution from Ships, 1973, and its Protocol of 1978 (MARPOL, 73/78);
- International Maritime Organization's (IMO) *Comprehensive Manual on Port Reception Facilities*;
- ANZECC Paper for public comment on *Maritime Accidents and Pollution: Impacts on the Marine Environment from Shipping Operations*, March 1995; and
- *Reference Manual on Port Reception Facilities* compiled by BIMCO in conjunction with ICS.

Activity 2 - List of ports, boat harbours and marinas

A comprehensive list of ports, boat harbours and marinas in each State and Territory was drawn up. This list was compiled from a range of sources in consultation with the Working Group.

A list of vessel owners and operators was also drawn up including:

- shipping lines;
- yachting associations;
- professional and amateur fishing associations; and
- industry groups.

Activity 3 - Information requirements defined

Information requirements were drawn up and approved by the Working Group in respect of:

- the port, boat harbour and marina waste disposal facilities;
- the characteristics, frequency and number of vessel arrivals;
- the quantities of liquid and solid waste (oil, noxious liquids, sewage, garbage);
- quarantine facilities; and
- specific requirements of vessel owners/operators.

Introduction continued

Activity 4 - Questionnaire design and issue

Four different questionnaires were designed and issued during May 1995 to:

- No. 1 Port Authorities and Port Corporations;
- No. 2 Boat Harbours and Marinas;
- No. 3 Shipping Companies/Operators; and
- No. 4 Boat Operators.

All port authorities and port corporations received questionnaires 1 and 2 to ensure that they responded separately in respect of port and marina facilities. Similarly, Naval facilities received both questionnaires 1 and 2. Boat harbours and marinas received questionnaires 2 and 4 as boating organisations are generally closely aligned to marinas.

Prior to the issuing of questionnaires, a pilot survey using a draft questionnaire was conducted at various ports and boat harbours. For questionnaire 1, the pilot survey covered one bulk loading terminal, and two multi-purpose ports. For questionnaire 2, the pilot survey was completed by one large boat harbour. The pilot survey responses suggested a number of questionnaire improvements which were generally adopted. In particular, one port raised the issue of confidentiality of responses. This resulted in the agreement that this report would contain only aggregate or transformed data when discussing facility adequacy. No port, boat harbour or marina names have been mentioned in this report. In addition, respondents were given the opportunity to indicate any data provided which should be treated in confidence. However, none of the respondents requested confidential treatment of any data submitted.

Activity 5 - Collating and formatting data

As the completed survey forms were received, they were progressively collated and formatted for presentation. 'Gaps' or anomalies in the information were identified and where appropriate, follow-up calls were made to obtain further data and/or clarify data submitted.

Activity 6 - Identification of present and future utilisation and priorities

On the basis of the information gathered in the study, an assessment was made of the likely future waste quantities, the extent of demand for waste disposal facilities and their likely utilisation, according to the principles set out in Chapter 7 of the IMO Manual.

Activity 7 - Assessment of adequacy and identification of issues

The adequacy of existing facilities to accommodate existing waste was assessed and the extent of any non-compliance with MARPOL, 73/78 was also identified.

Issues requiring further investigation or clarification, particularly additional information requirements in respect of compliance with MARPOL, 73/78, were also identified.

2. Outcomes of the Study

The outcomes of the survey in respect of each of the above objectives are summarised below.

2.1 Objective 1: Questionnaire Design and Survey

Four separate questionnaires were designed for port authorities (and corporations), boat harbours and marinas, shipping companies and boat operators. Questionnaires were directed to the port authorities, boat harbours and marinas as the *providers* of infrastructure and/or services. Questionnaires were directed to shipping companies and boat operators as the *users* of facilities in order to obtain a degree of verification of the information provided by the ports, boat harbours and marinas. Pilot surveys were used before finalising the questionnaires.

