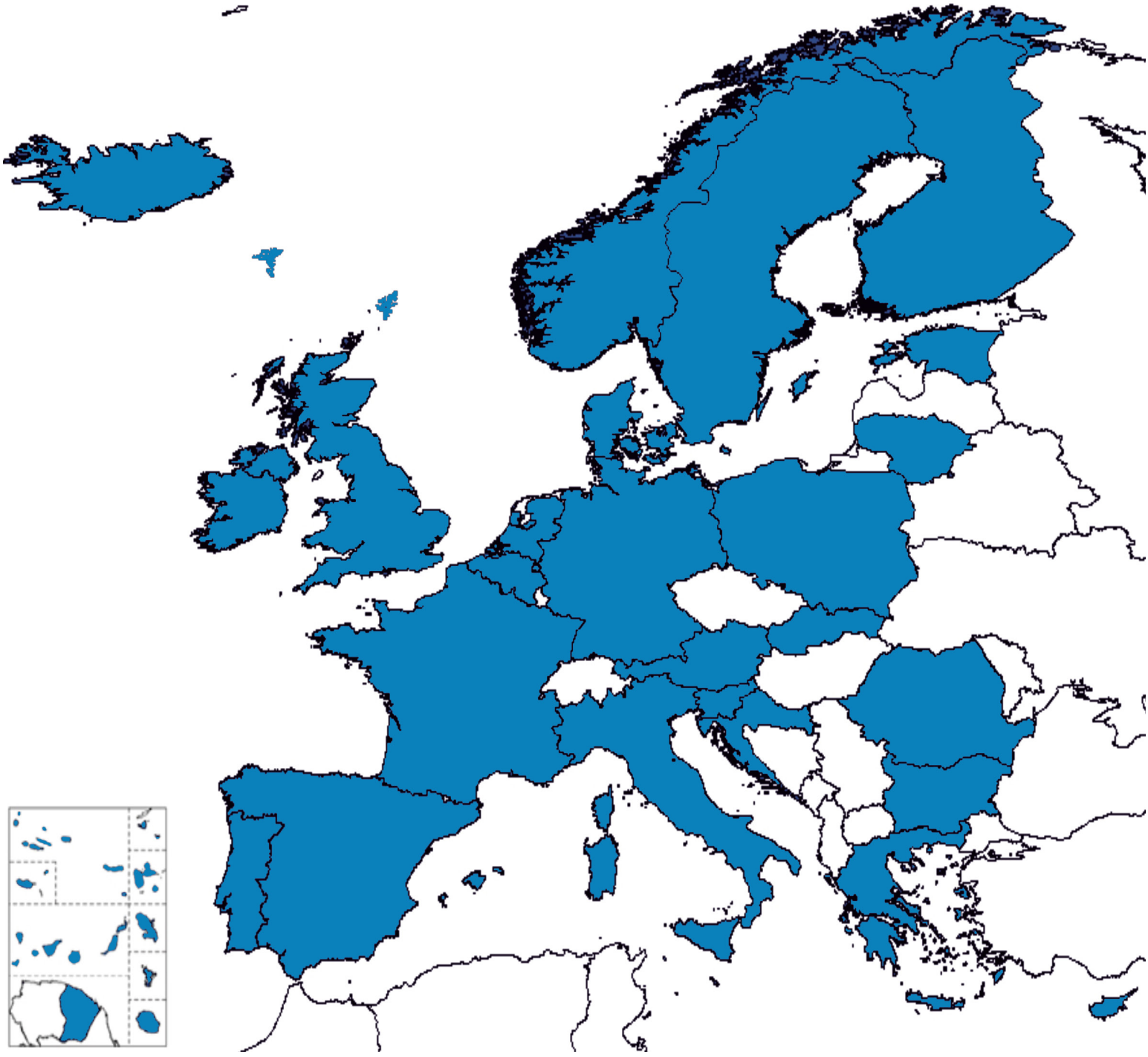
European Manual
for Hygiene Standards
and Communicable Disease Surveillance on Passenger Ships



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EU SHIPSAN ASSOCIATION
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European Manual for Hygiene Standards and Communicable Disease Surveillance on Passenger Ships

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Both editions 1 and 2 can be downloaded from https://www.shipsan.eu/.

Edition 3 can be downloaded from https://shipsanassociation.shipsan.eu/.

Below is the QR code providing access to the website of the EU SHIPSAN Scientific Association.

Changes introduced in this manual compared to the second edition are highlighted in yellow.

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Abbreviations

ACH	Air Changes per Hour
AGE	Acute Gastroenteritis
APS	Automatic Pump Shut-Off
ARI	Acute Respiratory Illness
ASME	American Society of Mechanical Engineers
BWMS	Ballast Water Management System
CCP	Critical Control Point
CCTV	Closed-Circuit Television
CFU	Colony Forming Unit
CL	Critical Limit
CLIA	Cruise Lines International Association
CT	Concentration × Time
CXR	Chest X-Rays
DoC	Declaration of Compliance
EC	European Commission
ECC	European Cruise Council
ECDC	European Centre for Disease Prevention and Control
ELDSNet	European Legionnaires' Disease Surveillance Network
EPIET	European Programme for Intervention Epidemiology Training
EU	European Union
EUMS	European Union Member States
EWGLI	European Working Group on *Legionella* Infections
EWRS	Early Warning and Response System
FAO	Food and Agriculture Organization
FCV	Feline Calicivirus
FDA	Food and Drug Administration
FIFO	First In — First Out
GDS	Gravity Drainage System
GHPs	Good Hygiene Practices
GI	Gastrointestinal Illness
HACCP	Hazard Analysis and Critical Control Point
HEPA	High Efficiency Particulate Air
HNIG	Human Normal Immunoglobulin
ICW	International Catering Waste
IHR	International Health Regulations
ILI	Influenza-Like Illness
ILO	International Labour Organization
IMDG	International Maritime Dangerous Goods
IMO	International Maritime Organization
IPM	Integrated Pest Management
ISO	International Organization for Standardization
IWA	International Water Association
LEG	Legal Requirement
MARPOL	International Convention for the prevention of pollution from ships
MDH	Maritime Declaration of Health
MMR	Measles-Mumps-Rubella
MMRV	Measles-Mumps-Rubella and Varicella
MNV	Murine Norovirus
NTU	Nephelometric Turbidity Unit
OMP	Outbreak Management Plan
PHA	Port Health Authority
PPE	Personal Protective Equipment
PVC	Polyvinyl Chloride
QUAT	Quaternary Ammonium Compound
RSV	Respiratory Syncytial Virus
RWF	Recreational Water Facilities
SARI	Severe Acute Respiratory Illness
SCF	Ship Communication Form
SDH	Ship Declaration of Health
SDS	Safety Data Sheet

SOLAS	Safety Of Life At Sea
SOPs	Standard Operating Procedures
SSCC	Ship Sanitation Control Certificates
SSCEC	Ship Sanitation Control Exemption Certificates
ST	Recommended Standard
SVRS	Safety Vacuum Release System
TALD	Travel-Associated Legionnaires' Disease
TMV	Thermostatic Mixing Valve
UV	Ultra Violet
VOCs	Volatile Organic Compounds
VPD	Vaccine-Preventable Disease
VSP	Vessel Sanitation Program
WHO	World Health Organization
WSP	Water Safety Plan

Table of contents

i. Introduction

Passenger shipping in Europe is a vital mode of transport and tourism. Maritime passenger traffic recorded over 395 million passengers embarking and disembarking in European ports in 2023 (1). With more than 5,000 km in European ferry routes, in 2023 there were 212 million passengers transported reflecting national and international ferry services (1, 2). Over 240 cruise ships operate across Europe calling more than 400 ports in the region (3). More than 16 million cruise passengers travelled through European ports in 2023, of which approximately eight million were from Europe (1, 4). In 2022, over 400 river cruise vessels operated in Europe (5).

A considerable proportion of the European population travels on modern ships, which are becoming increasingly complex, designed to carry larger number of passengers and crew while offering diverse experiences. From short-voyage ferry trips to the rising popularity of themed voyages and expedition cruising, this range highlights differences in both travel services and operational challenges.

Competent authorities of countries and ship companies faced unprecedented challenges during the COVID-19 pandemic. These experiences emphasised the need for maintaining preparedness through evidence-based practices. Routine operations in passenger ships must also include effective measures to prevent and control communicable diseases, and emerging research and evidence should be continuously used to review and update existing guidelines.

Recent reviews of scientific literature and epidemiological studies demonstrate that outbreaks of respiratory infections – such as COVID-19 and influenza – as well as gastroenteritis including norovirus, are some of the most frequently reported communicable diseases on large passenger ships. However, other diseases including Legionnaires' disease, measles, and varicella, as well as vector-borne and sexually transmitted infections have been linked to passenger ship travel. This highlights the importance of balancing context-specific guidelines with a generic approach to disease prevention and control, addressing all types of known and unknown events.

Examples of risk factors commonly reported for the spread of infections like COVID-19, influenza and norovirus include having an ill cabinmate and ill travellers embarking. Underreporting of symptoms among travellers has also been observed. These findings show the importance of strict traveller compliance with prevention and control measures, such as individual isolation and immediate symptom reporting before and during voyages. Evidence from passenger ship outbreaks indicates that a multi-layered approach should be considered, applying a set of prevention and control measures in combination. Written procedures, trained crew, and ensuring passenger and crew compliance with measures are considered essential elements for the implementation of effective outbreak prevention and control.

Ships move continuously from one country to another where different standards of sanitation are required. These differences can cause administrative difficulties for competent authorities of countries, as well as for ship companies, when trying to deal with the prevention and control of communicable diseases on board ships. Therefore, there is a need for standards regarding health-related issues, which can be adopted and accepted by all European Union Member States (EUMS).

The EU SHIPSAN project (No A/790577) study revealed a diversity of approaches and practices in the conduct of ship inspections, differences in the competencies of inspectors and in the legislation applied during inspections, as well as a lack of communication and training among many EUMS. Common inspection tools at the European level for hygiene inspection practices and port-to-port communication were recommended.

This document is Deliverable No 8 produced under work package 5 of the EU SHIPSAN TRAINET project. Ten working groups were established for the development of this document with participants/experts from 17 European countries. The European Centre for Disease Prevention and Control (ECDC), the World Health Organization (WHO), the International Maritime Organization (IMO) and the US Vessel Sanitation Program (VSP) also provided input. The European Cruise Council (ECC), the Cruise Lines International Association (CLIA) and individual cruise and ferry companies have also contributed to the development of this document.

The content of the European manual for hygiene standards and communicable disease surveillance on passenger ships (hereinafter called "manual") was based on expert opinion consensus reached during working group meetings and on EU legislation and International Health Regulations 2005 (IHR) requirements. The EU SHIPSAN project (No A/790577) study results, literature review and analysis of collected data on policies, guidelines and practices implemented by the EUMS were also used to develop this manual.

The EU SHIPSAN TRAINET project put into action a pilot implementation of the manual in 2010-11, before producing the first edition, which was published in October 2011.

The second edition of the manual was produced after a second pilot implementation phase conducted in 2013 and 2014 in the framework of the EU SHIPSAN ACT Joint Action. Since 2016 the second edition of the manual has been used to conduct routine inspections on board passenger ships sailing in the European ports. A grading system was designed for passenger ship inspections conducted according to the manual under the EU HEALTHY GATEWAYS joint action. The grading system was pilot-tested in 28 ships from September to December 2018.

The current edition of the manual builds on the work of the Horizon research and innovation project HEALTHY SAILING and was revised to take into consideration the latest legal requirements, evidence-based guidelines and research.

ii. Purpose and audience of the manual

This manual incorporates hygiene standards based on EU legislation and brings together best practice guidelines for passenger ships sailing within European waters.

The purpose of this manual is to collaborate with the industry and competent authorities in developing and implementing comprehensive hygiene programmes, using current legislative frameworks, in order to minimise the risk of communicable diseases. It also provides guidance on communicable disease surveillance on board ships. Compliance with the hygiene standards and best practice guidelines of the manual can help to improve and maintain: a) the hygiene level on board passenger ships sailing to or within the EU waters; b) the level of compliance with hygiene standards that are included in the

existing EU legislation; and c) the safety of food, water and environmental conditions for passengers and crew.

This manual is intended for passenger shipping companies and public health inspectors in European ports, who are responsible for passenger ship inspections. Hygiene inspections of passenger ships are conducted by assessing conditions observed against the criteria contained within Chapters 1 to 10, of Part A of this manual, excluding the Annexes.

The EU SHIPSAN Scientific Association provides training based on this manual to port health officers of the competent authorities, as well as ships' crews, in order to promote consistent inspection practices in EUMS and to help industry with the implementation of EU legal requirements and recommended standards.

iii. Manual structure and format

This document consists of two parts:

Part A describes the standards for hygiene inspections and communicable disease surveillance on board ships. These standards are a compilation of existing legislation, procedures and best practice. Each chapter of the manual starts with a short introduction and continues with the detailed description of legal requirements and recommended standards. For each legal requirement or recommended standard, a numbered short phrase has been provided on the left side of the page. On the right side of each page the abbreviations "LEG" (legal requirement) or "ST" (recommended standard) are provided in order to assist the user to easily distinguish legal requirements from recommended standards. Legal requirements are necessities that must be implemented on board in order to comply with EU and international legislation. Recommended standards represent good practices, which are not currently legislated but the implementation of which will help ensure a high level of hygiene. References to legal documents of the EU and international legislation are provided at the end of each chapter. For each item, next to the numbered short phrase provided on the left side of the page, a designation of "R" or "R*" has been provided:

- "R" indicates that the item is applicable to river cruise ships.
- "R*" indicates that the item is applicable to river cruise ships in a modified form, as detailed in **Annex 1** (page 254).
- Items that do not apply to river cruise ships carry no designation and are marked with "–".

Part B includes guidelines for the prevention and management of communicable disease on board passenger ships. Specific guidelines are given for dealing with Acute Respiratory Illness (ARI), including specific guidance during a pandemic, vaccine-preventable diseases, Legionnaires' disease and gastroenteritis.

iv. Administrative procedures

The administrative procedures below are designed to be used by the trained, authorised inspectors of competent authorities who conduct the inspections against the criteria set out in the manual. They

will also be of use to the passenger ship industry in preparing for inspections. The detailed administrative procedures are described in **Annex 2** (page 263).

Participating authorities

The competent authority in an EUMS that participates in the inspections in accordance with this manual has the following responsibilities: a) make the necessary arrangements for inspections in accordance with the procedures described in the manual and the local rules applicable at the port; b) authorise inspectors to conduct inspections in accordance with the manual; and c) participate in developing the inspection schedule at European level.

