POLLUTION FROM SHIPS: A GLOBAL PERSPECTIVE

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Because of the international nature of the shipping industry, it has long been recognised that action to improve maritime safety and prevent marine pollution is more effective if carried out at an international level rather than by individual countries acting unilaterally.

There are three principal objectives of the global approach: uniformity of law, certainty of law, and justice between interested parties.

Uniformity of law is desirable because it simplifies the law for interested parties in all countries, including the legal practitioners and the courts. Uniformity of law is also useful in eliminating or minimising the practice of "forum shopping" by which claimants and defendants seek to bring disputes into particular jurisdictions solely because they believe that the laws in such jurisdictions will be more favourable to their cause.

Certainty of law is regularly assisted by use of devices such as international conventions or treaties. These agreements, by establishing a uniform norm, help to avoid the conflict of different national laws. This, in turn, enables interested parties to identify more easily and clearly what their rights and obligations are likely to be, regardless of where a ship is going or where a claim or issue will be decided.

An international convention/treaty can also promote justice by establishing, in a clear and fair way, rights and obligations for all parties with an interest in the subject matter, including shippers, ship owners, ship operators, charterers, mortgagees and suppliers of services for shipping.

Early Initiatives

The first international initiative to control ship-sourced marine pollution was the convening of a conference in Washington, USA in 1926. Although recommendations were made at this conference to limit the discharge of oil at sea, no international agreement could be reached until after the Second World War. The British Government convened a conference in London in 1954 at which some 40 nations, including Australia, were represented. The result was the International Convention for the Prevention of Pollution of the Sea by Oil, which is commonly known as OILPOL.
OILPOL entered into force internationally on 26 July 1958, and imposes obligations on ship owners and masters to operate their ships so as to minimise the incidence of accidental and operational pollution. OILPOL was adopted on the basis that oil discharges were inevitable and so must be made where they will cause the least harm. The Convention operated in Australia from 29 November 1962 to 14 January 1988, when the International Convention for the Prevention of Pollution from Ships (MARPOL 73/78) commenced operation in Australia (see below).

In the meantime, the First United Nations Law of the Sea Conference at Geneva in 1958 adopted the Convention on the High Seas (to which Australia is also a party). This Convention contains certain limited provisions regarding the prevention of marine pollution. In particular, Articles 24 and 25 of the 1958 Convention identified the discharge of oil from ships or pipelines and the dumping of radioactive waste as being two sources of marine pollution against which each Contracting State is required to take measures. Since 1958 there has therefore been a clear basic obligation on member States to protect and preserve the marine environment.

Apart from accepting OILPOL in 1962, Australia was not particularly active in the prevention of marine pollution during the 1960s and early 1970s. Australia's main concern was to ensure that it had adequate powers to protect the Great Barrier Reef. To this end, Australia was successful in achieving international agreement in 1971 to amendments to OILPOL which would define "nearest land" for the purposes of the Convention as the outer edge of the Great Barrier Reef. Although this amendment never entered into force with respect to OILPOL, it was incorporated in MARPOL 73/78 and is in operation today.

It was not until the early 1980s, when a number of "Protection of the Sea" Acts were passed, that Australia was able to bring its domestic requirements into line with modern international law dealing with pollution from ships. In recent times Australian delegations to international conferences have been in the forefront of the development of new approaches to the control of marine pollution.

**International Maritime Organization**

A conference held by the United Nations in 1948 adopted a convention establishing what is now named the International Maritime Organization (IMO) in London as the first international body devoted exclusively to maritime safety and environmental matters.

Since 1959, the IMO has promoted the adoption of some thirty conventions and protocols, and adopted well in excess of 700 codes and recommendations concerning maritime safety, the prevention of pollution and related matters.

Australia has been a member of IMO since its inception, currently serves on the governing Council and provides chair or deputy chair persons for a number of committees, sub-committees and working groups. In addition, Australia sends delegations comprising representatives of Governments and industry to a wide range of IMO Committee and Working Group meetings on a regular basis. As a member of IMO, Australia has been active in developing and is a party to many IMO conventions. The regime for the control of ship-sourced pollution in Australia is based largely on a number of these conventions.
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The Nature of Oil Spills

To date Australia has been fortunate in that it has recorded very few medium to large oil spills and only two major oil spill incidents (that is of over 1 000 tonnes) since 1970 (the Oceanic Grandeur and the Kirki). It is therefore difficult to make an assessment of the likely nature of a spill in Australian waters and it is necessary to draw on international oil spill data to provide an indication of the nature of oil spills.