The questionnaire issued to the port authorities called for a much greater level of detail than that provided by boat harbours and marinas. The information requested for each of four waste groups, oil, noxious liquids, sewage and garbage (conforming with the four waste group classifications of MARPOL, 73/78) included the following issues:

- provision of facilities;
- types of waste handled;
- capacity of reception facilities for each waste type;
- other available facilities;
- constraints on waste reception and removal;
- availability of quarantine based incinerator;
- conditions of use; and
- contact details for facility providers.

While the Royal Australian Navy does not have to comply with MARPOL, 73/78 requirements, they were included in the survey.

Information concerning Royal Australian Navy Facilities (ports and boat harbours) has been reported as a separate category.

2.1.1 Questionnaire 1

Responses were received from 57 ports out of a total of 67 ports to which questionnaire 1 was issued. The overall response rate for ports was 85 per cent. The geographical spread of responses was quite even around Australia.

Responses to several sections of the questionnaire were incomplete, for instance, the sections on costs, charges, volumes and capacities, expansion plans and growth rates were often left blank or incompletely answered. This was mainly due to the fact that, at many ports, facilities are provided by private contractors, often in the form of mobile facilities, and port authorities do not have ready access to the information requested.

Outcomes of the Study continued

To facilitate more meaningful analysis, the 57 ports which responded were subdivided into four types: multi-purpose, bulk, remote bulk and minor ports. All major commercial ports responded to the questionnaire. The response rate for each port sub-group was 70 per cent or above. At the time of data collection, the overall rate of provision of waste reception facilities for oil was 58%, noxious liquids 28%, sewage 32% and garbage 68%. However, non-provision of facilities does not necessarily imply non-compliance with MARPOL, 73/78. If there is no demand for facilities for a particular waste type, then MARPOL, 73/78 does not require provision of that facility. This important issue is considered further below.

2.1.2 Questionnaire 2

Questionnaire 2 concerning boat harbours and marinas was issued to 486 separate bodies around Australia including port authorities, all known boat harbours, marinas and yacht clubs, several state fishing associations and councils and a selection of coastal councils suggested by the Local Government Association. There was, therefore, an intended degree of overlap to obtain the best possible coverage.

In total, responses were received covering 132 boat harbours and marinas with a fairly even geographic spread around Australia. In general, reception facilities are provided for oil, sewage (in some special locations) and garbage. The rate of provision of waste reception facilities for oil was approximately 50%, sewage 20% and garbage 80%. No boat harbours or marinas indicated that they accepted or had facilities to cater for noxious liquids, nor was there any demand for such facilities.

2.1.3 Questionnaire 3

Responses to questionnaire 3 were received from 7 major and minor Australian shipping companies to verify data collected in questionnaire 1. These 7 companies together cover a majority membership of the Australian Shipowners Association (ASA) and the sample is, therefore, deemed to be fairly representative of the Australian owned fleet operating in Australian ports. Respondents nominated ten frequently used ports and their conformance to facility provision at each port was assessed.

Firstly, in terms of provision of waste reception facilities, there was general agreement between port authorities and shipping lines in nearly all cases. Secondly, the adequacy of facilities was assessed and there was agreement except in one case. Thirdly, the shipping lines were asked whether there were constraints limiting their use of the facilities. Again, there was general agreement but with one or two exceptions. Finally, respondents were asked to indicate whether undue delay was experienced and also to confirm the operating hours of the port facilities. No undue delay was reported, and the operating hours were shown to have a few differences but no major divergence in opinion was noted.

Comments were also received on other aspects, including charges, anticipated growth rates, recycling and MARPOL, 73/78 requirements.

Outcomes of the Study continued

2.1.4 Questionnaire 4

Responses to questionnaire 4 for boat operators were received from nine boating clubs, only five of which commented on facilities at boat harbours which responded to questionnaire 2. These clubs were all small and represented only a small proportion of the boating community. However, the information submitted does provide a degree of verification of the boat harbour responses. This verification was achieved by the respondents selecting a number of frequently used harbours and answering questions on the waste reception facilities provided.

The provision of facilities was cross-checked with the stated provision in questionnaire 2. At the five harbours considered there was general agreement from boat operators with the information provided by boat harbours. As the boat operators' response rate was low, less importance has been attached to the responses in the classification of boat harbour compliance.

