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**Ships and marine technology —  
Marine environment protection —  
Arrangement and management of port  
waste reception facilities**

*Navires et technologie maritime — Protection de l'environnement  
marin — Disposition et gestion des installations portuaires de  
collecte des déchets*

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## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2. [www.iso.org/directives](http://www.iso.org/directives)

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The committee responsible for this document is ISO/TC 8, *Ships and marine technology*, Subcommittee SC 2, *Marine environment protection*.

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## Introduction

The development of adequate Port Reception Facilities (PRFs) for ship generated waste and cargo residues is a major element in the management of each of the shipboard waste streams covered by the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL) Annex 1 to VI, as amended, excluding Annex III (packaged dangerous goods). MARPOL requires that Party States ensure the provision of adequate reception facilities in ports to receive these wastes. Parties to MARPOL are encouraged to develop implementing legislation and should consider incorporating regional and intergovernmental legislation.<sup>1)</sup> However, due to operational, ownership, geographic, and legislative differences in ports, there is a large disparity in how operations are conducted. In order to overcome some of the major issues, IMO, through its Flag State Implementation (FSI) Subcommittee developed an action programme to tackle the inadequacy of port reception facilities.

This International Standard provides a method for addressing ship generated waste and cargo residues from when it is delivered from the ship to how it is managed ashore. The provision, operation and use of PRFs are inherently linked, so this International Standard addresses the design of the PRFs, and their operation and management. It is designed to be used by ports and terminals with existing PRFs which aim to refine their systems; it is also to be used by new ports and terminals that are developing PRFs.

To obtain the most efficient management of waste and to reduce the time and resource burden in segregating and handling waste in the ports, the concept of waste minimization has been integrated into this International Standard by incorporating the following basic principle:

- For waste generated aboard a vessel:

“Prevention before recycling before energy recovery before disposal”

- Once the waste is landed ashore:

“Avoidance before reduction before reuse before recycling before incineration with energy recovery before disposal”

Ship owners and operators, cargo owners, and port and terminal owners and operators, along with governments, are aware of the importance of well organized and managed waste collection, especially with respect to health and safety onboard ships and at ports and terminals. It has been acknowledged at the IMO that standard methodologies for waste management both onboard ships and ashore at PRFs would harmonize practices and ensure a smooth delivery of ship generated waste to shore-side facilities.<sup>2)</sup> The parties to the Basel Convention also support the development of this International Standard and have requested the Secretariat to continue its cooperation with ISO with the objective of including the Basel Convention requirements of waste minimization and environmentally sound management in this International Standard.

ISO has published ISO 21070, which provides a methodology for ships to segregate their garbage, Thus, port facilities worldwide may therefore expect a certain level of segregated ship generated waste. However, ISO 21070 cannot work alone and needs to be complemented by a parallel International Standard for reception of the waste. This International Standard assists in the planning for the provision of an appropriate PRF.

Many ports and terminals have invested much in achieving ISO 14001 Environmental Management Systems accreditation. This International Standard is also meant to complement ISO 14001 by adding a port component which extends the principles of ISO 14001 to ships' waste management in ports. It provides a specific methodology that any port, harbour, terminal or marina can apply to the planning, development and operation of its PRF. This International Standard can be incorporated easily into

1) An example of intergovernmental legislation is “Directive 2000/59/EC of the European Parliament and of the Council of 27 November 2000 on port reception facilities for ship-generated waste and cargo residues”. Regional arrangements between countries or ports to jointly provide facilities have also been agreed.

2) This has been reflected in the FSI Action Programme, Work Item 3.2 “Equipment/Technology – Standardize garbage segregation requirements and containment identification.”

other plans for achieving ISO 14001 accreditation, as an extension that focuses on PRFs. Conversely, the processes put in place during the preparations for ISO 14001 accreditation will assist in meeting the development of a holistic Port Waste Management Plan (PWMP) under this International Standard.

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# Ships and marine technology — Marine environment protection — Arrangement and management of port waste reception facilities

## 1 Scope

Parties to MARPOL are obligated as Port States to ensure that port reception facilities (PRFs) adequate to meet the needs of the ships using them without causing undue delay are provided at their ports and terminals. MARPOL does not seek to regulate the management of ship generated waste at ports and terminals beyond the reception facility requirement. However, ports and terminals must observe any national and regional regulations. While these regulations exceed the scope of MARPOL, the IMO recognizes the need to manage ship generated waste at ports and terminals as part of an environmentally sound management approach for avoiding, minimizing and eliminating pollution from ships.

