INTERNATIONAL STANDARD

ISO 16304

Second edition
2018-08

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

Reference number
ISO 16304:2018(E)

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Fax: +41 22 749 09 47
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

Page

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 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 8, *Ships and marine technology*, Subcommittee SC 2, *Marine environment protection*.

This second edition cancels and replaces the first edition (ISO 16304:2013), which has been technically revised.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

The development of adequate port reception facilities (PRFs) for ship generated waste and cargo residues is a major factor in the management of each of the shipboard waste streams covered by the International Convention for the Prevention of Pollution from Ships (MARPOL) Annexes I 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 should have developed implementing legislation to provide for PRFs. Regional and intergovernmental legislation has also been developed. However, due to operational, ownership, geographic, and legislative differences in ports, there is a large disparity in how operations are conducted. To overcome some of the major issues, the International Maritime Organization (IMO), through its implementation of IMO Instruments (III) Subcommittee (formerly the subcommittee on Flag State Implementation) developed an action programme to tackle the inadequacy of 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 minimisation has been integrated into this document by incorporating the following principles:

— For waste generated aboard a ship:

  "Prevention before recycling before energy recovery before disposal"

— Once the waste is offloaded 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-organised and managed waste collection, especially with respect to health and safety on board ships and at ports and terminals. It has been acknowledged at the IMO that standardized methodologies for waste management both on board ships and ashore at PRFs would harmonize practices and ensure a smooth delivery of ship generated waste and cargo residues to shore-side facilities. ISO 21070 provides a methodology for ships to segregate their garbage, thus, port reception facilities worldwide may expect a certain level of ship segregated waste and cargo residues. However, ISO 21070 cannot work alone and needs to be complemented by a parallel International Standard for the reception of ship generated waste. This document assists in the planning for the provision of adequate PRFs.

This document is also meant to complement ISO 14001 by adding a component that extends its principles to management of ships' waste 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. The document can be incorporated easily into other plans for achieving ISO 14001 accreditation, as an extension that focuses on PRF. 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 document.

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

1 Scope

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

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 and cargo residues at ports and terminals beyond the reception facility requirement. However, ports and terminals may need to consider national, regional and local regulations. While these regulations can exceed the scope of MARPOL, the IMO recognises the need to manage ship generated waste and cargo residues at ports and terminals as part of an environmentally sound management approach for avoiding, minimising, and eliminating pollution from ships.

In consideration of above, this document applies to the management of ship generated waste and cargo residues regulated by MARPOL that are discharged at ports and terminals. It also covers principles and issues that should be considered in the development of a 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 document.

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

— The development of a port waste management strategy;

— The design and operation of PRF;

— PWMP development, implementation and compliance; and

— PRF management and accountability.

This document has been designed to be used by ports and terminals of any size. It does not give specifics on the size or location of a PRF in each port, but provides a list of principles to be considered and applied to any size of 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). Inland ports and marinas and those ports that have entered regional arrangements for the provision of a PRF can also use this document.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at http://www.electropedia.org/

— ISO Online browsing platform: available at http://www.iso.org/obp

3.1
adequacy
meeting the needs of ships normally calling at the port by PRFs and not providing ships with a disincentive to use them, not causing undue delays and contributing to the protection of the environment

[SOURCE: IMO Circular 834]

3.2
cargo residues
remnants of any cargo material which are not covered by Annexes I, II, IV and VI of the MARPOL convention and which remain on the deck or in holds following loading or unloading, including loading and loading excess or spillage, whether in wet or dry conditions or entrained in wash water but not including cargo dust remaining on the deck after sweeping or dust on the external surfaces of the ship

Note 1 to entry: Dry bulk cargo residues may include substances that are harmful to the marine environment (HME) with special restrictions for discharges including HME entrained in cargo hold wash water. PRFs for cargo residues considered to be HME may be required at loading or discharge ports that handle dry bulk cargoes.

3.3
energy recovery
energy reclamation from waste

3.4
hazardous waste
waste which, due to its nature, physical, chemical or infectious properties, is potentially hazardous to human health

3.5
medical waste
any solid waste that is generated in the diagnosis, treatment, or immunization of human beings or animals, in research pertaining thereto, or in the production or testing of biological materials, including but not limited to isolation wastes, infectious agents, human blood and blood products, pathological wastes, sharps, body parts, contaminated bedding, surgical wastes and potentially contaminated laboratory wastes and dialysis wastes

Note 1 to entry: Medical waste is distinguished into two categories: infectious and non-infectious [WHO 2007].

3.6
port
place of geographical area consisting of infrastructure and equipment as to permit, principally, the reception of all types 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

3.7
port administration
public or private organisation or partnership with the responsibility for the operation of the port

3.8
port authority
organisation, either private or governmental, that manages the operations of a port, in whole or part

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

3.9
port reception facility/ies
PRF
PRFs
any facility or facilities operating in, or provided by, a port or terminal which is fixed, floating or mobile and is capable of receiving ship generated waste and cargo residues

3.10
quarantine waste
any solid or liquid waste that requires special handling, segregation and disposal due to its potential to spread disease, diseases, or plant and animal pests when discharged or delivered ashore

Note 1 to entry: Quarantine waste may also include food waste from galley operations and may be described as international catering waste.