2.1.5 Royal Australian Navy

All of the RAN ports (6) that are currently operating, responded to questionnaire 1. Facilities are generally provided for oil and sewage wastes, while garbage facilities are provided at all ports. Facilities for noxious liquids, however, are generally not provided, as there is very little (if any) demand. All RAN boat harbours (7) currently operating also responded to questionnaire 2. Oil facilities are generally provided, while garbage facilities are provided at all harbours. Sewage facilities, however, are generally not provided.

2.2 Objective 2: Existing and future demand for, and use of, waste reception facilities

The results of the survey indicate a level of uncertainty by ports, boat harbours and marinas as to the nature, frequency and volume of demand for waste reception facilities.

For example, about 40% of ports did not respond to the question concerning awareness of demand for oil or garbage facilities, and about 20% did not respond to questions about demand for noxious liquids and sewage facilities. Less than 15% of all ports identified a definite demand for reception facilities for any of the waste types.

Further, most ports did not submit data on the capacity of existing facilities, the existing volumes handled or the forecast future volume demand in respect of oily wastes. This is mainly due to the fact that, where reception facilities are provided at Australian ports, by far the majority are provided by private companies: 98% for oil, 100% for noxious liquids, 100% for sewage and 32% for garbage.

In responding to questions about adequacy, most ports indicated that their facilities were adequate to meet demand. However, the non-response rate to this question was still fairly high, particularly for oil (30%) and noxious liquids (20%). In some cases where a demand

for a waste reception facility was recognised by the port authority, cost was suggested as the limiting factor in not providing the facility.

Outcomes of the Study continued

Given that the shipping lines are the customers of the ports, it is reasonable to assume that ports are aware of the extent of demand and that the assessment of compliance is therefore soundly based, particularly as responses from shipping lines support the port's assessment of adequacy at the ports nominated by each shipping line for validation.

The main concern, therefore, is that insufficient data have been provided in this survey to quantify either the existing or future demand for any of the waste types. A significant contributory factor for this lack of data is that facilities are generally provided by private companies rather than directly by the port authorities themselves. Furthermore, there were very high non-response rates (70% oil, 87% noxious liquids, 87% sewage and 58% garbage) concerning future growth in demand.

This lack of quantitative data is suggested as an issue requiring further investigation.

As for the ports, respondents for boat harbours did not provide any quantifiable assessment of demand. However, only 3% considered the facilities inadequate for garbage, 5% for sewage and 6% for oil. A particular feature of boat harbour responses was that 58% indicated a demand for oil facilities where the harbour contained a slipway or ship repair facility.

There was a very high non-response rate to the question about demand from RAN ports and a fairly high (33%) non-response rate in terms of assessment of adequacy. As with the ports, this suggests an uncertainty about the nature of existing and future demand.

2.3 Objective 3: Adequacy of Existing Facilities and Extent of Non-compliance with MARPOL, 73/78

MARPOL, 73/78 provisions require the government of each signatory to ensure the provision of **adequate** port reception facilities without causing **undue delay**. A port reception facility is, "anything which can receive shipboard residues and mixtures containing oil or noxious liquids, or garbage" (IMO *Comprehensive Manual on Port Reception Facilities*).

Port compliance was assessed with respect to provision of **adequate** port reception facilities without causing **undue delay**.

With respect to the provision of **adequate** port reception facilities, the Marine Environment Protection Committee of the International Maritime Organization has defined the obligations of Contracting Parties. These are outlined below:

"As a minimum, the capacity of reception facilities at cargo unloading, loading, and repair ports and terminals shall be capable of receiving those residues and mixtures which are handled within that port and which must be discharged to reception facilities. All ports including marinas and fishing ports, regardless of size, will need to provide adequate facilities to receive Annex V wastes (garbage) and waste oil from engines, etc.

Outcomes of the Study continued

The receiving capability should be at least appropriate in time and availability to respond to the continuing needs of ships using the port. Arrangements needed to facilitate the discharge of residues, mixtures and all types of waste without causing undue delay to ships, such as prior notification of substances and quantities expected for discharge, piping or equipment required for discharge etc, are made between ship and the reception facility.