The International Petroleum Industry Environmental Conservation Association (IPIECA), the petroleum industry's principal channel of communication with the United Nations Environment Program (UNEP), in a 1991 report identified vessel operations and tanker accidents as contributing 45 per cent of the uncontrolled release of petroleum into the marine environment. International data indicate that worldwide, in the period between 1974 and 1989, there were 774 accidents involving oil spills greater than 7 tonnes. This equates to an average of about 50 incidents per annum.

The majority of spills occur in ports at the time of loading, discharging or bunkering. Responsibility for spills of this type is generally attributable to equipment failure, the human factor or the conditions prevailing at the time.

The impact of MARPOL in reducing global oil pollution of the marine environment from ships has been significant. The US National Research Council Marine Board has estimated a 60 per cent reduction from 1981 to 1989, from 1.4 million tonnes in 1981 to 580 000 tonnes in 1989.

The ship construction requirements of MARPOL have made a significant contribution to the global reduction in oil spills in recent years, with the average number of spills from tankers down to about one-third of the level seen during the 1970s. There were 91 spills greater than 5 000 barrels (3 500 tonnes) in the 10 years ending 1989, compared with 252 in the period 1970-1979 (see Figure 1).

As mentioned above, Australia has been fortunate in not having experienced any catastrophic oil spills. Although reports of relatively small oil slicks at sea have been more frequent in the 1980s and early 1990s than in the 1970s, this may well be due to increased awareness and surveillance and more conscientious reporting.

In the 1992-93 financial year, the Australian Maritime Safety Authority received reports from various sources (see Figure 2) of 233 marine oil spills.
## Figure 1

**Oil Spills >3500 Tonnes**

![Graph showing oil spills exceeding 3500 tonnes from 1974 to 1991.](image)

*Source: International Tanker Owners Pollution Federation*

## Figure 2

**Source of Oil Spill Reports - 1992/93**

![Bar chart showing the source of oil spill reports for 1992/93.](image)

*Source: Australian Maritime Safety Authority*
Over 54 per cent of these spills occurred within port limits where clean-up action was undertaken by the port authority or relevant oil terminal. In 18 cases, clean-up or response action of some description by AMSA was needed. The remaining reports were generally unconfirmed sightings from vessels or aircraft well offshore and involved small quantities of oil which were left to degrade naturally.

**The MARPOL 73/78 Convention**

The enormous growth in the maritime transport of oil and the size of tankers, the increasing amount of chemicals being carried by sea and a growing concern for the world's environment as a whole led to the development by IMO of the International Convention for the Prevention of Pollution from Ships 1973/78 (MARPOL 73/78). This Convention entered into force in Australia in January 1988 and is implemented by the *Protection of the Sea (Prevention of Pollution from Ships) Act 1983* and the *Navigation Act 1912*. The legislation provides for penalties of up to $200 000 for the master and $1m for the owners of a vessel which discharges in contravention of MARPOL.

MARPOL is the most ambitious international treaty covering maritime pollution ever adopted. It deals not only with oil but with all forms of marine pollution from ships except the disposal of land-generated waste into the sea by dumping (which is covered by another Convention).

The Convention includes five technical Annexes (see Figure 3) each dealing with a different type of pollution. As oil discharges are the most prominent type of shipsourced marine pollution, this paper will focus primarily on Annex I.

*Figure 3*

**Structure of MARPOL 73/78**

- **MARPOL 73/78**
  - Includes Protocol I (Reporting)
  - Protocol II (Arbitration)

- **ANNEX I** (oil)
  - Entry into force 2/10/83

- **ANNEX II** (noxious liquid substances)
  - Entry into force 6/4/87

- **ANNEX III** (harmful packaged substances)
  - Entry into force

- **ANNEX IV** (sewage)
  - Not yet into force

- **ANNEX V** (garbage)
  - Entry into force 31/12/88
The Convention totally prohibits discharges of dangerous chemicals and plastic and prescribes when, where and how other types of less harmful discharges, such as oil, may be made. The regulations provide, however, that wherever possible all waste is to be retained on board for disposal ashore.

The discharge provisions of the Convention do not apply to accidental discharges resulting from damage to a ship or its equipment provided all reasonable precautions are taken to minimise the discharge. However, this exemption does not apply to damage caused where the master acted either with intent to cause damage or recklessly and with knowledge that damage would probably result.