Inspection team — competency and authorisation

Only officers authorised as competent in their own EUMS and received additional training for the manual implementation (e-learning, face-to-face and on the job), conduct the inspections. The criteria for the inspectors' qualifications who are involved in the inspections have been developed by the EU SHIPSAN ACT Joint Action (**Annex 2**, page 263). Professional activities, educational qualifications, ability to communicate effectively with the ship crew, previous experience, continuing professional development and scientific activities formed the basis of the criteria for appointing the inspection team members (**Annex 2**, page 263). The inspection team in each country is appointed by the EUMS, taking into consideration the criteria developed by the EU SHIPSAN ACT Joint Action.

In particular, inspections in accordance with the manual are conducted by trained inspectors who have received training (e-learning, face-to-face and on the job) by the EU SHIPSAN Scientific Association, EU SHIPSAN ACT or EU SHIPSAN TRAINET project and fulfil the criteria included in the competency framework (**Annex 2**, page 263). The competent authority has agreed to participate in the inspections of passenger ships according to the manual. The inspector agrees to conduct the inspection according to the code of conduct included in **Annex 3** (page 267).

An inspector has the following responsibilities: a) conducts inspections in the port or ports in his/her own EUMS based on the European manual for hygiene standards and communicable disease surveillance on passenger ships and according to the code of conduct (**Annex 3**, page 267); b) prepares inspection reports and records the inspection findings in the EU Common Ship Sanitation Database (formerly known as EU SHIPSAN ACT Information System); c) participates in meetings and with inspectors of other EUMSs organised by EU SHIPSAN Scientific Association.

Technical expert (trainer/observer): a person who provides specific knowledge or expertise to the inspection team. Specific knowledge or expertise is that which relates to the organisation, the process or activity to be inspected, or language or culture. A technical expert does not act as an inspector in the inspection team but only gives guidance and advice during the inspection. The technical expert also provides guidance to the inspectors on how to complete the inspection report and record the inspection findings in the EU Common Ship Sanitation Database.

Inspectors-in-training will also participate in the inspections. Inspectors-in-training may participate in inspections only after successfully completing at least the e-learning course.

Inspection team is one or more inspectors conducting an inspection according to the manual, supported if needed by technical experts. One inspector of the inspection team is appointed as the inspection team leader. There must be at least one fully trained inspector in the team. The inspection team may include up to six members, e.g., two trainers/observers, two fully trained inspectors and two inspectors-in-training.

The inspection team shall undergo periodic refresher training. Regular meetings or teleconferences shall be held to promote consistency and standardisation of inspection procedures and to minimise subjective interpretation of the manual's provisions.

Newly authorised inspectors should participate in a minimum number and type of inspections together with competent and experienced authorised inspectors, before conducting inspections according to the manual.

Auditing of the inspection activities of personnel by EU SHIPSAN Scientific Association experts and/or experienced inspectors are organised on selected inspections.

Frequency of inspections

It has been decided that the frequency of routine inspections is specified as one inspection every six months or according to the specific criteria defined by EU SHIPSAN Scientific Association. When scheduling inspections, a target factor developed by EU SHIPSAN ACT Joint Action is applied when possible.

Standardisation of inspections

Inspection procedures are described in **Annex 3** (page 267). The use of a standardised inspection form (inspection outlines) during the inspection is considered necessary in order to ensure consistent implementation of inspection procedures, to reduce the subjectivity of the implementation of standards, and to record the inspection findings in a consistent manner. Standardised inspection forms (inspection outlines) are used for each chapter of the manual (food safety, potable water safety, etc.). The inspection outlines are based on the hygiene standards included in the manual and generally based on existing European legislation. Inspectors consider also the summary table describing all record keeping included in the manual, which can be found in **Annex 4** (page 277).

The standardised inspection report includes findings which are based on both legal requirements (LEG) and recommended standards (ST) as these constitute the overall standards. Part B of this manual is for guidance only and will not form part of inspections. Annexes provide supplementary material that can help both inspectors and the passenger shipping industry.

Grading system for the inspection results

The inspection results are graded (A, B, C, D). When a ship obtains a D grade, it is considered that it has failed the inspection and a follow-up inspection will be conducted (**Annex 3**, page 267). Inspection reports and inspection grades are reviewed by EU SHIPSAN Scientific Association.

Deficiencies related to Ship Sanitation Control Certificates/Ship Sanitation Control Exemption Certificates (SSCC/SSCEC) under the IHR

If the port is authorised to issue Ship Sanitation Certificates according to IHR 2005 the results of the inspection according to the manual may be utilised to issue a SSCC/SSCEC, if this is requested by the master of the ship or the competent authority.

Any legal requirement included in this manual, which represents "evidence of infection or contamination" as defined in the IHR (2005), should be recorded in the SSCC/SSCEC as set out in the IHR (2005) (6). These deficiencies will be noted in the SSCC/SSCEC issued at the time (during a joint inspection according to the manual and SSCC/SSCEC inspection) by the inspectors.

When it is decided that a ship is an affected conveyance, as defined in the IHR the inspecting authority can implement health measures, using their national public health legislation and/or the requirements set out in the IHR.

When needed the competent authority may also implement additional health measures, such as refusal of the departure of the ship, refusal of entry of the ship, isolation of the ship, in order to prevent the international spread of diseases. Where such additional measures are used they should be reported to the national authority responsible for implementing the IHR (the IHR National Focal Point). If a country implements such additional health measures, which 'significantly interfere'* with international traffic they must provide the WHO with the public health rationale and relevant scientific information to justify this action. WHO will then share this information, and information about the health measures implemented, with other countries and organisations.

Inspection categories

The definition of an "inspection" used in this manual is based on the Regulation (EC) No 854/2004, but has been modified since ship inspection involves not only food but water, waste management, Legionnaires' disease prevention and other issues of public health importance.

"Inspection" means the examination by competent authorities of establishments and the processing thereof, of businesses, and their management and production systems, including documents, finished product testing, of the origin and destination of production inputs and outputs, in order to verify compliance with the legal requirements in all cases (Regulation (EC) No 854/2004). Inspections according to the manual will also include assessment of compliance with legal requirements and recommended standards set out in part A, Chapters 1 to 10 of this manual. Annexes provide supplementary material that can help both inspectors and the passenger shipping industry. Guidelines are included in part B of the manual and do not form part of the inspection standards.

The following types of inspections can be conducted according to the manual: 1) routine short notice inspections, 2) follow-up inspections, 3) other types of inspections. Routine inspections are conducted according to the specific frequency required (see paragraph "Frequency of inspections" on page 5). Follow-up inspections will be conducted in the following circumstances: a) when the ship receives unsatisfactory inspection result, b) in order to check specific critical deficiencies cited during the

* 'Significant interference' generally means refusal of entry or departure of a ship on an international voyage, or its delay, for more than 24 hours.

previous routine inspection. The day of follow-up inspections will be determined by the severity of the non-conformities observed. In any case, any follow-up inspections will be conducted no later than four weeks after the previous routine inspection, when this is feasible, by the competent authority. Other types of inspections will be conducted in case of complaints or during outbreak investigations.

Corrective action

A corrective action statement (**Annex 5**, page 282) detailing each deficiency identified during the inspection and the corrective action taken should be submitted to the EU Common Ship Sanitation Database. The corrective action statement should be submitted within 21 days after receiving the final inspection report. The corrective action statement may contain requests for clarification of items noted on the inspection report.

Corrective actions will be based upon the specific manual legal requirements and recommended standards.

Protection of data confidentiality

Special provisions have been made to protect the confidentiality of data, by using software and by adopting policies to protect the network and the network-accessible resources from unauthorised access. Each user will need a unique password to access the data and will have different levels of access depending on authorisation given to them. This will help to protect sensitive data from companies, authorities and other persons.

The ships/shipping companies will have full access to their own data and will be able to analyse this information.

Reference list

1. Eurostat. Maritime passenger statistics [updated November 2023]. [Available from: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Maritime_passenger_statistics].
2. European Marine Observation and Data Network (EMODnet). Map of the Week – Ferry Routes updated 4 September 2020]. [Available from: https://emodnet.ec.europa.eu/en/map-week-ferry-routes-0].
3. Cruise Lines International Association. Strategic Agenda for the European Cruise Industry 2024 - 2029 - Decarbonisation & Competitiveness. (Accessed 13 March 2025). [Available from: https://europe.cruising.org/wp-content/uploads/2024/05/brochure_mars_2024.pdf].
4. Tourism Economics for Cruise Lines International Association. Economic Contribution of Cruise Tourism to Europe 2023. (December 2024). [Available from: https://cruising.org/sites/default/files/2025-03/CLIA_Europe_2023.pdf].
5. Central Commission for the Navigation of the Rhine - Market Observation Inland Navigation in Europe. Annual Market Observation Report on Inland Navigation in Europe: 2023 Edition. (25 October 2023). [Available from: https://www.inlandwaterwaytransport.eu/annual-market-observation-report-on-inland-navigation-in-europe-2023-edition/].
6. World Health Organization. International Health Regulations (2005) as amended 2014, 2022 and 2024. (19 September 2025). [Available from: https://www.who.int/health-topics/international-health-regulations#tab=tab_1].

PART A

Legal requirements and recommended standards for hygiene and communicable disease surveillance

Definitions

General

Bulkhead: A transverse wall within a ship for interior compartmentalisation and/or division.

Cleaning: The removal of soil, residues, dust, grease or other objectionable matter [CAC/RCP39, 1993].

Competent authority: Any authority in a EUMS that is responsible for public health and hygiene inspections or communicable disease surveillance of passenger ships (e.g., port health authorities).

Deck: Any of the various underfoot platforms built into a ship, equivalent to floor.

Deckhead: The underside of the deck, equivalent to ceiling.

Disinfection: The reduction, by means of chemical agents and/or physical methods, of the number of microorganisms in the environment, to a level that does not compromise safety or suitability [FAO, 2003].

Hazard: A biological, chemical, physical or radiological agent that has the potential to cause harm [Regulation (EC) No 178/2002].

International voyage: A voyage between points of entry in the territories of more than one country, or a voyage between points of entry in the territories of the same country if the ship has contacts with the territory of any other country on its voyage but only as regards those contacts [IHR, 2005].

Legal requirements: Necessities that must be implemented on board in order to comply with EU legislation.

Passenger ship/ship: Any seagoing or inland passenger ship (with more than 12 passengers) on an international voyage, sailing within the EU waters, providing accommodation and/or food (other than "prepacked" food items that are prepared on a licensed premise ashore) to passengers, and/or potable water from the ship water distribution system to passengers.

Personal Protective Equipment (PPE): All equipment designed to be worn or held by the worker to protect him against one or more hazards likely to endanger his/her safety and health at work, and any addition or accessory designed to meet this objective [Council Directive 89/656/EEC].

Recommended standard: Good practice not currently legislated, but their implementation is appropriate and required for maintenance of a good standard of hygiene. This definition includes appropriate alternative means or equivalent methods that achieve a comparable result.

Risk: A function of the probability of an adverse health effect and the severity of that effect, consequential to a hazard [Regulation (EC) No 178/2002].

River cruise ship: Any river cruise ship (with more than 12 passengers) on an international voyage, sailing within the EU inland waterways, providing accommodation and/or food (other than "prepacked" food items that are prepared on a licensed premise ashore) to passengers, and/or potable water from the ship water distribution system to passengers.

Medical facilities and capabilities

Contingency port: The port for which interoperability of the ship's contingency plan and the port's contingency plan has been ensured, and agreed that any potential public health emergency on board this ship will be managed at this port, e.g., complete evacuation of the ship if needed and isolation/quarantine of cases/contacts (the turnaround port is usually the contingency port) (Mouchtouri et al., 2021).

Hygiene Plan: A plan designed for medical facilities and equipment that includes appropriate provisions of disinfection, sterilisation, hand hygiene, laundry, medical waste management and correct use of personal protective equipment.

Public Health Emergency Contingency Plan: A set of actions to prepare for emergencies from all hazards and to help minimise their impact. These actions include the development, implementation, simulation, monitoring and regular update of risk-based contingency plans (WHO, 2018). It addresses common infectious diseases on board including the Gastroenteritis Outbreak Management Plan (OMP), the Medical Isolation and Quarantine Plan and the Hygiene Plan, and arrangements for a contingency port.

Communicable disease surveillance

Case: Any person with a reportable illness as listed in **Annex A** of the ship communication form (**Annex 12**, page 302) or a person with a syndrome that is listed in **Annex 12** (page 302) of the ship communication form or any person who has died on board (otherwise than as a result of accident, regardless of cause).

Communicable disease: An infectious disease caused by a contagious agent, which is transmitted from person to person by direct contact with an infected individual or by indirect means such as exposure to a vector, animal, fomite, product or environment, or exchange of fluid, which is contaminated with the contagious agent [Regulation (EU) 2022/2371].

Contact tracing: Measures to identify persons who have been exposed to a source of a serious cross-border threat to health, and who are in danger of being infected or being infectious or who have developed a communicable disease, through manual or other technological means, to rapidly identify potentially newly infected persons who may have come into contact with existing cases, in order to reduce further onward transmission [Regulation (EU) 2022/2371].

Epidemiological surveillance: The systematic collection, recording, analysis, interpretation and dissemination of data and analysis on communicable diseases and related special health issues [Regulation (EU) 2022/2371].

Infection: The entry and development or multiplication of an infectious agent in the body of humans and animals that may constitute a public health risk [IHR, 2005].

Isolation: Separation of ill or contaminated persons or affected baggage, containers, conveyances, goods or postal parcels from others in such a manner as to prevent the spread of infection or contamination [IHR, 2005].

Quarantine: The restriction of activities and/or separation from others of suspect persons who are not ill or of suspect baggage, containers, conveyances or goods in such a manner as to prevent the possible spread of infection or contamination [IHR, 2005].

Serious cross-border threat to health: A life-threatening or otherwise serious hazard to health of biological, chemical, environmental or unknown origin, which spreads or entails a significant risk of spreading across the national borders of EU Member States, and which may necessitate coordination at EU level in order to ensure a high level of human health protection [Regulation (EU) 2022/2371].

