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The new EU Directive on port reception facilities for ship-generated waste and cargo residues: an evaluation

A Carpenter and S M Macgill
School of the Environment, University of Leeds, United Kingdom

Abstract

The aim of this paper is to evaluate the new (summer 2000) EU Directive on port reception facilities for ship-generated waste and cargo residues. Five key elements of this Directive are considered with respect both to their potential effectiveness relative to existing practices, and to suggested weaknesses. The elements are: the mandatory provision of reception facilities in all ports; the mandatory use of such facilities by all ships; notification requirements on all ships; a mandatory common charging system; and compliance provisions. On the basis of this analysis, conclusions are drawn about the effectiveness of the new EU Directive as an instrument for preventing marine pollution. Additional recommendations are made in light of weaknesses that are identified.

1. Introduction

The new EU Directive on Port Reception Facilities is due to be signed in the summer of 2000, and to come into force 18 months later. It has been developed in furtherance of the MARPOL Convention 1973 to "achieve the complete elimination of intentional pollution of the marine environment by oil and other harmful substances and the minimization of accidental discharges of such substances"[1] and to "protect the marine environment from operational pollution by ships, regardless of flag, with a view to eliminating such pollution" [2] (page 2). Its focus is on the operation of ships in community ports, as distinct from the regulation of discharges at sea, this latter being the primary focus of MARPOL 73/78.

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The key elements of the proposed EU Directive are:

(1) Mandatory provision of port reception facilities. All ports will be required to "develop waste reception and handling plans ....for the reception and treatment of waste and residues"[2] (page 3), to "estimate the needs of ships (normally) visiting them" and to "take appropriate measures to meet those needs". It retains MARPOL's obligation not to cause undue delay to ships using port reception facilities.

(2) A mandatory discharge principle. Subject to certain exceptions, all vessels will be required to discharge ship-generated waste before leaving a Community port, unless it is demonstrated that storage capacity for such waste is sufficient. In the latter case, ships' masters will be required to prove legitimate reason for not using facilities; failure to do so will result in detention in port until delivery of waste has taken place.

(3) Notification requirements. Ships will be required to report information, in advance to their next port of call, on storage capacity, amount and type of waste on board, and intention to use reception facilities. This will allow ports to arrange adequate facilities and should assist enforcement.

(4) A common charging system. Ports are to establish cost recovery systems which encourage the use of facilities while at the same time placing the burden of costs on ships (in line with the polluter pays principle). The detail of the system will be at the discretion of each Member State subject to certain general principles. The fee system should not provide incentive for discharge of waste at sea and all vessels should contribute to the cost of facilities.

(5) Compliance and monitoring. Spot checks will be carried out on vessels deemed unlikely to use facilities or which have not notified a port in advance. Under this inspection system, vessels which have not complied with waste delivery requirements will not be allowed to proceed until discharge has taken place. Ships which have complied, but have been delayed as a result of inadequate facilities, shall have a right to compensation to cover any losses incurred by that delay.

Each of these elements will be considered in turn, with respect to existing practices, and alternative possibilities.

2. Mandatory Provision of Port Reception Facilities

The Directive is intended to strengthen MARPOL's provision (Annex 1 to Regulation 12, to which 109 states are currently signatory, covering 94% of world tonnage) [3] for the requirement for port reception facilities, with member states undertaking to "ensure the provision at oil loading terminals, repair ports, and in other ports in which ships have oily residues to discharge, of facilities for the reception of such residues and oily mixtures as remain from oil tankers and other ships adequate to meet the needs of the ships using them without causing undue delay to ships."

The need for reception facilities in the North Sea area was further emphasised with the granting of special area status to the North Sea by the Marine Environment Protection Committee (MEPC) of the International

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Maritime Organization (IMO), at its 40th Session in 1997 [4] Special status means that the number of vessels legally able to dispose of waste oil has been significantly reduced in the North Sea, and only in exceptional cases [1] (pp53-56) will discharge be allowed. These include securing the safety of a ship or saving life at sea and, in specific cases, discharging oil or oily mixture resulting from damage to a ship or its equipment.