This International Standard applies to the management of ship generated waste regulated by MARPOL that is discharged at ports and terminals. It also covers principles and issues that should be considered in the development of a port waste management plan (PWMP), its implementation and PRF operations. The operation of any PRF is governed by the principles and procedures included in the PWMP. The procedures to operate the PRF and the development of a PWMP are closely linked and therefore are integrated into this International Standard.

This International Standard addresses the principles and issues that should be considered in:

- The development of a port waste management strategy;
- The design and operation of PRFs;
- PWMP development, implementation and compliance; and
- PRF management and accountability.

This International Standard has been designed to be used by ports of any size and capability. It does not give specifics on the size or location of PRFs in each port, but provides a list of principles to be considered and applied to any size or type of port or terminal (e.g. marina, fishing port, container terminal, oil terminal, roll on/roll off terminal, cruise terminal, ferry terminal, bulk or general cargo terminal, ship repair or recycling facility, and offshore terminal). This International Standard can also be used by those ports that have entered into regional arrangements for the provision of their PRF, or inland ports and marinas, providing that the definition of waste and its management in the national legislation of the facility are referenced accordingly. Many ports already have systems in place that work efficiently; therefore this International Standard can be used by ports with existing PRFs as well as new ports or existing ports developing new PRFs.

## 2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 21070:2011, *Ships and marine technology — Marine environment protection — Management and handling of shipboard garbage*

## 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

**3.1  
adequacy**

<PRFs> meeting the needs of ships normally calling at the port, without providing ships with a disincentive to use them, without causing undue delays, and contributing to the protection of the environment

[IMO Circular 671]

**3.2  
cargo residues**

remnants of any cargo material on board which remain on the deck or in cargo holds or tanks following loading and unloading, including loading and unloading excess or spillage, whether in wet or dry conditions or entrained in wash water

Note 1 to entry: Does not include dust remaining on the deck after sweeping or dust on the external surfaces of the ship.

**3.3  
energy recovery**

energy reclamation from waste before final disposal

**3.4  
port**

place or geographical area consisting of infrastructure and equipment as to permit, principally, the reception of ships, including fishing vessels and recreational craft, for the loading or unloading of passengers, cargo, stores, equipment, fuel, fish from commercial or sport fishing, or for repairs or berthing or other related activities

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**3.5  
port administration**

public or private organization with the responsibility for the operation of the port

**3.6  
port authority**

organization, either private or governmental, that manages the operations of a port, in whole or part

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Note 1 to entry: Port authorities may have complete or limited jurisdiction within a geographic region.

**3.7  
port reception facility  
PRF**

any facility operating in a port, which is fixed, floating or mobile and capable of receiving ship generated waste or cargo residues in a way consistent with national, regional and local requirements

**3.8  
quarantine waste**

any solid or liquid waste determined by national, regional or local legislation to require special handling, segregation, management and final disposal due to its potential to spread disease or plant and animal pests

**3.9  
recreational craft**

boat or ship of any type, regardless of means of propulsion, that is intended for non-commercial sport or leisure purposes

**3.10  
ship**

sea-going vessel of any type whatsoever operating in the marine environment, including hydrofoil boats, air cushion vehicles, submersibles, floating craft, and fixed or floating platforms

[MARPOL Annex V]

Note 1 to entry: Ships may call at inland ports.



**3.11****ship generated waste and residue**

all wastes and cargo residues which are generated during the normal operation of a ship and fall under the scope of Annexes I, II, IV, V and VI to MARPOL

Note 1 to entry: Hazardous Waste may also be generated in the event of breakage and subsequent spillage of Annex III packaged cargos.

**3.12****terminal**

specific and distinct cargo or passenger loading and unloading facility for ships

**3.13****waste recovery**

reuse, recycling, reclamation or treatment of waste for reuse

**4 Waste management strategy elements****4.1 General**

There are three main components of any waste management strategy: administrative and legal matters; technology; and infrastructure and support services.<sup>3)</sup>

**4.2 Administrative and legal matters**

Many nations have implemented legislation, policies and national waste management strategies that govern the management of waste at PRFs, including ship generated waste. Such legislation must be considered when developing a port waste management strategy as it will determine the level of compliance that must be maintained. Additional requirements such as the need for licensing and/or approvals, and waste tracking and documentation must also be considered.