Syndrome definitions

Table 1: Syndrome definition

Syndrome category	Definition	
Acute Respiratory Illness (ARI)	Acute onset of at least two of the following four respiratory symptoms of presumed viral aetiology: a) fever/ feverishness; b) cough; c) coryza (nasal congestion or runny nose); d) sore throat; and/or a) confirmed acute respiratory infection diagnoses of COVID-19*; b) influenza†; and c) Respiratory Syncytial Virus (RSV)‡ infection. The aforementioned excludes *Streptococcal pharyngitis*, Epstein-Barr virus infection, diagnoses of bacterial pneumonia: either clinical or test-positive (e.g., by urine *Legionella* antigen, urine *Streptococcus pneumoniae* antigen), and non-infectious conditions as determined by the ship's medical doctor (e.g., allergies) [CDC, 2023].	
Acute Gastroenteritis (AGE)	Acute gastroenteritis (without bloody stools)	Acute diarrhoea (three or more episodes of loose stools (without blood) in a 24-hour period or what is above normal for the individual, e.g., individuals with an underlying medical condition that may affect interpretation); or Vomiting and at least one of the following symptoms: one or more episodes of loose stools in a 24-hour period (without blood), abdominal cramps, headache, muscle aches, fever [EU SHIPSAN ACT joint action, 2016].
	Acute gastroenteritis (with bloody stools)	Acute diarrhoea (three or more episodes of loose stools (with blood) in a 24-hour period or what is above normal for the individual, e.g., individuals with underlying medical condition that may affect interpretation); or Vomiting and at least one of the following symptoms: one or more episodes of loose stools in a 24-hour period (with blood), abdominal cramps, headache, muscle aches, fever [EU SHIPSAN ACT joint action, 2016].
Other syndromes	Fever and rash	Fever and skin rash.
	Haemorrhagic fever	Fever and bruising or bleeding or petechiae.

* *Confirmed COVID-19 means laboratory confirmation for SARS-CoV-2, by detection of SARS-CoV-2 nucleic acid in a clinical specimen, or identification of SARS-CoV-2 antigen in a clinical specimen (excluding self-tests performed outside healthcare settings), or isolation of SARS-CoV-2 from a clinical specimen [ECDC, 2024].*

† *Confirmed influenza means laboratory confirmation for influenza A or B by any of the following: a) isolation of influenza virus from a clinical specimen; b) detection of influenza virus nucleic acid in a clinical specimen, c) identification of influenza virus antigen by direct fluorescent antibody test in a clinical specimen; d) influenza specific antibody response [European Commission, 2018].*

‡ *Confirmed RSV means laboratory confirmation for RSV by detection of RSV nucleic acid in a clinical specimen, or identification of RSV antigen in a clinical specimen, or isolation of RSV from a clinical specimen [ECDC, 2023].*

	Persistent fever not classified in other syndromes	Fever, lasting more than 48 hours.
	Severe Acute Respiratory Infection (SARI)	An acute respiratory infection that meets all of the following criteria: • history of fever or a measured fever of ≥ 38 °C (100.4 °F); • cough; • onset within the last 10 days; and • requires hospitalisation [WHO, 2014].
	Fever and - persistent cough or - cough with bloody sputum	Fever and a cough that is either frequent or severe and that lasts three weeks or more; or Fever and a cough with bloody sputum.
	Fever and - decreased consciousness or - confusion of recent onset	See definitions of signs and symptoms.
	Fever and - persistent vomiting (other than sea sickness)	Fever and persistent vomiting accompanied by signs of dehydration.
	Fever and - headache with a stiff neck	See definitions of signs and symptoms.
	Pneumonia	Clinical or radiological evidence of pneumonia [EU SHIPSAN ACT joint action, 2016].

Definitions of signs and symptoms used for the definition of the syndromes

Table 2: Signs and symptoms used for the definition of the syndromes

Signs and symptoms	Definition
Abdominal cramps	–
Bruising or bleeding or petechiae	Noticeable and unusual bruising or petechiae or bleeding from gums, ears, nose, or areas on the skin with no obvious explanation (such as injury), vomiting blood, or bloody stool or urine [EU SHIPSAN ACT joint action, 2016, CDC, 2017].
Coryza	Runny nose or congestion caused by inflammation of the mucous membranes of the nose [CDC, 2017].
Cough	–
Cough with bloody sputum	The person is coughing up blood [CDC, 2017].
Decreased level of consciousness	Condition of an ill person when he or she is not fully aware of the surroundings and may be confused about who he or she is, where he or she is going, or the time of day/week, does not respond normally to questions or painful sensations, or may appear to be sleepy, groggy, unresponsive or difficult to awaken [EU SHIPSAN ACT joint action, 2016, CDC, 2017].
Diarrhoea	Three or more loose or watery stools in 24 hours [EU SHIPSAN ACT joint action, 2016, CDC, 2017].
Fever	A measured temperature of 38 °C (100.4 °F) or above.

Feverishness	The sensation of a patient of having a fever, even if a high temperature is not confirmed by measurement.
Headache	The person has head pain of unusual severity [CDC, 2017].
Headache with neck stiffness	The person has difficulty moving the neck or severe pain during neck movement [CDC, 2017].
Myalgia	Muscle aches.
Persistent cough	A cough that is either frequent or severe enough to catch the attention of others on board the ship or a severe cough that lasts three weeks or more [EU SHIPSAN ACT joint action, 2016, CDC, 2017].
Persistent vomiting	The person has vomited two or more times (other than seasickness) and either expresses concern to the crew or it comes to the attention of others on board (crew or passengers) [CDC, 2017].
Sore throat	–

Skin rash	• Abnormal areas on the skin that may appear as discoloured bumps or flat spots or areas, or blisters or bumps containing fluid or pus that are intact or crusted over.
	• "Rash" includes insect bites or parasite lesions.
	• Colour: ranges from light-coloured to red or pink, purple, or black, but can also be the same colour as the person's skin tone.
	• Texture: can be flat, raised, blister-like, or crusted. In some diseases, such as chickenpox, areas with more than one of these characteristics can be found at the same time.
	• Select the most appropriate description of the rash's appearance:
	  ○ Maculopapular: A red rash with both flat red areas (macules) and small bumps (papules) that may run together.
	  ○ Vesicular/Pustular: Small bumps filled with fluid that can be clear of cloudy (vesicles) or filled with a thick, opaque fluid (pustules).
	  ○ Purpuric/Petechial: Red or purple discolourations caused by bleeding under the skin or mucous membranes; they do not blanch or fade with pressure. Petechial lesions appear as small, reddish freckles, while purpuric lesions cover larger areas.
	  ○ Scabbed: Lesions that are crusted over.
	• Pattern: Can be disconnected (discrete) or run together (confluent).
	• Location: May include one area of the body, such as the face, or more than one area [EU SHIPSAN ACT joint action, 2016, CDC, 2017].

Vomiting	–

Outbreak: The occurrence of cases of disease with a frequency in excess of what would normally be expected (for the specific itinerary and time). Normal expectancy is determined from historical/baseline data for the ship. A single case of a communicable disease long absent from a population or caused by an agent (e.g., bacterium or virus) not previously recognised in that community or area, or the emergence of a previously unknown disease, may constitute an alert for a possible outbreak and should be reported.

Outbreak definition for acute respiratory illness: An increase in the number of cases of acute respiratory illness above the number normally occurring on that ship over a defined period of time and itinerary.

Outbreak definition for gastroenteritis: An increase in the number of cases of gastroenteritis above the number normally occurring on that ship over a defined period of time and itinerary.

Threshold for reporting outbreaks of gastroenteritis: For reporting purposes, two different thresholds should be used. An initial report (**Annex 12**, page 302) should be prepared and sent to the competent authority at ports when the percentage of reportable gastroenteritis cases reaches 2 % or more among passengers or 2 % or more among crew. A second report should be sent when the number of reportable gastroenteritis cases reaches 3 % or more among passengers or 3 % or more among crew.

Food safety

Approved/nominated suppliers: A company or a person that supplies the ship with safe foodstuffs which complies with European legislation standards [Regulation (EC) 852/2004].

Bivalve molluscs: Filter-feeding lamellibranch molluscs [Regulation (EC) 853/2004].

Contamination: The presence of environmental, chemical, biological or physical hazards in food, in water, or in other inanimate objects (for example, eating utensils, linens, surgical instruments) that can lead to potential health risks [VSP, 2025].

Critical Control Point (CCP): A step at which control can be applied and is essential to prevent or eliminate a food safety hazard or reduce it to an acceptable level [FAO and WHO, 2023].

Critical Limit (CL): A criterion, observable or measurable, relating to a control measure at a CCP which separates acceptability from unacceptability of the food [FAO and WHO, 2023].

Cross-contamination: The contamination of a food product from another source. There are four main ways that cross-contamination can occur: i) food to food, ii) equipment or work surfaces to food, iii) people to food and iv) pests to food.

Domestic ungulates: Domestic bovine (including *Bubalus* and *Bison* species), porcine, ovine and caprine animals, and domestic solipeds (horses) [Regulation (EC) 853/2004].

Eggs: Eggs in shell — other than broken, incubated or cooked eggs — that are produced by farmed birds and are fit for direct human consumption or for the preparation of egg products [Regulation (EC) No 853/2004]. Eggs used in catering are predominantly chicken, although duck, quail and others can be used.

Equipment: An article that is used in the operation of a food business (passenger ship food operation) such as a freezer, grinder, hood, ice maker, meat block, mixer, oven, reach-in refrigerator, scale, sink, slicer, stove, table, temperature measuring device for ambient air, vending machine, or dishwasher. Equipment does not include apparatus used for handling or storing large quantities of packed foods that are received from a supplier in an encased or overwrapped lot, such as hand trucks, forklifts, dollies, pallets, racks, and skids [FDA, 2022].

Fishery products: All sea water or freshwater animals (except for live bivalve molluscs, live echinoderms, live tunicates and live marine gastropods, and all mammals, reptiles and frog) whether wild or farmed and including all edible forms, parts and products of such animals [Regulation (EC) No 853/2004].

Food business operator: The natural or legal persons responsible for ensuring that the requirements of food law are met within the food business under their control [Regulation (EC) No 178/2002].

Food business (ship food operation): Any undertaking, whether for profit or not and whether public or private, carrying out any of the activities related to any stage of production, processing and distribution of food [Regulation (EC) No 178/2002].

Food contact material: Materials and articles, including active and intelligent food contact materials and articles, which in their finished state:

- are intended to be brought into contact with food; or

- are already in contact with food and were intended for that purpose; or
- can reasonably be expected to be brought into contact with food or to transfer their constituents to food under normal or foreseeable conditions of use [Regulation (EC) No 1935/2004].

Active materials and articles intended to come into contact with food: Materials and articles that are intended to extend the shelf-life or to maintain or improve the condition of packaged food. They are designed to deliberately incorporate components that would release or absorb substances into or from the packaged food or the environment surrounding the food [Regulation (EC) No 1935/2004].

Intelligent materials and articles intended to come into contact with food: Materials and articles which monitor the condition of packaged food or the environment surrounding the food [Regulation (EC) No 1935/2004].

Food contact surfaces: Surfaces intended to be in direct contact with food or onto which food may drain, drip or splash.

Food handler: Any person, temporary food handlers and contractors, who directly handles packaged or unpackaged food, food equipment and utensils or food contact surfaces and is therefore expected to comply with food hygiene requirements [FAO, 1998].

Food hazard: A biological, chemical or physical agent in, or condition of, food or feed with the potential to cause an adverse health effect [Regulation (EC) No 178/2002].

Food hygiene: The measures and conditions necessary to control hazards and to ensure fitness for human consumption of a foodstuff taking into account its intended use [Regulation (EC) No 852/2004].

Food preparation area: Any area where food is processed, cooked, or prepared for service. Food preparation areas include areas where utensils are used to mix and prepare food (such as breweries and stations for carving meat and for making pizza, salad, sandwiches, and sushi) and the food is prepared and cooked (such as fryers, griddles, grills, ovens, skillets, and waffle makers) [VSP, 2025].

Foodstuff (or food): Any substance or product, whether processed, partially processed or unprocessed, intended to be, or reasonably expected to be ingested by humans. It includes drink, chewing gum and any substance, including water, intentionally incorporated into the food during its manufacture, preparation or treatment [Regulation (EC) No 178/2002].

Good Hygiene Practices (GHPs): Fundamental measures and conditions applied at any step within the food chain to provide safe and suitable food [Commission notice on the implementation of food safety management systems covering Good Hygiene Practices and procedures based on the Hazard Analysis and Critical Control Point (HACCP) principles, including the facilitation/flexibility of the implementation in certain food businesses (2022/C 355/01)].

High-risk foods: Foods that may contain and support the growth of microorganisms and are intended for consumption with or without further treatment to destroy microorganisms (e.g., cheese from pasteurised milk and cheese from unpasteurised milk, low acid foods such as mortadella, ground raw meat products such as sausages and hamburgers, raw fresh chilled or frozen meat, including poultry, products) [FAO/WHO, 2004].

Lagomorphs: Rabbits, hares and rodents [Regulation (EC) 853/2004].

Low-risk foods: Foods that are unlikely to contain pathogenic microorganisms or will not support growth of pathogenic microorganisms but due to their processing may support their growth. This category includes carbonated beverages, alcoholic drinks, coffee and tea, dried herbs, grains and grain derivatives (corn flakes), honey, sugar and bakery products [FAO/WHO, 2004].

Mandatory food information: The particulars that are required to be provided to the final consumer by EU provisions [Regulation (EU) No 1169/2011].

Meat: Edible parts of the animals including blood [Regulation (EC) No 853/2004].

Meat preparations: Fresh meat, including meat that has been reduced to fragments, which has had foodstuffs, seasonings or additives added to it or which has undergone processes insufficient to modify the internal muscle fibre structure of the meat and thus to eliminate the characteristics of fresh meat [Regulation (EC) 853/2004].

Minced meat: Boned meat that has been minced into fragments and contains less than 1 % salt [Regulation (EC) No 853/2004].

Offal: Fresh meat other than that of the carcase (body of an animal after slaughter and dressing), including viscera (organs of the thoracic, abdominal and pelvic cavities, as well as the trachea and oesophagus and, in birds, the crop) and blood [Regulation (EC) 853/2004].

Poultry: Farmed birds, including birds that are not considered as domestic but which are farmed as domestic animals, with the exception of ratites (flightless birds such as ostrich) [Regulation (EC) No 853/2004].

Prepacked food items: Any single item for presentation as such to the final consumer, consisting of a food and the packaging into which it was put before being offered for service, whether such packaging encloses the food completely or only partially, but in any event in such a way that the contents cannot be altered without opening or changing the packaging. Prepacked food does not cover foods packed on the ships premises at the consumer's request or prepacked for direct service [Regulation (EU) No 1169/2011]. Prepacked food items are prepared on a licensed premise ashore.