Under Annexes I, II and IV, all vessels (but for the smallest) are subject to regular and complete surveys to ensure that the structure, equipment, fittings, materials and arrangements fully comply with the Convention.

Enforcement

Parties to MARPOL 73/78 are obliged to ban violations of the Convention and to take action against violators, ensuring that penalties "shall be adequate in severity to discourage violations".

Parties are required to cooperate in the detection of violations. Ships may be inspected by other Parties to see if any discharges have taken place in violation of the Convention. Incidents involving harmful substances must be reported without delay.

Oil tankers—cargo space discharges

Operational discharges of oil from tankers are allowed only when all of the following conditions are met:

- the total quantity of oil which a tanker may discharge in any ballast voyage whilst under way must not exceed 1/15 000 of the total cargo carrying capacity of the vessel;
- the rate at which oil may be discharged must not exceed 30 litres per mile travelled by the ship;
- no discharge of any oil whatsoever must be made from the cargo spaces of a tanker within 50 miles of the nearest land: and
- the tanker has in operation an oil discharge monitoring and control system and a slop tank arrangement.

Depending on the size and age of the ship, MARPOL requirements may also include the fitting of an oil discharge monitoring and control system, oily water separation equipment and filtering system, slop tanks, sludge tanks, piping and pumping arrangements.
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Oil tankers—construction

Segregated ballast tanks (that is tanks which carry only ballast water and not oil) are required to be protectively located to meet certain subdivision and damage stability requirements so that, in any loading conditions, they can survive after damage by collision or stranding.

Under a system known as crude oil washing (COW), tanks are washed not with water, but with crude oil—the cargo itself. The solvent action of the crude oil makes the cleaning process far more effective than when water is used and, at the same time, the mixture of oil and water which led to so much operational pollution in the past is virtually ended. The owner is also able to discharge more of the cargo than before, since less of it is left clinging to the tank walls and bottoms.

Under recent amendments, oil tankers of 5 000 cwt and above delivered after July 1996 must be fitted with double bottoms and wing tanks extending the full depth of the ship's side. The regulation allows mid-height deck tankers with double-sided hulls as an alternative to double-hull construction. Other methods of design and construction may also be accepted provided that they ensure the same level of protection against pollution in the event of a collision or stranding and are approved by IMO.

With the exception of ships built with double hulls, existing ships built to MARPOL standards must comply with the new double hull requirements not later than 30 years after the date of delivery. Oil tankers built to pre-MARPOL standards must, not later than 25 years after the date of delivery, have side or bottom protection to cover at least 30 per cent of the cargo area. The Convention also allows for future acceptance of other structural or operational arrangements as alternatives to the protection measures spelt out in the Convention.

All ships—machinery space discharges

The discharge from machinery space bilges is allowed only when all of the following conditions are met:

- the oil content of the effluent must not exceed 15 ppm;
- the ship is proceeding en route;
- the ship has in operation an oil discharge monitoring and control system and oil filtering equipment.

Port State Control

AMSA surveyors conduct a program of port state control inspections of foreign flag ships visiting Australian ports. In addition, Australian flag vessels engaged on interstate and overseas voyages are surveyed for the issue of appropriate statutory certificates by AMSA, or by authorised classification societies on behalf of AMSA.

These inspections and surveys are undertaken to ensure that all ships comply with the relevant provisions of the IMO instruments and codes, including MARPOL 73/78, and with the provisions of the Navigation Act 1912. Should a ship be found not to comply with
appropriate requirements, AMSA will detain the ship until satisfactory repairs are carried out or remedial action taken.

Since MARPOL 73/78 entered into force for Australia in January 1988, compliance with MARPOL requirements at port state control inspections is set out in Table 1.

Table 1
Compliance with MARPOL Requirements, 1988-92

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<td>22</td>
<td>19</td>
<td>14</td>
<td>18</td>
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<td>96.7</td>
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Inspectors

MARPOL 73/78 provides that ships may, in any port or offshore terminal of a party, be subject to inspection by authorised officers for the purpose of verifying whether the ship has discharged any substance in violation of the Convention. Australia has appointed 175 inspectors under sub-section 3(1) of the Protection of the Sea (Prevention of Pollution from Ships) Act covering all major Australian ports. Inspectors include all AMSA surveyors and nominated Commonwealth/State departmental officers, harbour masters, pilots or environmental officers. Australian legislation provides that an inspector may:

- go on board the ship with such assistants and equipment as he considers necessary;
- require the master of the ship to take such steps as the inspector directs to facilitate the boarding; inspect and test any machinery or equipment of the ship;
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- require the master of the ship to take such steps as the inspector directs to facilitate the inspection or testing of any machinery or equipment of the ship;

- open, or require the master of the ship to cause to be opened, any hold, bunker, tank, compartment or receptacle in or on board the ship and inspect the contents of any hold, bunker, tank, compartment or receptacle in or on board the ship;

- require the master of the ship to produce a record book required by the Act to be carried in the ship or any other books, documents or records relating to the ship or its cargo that are carried in the ship;

- make copies of, or take extracts from, any such books, documents or records;

- require the master of the ship to certify that a true copy of an entry in a record book required by this Act to be carried in the ship made by the inspector is a true copy of such an entry;

- examine, and take samples of, any substances on board the ship;

- and require a person to answer questions.

Penalties are provided for persons who refuse or fail to comply with a requirement made of the person by an inspector (maximum $8,000) or making a false or misleading statement (maximum $20,000).

With the assistance of the Director of Public Prosecutions, instructions have been issued to inspectors on the correct method of taking oil samples. The instructions cover issues such as conduct of interviews, preparation of evidence and sampling techniques.

Analysts

A significant factor in any prosecution is the matching of oil samples taken from the polluted area with those taken from the accused vessel. Prior to 1968 oil spills were analysed primarily by physical methods such as wax and asphaltene content, pour point, viscosity and API gravity. Considerable work was carried out in the UK and US during the 1970s and today the antiquated petroleum tests have been discarded in favour of capillary gas chromatography, mass spectrometry, fluorescence spectroscopy and biomarkers. For the submission of evidence in court, AMSA has appointed 16 analysts from nine laboratories around Australia.

Insurance for Penalties

As mentioned above, MARPOL 73/78 imposes obligations on the Contracting Parties to establish sanctions against the violation of the relevant discharge provisions. Penalties specified under the law of a Party are to be adequate in severity to discourage violations of the Convention and be equally severe irrespective of where the violations occur. Similar provisions with the aim of effective enforcement of applicable international rules and standards are contained in Article 217(8) of the Law of the Sea Convention.
International efforts to improve by technical and legal measures the deterrence against violations are hampered by the well-established practice of international transport insurers to cover penalties imposed on the basis of due process against owners, masters, or crew members for MARPOL violations.

Germany has recently introduced domestic legislation prohibiting national insurance companies from offering such contracts. Germany has expressed the view at IMO that international insurance activities which cover the risk of individual penal responsibility in the field of marine pollution, thus making any effectiveness of MARPOL-like enforcement measures illusory, should gradually be eliminated by using all appropriate means provided by domestic law and in cooperation with other nations.

This issue is still being considered at IMO.

**Jurisdiction**

A landmark decision of the High Court in the Seas and Submerged Lands Act case of 1975 (NSW v. Commonwealth (1975) 135 CLR 337) affirmed the complete sovereign power and rights of the Commonwealth Parliament over offshore areas of Australia, that is from the low water mark outwards. The result of that was that the Commonwealth Parliament has the power to override all State legislation in the area. Some of the consequences of this decision, which left many of the States’ powers in doubt, were reversed by the Offshore Constitutional Settlement (OCS).

The OCS was enshrined in legislation in 1980 and effectively gives the States and the Northern Territory jurisdiction over the territorial sea and the Commonwealth jurisdiction over the high seas. One feature of the OCS was a recognition by the States that a mechanism was required to enable Australia to become a party to key international maritime conventions without the need for the legislation in every Australian jurisdiction to be in compliance at the time of ratification. The concept of the "savings clause" was introduced whereby Commonwealth law giving effect to the Conventions would apply in all jurisdictions, but would "step back" if and when a State enacted the provisions itself. This gave States time to enact parallel legislation at its own pace or, indeed, choose not to do so at all. Examples of this device can be found in the majority of Commonwealth Protection of the Sea legislation.

In November 1990 Australia's territorial sea was extended from three to twelve nautical miles from the baselines, although State and Northern Territory jurisdiction remains at three nautical miles by virtue of the Coastal Waters (State Powers) Act 1980 (Cwlth). The greater part of the baseline is the low water line along the coast.