The overall aim of the IMO, MEPC and MARPOL 73/78 has been to reduce the amount of oil-water mixtures for disposal (for example through the introduction of segregated ballast tanks and crude oil washing), and to ensure that facilities are available on shore for receiving the oily wastes that remain. This latter need has been taken up by the proposed new EU Directive.

Port reception facilities have actually been available in some North Sea ports for a considerable period of time, even prior to the introduction of MARPOL 73/78. In the Netherlands, Van de Laar [5] indicates that reception facilities came into being as early as 1932 when Shell started operating in Amsterdam and Rotterdam to import crude oil. When the price of oil was high, such facilities were well utilised because ship owners received money for oil (including waste) and so came into port to sell it. They were introduced as a service to industry; not because Government wanted them. Van de Laar [5] also indicates that services are now contracted out to private companies and are not owned by Ports.

In the case of the UK, Lee [6] indicates that there have been reception facilities in all major UK ports for a considerable period of time; at least 30 years. In addition, ports which do not have facilities on site may contract them in when requested to do so. Facilities can range from the provision of waste bins where oily rags from engine rooms can be disposed of, to large tanks into which oily bilge water can be pumped. They can be fixed in a port and ships will be required to give notice of their requirement to use them, as they may be limited to specific berths in that port. Facilities can also be brought in from external contractors and here it is possible for ships' agents or masters to arrange for facilities to be made available without necessarily informing the port of that requirement. As a result, any records kept by a port on usage of reception facilities may be patchy, and data on amounts of waste oil disposed of are unlikely to be accurate.

In order to determine the availability of reception facilities in MARPOL signatory states, in December 1983 the MEPC decided to issue a questionnaire to ports. The six waste facility categories covered in the survey were: dirty ballast water; tank washing (slops); oily mixtures containing chemicals; scale and sludge from tanker cleaning; oily bilge water; and sludge from fuel oil purifier. Figures 1 and 2 summarise findings for selected countries from the series of questionnaires run since 1985 [7].

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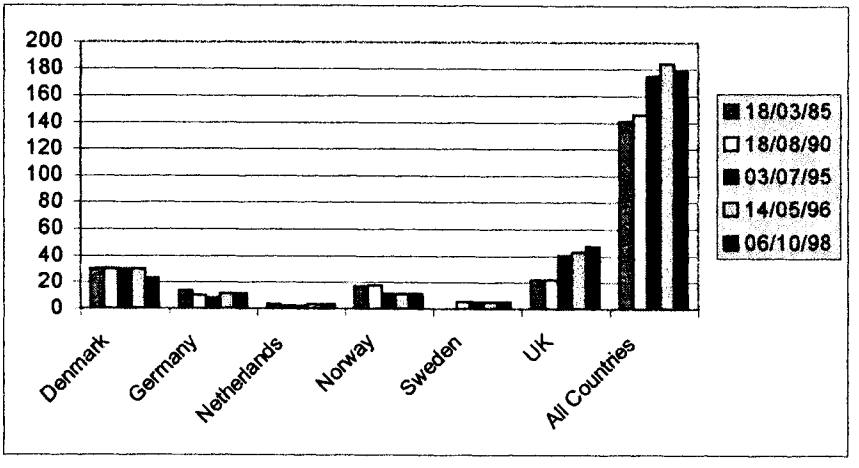