Products of animal origin: Food of animal origin, including: honey and blood; live bivalve molluscs, live echinoderms, live tunicates and live marine gastropods, intended for human consumption; and other animals destined to be prepared with a view to being supplied live to the final consumer [Regulation (EC) No 853/2004].

Quick-frozen foodstuffs: Foodstuffs which a) have undergone a suitable freezing process known as 'quick-freezing' whereby the zone of maximum crystallisation is crossed as rapidly as possible, depending on the type of product, and the resulting temperature of the product (after thermal stabilisation) is continuously maintained at a level of – 18 °C (– 0.4 °F) or lower at all points, and b) are marketed in such a way as to indicate that they possess this characteristic. Ice-cream and other edible ices shall not be regarded as quick-frozen foodstuffs [Council Directive 89/108/EEC].

Ready-to-eat food: The status of the food being ready for immediate consumption at the point of service or sale. It could be raw or cooked, hot or chilled, and can be consumed without further heat-treatment including reheating.

Risk communication: The interactive exchange of information and opinions throughout the risk analysis process as regards hazards and risks, risk-related factors and risk perceptions, among risk assessors, risk managers, consumers, feed and food businesses, the academic community and other interested parties, including the explanation of risk assessment findings and the basis of risk management decisions [Regulation (EC) 178/2002].

Traceability: The ability to trace and follow a food, feed, food-producing animal or substance intended to be, or expected to be incorporated into a food or feed, through all stages of production, processing and distribution [Regulation (EC) No 178/2002].

Utensils: Any of the instruments or vessels commonly used in a galley such as eating utensils (knives, forks, etc.) and baking utensils (ladle, tongs, etc.).

Validation: The process of obtaining evidence that a control measure or combination of control measures, if properly implemented in the HACCP-based procedures and by the Outbreak Prevention and Response Plan (OPRP), is capable of controlling the hazard to a specified outcome.

Verification: The application of methods, procedures, tests and other evaluations, in addition to monitoring, to determine whether a control measure is or has been operating as intended. This includes routine activities such as inspections, audits, and reviewing records to confirm that the control measures are being followed correctly and are effective.

Potable water safety

Air gap: The unobstructed vertical distance through the free atmosphere between the lowest opening from any pipe or faucet supplying water to a tank, plumbing fixture, or other device and the flood-level rim of the receptacle or receiving fixture. The air gap would typically be at least twice the diameter of the supply pipe or faucet, or at least 2.5 cm (1 in) [WHO, 2011].

Backflow: The undesirable reversal of flow of water or mixtures of water and other liquids, gases or other substances into the distribution pipes of the potable water supply of water from any other source or sources [USC Foundation for Cross-Connection Control and Hydraulic Research, 1993]. Back-siphonage and back pressure are forms of backflow.

Backflow preventer: An approved backflow prevention plumbing device that must be used on potable water distribution lines where there is a direct connection or a potential cross-connection between the potable water distribution system and other liquids, mixtures, or substances from any source other than the potable water supply. Some devices are designed for use under continuous water pressure, whereas others are non-continuous pressure types [VSP, 2018].

Control measures: An activity or process to prevent, eliminate or reduce the risk of a hazardous event to an acceptable level [WHO, 2023].

Corrective action: Action taken when operational monitoring indicates that the control measure is not working as intended [WHO, 2023].

Critical limit: An operational limit that separates acceptable performance from unacceptable performance of the control measure, triggering corrective action [WHO, 2023].

Cross-connection: Any unprotected actual or potential connection or structural arrangement between a public or a consumer's potable water system and any other source or system through which it is possible to introduce into any part of the potable system any used water, industrial fluid, gas, or substance other than the intended potable water with which the system is supplied. Bypass arrangements, jumper connection, removable section, swivel or change-over devices and other temporary or permanent devices which or because of which backflow can occur are considered to be cross-connections [WHO, 2011].

Deadleg/blind line: A length of pipe (larger than twice its diameter) closed at one end through which no water passes.

Hazardous event: An event that results in a hazard being introduced to, or inadequately removed from, the water supply [WHO, 2023].

Non-potable water: Water not intended for human consumption according to Directive (EU) 2020/2184.

Operational monitoring: The act of monitoring control measures to ensure that they work as intended, and that proper and timely corrective action is taken when predefined limits are not met [WHO, 2023].

Potable water: Water meeting the requirements laid down in Directive (EU) 2020/2184 on the quality of water intended for human consumption. According to the Directive (EU) 2020/2184, "water intended for human consumption" means:

- all water, either in its original state or after treatment, intended for drinking, cooking, food preparation or other domestic purposes in both public and private premises, regardless of its origin and whether it is supplied from a distribution network, supplied from a tanker or put into bottles or containers, including spring waters;
- all water used in any food business for the manufacture, processing, preservation or marketing of products or substances intended for human consumption [Directive (EU) 2020/2184].

Stagnant line: Pipe leading to a fitting through which water only passes when there is draw off from the fitting. This pipe is considered as a stagnant line when water remains stagnant for more than seven days.

Technical water: Water that has not been chlorinated or pH controlled onboard the vessel and that originates from a bunkering or condensate collection process, or seawater processed through the evaporators or reverse osmosis plant and is intended for storage and use in the technical water system [VSP, 2018].

Verification: The process of obtaining evidence that the WSP, as a whole, is working effectively to deliver safe drinking-water [WHO, 2023].

Water Safety Plan (WSP): A proactive risk assessment and risk management approach to help ensure drinking-water safety, encompassing the entire drinking-water supply, from catchment to consumer [WHO, 2023].

Recreational water safety

Alkalinity: A measure of the concentration of alkaline salts dissolved in the water. Total alkalinity is the water's resistance to pH changes [WHO, 2006].

Automatic controllers: A system of at least one chemical probe, a controller, and an auxiliary or integrated component that senses the level of one or more Recreational Water Facilities (RWFs) water parameters and provides a signal to other equipment to maintain the parameter(s) within a user-established range.

Backwash: The process of reversing the flow of water through a filter to clean the filter media from matter accumulation and prevent mud ball formations that can hinder filter operation.

Bathing load: The maximum number of people that are allowed to use an RWF (e.g., swimming pool), at one time, for safety and hygiene issues.

Bromine: A halogen chemical element that works as a disinfectant in pool and spa water to kill microorganisms, and oxidises ammonia and nitrogen compounds that can enter the RWF from swimmer body wastes and other sources.

Chlorine: A halogen chemical element that works as a disinfectant in pool and spa water to kill microorganisms, and oxidises ammonia and nitrogen compounds that can enter the RWF from swimmer body wastes and other sources. This is the disinfectant that is most commonly used for disinfection of potable and recreational waters.

Circulation rate: The flow rate of water to and from the pool through all the pipework and the treatment system; it is related to the turnover period [WHO, 2006].

Coagulation: The process employed to enhance the removal of dissolved, colloidal or suspended material by addition of a chemical coagulants prior to filtration. The dissolved solids are suspended out of solution and clump together forming flocs which are more easily trapped in the filter [WHO, 2006].

Combined halogen (bromine or chlorine): The substance formed when halogen combines with ammonia, other nitrogen-containing compounds and organics compounds. They are still disinfectants but 40-60 times less effective than free available halogen.

Filter: A device that separates particulate matter from water by circulation through a porous medium.

Filtration rate: A measurement of the volume of water that passes through a filter per unit of surface area in a given period of time expressed in litres/minute/square meter (gallons/minute/square foot).

Flow meter: A device that measures the flow rate of a substance through a conduit.

Free halogen (bromine or chlorine): Halogen that has not combined with ammonia or other nitrogen-containing compounds or with organic matter.

Gravity feed tank: Tank that is filled by pool water flowing by gravity only, intended as a separation element between the pool and the suction pumps [EN 13451-3].

Grille: Component to cover any opening, designed to allow the passage of water and/or air (e.g., inlet grille, outlet grille, overflow channel grille, deck level channel grille) [EN 13451-3].

Halogen demand (e.g., chlorine or bromine demand): The halogen consumed by materials in the water such as bacteria, algae, dirt, leaves and swimmers waste. The halogen demand must be satisfied before a halogen residual is available to disinfect the pool water.

Halogen residual (or disinfectant residual): The amount of halogen (chlorine or bromine) remaining in RWF after satisfying the halogen demand. The halogen residual can be expressed as free halogen residual (e.g., free chlorine); combined halogen residual (combined chlorine); or total halogen residual (that it is the total of free and combined halogen residual).

Hot tub (whirlpool spa)/spa pools: A body of water designed for sitting or lying in up to the neck, and not for swimming. It is a self-contained body of water that is filtered and chemically disinfected. Usually, a hot tub/spa pool is not drained, cleaned or refilled after each user but after a number of users or a maximum period of time. Hot tub contains hot water to 32-40 °C (90-104 °F) and has hydrotherapy jet circulation with or without air induction bubbles. Common terms for hot tub are spa pool, hot spa and whirlpool spa. Jacuzzi is the registered trade name of a specific manufacturer and should not be mistaken for a generic name for whirlpool spas or hot tubs. Some hydrotherapy pools/spa pools may have cold water.

Inlet: A device designed for introducing water/air in the pool [EN 13451-3].

Jetted tubs (whirlpool baths): They are designed for one or more bathers and are usually fitted with water jets, which can be angled in use. In addition, there is usually an air track in the floor of the bath, powered by an air-blower system and/or air may be introduced to the water jets [HSE, 2017]. Jetted tubs (whirlpool baths) can only be accessed by entering a cabin (or non-public space) and are not designed to be operated as hot tubs/spa pools [VSP, 2025].

Leisure water pools: Water pools for leisure activities such as interactive RWF and activity RWF.

mg/L: An abbreviation for milligrams per litre or parts per million (ppm), which is a concentration measurement for disinfectants and other chemical parameters such as alkalinity, chlorine, hardness, etc.

Outlet: A device designed for the extraction of water by gravity or suction [EN 13451-3].

pH: The negative logarithm of the hydrogen ion concentration, which is a measure of the degree of acidity or basicity of a solution, where value seven is neutral, higher values are more alkaline and lower values are more acidic.

Recirculation: The process of pumping water from the pool through the filter system and returning it to the pool.

Recreational Water Facility (RWF): A water facility that has been constructed, installed, or modified for the purposes of public swimming or recreational bathing. It includes but it is not limited to swimming pools, hot tubs, leisure water pools, children's pools, etc.

Sump: Vessel between the suction outlet grille and the suction outlet piping, manufactured or field built [EN 13451-3].

Swimming pool: A watertight basin, chamber or tank containing an artificial amount of water suitable for swimming, diving and recreational bathing.

Total halogen (bromine or chlorine): The sum of all active halogen compounds or otherwise the sum of free and combined halogen.

Turbidity: A measure of the cloudiness of water. It quantifies the clarity of the water expressed as Nephelometric Turbidity Units (NTU).

Turnover period: The time taken for a volume of water equivalent to the entire pool water volume to pass through the filters and treatment plant and back to the pool. It is calculated by dividing the volume of the pool by the flow rate.

Pest management

Active surveillance: The planned process of active finding of pests, signs for their presence and conditions favour their access, harbourage and reproduction. This includes but is not limited to visual determination of general hygiene levels, structural discrepancies, and signs of pest accesses/harbourages [Defense Commissary Agency (DeCA) Manual 30-22.01, Integrated Pest Management, 2025].

Harbourage: Any conditions or place where pests can live, nest or seek shelter.

Integrated Pest Management (IPM): A documented process/programme of controlling pests consisting of five steps. These include inspection, identification and establishment of threshold levels, employment of control measures and evaluation of effectiveness. To be acceptable, the control measures must be environmentally compatible [NPMA, 2006; WHO, 2007].

Passive surveillance: The passive monitoring for pests, which typically includes the placement of glue traps, glue boards, bait stations, and with respect to rodents, either snap traps or isolation traps [CDC, Health practices on cruise ships: training for Employees Transcript].

Pest: Organisms (rats, insects, etc.) which may cause illness or damage or consume or infest food products and other materials important to humans.

Pesticide (biocidal product intended for pest control): The definition of biocidal products can be found under "Hazardous chemical agents" in the Definitions section. According to the Regulation (EU) No 528/2012, the biocidal products are classified into 22 biocidal product-types including product types intended for Pest Control such as "Insecticides, acaricides and products to control other arthropods" which are products used for the control of arthropods (e.g., insects, arachnids and crustaceans), by means other than repulsion or attraction, and "Rodenticides" which are products used for the control of mice, rats or other rodents, by means other than repulsion or attraction (European Chemical Agency, https://echa.europa.eu/el/biocides). In the European Union, many pest control substances are regulated as "biocidal products" under the Biocidal Products Regulation (EU BPR). In this chapter, the broader term "pesticides" is used to reflect international terminology.

Reservoir: An animal, plant or substance in which an infectious agent normally lives and whose presence may constitute a public health risk [IHR, 2005].

Vector: An insect or other animal which normally transports an infectious agent that constitutes a public health risk [IHR, 2005].

Housekeeping and other ship facilities

Body fluid spillage: An uncontrolled/uncontained escape of fluids produced by the body such as blood, faeces, vomit, or urine.

CE marking: CE marking indicates that a product has been assessed by the manufacturer and deemed to meet EU safety, health and environmental protection requirements. It is required for products manufactured anywhere in the world that are then marketed in the EU (European Commission, 2025, https://europa.eu/youreurope/business/product-requirements/labels-markings/ce-marking/index_en.htm).

Cross-contamination: Cross-contamination occurs when microorganisms are transferred from a contaminated surface, area, or item to another due to improper cleaning and disinfection practices, such as incorrect cleaning sequence, reuse of contaminated cleaning equipment, inadequate hand hygiene, failure to change personal protective equipment, aerosolisation during cleaning, or improper storage of cleaning tools.

Disinfectant (biocidal product intended for disinfection): An agent, such as heat, radiation, or a chemical, that disinfects by destroying, neutralising, or inhibiting the growth of disease-carrying microorganisms. Regulation (EU) No 528/2012 classifies biocidal products into 22 product-types, including disinfectants for human hygiene, surfaces, food areas, and drinking water. The definition of biocidal products can be found under "Hazardous chemical agents" in the Definitions section.

Nappy (diaper) changing area: An area appropriate for nappy changing, which is located inside the nursery and play areas.

Nursery and play area: A facility of the ship where children under six years old are cared for by the designated crew.

Ventilation systems: A system which provides sufficient air at an appropriate temperature [IMO, 2002].

Hazardous chemical agents

Authorisation: National authorisation, Union authorisation or authorisation in accordance with Article 26 of Regulation (EU) No 528/2012.