3.11
recreational craft
boat or ship of any type regardless of means of propulsion that is intended for non-commercial sport or leisure purposes

3.12
ship
vessel of any type whatsoever operating in the marine environment, including hydrofoil boats, air cushion vehicles, submersibles, floating craft, and fixed or floating platforms

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

[SOURCE: MARPOL Article 2]

3.13
ship generated waste
all waste, including sewage, and residues other than cargo residues, which are generated during the service of a ship and fall under the scope of Annexes I, II, IV and VI to MARPOL and operational waste as defined in Annex V or MARPOL

3.14
terminal
specific and distinct cargo or passenger loading and unloading facility for ships

3.15
waste recovery
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.[1)]

4.2 Administrative and legal matters

Many states have implemented legislation, policies and national waste management strategies that govern the management of waste received at PRFs. Such legislation may be considered when developing a port waste management strategy, as it will assist in determining how local compliance may affect the operation of PRFs within a port. Additionally, there may be a need for licensing and/or local approvals, and the port or terminal operator should consider waste tracking and documentation.

1) International Maritime Organization, 1999.

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

4.3 Technology

PRFs should use waste management technology that is current and applicable for ship generated waste and cargo residues expected from ships using the port or terminal. Recycling and reclamation of waste is preferable to disposal (see 6.5). Therefore, any waste management strategy should recognize and promote alternative methods of waste management that utilise new and emerging technologies.

4.4 Infrastructure and support services

The waste management strategy should be developed with an awareness of the infrastructure and support services not only throughout the port or terminal, but also beyond those physical limits. There shall be in place suitable waste transport logistics, 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 PRF.

5 Design and operation of PRFs

5.1 General

The types and number of ships normally calling at the port or terminal and the nature of operations should be considered in the planning for the provision of a PRF. PRFs for relevant wastes shall be available without causing undue delay to ships or imposing economic or other disincentives for their use. The PWMP will provide options for waste collection and handling. The calculated PRF capacity and the design of the PRF provide a foundation for the PWMP. However, for those waste volumes that could be anticipated to fluctuate widely over different periods, the provision of a PRF should be adapted appropriately. The system designed to support and operate a PRF should consider the following core components.

5.2 Port characteristics

5.2.1 Spatial and siting requirements

The location of a PRF should be “convenient” and not create a disincentive for ships to use.[2)] The location shall 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 should be considered as part of the design phase. The best way to collect each waste stream throughout the port or at the terminal shall 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 to the lock.

2) International Maritime Organization, 1999.

A port or terminal that is planning to increase operations in the future may see a rise in shipping waste volumes. This may result in a need to consider providing excess PRF capability during planning 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, oily waste, and noxious liquid substance wash water could 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 a PRF.

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.

5.3 Types

5.3.1 General

The type of PRF can vary between ports and terminals and is determined after assessing the needs of users and the frequency of use.

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 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 as a number of ships can be serviced before the vehicle is full. However, the capacity of vehicles, such as tank trucks and traditional garbage collection trucks may be a limiting factor when servicing large ships. This can cause delays and increase congestion in ports and terminals. Furthermore, certain areas may be off limits to third party waste collection organisations due to either safety or security concerns, or both. Also, the size of the vehicle may prohibit access to all areas of the port or terminal.

5.3.3.1 Other considerations

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.

5.4 Waste characteristics

5.4.1 General

All types of ship generated waste and cargo residues that will be received and handled at the port or terminal shall be identified. Failure to consider certain waste streams may limit the services that the port or terminal may be able to provide. Wastes may be offloaded by ships in many different forms, from single waste streams such as oil, sewage or segregated waste, to mixed waste streams such as garbage. Annex A provides further information on types of ship generated waste and cargo residues.

NOTE See Annex A for a listing of waste streams and treatment options.

5.4.2 Other considerations

Not all waste streams will necessarily be produced by every ship or be offloaded in every port. Additionally, in some circumstances ships may need or wish to offload waste, such as food waste and cargo residues that could be discharged into the sea under the provisions of MARPOL but due to operations, company policy, or other considerations, the master of the ship chooses to offload these wastes ashore. Therefore, the PWMP should consider the following:

a) Some ports or terminals may require ships to offload all, or part of, their waste prior to departure.

b) Some port or terminals may treat waste from ships on international voyages differently than waste from ships on domestic voyages (such waste may include quarantine waste, international catering waste or food waste from galley operations).

c) Ship generated waste and cargo residues may include hazardous waste or other wastes determined to be harmful to the marine environment.

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, regulation 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 shall be made using estimates of the expected ship traffic. Calculations should take into consideration the number and frequency of port calls for each type of ship and the expected wastes that are generated aboard and delivered ashore based on:

— The type and size of ship;

— Cargo(es) handled (volumes or tonnes);

— The crew size, the number of passengers (if any);

— The average length of voyages for inbound ships; and