Figure 1: Number of ports with all facilities

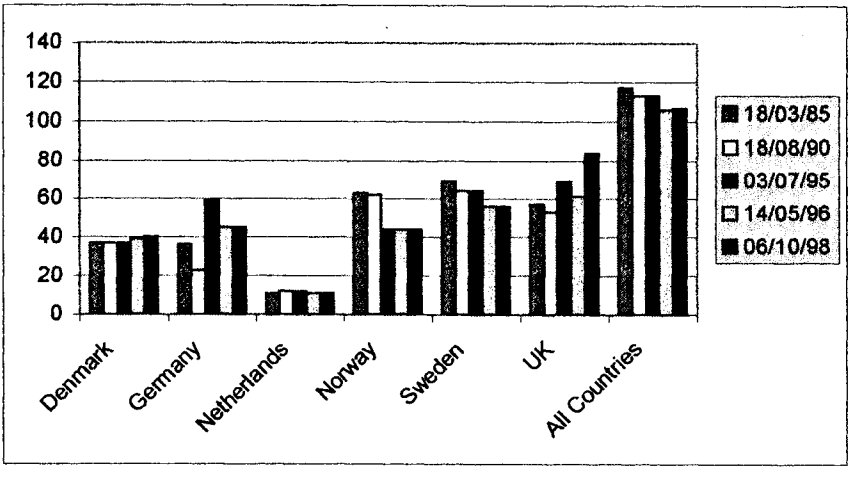

Figure 2: Number of ports with only one or two categories of facilities

There are evidently some significant gaps in the data from this survey, and this in turn highlights a crucial shortcoming for the proposed new EU Directive: unless the EU knows exactly which ports do, and which do not, have facilities, then it will not be in a position of ensuring that they are available for all the vessels that are supposed to use them.

3. Mandatory Discharge Principle

An inspection system will be required to ensure that vessels do not leave port without discharging waste. This is not new. The system of Port State Control Inspections under the aegis of the Paris Memorandum of Understanding (MOU) [8] which covers all aspects of ship and crew safety, to ensure compliance with the relevant international treaties and conventions, including MARPOL 73/78. One aspect of these inspections is to check that oil is not being disposed of illegally.

Mitchell [9] indicates that this system was adopted in 1982 by fourteen European states as a means of enforcing oil pollution regulations and meeting MARPOL's requirement for each member state "to inspect 25 percent of the ships entering its ports". Under this inspection system, ships' masters are required to keep accurate records of how they disposed of oil - including type, volume, and disposal location - and are informed of the facilities available in ports.

As this system of inspection already exists, it should be possible to adapt it to the requirements of the proposed Directive, making use of the same agencies to carry out both Paris MOU inspections and also those specifically for port reception facilities.

It will require the use of the system of ship logbooks - currently used on oil tankers and showing how much oil is carried, what type, where it is held, where it is offloaded – to be extended to a much greater range of vessels and waste types. Vessels entering European waters for the first time will be issued with such a logbook and will have to keep it up to date, even if they then visit European ports infrequently.

In addition, the Directive indicates that vessels can be detained in port if they do not make use of facilities, should an inspector consider that they do not have capacity to carry any more waste. This gives whoever undertakes the inspections considerable power to cause delay to a vessel, and the question can be asked whether a vessel's owner can sue that inspector if detention results in loss of business.

4. Notification

Amendment 1 to the draft Directive [10] sets out the requirement for ships to give ports advance notice (normally between 24 and 48 hours) of their need to use facilities. At the same time, it states that "waste from fishing vessels and recreational craft certified to carry fewer than 12 people may be handled ... without prior notification". By making facilities accessible without notice, it should be easier for smaller vessels to use them during regular visits to ports, rather than having to make specific arrangements in advance, particularly if their activities mean that being tied to a specific date or time could result in financial loss.