Biocidal products: (i) Any substance or mixture, in the form in which it is supplied to the user, consisting of, containing or generating one or more active substances, with the intention of destroying, deterring, rendering harmless, preventing the action of, or otherwise exerting a controlling effect on, any harmful organism by any means other than mere physical or mechanical action; (ii) any substance or mixture, generated from substances or mixtures which do not themselves fall under the first indent, to be used with the intention of destroying, deterring, rendering harmless, preventing the action of, or otherwise exerting a controlling effect on, any harmful organism by any means other than mere physical or mechanical action. A treated article that has a primary biocidal function shall be considered a biocidal product [Regulation (EU) No 528/2012]. An exhaustive list of 22 product types with an indicative set of descriptions within each type is given in Annex V of the Regulation (EU) No 528/2012.

Chemical agent: Any chemical element or compound, on its own or admixed, as it occurs in the natural state or as produced, used or released, including release as waste, by any work activity, whether produced intentionally or not and whether placed on the market or not [Council Directive 98/24/EC].

Hazardous chemical agent: (i) Any chemical agent which meets the criteria for classification as hazardous within any physical and/or health hazard classes laid down in Regulation (EC) No 1272/2008 of the European Parliament and of the Council, whether or not that chemical agent is classified under that Regulation; (ii) any chemical agent which, whilst not meeting the criteria for classification as hazardous may, because of its physicochemical, chemical or toxicological properties and the way it is used or is present in the workplace, present a risk to the safety and health of workers including any chemical agent that is assigned an occupational exposure limit value under Article 3 [Council Directive 98/24/EC].

Mixture: A mixture or solution composed of two or more substances [Regulation (EC) No 1272/2008].

Packaging: One or more receptacles and any other components or materials necessary for the receptacles to perform their containment and other safety functions [Regulation (EC) No 1272/2008].

Safety Data Sheet (SDS): Provides a mechanism for transmitting appropriate safety information on classified substances and preparations, including information from the relevant Chemical Safety Report(s) down the supply chain to the immediate downstream user(s) [Regulation (EC) No 1907/2006].

Substance: A chemical element and its compounds in the natural state or obtained by any manufacturing process, including any additive necessary to preserve its stability and any impurity deriving from the process used, but excluding any solvent which may be separated without affecting the stability of the substance or changing its composition [Regulation (EC) No 1272/2008].

Use: Any processing, formulation, consumption, storage, keeping, treatment, filling into containers, transfer from one container to another, mixing, production of an article or any other utilisation [Regulation (EC) No 1907/2006].

Waste management

Black water or sewage:

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

Catering waste from means of transport operating internationally (or international catering waste): International catering waste is characterised as High-Risk Category I animal by-product [Regulation (EC) 1774/2002]. Means of transport operating internationally include vessels, which have landed on territory outside of the EU or are operating in non-EU waters. Catering waste includes materials derived from foodstuffs served on board a ship arriving in the European Union from a third country destination, i.e., outside the EU. The food waste may have originated from:

- food prepared on board the ship;
- food brought onto a ship by outside caterers; or
- by passengers or crew from their own private kitchens, retailers, fast food outlets, etc.

Chemical waste: Discarded solid, liquid, and gaseous chemicals, for example from diagnostic and experimental work and from cleaning, housekeeping, and disinfecting procedures [WHO, 2014].

Cooking oil: Any type of edible oil or animal fat used or intended to be used for the preparation or cooking of food, but does not include the food itself that is prepared using these oils [IMO, MARPOL, ANNEX V].

Emission: Any release of substances subject to control by Annex VI of MARPOL from ships into the atmosphere or sea [IMO, MARPOL, Annex VI].

Food waste: Any spoiled or unspoiled food substances including fruits, vegetables, dairy products, poultry, meat products and food scraps generated aboard, principally in the galley and dining areas [IMO, MARPOL, Annex V].

Garbage: All kinds of food wastes, domestic wastes and operational wastes, all plastics, cargo residues, incinerator ashes, cooking oil, fishing gear, e-waste (electronic and electrical waste) and animal carcasses generated during the normal operation of the ship and liable to be disposed of continuously or periodically except those substances which are defined or listed in other Annexes to the MARPOL Convention. Garbage does not include fresh fish and parts thereof generated as a result of fishing activities undertaken during the voyage, or as a result of aquaculture activities which involve the transport of fish including shellfish for placement in the aquaculture facility and the transport of harvested fish including shellfish from such facilities to shore for processing [IMO, MARPOL, Annex V].

Grey water: Drainage from dishwasher, shower, laundry, bath and washbasin drains and where such drainage does not include and is not mixed with drainage from toilets, urinals, hospitals, and animal spaces, as defined in regulation 1(3) of Annex IV, as well as drainage from cargo spaces. Grey water is not considered garbage in the context of MARPOL Annex V [IMO, 2017, Guidelines for Implementation of Annex V of MARPOL].

Hazardous waste: A type of waste, which, because of its quantity, concentration or physical or chemical or biological/infectious characteristics, may pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed or otherwise managed. Hazardous waste has the following properties: explosive, oxidising, highly flammable, flammable, irritant, harmful, toxic, carcinogenic, corrosive, infectious, toxic for reproduction, sensitising, ecotoxic, teratogenic, mutagenic, ecotoxic and waste capable by any means, after disposal, of yielding another substance, e.g., a leachate, which possesses any of the characteristics listed above. Waste capable of exhibiting a hazardous property listed above not directly displayed by the original waste [Directive 2008/98/EC]. Hazardous waste generated onboard (either categorised as operational or domestic waste) includes used cleaners, solvents, paints, thinners, incinerator ash, fluorescent/mercury vapour bulbs, batteries, used and expired explosives, discarded chemicals (solid, liquid or gaseous) that are generated during disinfecting procedures or cleaning processes, aerosol cans, oily waste and oily rags, infectious and non-infectious medical waste, dry cleaning (spent solvent that is chlorinated solvent), print shop waste (printing solvents, inks), photocopying and laser printer cartridges (spent or discarded cartridges, inks and toner material).

Infectious medical waste: Substances containing viable microorganisms or other toxins which are known or reliably believed to cause disease in man or other living organisms [Directive 2008/98/EC]. This category includes:

- cultures and stocks of infectious agents from laboratory work;
- waste from surgery on patients with infectious diseases (e.g., tissues, and materials or equipment that have been in contact with blood or other body fluids);
- waste from infected patients in isolation wards (e.g., excreta, dressings from infected or surgical wounds, clothes heavily soiled with human blood or other body fluids); and
- any other instruments or materials that have been in contact with infected persons or animal [WHO, 2014].

MARPOL: The International Convention for the Prevention of Pollution from Ships, in its up-to-date version [Directive 2019/883/EC].

Medical waste: Any waste generated during patient diagnosis, treatment or immunisation. Medical waste is distinguished into two categories: infectious and non-infectious [WHO, 2014].

Non-infectious medical waste: Disposable medical supplies and materials that do not fall into the category of infectious medical waste [WHO, 2014].

Pharmaceutical waste: Expired, unused, spilt, and contaminated pharmaceutical products, prescribed and proprietary drugs, vaccines, and sera that are no longer required and due to their chemical or biological nature need to be disposed of carefully. The category also includes discarded items heavily contaminated during the handling of pharmaceuticals, such as bottles, vials and boxes with residues, gloves, masks, connecting tubing [WHO, 2014].

Port reception facilities: Any facility, which is fixed, floating or mobile and capable of providing the service of receiving the waste from ships [Directive 2019/883/EC].

Sewage holding tank: A tank used for the collection and storage of sewage [IMO, MARPOL, ANNEX IV].

Sharps: Objects or instruments necessary for the exercise of specific healthcare activities, which are able to cut, prick, cause injury and/or infection. Sharps are considered as work equipment within the meaning of Directive 89/655/EEC on work equipment [adapted from Council Directive 2010/32/EU].

Shipboard incineration: The incineration of wastes or other matter on board a ship, if such wastes or other matter were generated during the normal operation of that ship [IMO, MARPOL, Annex VI].

Shipboard incinerator: A shipboard facility designed for the primary purpose of incineration [IMO, MARPOL, Annex VI].

Sufficient storage capacity: Enough capacity to store the waste on board from the moment of departure until the next port of call (*where waste offloading is permitted*), including the waste that is likely to be generated during the voyage [Directive 2019/883/EC].

Ballast water management

Ballast water: Water with its suspended matter taken on board a ship to control trim, list, draught, stability or stress of the ship [IMO, Ballast Water Management Convention, 2004].

Ballast Water Management: Mechanical, physical, chemical and biological processes, either singularly or in combination, to remove, render harmless, or avoid the uptake or discharge of harmful aquatic organisms and pathogens within ballast water and sediments [IMO, Ballast Water Management Convention, 2004][*].

Harmful aquatic organisms and pathogens: Aquatic organisms or pathogens which if introduced into the sea, including estuaries or into fresh water courses, may create hazards to the environment, human health, property or resources, impair biological diversity or interfere with other legitimate uses of such areas [IMO, Ballast Water Management Convention, 2004].

Sediments: Matter settled out of ballast water within a ship [IMO, Ballast Water Management Convention, 2004].

[*] While the Convention lists chemical treatment among acceptable methods, such treatments may not be suitable or applicable for all vessel types due to variations in design, operation, or environmental compliance requirements.

1. MEDICAL FACILITIES AND CAPABILITIES

1. MEDICAL FACILITIES AND CAPABILITIES

The specific medical needs of a ship are dependent on variables such as ship size, duration and destination of the voyage, and the number of passengers and crew. Medical staff play an important role on board, not only to treat illness and injuries, but also for prevention and control of infectious diseases including outbreak investigation and disease surveillance.

Legal requirements (LEG)/Recommended standards (ST)/River cruise ship applicability (RCSA)

Item	RCSA	Details	LEG/ST
		Medical staff, medicines, facilities construction and maintenance	
1.1 Medical staff, equipment and medicines	R*	• Ships must have medical staff, a medicine chest, medical equipment, and a medical guide in accordance with the Flag State requirements.	LEG[1, 2, 3, 4]
		• Ships flying the flag of EUMS or registered under the jurisdiction of an EUMS must have medicines and medical equipment as described in the Council Directive 92/29/EEC.	LEG[1]
		• European medical devices which are installed on board ships, must conform with the requirements of Regulation (EU) 2017/745 as follows: – bear the CE marking of conformity; – bear the Unique Device Identification (UDI) on the label of the device or on its packaging; and – be maintained and used in accordance with their intended purpose and manufacturer's instructions.	LEG[4]
1.1.1 Medical facilities and medical staff	–	Ship operators must ensure that each vessel is staffed with an adequate number and composition of qualified medical personnel in order to comply with applicable international and national requirements. These include: Maritime Labour Convention, 2006 (requirements for medical care on board ship and ashore), International Health Regulations (2005), Flag State regulations, and STCW Convention (requirements for crew medical training).	LEG[2, 5]

1.1.2 Risk-based approach	–	• In addition to fulfilling these obligations, ship operators should adopt a risk-based approach to determine the appropriate staffing of medical personnel (e.g., physicians, nurses, and other trained staff). This assessment should consider: – Ship-related factors: vessel size, design, and, onboard medical facilities. – Voyage-related factors: total number of persons on board (passengers and crew), duration and type/theme of the voyage (e.g., transoceanic, expeditionary, coastal, adventure), distance from land and expected time to reach shore, feasibility of timely medical evacuation, availability and reliability of telemedicine support, capacity and capability of shore-side medical facilities at ports of call.	ST
		• Recommendations for medical facilities and medical staff on passenger ships on international voyages are given in **Annex 6** (page 283).	ST
1.1.3 Medical equipment certification	–	All medical devices used on ships should bear recognised regulatory markings such as the CE mark, Food and Drug Administration (FDA) approval, or equivalent national certifications. Devices should include clear labelling and instructions.	ST
1.1.4 Point-of-care testing	R	Passenger ships on international voyages which last more than 24 hours should carry point-of-care testing on board for diagnosis of norovirus, influenza A and B, COVID-19, malaria, HIV and Legionnaires' disease.	ST
1.2 Medical facilities and capabilities	R*	Ships must have medical facilities in accordance with the Flag State legislation.	LEG[1, 2, 3, 4]
1.2.1 Medical facilities description	R*	• Ships should have a minimum of one examination room per ship.	ST
		• Medical facilities should be designed to facilitate treatment of ill passengers or crew to help prevent the spread of infectious diseases.	ST
		• Medical facilities should be separated from other facilities.	ST
		• Medical rooms should be used solely for the treatment of sick persons and for the isolation of potentially infectious patients.	ST
		• Furnishing and equipment in medical facilities should have smooth surfaces that can be cleaned and disinfected.	ST
		• Medical supplies and medicines should be protected, stored, and locked in a secure area (see item 1.12).	ST

1.3 Isolation and quarantine capabilities	R*	Ships should have: – an isolation room or the capability to provide isolation of patients as described in item 1.11; and – the capability to provide quarantine as described in item 1.11.	ST
1.4 Ventilation	–	Medical rooms should be well ventilated and have F7 air filters or above installed.	ST
1.5 Washing facilities	–	Medical facilities should have a patient toilet and hand washing facilities, which should be supplied as described in section 7.2.	ST
1.6 Medical waste management – Sharps and biomedical waste	R*	Medical facilities must have appropriate sharps and biomedical waste capability.	LEG[6]
1.6.1 Medical waste management – Identification	R	Medical waste must be clearly identifiable and placed in containers/bags that are both appropriately marked as described in items 9.1.3, 9.1.3.1, 9.5.2.1, and 9.5.4.	LEG[7, 8]
1.6.2 Medical waste management	R	• Contaminated, out of date, damaged or partially used medicines that cannot be reused should be replaced and not used. Pharmaceutical waste should be disposed of as described in item 9.5.6. • Waste produced and disposed of by patients themselves in medical facilities (e.g., in wards or waiting room) should not be recycled.	ST ST
1.6.2.1 Sharps	R*	Sharp collection, storage, disposal container design and placement must be in accordance with section 9.5.5.	LEG[8]
1.7 Temperature measuring devices	R	Temperature measuring devices (medical thermometer) must be provided and maintained in proper operational condition for patients.	LEG[1]
1.8 Medical procedures	R*	The following procedures are the minimum required on board: – maintenance and calibration (where applicable) for all medical equipment; – a medical record system with: ○ well organised, legible, and consistent documentation of all medical care, ○ a system of appropriate medical records and communication confidentiality; – resuscitation team (crash/code team) trained and updated regularly; – manuals for the operation of medical equipment;	LEG[1, 9]