Governments shall ensure that the formalities for the use of reception facilities, particularly customs, health and environmental formalities, should be as simple and expeditious as possible in order to avoid undue delay of the ship or even to prevent ships from using the reception facility.

Governments shall ensure that the costs for receiving wastes should be covered in such a way that fees, if charged, would not provide a disincentive for the use of the reception facilities."

Undue delay may arise when the time spent in port for the disposal of residues, mixtures or wastes goes beyond the normal turn-around time of the ship in that port, unless the delay is caused by fault of the ship, its master, its owner or his authorised representatives, safety requirements or the normal port procedures. The *Comprehensive Manual on Port Reception Facilities* states that:

"The master or the owner of a ship or his authorised representative should notify the appropriate authority in good time, but generally not less than 24 hours before discharge is required to take place. Any special or unusual wastes should also be reported at this time.

The request to use the reception facility shall contain all relevant information with respect to substances and quantities expected for discharge, expected time of arrival (ETA) and expected time of discharge, berth, etc. The time of transfer should mutually be agreed upon and transfer of waste should take place during the cargo handling working hours of the port unless the ship's normal call at the port is not at a time within this period."

Key issues associated with these two criteria were also considered. Analysis of the responses provided an indication of the level of compliance at each port for each waste group. Compliance was assessed for oil, noxious liquids and garbage, but not for sewage, as MARPOL, 73/78 Annex IV (sewage) has not entered into force internationally at this time.

In assessing compliance, facilities for each of the three waste groups (oil, noxious liquids and garbage), at each port, have been classified as:

- Complying; or
- Minor non-complying; or
- Non-complying; or
- Specific non-complying.

Outcomes of the Study continued

For each particular waste, **complying** ports are those which:

- provide **adequate** facilities, without causing **undue delay** or restriction to shipping, for all wastes which would normally be expected at that port, or
- do not provide facilities and the demand is understood to be nil or negligible for such facilities.

For each particular waste, **minor non-complying** ports are those which:

- provide facilities but:
 - do not accept all waste types in that waste group and/or
 - have some restriction on use of the facility, and/or
 - result in some undue delay, or
- do not provide facilities but there is understood to be a low demand for such facilities.

For each particular waste, **non-complying** ports are those which:

- do not have a waste reception facility and a waste demand is understood to exist.

For each particular waste, **specific non-complying** ports are those which:

- do not have a waste reception facility; and
- the Port Authority has responded affirmatively to one of the port information questions concerning either Annex I - Regulation 12 (Part 2) or Annex II - Regulation 7.

MARPOL, 73/78 Annex I - Regulation 12 (Part 2)

- a) All ports and terminals in which crude oil is loaded onto oil tankers where such tankers have immediately prior to arrival completed a ballast voyage of not more than 72 hours or not more than 1,200 nautical miles;
- b) all ports and terminals in which oil other than crude oil in bulk is loaded at an average quantity of more than 1,000 metric tons per day.
- c) all ports having ship repair yards or tank cleaning facilities;
- d) all ports and terminals which handle ships provided with the sludge tank(s) required by Regulation 17 of Annex I.
- e) all ports in respect of oily bilge waters and other residues, which cannot be discharged in accordance with regulation 9 of Annex I; and
- f) all loading ports for bulk cargoes in respect of oil residues from combination carriers which cannot be discharged in accordance with regulation 9 of Annex I.

Outcomes of the Study continued

MARPOL, 73/78 Annex II - Regulation 7

- 1) The Government of each Party to the Convention undertakes to ensure the provision of reception facilities according to the needs of ships using its ports, terminals or repair ports as follows:
 - a) cargo loading and unloading ports and terminals shall have facilities adequate for reception without undue delay to ships of such residues and mixtures containing noxious liquid substances as would remain for disposal from ships carrying them as a consequence of application of Annex II and;
 - b) ship repair ports undertaking repairs to chemical tankers shall have facilities adequate for the reception of residues and mixtures containing noxious liquid substances.