This issue is of particular importance since it is the wide range of smaller vessels travelling through the North Sea that are generally viewed as the main culprits in generating deliberate oil pollution in the North Sea. Greenpeace

[11] estimated that "of the 25% of oil pollution arising from shipping ... 28% can be ascribed to involuntary operations and 72% to deliberate ones". In other words, the majority of oil pollution from ships at that time came from the deliberate dumping of waste oil, the majority being from smaller vessels

The reasoning here is that, although these ships have very limited amounts of waste, ranging from oily rags to oily waste in the engine room, and while the quantities of such waste will be very small, such waste can be expensive for smaller vessels to dispose of, both financially and in terms of time and effort required to do so. Dumping of oily waste from smaller vessels is therefore likely to have a cumulative effect, building up gradually in the environment and making it very hard to monitor in terms of its source and impacts. The provision for small vessels to use facilities without notice could accordingly be very significant in terms of pollution reduction, as long as facilities are available where they are actually needed. Small harbours may well not have any facilities; absence of reliable data makes it impossible to ascertain the actual position at the present time.

5. Common Charging System

The proposed EU Directive makes clear that the burden of cost of provision of adequate reception facilities should be borne by ships visiting ports. One of the most significant amendments to the original draft of the EU Directive states that "all ships calling at a port of a Member State shall contribute significantly, i.e. at least 90% of the costs..." of port reception facilities including treatment and disposal of waste ."...irrespective of actual use of the facilities" [10] (page 8).

Olsen [12] has previously evaluated three broad types of charging model: Direct Cost Recovery; Non-Special Fee; and Free of Charge. Direct Cost Recovery is currently the most commonly used approach (it is in operation in the UK and the Netherlands, for example). Independent, certified contractors receive the waste, with ships either contacting them directly or arranging for a port to do so on their behalf. Ships are then invoiced for the costs of disposal. The only charge to the port is that of licensing and inspection of the contractors. These costs are often passed on to the ships in the form of a small levy. Problems with this approach are that it may promote illegal dumping as ship owners seek to avoid disposal costs, and it may encourage the use of cheap, low technology treatment and disposal methods.

Under the Non-Special Fee system (operated, for example, in Sweden) reception and treatment costs are included in harbour fees, in the belief that ships will make use of facilities they have already paid for. In this case the best available technology is often used for reception and treatment, as a means of bringing down costs through efficiency and achieving the extraction of as much oil as possible which can then be sold to recoup some costs. Problems with this approach are that ships' masters may consider that use of facilities will result in extra time spent in port, resulting in extra costs that they are unwilling to bear. In such circumstances, they may still choose to dump illegally rather than make use of reception facilities. There is also little

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incentive for introducing waste reduction measures on board ships such as maintenance of oily water separators. Some ports may choose to have only very limited or even no facilities, in the belief that ships will use other facilities en route, potentially resulting in a competitive advantage for such ports as they would have no costs to bear in this scenario.

The Free of Charge system (operated as a three year pilot project in the Bremen/Bremerhaven area of Germany between May 1988 and May 1991)was based on the belief that ships would make use of facilities if they did not have to pay for them, the costs of such facilities being borne by the taxpayers in the host country. This method should directly impact on the level of illegal discharges since there would be no costs involved in offloading in port rather than dumping at sea, and there should also be no delays to ships that are in port anyway. There should also be no impact on the competitiveness of ports. Problems associated with this method include the lack of pressure on ships to reduce levels of waste as there will be no stimulus to improve waste reduction measures on ships. At the same time, there will be no pressure on contractors or treatment plants to introduce best available technology, and ports are unlikely to use the best technology for reception and treatment since costs will be covered by the state. As a result, the level of pollution being generated may not be reduced, as would be the case under the Direct Cost Recovery Principle. Also, it may not be reasonable for the taxpayers (as distinct from the polluters) to bear the burden of costs. A fuller review of experience with these various charging approaches in different countries is given elsewhere (Carpenter and Macgill [13]).

In choosing a 'no-special-fee' system covering 90% of the cost of facilities, the EU has sought to remove any economic incentive to discharge illegally, to recover a sufficient level of cost to support progressive improvement in technology, and to achieve an equitable distribution of costs. While the EU has set out its commitment to the "Polluter Pays Principle" in Article 130(r) of the Single European Act, stating that "environmental damage should as a priority be rectified at source, and that the polluter should pay" [14] it was considered that direct application of "polluter pays" could, in this case, result in an economic incentive for discharge of waste at sea. The indirect application of 'polluter pays' has accordingly been preferred. This system should also bring the North Sea into line with a similar scheme, implemented on a voluntary basis in the Baltic Sea, under the HELCOM Agreement (1974) [15].