The best possible environmental solution for waste recovery and disposal should be identified. Waste management targets adopted by the national administration for ports within its jurisdiction should be included in the development of waste management strategies. If there are no such targets, then the port should consider developing them.

**4.3 Technology**

Waste management technology that is current and suitable should be employed. The technology considered as part of the waste management strategy should reflect the most current state of waste management techniques. However, the focus is shifting toward recycling and reclamation of waste, versus disposal (see 6.5). Thus, the waste management strategy should recognize and promote alternative methods of waste management that harness the benefits of new and emerging technologies.

**4.4 Infrastructure and support services**

The waste management strategy must be developed in an effective way with an awareness of the infrastructure and support services not only throughout the port or terminal, but also beyond those physical limits. There must be in place suitable waste transport organizations, recycling facilities, treatment facilities, and if necessary, final disposal sites. These treatment and disposal facilities may or may not be located within the port. Waste management strategies should also incorporate proactive mechanisms to inform and educate those having an interest in using the PRFs.

<sup>3)</sup> International Maritime Organization, 1999

## 5 Design and operation of PRFs

### 5.1 General

The types and number of ships normally calling at the port and the nature of operations must be considered. PRFs for relevant wastes need to be available without causing undue delay to ships or imposing economic or other disincentives for their use, such as prohibiting waste offload at a specific pier during cargo handling for safety reasons. Reference to the PWMP will provide options for waste stream collection and handling, and this, combined with the calculated PRF capacity, provides a foundation for the PRF design. However, for those waste volumes that could be anticipated to fluctuate widely over different periods, the provision of PRFs should be adapted appropriately. The system designed to support and operate a PRF should take into account the following core components.

### 5.2 Port characteristics

#### 5.2.1 Spatial and siting requirements

The location of PRFs should be “convenient” and not be a disincentive to use.<sup>4)</sup> The location must be suitable and sufficient to allow easy and safe use that does not impose an undue delay upon the ship. Siting considerations should include an awareness of the impact on other port operations as well as the public areas surrounding the port or terminal.

Larger ports and terminals may require higher capacities or more diverse capabilities. Construction of a new port or terminal may offer greater flexibility in design as opposed to making improvements to an existing PRF.

Regardless of the type of PRF that is chosen, the port or terminal geography and layout must be considered as part of the design phase. The best way to collect each waste stream throughout the port or at the terminal must be determined. In a compact port with large berths, garbage waste disposal bins on each quay or a direct transfer to the waste handler could be implemented. However, in certain other port configurations, it may be better to collect waste by barge. If the port is lock-bound, waste can be landed upon entry or exit at the lock.

A port or terminal with expansive space to increase operations in the future may see a rise in shipping waste volumes. This may drive a need to consider providing excess capability during PRF planning activities so as not to limit future port or terminal expansion activities.

#### 5.2.2 Types of cargo handled within the port or by the terminal

Multiple MARPOL waste reception facilities may be required. Ports or terminals that receive ships with diverse cargoes that could produce cargo residues, such as oil and noxious liquid substances, would create unique waste handling challenges.

#### 5.2.3 PRF service providers

Companies that are licensed or otherwise certified or approved to provide waste handling services should be identified and verified by the port administration or port authority. Effective port waste management goes beyond the act of receiving waste from ships. Good downstream waste management supports the intent and purpose of having PRFs.

#### 5.2.4 External factors

Extreme weather conditions or extreme tidal cycles may make it difficult to access PRF services or hinder the operation of traditional waste handling equipment.

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4) International Maritime Organization, 1999

## 5.3 Types

### 5.3.1 General

The type of PRF can vary between ports and terminals and is determined after assessing the different options.

### 5.3.2 Floating

The use of barges may have distinct advantages, as they are relatively mobile, typically have sufficient capacity to service multiple ships, and can receive most wastes. Their shallow draught allows for access in most port and terminal areas. However, sea state limitations may prevent floating reception facilities from operating at all times. Additionally, there is an added element of risk when transferring waste to a floating PRF, especially those containing oily or noxious liquid mixtures, or in ports and terminals where ship traffic is heavy and continuous in volume.