For undue delay the responses on operational hours do not lead to a clear compliance definition. Therefore, the IMO Manual statement relating to a 24 hours prior notice has been used to classify compliance concerned with undue delay.

2.3.1 Facilities at Ports

At the time of data collection, the 22 multi-purpose ports generally complied, with 18 ports fully complying for oil, 20 fully complying for noxious liquids and 17 fully complying for garbage. Of the 12 bulk ports, 6 comply for oil, all comply for noxious liquids, and 8 comply for garbage. Of the 7 remote bulk ports, only 1 complies for oil, 6 comply for noxious liquids, and none comply for garbage. Of the 16 minor ports, 4 comply for oil, all comply for noxious liquids, and 6 comply for garbage. Since the study was completed some ports have made arrangements with contractors to provide reception facilities to enable the port to comply with MARPOL, 73/78 requirements.

The results for each waste type are summarised below and in Table 1 on page 14.

Oil

Twenty-nine ports (51% of total) comply fully with MARPOL, 73/78, with a further 15 complying in all but minor aspects such as not accepting all types of waste in a particular group or requiring more than 24 hours notice prior to use. However, by aggregating the complying and minor non-complying ports, it could be considered that 44 ports (77% of total) generally comply.

Overall, this results in a reasonably high level of compliance for oil reception facilities although the remote bulk ports have a low level of compliance. Twenty-one out of 22 multi-purpose ports comply.

Outcomes of the Study continued

Noxious liquids

Fifty-five ports (96% of total) comply with MARPOL, 73/78. The very high level of compliance results from ports not needing to provide facilities where there is no actual demand.

Garbage

Thirty-one ports (54% of total) have garbage facilities which comply with MARPOL, 73/78. However, by aggregating the complying and minor non-complying ports, it could be considered that 45 ports (79% of total) generally comply, resulting in a reasonably high level of compliance overall. Again, the remote bulk ports have a low level of compliance.

The results of this survey were compared with that carried out in 1992/93 by the Australian National Maritime Association (ANMA), now Australian Shipowners Association (ASA), which surveyed their members concerning 43 ports in Australia. The ANMA survey sought to answer the question "Are Australian port facilities adequate to meet the needs of the ships using them without causing undue delay to ships?" The scope of the current survey is much wider and more detailed than the ANMA survey. Although there is general agreement in the findings of the two surveys, the current survey has found a higher rate of compliance than the ANMA survey.

The higher rate of compliance is likely to be due to:

- (i) the shipping industry being unaware in some cases of the mobile facilities provided at many ports; and
- (ii) an increase in the extent of provision of facilities over the period 1992-95.

2.3.2 Facilities at Boat Harbours and Marinas

Boat harbours and marinas were classified as either: complying, or minor non-complying (oil only), non-complying or unclassified (garbage only). The 'unclassified' harbours are those which have responded but which have not provided sufficient information on which to assess degree of compliance.

Most of the boat harbours and marinas which responded to the questionnaire complied with requirements for reception of oily wastes, noxious liquids and garbage. The results for each waste type are summarised below. Data are summarised in Table 2.

Oil

Ninety-four harbours (71% of harbours responding) comply with MARPOL, 73/78. However, by aggregating the complying and minor non-complying harbours, it could be considered that 127 harbours (96% of those responding) generally comply.

Outcomes of the Study continued

Garbage

One hundred and six harbours (80% of harbours responding) comply with MARPOL, 73/78. Four harbours (3% of total) do not comply and 22 harbours (17% of total) were unclassified. It is probable that, with further information, these unclassified harbours could be classified correctly. Overall, a high level of compliance results for harbours in respect of garbage waste.

Noxious Liquids

As there is no reported demand for handling noxious liquids at boat harbours, there is deemed to be full compliance with MARPOL, 73/78 even though no facilities are provided.

2.3.3 Facilities at Royal Australian Naval Ports

RAN ports and boat harbours were classified, for each waste group, as either: complying, minor non-complying or non-complying. Data are summarised below and in Table 3. All 6 RAN ports responded to the questionnaire and on the basis of data provided, the following comments on port compliance can be made.