		– Medical Operations Manual as required by the International Safety Management Code requirements; and – Emergency Preparedness Plan as required by the International Safety Management Code, incorporating a Public Health Emergency Contingency Plan and arrangements for a contingency port as described in the definitions section.	
1.9 Hygiene plan and implementation	R*	• A Hygiene Plan for medical facilities should be implemented.	ST
		• The Hygiene Plan should include disinfection, sterilisation (unless single use instruments are used), hand washing, laundry, medical waste management and correct use of PPE.	ST
		• Equipment for hand hygiene of medical staff should be available in each of the wards separate from the toilet facilities. Equipment can include hand washing facilities (applicable to new ships* only) or hand antiseptics. Hand washing facilities should be supplied as described in section 7.2.	ST
		• The following PPE should be available: single-use (disposable) polyethylene gloves, rubber gloves, sterile gloves, plastic aprons, plastic goggles, surgical face masks, full-face masks, N95/KN95/FFP2 masks, fluid-resistant or impermeable boot and shoe covers, fluid-resistant or impermeable gown.	ST
1.10 Gastroenteritis Outbreak Management Plan	R	• There should be an agreed Gastroenteritis Outbreak Management Plan, which specifies the duties for all crew members and responsibilities of the outbreak management team (see Part B, Guideline II).	ST
		• Pre-defined thresholds for outbreak alert reports and control measures should be agreed and included in the Gastroenteritis Outbreak Management Plan.	ST
1.11 Isolation and quarantine plan for passengers and crew and implementation	R	• There should be a written Medical Isolation and Quarantine Plan for passengers and crew suspected or known to be suffering from infectious diseases, which may require isolation or quarantine. The plan should consider the normally expected number of the passengers or crew on board (see Part A, Chapter 2 and Part B, Guidelines I, II, and IV).	ST
		• The Medical Isolation and Quarantine Plan should describe the location(s) where cases should be isolated or quarantined, the duration, the precautions measures and any necessary communication between departments (medical, housekeeping,	ST

* Ships that the keel is laid after 01/01/2017.

		laundry, room service, etc.) about the persons in isolation or quarantine.	
		• Records should be maintained indicating the names, duration and location of individuals who are in isolation or quarantine.	ST
		• Medical staff should have knowledge of the Medical Isolation and Quarantine Plan and should implement it as required.	ST
1.12 Temperature control	–	• Refrigerators and freezers used to store temperature sensitive medicines should be capable of maintaining the safe temperatures recommended by the manufacturer.	ST
		• Temperatures of these fridges/freezers should be checked and recorded at least daily using internal thermometers or external reading thermometers.	ST
1.13 Sharp injuries prevention	–	• Appropriate training must be provided to support the implementation of policies and procedures associated with sharps injuries, including: the correct use of medical devices incorporating sharps protection mechanisms, induction for all new and temporary staff, the risk associated with blood and body fluid exposures; preventive measures including standard precautions, safe systems of work, the correct use and disposal procedures, the importance of immunisation, according to the procedures at the workplace, the reporting, response and monitoring procedures and their importance, measures to be taken in case of injuries.	LEG[6]
		• Risk-assessment procedures must be conducted regarding sharps handling practices and must include an exposure determination that covers all situations where there is injury, blood or other potentially infectious material.	LEG[6]
1.13.1 Medical staff vaccination	R	Medical staff should be assessed for their vaccination status and/or immunity and offered vaccination if necessary in accordance with Flag State law and/or company practice. The recommended scheme includes: – A pulmonary tuberculosis (TB) screening programme at the time of hiring for all medical staff, followed by biannual or more frequent testing based on assessed occupational exposure risk. – Hepatitis B immunity: all medical staff who have a reasonable expectation of being exposed to blood are recommended to provide documented serological proof of Hepatitis B immunity (anti-HBs ≥ 10 mIU/mL or have documented proof of Hepatitis B vaccination) prior to any clinical work.	ST

– Medical staff participation in a seasonal influenza vaccination programme.

Referenced legislation

1. Directive 92/29/EEC on the minimum safety and health requirements for improved medical treatment on board vessels
2. ILO Maritime Labour Convention, 2006
3. Directive 2009/13/EC implementing the Agreement concluded by the European Community Shipowners' Associations (ECSA) and the European Transport Workers' Federation (ETF) on the Maritime Labour Convention, 2006, and amending Directive 1999/63/EC
4. Regulation (EU) 2017/745 on medical devices, amending Directive 2001/83/EC, Regulation (EC) No 178/2002 and Regulation (EC) No 1223/2009 and repealing Council Directives 90/385/EEC and 93/42/EEC
5. International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW), 1978, as amended
6. Directive 2010/32/EU implementing the Framework Agreement on prevention from sharp injuries in the hospital and healthcare sector concluded by HOSPEEM and EPSU
7. Directive 2019/883 on port reception facilities for the delivery of waste from ships, amending Directive 2010/65/EU and repealing Directive 2000/59/EC
8. Directive 2008/98/EC on waste
9. Regulation (EC) No 336/2006 on the implementation of the International Safety Management Code within the Community and repealing Council Regulation (EC) No 3051/95

2. COMMUNICABLE DISEASE SURVEILLANCE

2. COMMUNICABLE DISEASE SURVEILLANCE

Surveillance of communicable diseases on board passenger ships is an essential tool for assessing the burden of communicable diseases and to allow the early detection and management of outbreaks.

Maintaining medical logs of communicable diseases and the active monitoring of such illnesses on board will assist ships in identifying outbreaks and other events of public health concern, and allow them to implement control measures rapidly and consistently.

Objectives of surveillance on board ships

- To enable timely application of preventive measures through the early detection of outbreaks and other communicable disease events.
- To inform competent authorities and to assist them in case investigation, management and follow-up.
- To collect baseline information on communicable diseases by season and specific itineraries, in order to determine thresholds for outbreak detection.
- To estimate the burden of communicable diseases.
- To provide data for risk assessment.

Reporting to competent authorities in ports in EUMS

If an infection or death has occurred on board a ship on an international voyage, the master is required to inform the next port of call in accordance with the IHR. In the event of an outbreak, the competent authority staff may request to see the ship's surveillance data whilst undertaking a risk assessment. If they consider that there is a risk of transmission of the infection in their country or other MS, they may alert their national surveillance centre and/or National Focal Point. It is important, therefore, that good surveillance logs are maintained by the ship (**Annex 7**, page 285).

Legal requirements (LEG)/Recommended standards (ST)/River cruise ship applicability (RCSA)

Item	RCSA	Details	LEG/ST
		Records/Log	
2.1 Responsibility	R	A standardised illness medical log for each voyage must be maintained daily by the designated crew member.	LEG[1]
2.2 Log content	R	• The illness medical log should list: – the name of the ship, the voyage dates and the voyage itinerary;	ST

- all cases of communicable diseases or events or syndromes (see items 2.11 and 2.12); and
- all passengers and crew who were dispensed medication by designated crew member.

- The illness medical log entry for each passenger or crew member should contain the following information: ST
  - the date and time of the first clinic visit or when the illness was reported to a crew member;
  - person's name, age and gender;
  - nationality;
  - designation as either a passenger or crew member;
  - crew member position or job on the ship, if applicable;
  - cabin number;
  - date and time of illness onset;
  - symptoms of their illness;
  - use of medication;
  - presence of any underlying medical conditions or medication side effects or other comments; and
  - laboratory result (if available).

2.3 Surveillance log R*

- In addition to the normal daily illness medical log there should be a log or records for surveillance of the syndromes described in **Annex 8** (page 286) for passengers and in **Annex 9** (page 290) for crew members. ST
- Model specific logs are included as example in **Annex 8** (page 286) for passengers and in **Annex 9** (page 290) for crew members. Data fields provided in the model logs should be included in ship surveillance systems. ST
- Data collected by using surveillance logs should be collated (aggregated) and reviewed (summarised/analysed, electronically where possible) on a daily basis for each voyage. Log data when requested by competent authorities should be transmitted, electronically and in analysable formats. ST
- For logs, all fields should be filled in. If the information is not known then 'NK' can be inserted. ST

Questionnaires

2.4 GI questionnaire –

GI questionnaires (see an example in **Annex 10**, page 296) detailing activities and all meal locations, whether on or off ship, for the 72 hours before the onset of illness should be available in the ship infirmary and be given to all gastroenteritis cases on presentation. ST

The completed questionnaires should be maintained alongside the medical log and surveillance logs.

Retention

2.5 Retention	R	• The ship's illness medical log, surveillance forms and questionnaires should be maintained on the ship for at least 12 months. Electronic versions of these records are acceptable as long as the data are complete and can be retrieved during inspections*.	ST
		• The ships illness medical log, surveillance forms and questionnaires including all completed copies should be available for review by the authorities conducting inspections and outbreak investigations.	ST
2.6 Confidentiality	R	All personal medical information collected by the medical staff must be protected in accordance with EU legislation for personal data protection.	LEG[2, 3, 4, 5, 6, 7]

Notification and Ship Declaration of Health (SDH)†

2.7 Notification to the next port	R	• Officers in command of ships, or their agents, must make known to the port, as early as possible before arrival at the port of destination, any cases of illness indicative of a disease of an infectious nature, irrespective of case numbers, or evidence of a public health risk on board as soon as such illnesses or public health risks are made known to the officer (ships' physicians or doctors must always submit information to the master for reporting).	LEG[1, 5]
		• This information must be immediately relayed to the competent authority for the port.	LEG[1, 5]
2.7.1 Notification under urgent circumstances	R	In urgent circumstances, such information should be communicated directly by the master/officers to the relevant port authority.	ST
2.8 Ship Declaration of Health	R	• For ships on international voyages, the master of a ship, before arrival at its first port of call in the territory of a State Party, must ascertain the state of health on board, and, except when that State Party does not require it, the master must, on arrival, or in advance of the ship's arrival if the ship is so equipped and the State Party requires such advance delivery, complete and deliver	LEG[1, 5]

* National legislation in Germany requires hard copies of the medical log.

† Currently the Maritime Declaration of Health (MDH).

to the competent authority for that port a SDH (**Annex 11**, page 299) which must be countersigned by the ship's doctor, if one is carried.

- The information included will be assessed by the competent authority. LEG[1]
- If a doctor is on board, additional information must be provided about the case of illness to support the assessment of the competent authority. LEG[1]

2.9 Ships without doctor R

In the absence of a doctor, the master should regard the following symptoms as grounds for suspecting the existence of a disease of an infectious nature: ST

- any individual on board (excluding those with symptoms or other indications of a pre-existing chronic medical condition) who displays the following:
  - fever ≥ 38 °C (≥ 100.4 °F), persisting for several days or accompanied by: (i) prostration, (ii) decreasing level of consciousness, (iii) swollen glands, (iv) jaundice, (v) persistent cough or shortness of breath, (vi) unusual bleeding, or (vii) recent weakness or paralysis;
  - with or without fever: (i) any acute skin rash or eruption*, (ii) severe vomiting (other than sea sickness), (iii) severe diarrhoea, or (iv) recurrent convulsions.

Specific recommendation for AGE or ARI outbreak reporting

2.10 Outbreak reporting R

- For reporting of a gastroenteritis outbreak, an initial report should be prepared and sent to the competent authority at the next port of call, when the percentage of reportable cases reaches 2 % or more among passengers or 2 % or more among crew. A second update report should be sent when the number of cases reaches 3 % or more among passengers or 3 % or more among crew. The voyage duration should be considered when interpreting illness trends and determining public health response actions. ST
- For updates, the report should be sent not less than four hours before the next port of call. ST
- The Ship Communication Form (SCF) may be completed through the EU Common Ship Sanitation Database in addition to the SDH for reporting aggregated data of the number of cases for each syndrome, outbreaks and details of any laboratory confirmed ST

* Excluding allergic reactions in persons with history of allergy.

case on a voluntary basis or if the competent public health authority requires it. Alternatively, the SCF found in **Annex 12** (page 302) may be filled and share in addition to the SDH.

Tools to help with communicable disease surveillance

Case/outbreak recording

2.11 Ship communication form –
- The Ship Communication Form found in **Annex 12** (page 302) should be used for record keeping of any case/outbreak or event of public health concern, unless the ship uses another forms or has other systems in place to record the same information. ST
- This information should be kept on board for at least 12 months and be available for inspection. ST
- The ship communication form may be used in addition to the SDH for the purposes of reporting additional information to the competent authorities on a voluntary basis using the EU Common Ship Sanitation Database (formerly known as EU SHIPSAN ACT Information System) or when the requested by the public health authority at the next port of call. ST

2.12 Case definitions – For recording or reporting purposes the use of EC case definitions is recommended*. LEG[6, 7, 8]

Routine record keeping for syndromes

2.13 Syndromes recording form R
- The syndromic surveillance recording forms found in **Annex 8** (page 286) for passengers and in **Annex 9** (page 290) for crew members should be used for recording of any syndrome under surveillance except when: ST
  - another system is implemented to record the same information, or
  - the cruise/voyage lasts for less than 24 hours.
- These forms should be completed by the designated crew at the end of each day, except when the ship implements another system to record and monitor GI or acute respiratory illnesses (or other syndrome cases), when the cruise/voyage lasts for less than 24 hours. ST

2.14 Syndromic surveillance review frequency R For syndromic routine surveillance data information included in **Annex 8** (page 286) for passengers and in **Annex 9** (page 290) for ST

* https://eur-lex.europa.eu/eli/dec_impl/2018/945/oj

crew members (including recording of zero cases) should be collected and reviewed on a daily basis for each voyage and be available for inspections.

2.15 Anti-diarrhoeal medication	R	Anti-diarrhoeal medication should be provided exclusively by designated staff on board. Records of the names and cabin numbers for all individuals who are provided anti-diarrhoeal medication should be maintained.	ST

Referenced legislation

1. International Health Regulation 2005
2. Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation)
3. Directive 2002/58/EC of the European Parliament and of the Council of 12 July 2002 concerning the processing of personal data and the protection of privacy in the electronic communications sector (Directive on privacy and electronic communications)
4. Regulation (EU) 2018/1725 of the European Parliament and of the Council of 23 October 2018 on the protection of natural persons with regard to the processing of personal data by the Union institutions, bodies, offices and agencies and on the free movement of such data, and repealing Regulation (EC) No 45/2001 and Decision No 1247/2002/EC
5. Directive 2010/65/EU on reporting formalities for ships arriving in and/or departing from ports of the Member States and repealing Directive 2002/6/EC
6. Regulation (EU) 2022/2371 of the European Parliament and of the Council of 23 November 2022 on serious cross-border threats to health and repealing Decision No 1082/2013/EU
7. Commission Decision 2000/57/EC and Commission Decision of 28 April 2008 amending Decision 2000/57/EC as regards events to be reported within the early warning and response system for the prevention and control of communicable diseases
8. Commission Implementing Decision (EU) 2018/945 of 22 June 2018 on the communicable diseases and related special health issues to be covered by epidemiological surveillance as well as relevant case definitions (Text with EEA relevance)

3. FOOD SAFETY

3. FOOD SAFETY

There are a number of factors which influence the standards of food safety and the likelihood of foodborne illness on passenger ships. On passenger ships, a large number of people commonly eat from the same food supply. The sources of food supplied to ships may vary depending on the previous ports of call of the ship although many ships routinely store provisions from controlled sources in designated ports.