The remainder of the baseline consists of straight lines as follows:

- lines across the mouths of rivers which flow directly into the sea;
difficulties with enforcement

the marpol convention distinguishes two enforcement situations. one whereby the discharge rules have been violated within the jurisdiction of the coastal state. this refers to the territorial sea, the internal waters and in certain cases the exclusive economic zone (eez) of a coastal state. in these maritime zones the coastal state is authorised to either proceed against such a ship or to send a report to the flag state. in the majority of cases, action is left up to the flag state.

the second situation is the one whereby the coastal state detects the violation and is unable to establish where it was committed or determines it was committed outside jurisdiction (high seas). in this case the coastal state cannot proceed but must inform the flag state of the alleged violation. it is up to the flag state to examine whether the violation has effectively been committed and whether this is an illegal act under its law.

for a coastal state, initiating action against foreign vessels is not easy. a prosecutor will firstly have to determine whether the alleged violation has taken place within the jurisdiction of the country. if witnesses identify a ship discharging forbidden substances it may not be a problem since, in that case, it is relatively simple to determine the location. however, in other cases it may be more difficult. for example, if the master has not maintained the appropriate entries in the ship's oil record book, questions may be raised as to where this offence took place. a master would tend to state that it has taken place on the high seas, and thus subject to the (possibly more clement) jurisdiction of the flag state. a prosecutor would submit that it occurred in the port of call since the oil record book should have been in order at that time.

once the judge has solved this problem he or she will then need to determine whether the violation of rules has been proven. this is the most difficult part of the task.

marpol generally prohibits discharges higher than 15 parts per million. with a significant number of incidents in australian waters being reported by aircraft (see figure 3), samples can rarely be obtained for laboratory analysis of oil content.

to address this global enforcement problem, in 1991 the netherlands ministry of transport, public works and water management conducted extensive tests during which oily mixtures with different oil concentrations were discharged into the sea. observations of these discharges were made from the discharging vessel (visual) and from a coast guard aircraft (visual and with remote sensing equipment). the report of the tests concluded that:
a discharge of an oily mixture with a concentration of 15 ppm can under no circumstances be observed, either visually or with remote sensing equipment; and

the lowest concentration of oil present in the discharge of an oily mixture where the first traces were visually observed from the aircraft was 50 ppm.

It remains to be seen how the courts will view this report as evidence.

Future Directions

AMSA has proposed legislation which will, based on the United Nations Law of the Sea Convention (UNCLOS), ensure that a vessel suspected of causing marine pollution can be detained and released after providing security to cover estimated penalties and clean-up costs.

The proposed legislation will comply with the safeguards relating to enforcement action in respect of foreign ships listed in Articles 223-233 of UNCLOS. Several aspects of these safeguards have implications for existing means of enforcement, such as inspections or the institution of legal Proceedings.

It is proposed that the legislation enable AMSA to detain a ship in the following circumstances:

- where a foreign vessel is voluntarily in port or at an off-shore terminal and there are clear grounds for believing that the vessel has breached the pollution provisions of the Act in the EEZ or in the territorial sea;

- where a foreign vessel is in the territorial sea, and there are clear grounds for believing the vessel has breached the pollution provisions of the Act while navigating in the territorial sea;

- where a foreign vessel is in the EEZ or in the territorial sea and there is clear objective evidence that the vessel has breached the pollution provisions of the Act in the EEZ and that the (suspected) breach has resulted in a discharge which has caused or threatens to cause major damage to the coastline or related interests, or to any resources of the territorial sea of EEZ.

An offence will be created for the master and owner of a detained ship which leaves Australian waters before it is released from detention.

The legislation will, in accordance with Article 226 of UNCLOS, provide that the Authority shall not detain a ship longer than is essential for purposes of investigation. A provision will provide that a ship that has been detained must be released if:
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- security is provided in a form acceptable to the Authority to the maximum amount of penalties that can be imposed under the Act against the owner or master in relation to the discharge and any amount that might, in the opinion of AMSA, be recoverable under the cost recovery provisions;
- proceedings are instituted but discontinued;
- proceedings are instituted and concluded without the master or owner being convicted;
- proceedings are concluded and all costs and expenses ordered to be paid and all penalties imposed have been paid;
- the Authority has sought to recover costs and expenses incurred as a debt due and the amount has been paid;
- the Authority believes that the discharge did not occur from the ship; or
- the Authority determines for any other reason that the ship should be released.

It is also proposed to include provisions consistent with UNCLOS to extend the application of the Protection of the Sea (Prevention of Pollution from Ships) Act 1983 to pollution incidents occurring within Australia's soon to be proclaimed EEZ.

References