Introduction of the common charging system should also allow ships' masters and owners to budget much better for waste disposal as the variation of cost between different ports should be minimised. Also as a result of this, ports will be less able to manipulate charges (by charging extremely high prices to ships with waste and very low ones to those without, thereby seeking to transfer waste transfer to other ports, while bringing business into the original port by undercutting the competitors' charges). It should also help reduce claims of an "unfair playing field" where ports that have Government subsidized facilities (e.g. the German free of charge project which cost Federal government and Coastal states DM 13.50 million per annum for 3 years [16]) which might take business away from other ports. .

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The position of ports bringing in private contractors is less clear. If the ports are to charge 90% of the total cost in their harbour dues, there is the question of what proportion they pass on to contractors who will need to charge for the actual amount of waste disposed of. As a result of the Directive, ports may choose to take over these activities from contractors, retaining the 90% to invest in new infrastructure, leading to an increase in fixed facilities. Licences for private contractors to operate in particular ports may become dependent on which company will accept the smallest amount of money from the port to carry out operations. Additionally, a company granted a licence may then be forced (or be allowed) to charge higher prices for actual disposal, because their share of the 90% is insufficient to cover costs, thus removing some of the evenness in pricing that is anticipated from the Directive.

The EU also introduced the amendment that "ships producing reduced quantities of ship generated waste should be treated more favourably in the cost recovery systems ..." [10] (page 6). This should clearly result in the increasing use of cleaner technology on board ships. However, there will need to be guidelines on how much waste a particular vessel, or particular engine size, should generate during the normal course of its activities. There will also need to be data on capacity to carry waste, type of waste, type of facilities required, and so on.

In order to introduce this system, whoever inspects the vessel and decides on the level of charge will need all the above information to determine whether a particular vessel is actually producing a reduced level of waste (or the ship will have to demonstrate that it has not dumped waste in order to get a price reduction.

6. Compliance and Monitoring

Inspections are a crucial element of the proposed system, and the issue of who is going to carry them out is important. It would seem appropriate to recommend that the agencies already carrying out Paris MOU inspections on 25% of foreign flag vessels entering their ports should carry out the additional inspections. However, if the new Directive requires almost 100% of vessels to be inspected specifically for waste oil, this will require a considerably greater number of inspectors, in which case there is the issue of who is to pay for them. One possibility is for each port to pay for its own inspector(s) out of the 90% element. Smaller ports may be able to afford only 1 inspector, so this could introduce limits regarding time when facilities are available for use. There would clearly have to be inspectors in every port with facilities, if vessels calling there are supposed to make use of them.

A problem with the Directive is the requirement for frequent use of facilities. The paperwork generated on board a ship travelling to and fro across the North Sea could be increased considerably. If an inspector has to notify the next port of call that a vessel still has waste on board, this again increases administrative costs and activities.

At the same time, an additional system exists to monitor the effectiveness of the EU Directive in reducing oil pollution at sea, namely the monitoring of

oil slicks at sea undertaken by the Bonn Agreement (1983) [17] Aerial Surveillance Programme. Under this agreement, contracting parties are required to "request the masters of all ships flying their flags and the pilots of aircraft registered in their countries" to report any oil slicks seen in the North Sea. Figures resulting from surveillance flights are available for the period 1986 to 1998 [18] and the results of aerial surveillance carried out during that period is shown in Figure 3.