Food handlers on ships come from a variety of countries and their experience and understanding of safe food handling procedures, together with the levels of hygiene training and expertise on the ship, can vary considerably. Extensive menus with many dishes are often offered to passengers, many of whom eat on board for the majority of their voyage. As on land, the preparation of a wide variety of foods at the same time for a large number of people can increase the risks of mishandling or cross-contamination. Most ship companies seek to reduce such risks by good design — in particular the installation of adequately sized, fully equipped food rooms and the separation of 'low-risk' and 'high-risk' food processes. Other factors that influence the standards of food safety may include: a) the effective implementation and maintenance of food safety management systems including HACCP; b) the standard of food facilities and equipment including durability and ease of cleaning; c) the age of food production facilities; and d) the effective repair, maintenance and condition of food handling facilities and equipment.

3.1 Hazard Analysis and Critical Control Point

HACCP is a documented, structured and systematic food safety management system. It consists of the analysis of potential food hazards within a process, the identification of points in the food production process where action should be taken to prevent these hazards, and the recording, monitoring and, where necessary, the modification of the food process and the procedures for HACCP principles implementation.

Passenger ships need to use a HACCP-based approach to ensure food safety during all stages of food production, from supply and storage through to preparation, cooking and final service.

Legal requirements (LEG)/Recommended standards (ST)/River cruise ship applicability (RCSA)

Item	RCSA	Details	LEG/ST
		HACCP Principles	
3.1.1 HACCP implementation	R	• Passenger shipping operators must be able to show that they are applying the HACCP principles in relation to food production, storage, and service.	LEG[1]

		• Ships with 50 or more food handlers must fully comply with HACCP principles as required by Regulation (EC) No 852/2004.	LEG[1]
		• Ships in this category must implement and maintain a permanent written procedure or procedures based on HACCP principles together with Good Hygiene Practices (GHPs).	LEG[1]
3.1.1.1 Good Hygiene Practices (GHPs)	R	• Ships with less than 50 food handlers or ships who serve only prepacked food, must either implement systems based on HACCP principles or apply GHPs, as long as food safety can be assured.	LEG[1]
		• Ships in this category must at least implement GHPs in procedures that are in line with the standards of this chapter.	LEG[1]
3.1.2 Identification of hazards	R	**a. Identifying any hazards (Annex 14, page 318) that must be prevented, eliminated or reduced to acceptable levels.**	LEG[1]
3.1.3 Identification of CCPs	R	**b. Identifying the Critical Control Points (CCPs) at the step(s) or steps at which control is essential to prevent or eliminate a hazard or to reduce it to acceptable levels.**	LEG[1]
3.1.3.1 Description of CCPs	R	• A control point may be critical if the lack of any control measure at that stage is likely to cause a health risk when the food is eventually consumed.	ST
		• It is vital that the CCPs are correctly identified as control needs to be exercised at these points to ensure food safety.	ST
		• A simple way to do this is to construct a flow chart for the various processes within the ship's food operations.	ST
		• The ship operators should describe what control measures, if any, are applied for each hazard at each process step.	ST
3.1.3.2 Identification of CCPs	R	• CCPs must be identified, described and documented.	LEG[2]
		• CCP are intended to address only significant hazards in an establishment.	LEG[2]
3.1.4 Establishment of CLs	R	**c. Establishing Critical Limits (CLs) at CCPs which separate acceptability from unacceptability for the prevention, elimination or reduction of identified hazards.**	LEG[1]
3.1.4.1 Information on CLs	R	• CLs must be established for each control measure at CCPs and implemented.	LEG[2]
		• CLs separate acceptability from unacceptability.	LEG[2]

		• CLs must be validated and should include clear, specific values that are measurable or observable.	LEG[2]
3.1.4.2 Effectiveness of CLs	R	When CLs are set, they should be realistically achievable, practical, and recordable and should effectively reduce or minimise the hazard concerned.	ST
3.1.5 Monitoring procedures	R	**d. Establishing and implementing effective monitoring procedures at CCPs.**	LEG[1]
3.1.5.1 Information on monitoring procedures	–	• A HACCP plan should include effective monitoring of all control measures at CCPs.	ST
		• The HACCP plan should describe the methods, the frequency of observations or measurements and the recording procedure for monitoring at CCPs: – who monitors and checks; – when is monitoring and checking conducted; and – how is monitoring and checking conducted.	ST
3.1.6 Corrective actions	R	**e. Establishing corrective actions when monitoring indicates that a CCP is not under control.**	LEG[1]
3.1.6.1 Information on corrective actions	R	• Corrective actions should be taken when monitoring indicates a deviation from an established CL.	ST
		• Corrective actions should be implemented to ensure that no product which is harmful to health or otherwise contaminated as a result of such a deviation is used or served.	ST
		• Corrective actions should: – ensure that immediate steps are taken to prevent unsafe food being served to customers by, for example, rendering the food safe by further cooking or by throwing the contaminated food away; – prevent a re-occurrence of the same problem by identifying the cause of the failure of the control measure and taking appropriate actions to effectively counteract the problem.	ST
3.1.7 Establishment of procedures	R	**f. Establishing procedures, which must be carried out regularly, to verify that the measures outlined in subparagraphs (a) to (e) are working effectively.**	LEG[1]
3.1.8 Validation	R	Validation should ensure that the information supporting the procedures for HACCP principles implementation is correct.	ST

		Revalidation may be required where changes are made to food production.	
3.1.9 Verification	R	• Verification must be conducted periodically to demonstrate that the HACCP system and the management of the OPRP are working as planned. • As part of the verification and validation procedures, ship operators must conduct microbiological testing where appropriate. Ship operators must, where appropriate, refer to the microbiological criteria of Regulation (EC) No 2073/2005 as reference values when validating or verifying procedures based on HACCP principles and GHP (**Annex 15**, page 319).	LEG[2] LEG[3]
3.1.9.1 Records	R	• Verification actions should be recorded and documented to provide evidence that the HACCP system is working effectively. • Verification procedures may include such activities as review of the procedures for the HACCP principles implementation, CCP records, CLs, etc.	ST ST
3.1.10 Record keeping	R	**g. Establishing documents and records commensurate with the nature and size of the ship food operation to demonstrate the effective application of the measures outlined in subparagraphs (a) to (f)*.**	LEG[1]
3.1.10.1 Information on records	R	• Documentation and record keeping must be appropriate to the nature and size of the operation, the hazards identified and the procedures required for their control. • Documentation and record keeping must be sufficient to help verify that the necessary HACCP controls are in place and being maintained.	LEG[2] LEG[2]
3.1.10.2 HACCP records	R	• HACCP records should be kept up to date. • Records should be kept for at least 12 months and be available for inspection.	ST ST

* As part of the GHPs, it is advisable to consider at least the following areas and to keep records of them: regular inspections of the work premises, equipment and devices, hygiene training for staff, incoming goods inspections, tank temperatures and utensil surface temperatures of the dishwashers, regular maintenance and inspection of the dishwashers, implementation of cleaning and disinfection measures, microbiological testing of the efficiency of cleaning and disinfection, preventive and control measures against pests and checking the cooling and freezing temperatures.

3.1.11 Modification	R	When any modification is made to the product (food), process, or any step, food business operators must review the procedure and make the necessary changes and updates to it.	LEG[1]
3.1.12 Review	R	A review of the procedures which implement the HACCP principles should be made when there is a change that may affect food safety to ensure that the system continues to be valid for the passenger food business operator, for example, when: – a new food or menu item is produced or used, or a new catering method of food production process is applied; – a failure or deficiency is observed in the system; and – a food safety incident occurs.	ST
3.1.13 Food safety culture	R	• Ship operators must establish, maintain, and provide evidence of an appropriate food safety culture by fulfilling the following requirements: – commitment of the management and food handlers to the safe production and service of food; – leadership towards the production of safe food and to engage all food handlers in food safety practices; – awareness of food safety hazards and of the importance of food safety and hygiene by all food handlers on the ship; – open and clear communication between food handlers, within a task/activity and between consecutive tasks/activities, including communicating any deviations and expectations; and – availability of sufficient resources to ensure the safe and hygienic handling of food.	LEG[1]
		• Management commitment must include: – ensuring that roles and responsibilities are clearly communicated within each type of food operation; – maintaining the integrity of the food hygiene system when changes are planned and implemented; – verifying that food safety controls are timely and effective, and that any documentation is up to date; – ensuring there is appropriate training and supervision for food handlers; – ensuring compliance with relevant regulatory requirements; and – encouraging continual improvement of the food safety management system of the ship, and where appropriate, taking into account developments in science, technology and best practices.	LEG[1]

		• The requirement for food safety culture applies to both ships implementing a full HACCP system and those relying on GHPs.	LEG[1]
		• Examples of indicators of the food safety culture to be used by the ship operators can be found in Appendix 3 of Commission Notice 2002/C 355/01.	LEG[2]
		• Recommendations on auditing food safety culture is presented in **Table 11**.	LEG[2]
3.1.14 Risk communication	R	• Ships must establish and maintain effective risk communication strategies as part of their food safety management HACCP plan. This involves the exchange of information and opinions throughout the risk analysis process concerning hazards and risks, risk-related factors, and risk perceptions among all stakeholders, including crew members, passengers, and relevant authorities.	LEG[4]
		• The requirement for risk communication applies to both ships implementing a full HACCP system and those relying on GHPs.	LEG[4]

3.2 Food handlers

Food handlers can avoid creating food safety risks (such as causing contamination of food) provided they are well trained and know how to handle raw foodstuffs (which require cooking or other process) and ready-to-eat food. It is a legal requirement (Regulation (EC) No 852/2004) that crew involved in a ship food operation are trained and supervised as appropriate for their work activity. Responsibility for ensuring that food handlers are supervised, instructed and/or trained lies with the food business operator. Supervision, instruction and training aim to ensure that food handlers work hygienically.

Food handlers who prepare or handle food while ill with infectious diseases transmissible through food can contaminate food and transmit illness to consumers. Excluding food handlers with infectious diseases from work is necessary to help ensure that food does not facilitate the spread of infection on a ship.

Food may be contaminated when it comes into contact with dirty surfaces or when appropriate hygiene practices are not properly applied. Hygiene practices aim to protect food from the risk of biological, chemical or physical contamination and prevent any organisms growing to an extent that would expose passengers and crew to risk or result in premature decomposition of food.

Training of food handlers

Item	RCSA	Details	LEG/ST
		Training plan and record keeping	
3.2.1 Training plan	R	There should be a training plan (**Annex 16**, page 320) which identifies: – the number, the type and position of food handlers employed; – the training required by each food handler; and – a model training plan is included in **Annex 16** (page 320).	ST
3.2.2 Record keeping	R	Up to date, completed electronic/digital/manual records of each food handler's training should be maintained and be available for inspection. They should be retained for all current food handlers and for at least one year after employment ends.	ST
3.2.3 Food handler training	R	Ship operators must ensure that food handlers are trained in food hygiene matters commensurate with their work activity.	LEG[1]
3.2.3.1 Food handler training and demonstration of knowledge	R	• Food handlers should be trained to an appropriate level as determined by the types of food they handle. Examples of appropriate levels and suggested training content and a model training plan are contained in **Annex 16** (page 320).	ST
		• Food handlers should demonstrate knowledge in food hygiene matters commensurate with their work activity.	ST
		• If a food handler has several different duties within a ship food operation, he/she should be trained to the highest training level for the food types involved.	ST
		Exemption	
3.2.4 Non-food handlers	R	Non-food handlers who enter the food preparation areas, such as engineers, pest control crew, outside contractors and any other crew who work in these areas should receive appropriate supervision, instruction, and training commensurate with their activities. Tools which are needed for works within food preparation areas need to be cleaned and/or disinfected. Alternatively, there should be a separate set of tools which is available for use only in food preparation areas.	ST

Food handlers' diseases: reporting and restriction

Item	RCSA	Details	LEG/ST
		Health of food handlers	
3.2.5 Diseases	R	Food handlers who are infected by pathogenic microorganisms* transmissible through food must be excluded from food handling activities.	LEG[1]
3.2.5.1 Isolation of food handlers	R	Food handlers who have symptoms of Gastrointestinal Illness (GI) should be isolated until they have been symptom-free for at least 48 hours.	ST
3.2.6 Medical permission	–	• Supervisors should ask the medical staff or other designated crew to issue written release/authorisation to return to work, for food handlers to return to their duties after recovery. • A record of the written release/authorisation to return to work should be maintained for at least 12 months and be available for inspection.	ST ST
3.2.7 Reporting symptoms	R	Food handlers must report any symptoms of infectious disease to their supervisor. These usually include: – vomiting; – fever (≥ 38 °C (100.4 °F)); – abdominal cramps; – diarrhoea; – sore throat with fever; – any discharges from their nose; – persistent coughing and sneezing; – visible sores on their hands, arm, or face; and – jaundice.	LEG[1]
3.2.7.1 Assessment of food prepared or served	R	If food is prepared or served by a food handler while they have GI symptoms, then an assessment of the food must be conducted, and appropriate corrective actions taken and documented.	LEG[1]
3.2.8 Covering of wounds	R	Crew working in food-handling areas should cover wounds which have the potential to contaminate food (on hands or other exposed parts	ST

* Such as *E. coli*, *Salmonella* Typhi, *S.* Paratyphi, *Giardia lamblia*, other parasites, hepatitis A, norovirus, etc.

of the body) with waterproof dressings and disposable gloves, when applicable.