Oil

Two ports comply with MARPOL, 73/78 and the remaining four ports were classified as having a minor non-compliance.

Noxious liquids

Five ports comply with MARPOL, 73/78 and one port was classified as having a specific non-compliance.

Garbage

Five ports comply with MARPOL, 73/78 and one port was classified as having a minor non-compliance.

2.3.3 Facilities at Royal Australian Naval Harbours

All 7 RAN boat harbours responded to the questionnaire and on the basis of data provided, the following comments on boat harbour compliance can be made:

Oil

Five boat harbours comply with MARPOL, 73/78 and two boat harbours are classified as having a minor non-compliance;

Outcomes of the Study continued

Noxious Liquids

As there is no reported demand for handling noxious liquids at boat harbours, there is deemed to be full compliance with MARPOL, 73/78, even though no facilities are provided.

Garbage

All seven boat harbours comply with MARPOL, 73/78.

2.3.5 Summary of Level of Compliance

The level of compliance at the 57 ports, 132 boat harbours and marinas and 13 RAN facilities which responded to the questionnaires, is summarised in Tables 1, 2 and 3 respectively for oil, noxious liquids (ports only) and garbage. The criteria for compliance as defined by MARPOL, 73/78 are the provision of **adequate** port reception facilities without causing **undue delay**.

Outcomes of the Study continued

Table 1: Summary of level of compliance at ports by port type

Port type and Waste Category	No. of Ports	Complying	Minor non-complying	Non-complying	Specific non-complying
Oil					
1. Multi-purpose ports	22	18	3	--	1
2. Bulk ports	12	6	3	3	--
3. Remote bulk ports	7	1	--	6	--
4. Minor ports	16	4	9	2	1
TOTAL	57	29	15	11	2
Noxious liquids					
1. Multi-purpose ports	22	20	1	--	1
2. Bulk ports	12	12	--	--	--
3. Remote bulk ports	7	7	--	--	--
4. Minor ports	16	16	--	--	--
TOTAL	57	55	1	--	1
Garbage					
1. Multi-purpose ports	22	17	4	1	--
2. Bulk ports	12	8	--	4	--
3. Remote bulk ports	7	--	1	6	--
4. Minor ports	16	6	9	1	--
TOTAL	57	31	14	12	--

Table 1 above summarises the level of compliance at the time of data collection for 57 ports which responded to the questionnaire. This response rate of 57 out of a total of 67 ports to which questionnaires were issued (85%) provides an adequately representative 'picture' of the levels of compliance at ports around Australia.

Outcomes of the Study continued

Table 2: Summary of level of compliance at boat harbours and marinas

Boat harbours	No. of Harbours	Complying	Minor non-complying	Non-complying	Unclassified⁽²⁾
Oil	132	94	33	5	--
Noxious Liquids ⁽¹⁾	132	132	--	--	--
Garbage	132	106	4	--	22

⁽¹⁾No demand identified

⁽²⁾Insufficient information to classify level of compliance

Table 3: Summary of level of compliance at RAN facilities

Waste Category	No. of Ports	Complying	Minor non-complying	Non-complying	Specific non-complying
Ports					
Oil	6	2	4	--	--
Noxious liquids	2	5	--	--	1
Garbage	6	5	1	--	--
Boat Harbours	7	5	2	--	--
Oil					
Noxious Liquids ⁽¹⁾	7	7	--	--	--
Garbage	7	7	--	--	--

⁽¹⁾No demand identified

2.4 Objective 4: Issues to be further addressed

In the course of undertaking this survey and analysing the results, several issues concerning compliance with MARPOL, 73/78 were identified as requiring further investigation and/or other action beyond the scope of this study.