### 5.3.3 Mobile

Vehicle-borne PRFs offer speed and flexibility, particularly with respect to smaller ports, terminals or marinas. However, the capacity of vehicles such as tank trucks and traditional over-the-road garbage collection trucks may be a limiting factor when servicing large ships. This may mean a smaller number of ships can be serviced before the vehicle is full. This can cause delays and increase congestion in the already very busy ports and terminals. Furthermore, certain areas may be off limits to third party waste collection organizations due to either safety and/or security concerns, or both.

#### 5.3.3.1 Other considerations (standards.iteh.ai)

Temporary placement of containers or collection bins that are dropped off via truck and picked up at a later date, after the container/bin is full, may be an option.

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### 5.3.4 Fixed

The use of fixed PRFs might be the preferred route for locations where terminals operate their PRFs independently. Centralized PRF arrangements (e.g. at or near frequently used locks) may be considered, however, it should be recognized that such arrangements could increase the burden on ships due to scheduling requirements. In cases where specialized PRFs are needed, such as those for oily or noxious liquid mixtures, having distinct and separate PRFs at each terminal might be the best option. This arrangement will ensure that the ships having business with those terminals are provided with the appropriate type of reception facility services.

## 5.4 Waste characteristics

### 5.4.1 General

All types of ship generated waste that will be received and handled at the port or terminal must be determined. Failure to consider certain waste streams may limit the future potential of the port or terminal. Wastes may be delivered by ships in many different forms, from single compound waste streams such as oil, sewage or segregated waste, to mixed waste streams such as garbage. Ship generated wastes are discussed in [6.7](#).

NOTE See [Table A.1](#) for a listing of waste streams and treatment options.

### 5.4.2 Other considerations

- a) Not all waste streams will necessarily be produced by every ship or be discharged in every port. Additionally, in some circumstances ships may need or wish to discharge waste, such as food waste and non-harmful cargo residues that could be discharges into the sea under the provisions

of MARPOL but due to operations, company policy, or other considerations, the master of the ship chooses to discharge these wastes ashore. Therefore, the PRF should consider these additional waste streams.

- b) Ports may also have to take into account any local, national or regional legislation and guidance that requires vessels to deliver all of their waste, or part of their waste prior to departure.
- c) Special national legislative considerations may have to be taken into account when receiving ships on international voyages as opposed to domestic voyages (such as food waste or quarantine waste).
- d) Where applicable, in cases where ship generated wastes and cargo residues are considered “hazardous wastes” or “other wastes” under the Basel Convention, the requirement for environmentally sound management should be taken into account.

### 5.5 Design capacity

#### 5.5.1 General

The design of a PRF should be based on the number and types of ships calling on the port. The basic PRF capacity needed in the port or terminal, per waste stream or per ship type, can be calculated based on the expected or most probable level of traffic in the port.

#### 5.5.2 Existing ports

For existing ports and terminals the level/quantities of waste received in previous years can be used to determine PRF capacity. Additionally, if there is any anticipated change in traffic, legislation or waste management technology, then the initial figures may have to be modified.

#### 5.5.3 New ports or terminals

When designing a new port or terminal or redesigning an existing port to handle new business, or larger or different types of ships, a calculation of waste reception facility capacity must be made using estimates of the expected vessel traffic. Calculations should take into consideration the number and frequency of port calls for each type of vessel and the expected wastes that are generated aboard those vessels based on the type and size of vessel and cargo(es) handed (volumes or tonnes), the crew size, the number of passengers (if any), the average length of the voyages for inbound ships, and whether the port is a loading or unloading port or a combination.

If no data are available for a new port, the information could be obtained from other ports with similar traffic.

NOTE Annex A of ISO 21070:2011 provides information on calculation of the expected amounts of (Annex V) wastes.

### 5.6 Waste handling capabilities

#### 5.6.1 Adequacy

A fundamental consideration is to determine the waste handling capabilities needed in order to be considered adequate (see 3.1.).

#### 5.6.2 Accessibility and suitability

Suitable PRF equipment for all waste streams must be easily accessible by the ship. PRF equipment that is difficult to use and poorly arranged may create a disincentive for ships to properly dispose of their waste while at the port or terminal.