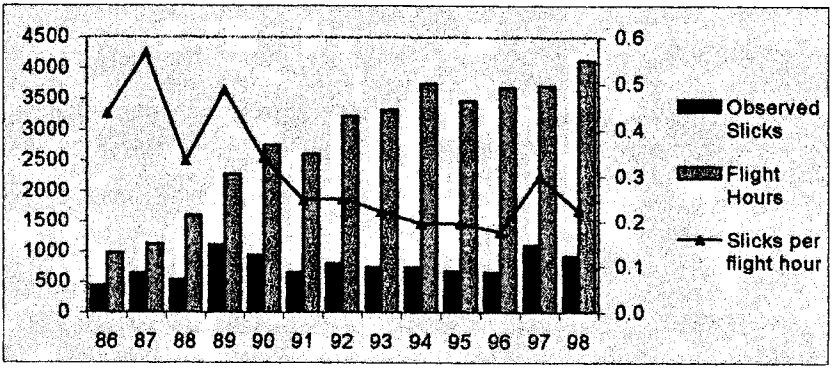

Figure 3: Bonn Agreement Aerial Surveillance Results 1986-1998

As can be seen, the number of flight hours has more than quadrupled during the period covered by this chart (977 in 1986 compared with 4126 in 1998). At the same time, the number of reported slicks has approximately doubled over the same period, with some exceptions such as 1989 and 1997 (425 in 1986 compared with to 1104 in 1989 and 1997, and 922 in 1998). The ratio of slicks observed to flight hours has fallen from 0.44 slicks per hour in 1986 to 0.22 slicks per hour in 1998. By continuing the activities undertaken under this surveillance scheme, it may be possible to use this system as a means of identifying reduced levels of oil pollution at sea resulting from the implementation of the new Directive.

7. Conclusions and recommendations

A major stumbling block of MARPOL has been the lack of accurate data regarding the availability of facilities, and this issue may also undermine the proposed EU Directive, unless new steps are taken. In order for the EU to provide accurate information to vessels wishing to make use of facilities, it is recommended that a survey of all EU ports be undertaken in order to obtain the most up to date information possible. It is important not only to know what is available, but also to know what is not. Ports should be required to provide information whether or not they have any facilities.

By keeping such survey information up to date, it will then be possible to identify growth in availability of facilities, and also to compare with data about recorded pollution incidents, thus providing the opportunity to identify how

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successful port reception facilities actually are in reducing disposal of waste oil at sea.

Once such data is available, an EU-wide database could be developed, including a telephone contact point in each country, so that vessels can obtain up to date information on availability, notification periods, capacity of facilities and contact points to arrange use. This would make it easier for a vessel's master to plan ahead and to decide exactly which ports to visit.

At the same time, such a system will help satisfy the requirement for notification of need to use facilities and, in addition, will help with compliance and monitoring. Inspection teams can be put in place at larger ports where facilities are available but, in the case of smaller ports, there may be a need for one inspector to cover several. If the notification element is strengthened, then inspectors can arrange to be present as required, rather than being permanently based in a port. Monitoring at sea will, it is assumed, continue to be conducted under the Bonn Agreement, providing information which should help to identify how effective the proposed Directive is in the long term.

As previously stated, vessels will need to notify the next port of call about their waste. They will also need to keep accurate records of how they dispose of waste oil. At the same time, there will be a need for inspectors to know how much waste oil a particular type of vessel or engine size should generate, and also for account to be taken of vessels producing reduced levels of waste so that they may receive more favourable treatment. There will clearly be a considerable administrative burden on ports and national agencies conducting inspections, at least in the short term.

In order for the Directive to be implemented efficiently, a database will be required for use by inspectors, providing information on the above issues. Ports will also need to be informed of those vessels which can receive favourable treatment or arrange some method of reimbursing such vessels at a later date.

In order for the EU to show that it has achieved its aim of protecting the marine environment from operational pollution by ships by making use of port reception facilities, much better information is required than is currently available. By identifying where and what facilities are or are not available now, and by monitoring both increases in availability and levels of uptake once the Directive has come into force, the EU should be able to obtain firm data on the effectiveness of these facilities.

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