Outcomes of the Study continued

General issues

- (i) Given that the aim should be 100% compliance, further work needs to concentrate on non-complying, specific non-complying and unclassified ports, boat harbours and marinas for each waste group. Minor non-complying ports could then be addressed as a lower priority.
- (ii) Ports should be encouraged to prepare a waste management plan to ensure compliance with MARPOL, 73/78. This does not necessarily imply a need for provision of infrastructure given the opportunity for ports, boat harbours and marinas to contract out provision of facilities and the opportunity to meet demand by providing mobile rather than fixed facilities.
- (iii) Boat harbours, which do not commonly have the management structure and resources available to port authorities, may require assistance to prepare waste management plans.
- (iv) Analysis of survey results in respect of sewage waste was not included in this study as Annex IV of MARPOL, 73/78, which deals with sewage, has not yet entered into force internationally. However, this requires follow-up, especially given that some states in Australia are introducing legislation which effectively implements MARPOL, 73/78 sewage requirements.
- (v) There was generally a very poor response rate from all parties responding to estimates of volumes of waste for which there was likely to be a demand for reception facilities in future. Similarly, the request for ports to indicate the volumetric capacity of existing facilities received a poor response, as at many ports, private companies provide a mobile service and the information was not therefore readily obtainable by the ports. It is suggested that some further work be undertaken to quantify existing demand and capacity and to estimate future demand, perhaps as a component of the waste management plans suggested in (ii) above.

Issues relating specifically to ports

- (vi) Some ports require further information concerning the requirements of MARPOL, 73/78 applying to their ports.
- (vii) Further work would need to be undertaken to complete the missing information identified in responses from ports. This may result in a change to the assessment of the degree of compliance presented in this report.

Outcomes of the Study continued

- (viii) No ports reported plans to provide new or additional facilities. However, seven ports said that they were awaiting the outcome of this study before they would decide on any new facilities.
- (ix) A large number of ports with inadequate facilities or no facilities had no form of waste management strategy. If an effective waste management strategy was adopted at non-complying ports, particularly remote ports with small waste demand, these ports could possibly be upgraded to minor non-complying status.
- (x) Cost and lack of demand were often cited as reasons why non-complying ports did not provide facilities.
- (xi) The type and quantity of cargo and vessels handled at any port is subject to change over time. Whilst this survey provides a 'snapshot' of the existing situation, the degree of compliance will need to be monitored to take such changes in port traffic into account.
- (xii) In general, there is a need for further work to quantify existing and future demand in order to relate this to the capacity of the facilities.

Issues relating specifically to boat harbours and marinas

- (xiii) Further work would need to be undertaken to complete the missing information identified in boat harbour and marina responses. This may result in a change to the assessment of the level of compliance presented in this report.
- (xiv) As with ports, further work is needed to quantify existing and future demand compared with capacity and a need to inform boat harbours concerning the requirements of MARPOL, 73/78.

Issues relating specifically to RAN facilities

Ports

- (xv) Further work needs firstly to concentrate on those specific non-complying ports and secondly, on the minor non-complying ports.
- (xvi) Oil facilities require the most work while noxious liquid and garbage facilities mostly comply, and hence require little further work.

Boat harbours

- (xvii) For oil, some further work is required for those minor non-complying boat harbours.
- (xviii) For garbage, all boat harbours comply, and hence no further work is required.

3 Conclusions

There was a good overall response to the survey questionnaires from ports but a much lower response rate from boat harbours and marinas. Further work is being undertaken in relation to the low level of response from boat harbours and marinas through peak bodies.

Responses to several sections of the questionnaire were incomplete, for instance, the sections on costs, charges, volumes and capacities, expansion plans and growth rates were often left blank or incompletely answered. This is mainly due to the fact that at many ports facilities are provided by private contractors. Collection facilities are often in the form of mobile facilities, and port authorities do not have ready access to the information requested.

In general, the level of compliance for ports was good except for remote bulk ports. With one exception, all large multi-purpose ports generally complied with MARPOL, 73/78 requirements for oil, noxious liquids and garbage.

For those boat harbours and marinas which did respond to the questionnaire there was a good level of compliance.

Further investigation and action is needed in relation to ports, boat harbours and marinas not complying with MARPOL, 73/78 requirements. All ports and harbours should be encouraged to prepare a waste management plan to address compliance requirements.

Further reading

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