Hygiene practices and personal hygiene of food handlers

Item	RCSA	Details	LEG/ST
		Food handlers' hygiene	
3.2.9 Hygiene practices	R	Food handlers must prevent food contamination by working hygienically.	LEG[1]
3.2.10 Personal cleanliness	R	Crew working in a food-handling area must maintain a high degree of personal cleanliness.	LEG[1]
		Clothing	
3.2.11 Clothing	R	Crew working in a food-handling area must wear suitable and clean clothing.	LEG[1]
3.2.11.1 Protective clothing and uniforms	R*	• Protective clothing or uniforms should be changed if they become soiled or present a risk of cross-contamination.	ST
		• Outdoor clothes and personal effects should not be brought into food preparation, handling or storage areas.	ST
		• Protective clothing or uniform should be considered as possibly contaminated and handled and washed as described in section 7.6.	ST
		• Protective clothing or uniform should be light coloured, suitable for the work being carried out and either be disposable or able to be disinfected.	ST
		• Protective clothing or uniform should completely cover other clothing.	ST
		• Clean protective clothing or uniform should be available on demand, in case it becomes soiled and needs to be changed.	ST
		• Food handlers protective clothing or uniform which is soiled or contaminated while they are outside the food areas (e.g., during breaks) should be changed before resuming work.	ST
		Jewellery	
3.2.12 Jewellery wearing	R	Food handlers under Categories A and B (see **Annex 16**, page 320) while handing food should not wear jewellery, pendants, watches, pins, or other decorative items except for a flat plain ring.	ST

Hair

3.2.13 Hair restraining and covering	R	• Crew working in food-handling areas where exposed food, clean equipment, or utensils are handled should wear suitable head coverings to prevent contamination. This standard does not apply to staff working in passenger dining areas or bars where no exposed food is handled.	ST
		• Hair should be restrained within a hair covering.	ST
3.2.14 Facial hair covering	R	Facial hair such as moustaches and beards, which are heavy or pronounced, should be covered with a beard snood.	ST

Nails

3.2.15 Nail hygiene	R	Fingernails should be kept short and clean.	ST
3.2.16 Artificial nails and nail varnish	R	Artificial nails and nail varnishes should not be used.	ST

Gloves

3.2.17 Glove wearing	R	• The use of disposable gloves should not replace effective hand washing.	ST
		• Disposable gloves should be made of food-grade material that is safe for contact with food and used properly. Food handlers using single-use gloves should follow the guidelines given below.	ST

If food handlers wear single-use gloves (e.g., to avoid bare-hand contact with ready-to-eat foods), the following recommended standards should be followed:

- Wash and dry hands thoroughly before putting on gloves.
- Change gloves frequently.
- Change gloves after handling raw foods (which requires cooking or other process) and before handling cooked or ready-to-eat foods.
- Discard gloves that are torn, dirty or contaminated (gloves should not be left on the top of work surfaces).
- If stopping preparing food to carry out another non-food handling task, such as answering the telephone or taking money from a customer, always take off gloves and put on a new pair before handling food again.
- Discard gloves when they are taken off for any reason.
- The re-use or sharing of disposable gloves is forbidden.

Hand washing

3.2.18 Triggers for hand washing R

- Food handlers should wash their hands as frequently as necessary during the day and always: ST
  - before starting work or putting on gloves;
  - before touching any raw meat or high-risk foods;
  - during food preparation as often as may be necessary to keep hands clean;
  - after break periods;
  - after using the toilet;
  - after touching any raw meat or high-risk foods, using cleaning chemicals and materials, discarding waste/rubbish, having dealt with dirty dishes, utensils, or other equipment, removing gloves, or coming in contact with any dirty item;
  - after eating or drinking, smoking, or using tobacco, coughing, or sneezing, touching their hair, face, nose, mouth, wounds or sores, or changing any wound dressings/plasters; and
  - when changing from working with raw food which needs to be cooked and any ready-to-eat food.

See an example sign for hand washing technique in **Annex 17** (page 324).

- Alcohol antiseptics (hand sanitisers) should not be used instead of hand washing in food preparation areas. They may be used after washing and the product should be appropriate for use by food handlers. ST

Other contamination sources

3.2.19 Other contamination sources R

When handling food, food handlers should not: ST

- cough, sneeze or spit over or around food;
- pick, scratch or blow their nose;
- taste food with their fingers or an unwashed or reused utensil;
- blow into glasses to polish them or bags to open them;
- smoke or use tobacco (pipes, cigars, etc.) in food preparation and handling areas, including chef's office if the office is incorporated in the galley area;
- drink or eat (food, gum, etc.); and
- lick their fingers when handling food or wrapping materials.

3.3 General requirements for food-handling areas

Food-handling areas must be kept clean and maintained in good repair. The layout, design, construction and size of food-handling areas must permit adequate cleaning and/or disinfection;

protect against the accumulation of dirt and contaminants; permit good hygienic practices including protection against cross-contamination; and provide suitable temperature conditions for hygienic food handling.

Item	RCSA	Details	LEG/ST
		Decks	
3.3.1 Materials	R	The materials used for deck construction in all food rooms must be impervious, durable, non-absorbent, washable, and non-toxic.	LEG[1]
3.3.1.1 Suitable materials	R	Suitable materials may include: – stainless steel; – ceramic, quarry tiles; – epoxy resin; and – terrazzo.	ST
3.3.2 Defects	R	Decks, deckheads and bulkheads should be free from cracks, crevices, or pitting.	ST
3.3.3 Easy to clean surfaces	R	Decks must be easy to clean.	LEG[1]
3.3.3.1 Coved decks	R	In galleys or other high-risk food areas, decks should be coved at bulkheads to facilitate cleaning.	ST
3.3.4 Repairing	R	Decks, deckheads and bulkheads must be kept in good condition.	LEG[1]
3.3.5 Construction	R	The construction of decks must prevent the accumulation of dirt and debris and allow for adequate surface drainage.	LEG[1]
		Bulkhead surfaces	
3.3.6 Accumulation of dirt	R	Bulkhead surfaces and fixtures such as bulkhead electrical sockets must be made of materials that prevent accumulation of dirt and undesirable substances such as mould.	LEG[1]
3.3.6.1 Materials	R	• The materials used for bulkhead surfaces should be impervious, non-absorbent, cleanable, and non-toxic.	ST

		• Suitable materials may include: – stainless steel; – ceramic tiles; – washable painted steel; – PVC; and – epoxy resin and similar coatings.	ST
3.3.6.2 Design	R	Bulkhead surfaces must be smooth.	LEG[1]
3.3.7 Defects	R	Bulkhead surfaces should be free of obstructions, holes and other obstacles or recesses in which dirt can accumulate.	ST
3.3.8 Cleanable surfaces	R	Bulkhead surfaces should be cleanable to a height at which they may be soiled with food particles during normal use.	ST
		Deckheads	
3.3.9 Accumulation of dirt	R	Deckheads and overhead fixtures (e.g., lights) must be made of materials that prevent the accumulation of dirt and undesirable substances such as mould.	LEG[1]
3.3.9.1 Design and materials	R	• Suitable materials may include among others stainless steel and smooth washable painted steel. • In order to prevent the accumulation of dirt direct fixed deckheads or suspended deckheads should be installed. • Deckhead surfaces should be smooth and cleanable. • Deckhead surfaces should be in good condition.	ST ST ST ST
		Cleaning and disinfection	
3.3.10 Cleaning and disinfection of decks, deckheads and bulkheads	R	All decks, deckheads and bulkheads must be maintained in a clean condition, and disinfected periodically if needed, to remove any mould build up and any other particles or debris that could fall into food.	LEG[1]
		Windows and other openings	
3.3.11 Materials	R	Windows or portholes must be constructed to allow effective cleaning and to prevent the accumulation of dirt.	LEG[1]
3.3.12 Prevention of contamination	R	Windows must be protected to prevent contamination of foodstuffs and to exclude pests.	LEG[1]

3.3.12.1 Protection	R	Windows that open to the outside environment should be fitted with insect-proof screens (mesh size ≤ 0.16 cm / 0.06 in) or protected by other effective means. Screens should be easily removable for cleaning. Where open windows could cause contamination, they should remain closed and fixed during food preparation or production.	ST
		Doors	
3.3.13 Cleaning and disinfection	R	• Doors must be made of materials that can be easily cleaned. • Doors that require disinfection must be made of a material that can be easily disinfected.	LEG[1] LEG[1]
3.3.14 Materials	R	Suitable materials may include: – gloss painted wood; – laminated glass; – stainless steel; – plastic; and – rubber.	ST
3.3.15 Construction	R	Doors should be flush fitting to avoid angles and mouldings that accumulate dirt.	ST
3.3.16 Fingerplates and handles	R	Door fittings likely to come in contact with hands such as fingerplates and handles should also be capable of being disinfected.	ST
3.3.17 Self closing door	R	Doors should preferably be automatic or self-closing.	ST
		Equipment and food contact surfaces	
3.3.18 Sound condition	R	Food contact surfaces (including surfaces of equipment) in areas where foods are handled and, in particular, those in contact with food must be maintained in a sound condition and be easy to clean and, where necessary, to disinfect.	LEG[1]
3.3.18.1 Cleaning and disinfection of surfaces	R	• All surfaces with which food comes into contact must be effectively cleaned and, where necessary, disinfected. • Cleaning and disinfection must take place at a frequency sufficient to avoid any risk of contamination.	LEG[1] LEG[1]
3.3.18.2 Cleaning and disinfection frequency	R	All surfaces that are non-food contact surfaces should be kept clean and disinfected at a frequency sufficient to avoid any risk of contamination.	ST

3.3.19 Materials	R	The materials used for food contact surfaces must be smooth, impervious, non-absorbent, washable, and non-toxic and food grade in accordance with Regulation (EC) No 1935/2004, Directive 84/500/EEC, and Regulation (EU) No 10/2011.	LEG[1, 5, 6]
3.3.19.1 Suitable materials and coating	R	• Suitable materials may include: – stainless steel; – marble; – ceramics (complying with Directive 84/500/EEC); and – food grade plastics (complying with Regulation (EU) No 10/2011). • Food contact surfaces made of materials not meeting these standards must be coated with materials that comply with Regulation (EC) No 1935/2004 and other applicable EU legislation.	LEG[1, 5, 6] LEG[1, 5, 6]
3.3.20 Cleaning	R	Windows and other openings, doors, and other surfaces (including surfaces of equipment) in areas where foods are handled must be kept clean.	LEG[1]
		Lighting in food preparation areas	
3.3.21 Lighting	R	• Light bulbs should be covered or shatter-resistant in areas where there is exposed food, clean equipment, utensils and linen or unwrapped single service and single use articles. • Ensure there is adequate light intensity at surfaces of equipment, counters, sinks and clean storage areas to allow effective cleaning and disinfection. • Infrared or heat lamps should be protected against breakage.	ST ST ST
		Ventilation in food preparation areas	
3.3.22 Ventilation	–	There must be sufficient ventilation in food preparation areas. Mechanical airflow from a contaminated area to a clean area must be avoided. Filters and other removable parts of the ventilation system must be easily accessible for cleaning and maintenance.	LEG[1]
		Arrangement of spaces	
3.3.23 Arrangement of spaces	–	• The layout and flow of the food areas should be designed to prevent cross-contamination. • The space arrangement should also facilitate effective cleaning and disinfection.	ST ST

		Condition of food-handling areas	
3.3.24 Condition of food-handling areas	–	Food-handling areas must be kept clean and maintained in good repair and condition.	LEG[1]

3.4 General food safety rules

General food safety rules/source/purchasing

Food safety starts with the source of food products. It is important for a ship food operation to select appropriate suppliers. Food business operators must have systems in place to check delivered foods and must not accept on board, or must remove, any contaminated, defective or spoiled foodstuffs.

Item	RCSA	Details	LEG/ST
		General food safety/source	
3.4.1 Safe food	R	Food business operators must ensure that food meets safety requirements.	LEG[1]
3.4.1.1 Expired food	R	Foods which, from a microbiological point of view, are highly perishable (high-risk food), must have a 'use by' date. After the 'use by' date is reached, these foods are deemed to be unsafe and must not be used.	LEG[7]
3.4.1.2 Protection from contamination	R	At all stages of production, processing and distribution, food must be protected against any contamination likely to render the food unfit for human consumption, harmful to health or contaminated in such a way that it would be unreasonable to expect it to be consumed in that state.	LEG[1]
3.4.1.3 Quarantine and disposal	R	Any food discovered which is suspected of being contaminated, defective or spoiled must be immediately separated from safe food items and placed under quarantine. Such food must not be used or served until it has been inspected. If the food is confirmed to be unsafe, it must be disposed of the ship as soon as practicable.	LEG[1]

3.4.1.4 Release from quarantine	R	If no evidence is identified that confirms contamination, then the suspect food may be released from quarantine, providing there have been no subsequent issues caused by handling, cross-contamination, temperature abuse or shelf life of the suspected item.	ST
3.4.1.5 Protection from cross-contact	R	Equipment, conveyances and/or containers used for the processing, handling, transport or storage of substances or products which cause allergies or intolerances: – Must not be used for the processing, handling, transport, or storage of any food, which does not contain that substance or product, unless; – At a minimum the equipment, conveyances and/or containers have been cleaned and the absence of any remaining debris from that substance or product has been checked.	LEG[1]
3.4.1.6 Designated supervisor	R	A designated supervisor (e.g., Executive Chef or Sanitation Officer) should verify and record that equipment, conveyances, and containers used for allergenic products have been cleaned and inspected before reuse for non-allergenic foods.	ST
3.4.2 Food source	R	Food business operators should obtain food from approved and nominated suppliers*.	ST
3.4.3 Contamination during transport	R	All foodstuffs must be protected from contamination during transport†.	LEG[1]
3.4.3.1 Transportation of allergenic food	R	Allergenic foods should be transported separately from non-allergenic foods or adequately packaged, sealed and labelled to prevent contamination.	ST
3.4.4 Supplier's list	R*	Passenger shipping companies should inspect the suppliers' establishments or otherwise assess the safety of the operation before they are added to any approved supplier list‡.	ST

* EUMS publish lists of establishments handling, preparing or producing products of animal origin that have received approval according to the requirements are laid down in Regulation (EC) 853/2004.

† This is the direct responsibility of the food supplier but the transportation and safe condition of food should be checked on arrival at the ship.

‡ These assessments may be made checking compliance with supplier third party accreditation and approval by an internationally recognised body or standard — for example ISO 22000 regarding food safety.

3.4.5 Details of list	R*	• An approved list of direct suppliers should be used and should include either the name of the company or person, their address and documentation to prove the suppliers establishments' permit/registration or other food safety approval.	ST
		• The food business operators and food suppliers should have a written agreement, detailing specifications regarding the safe standards of foodstuffs supplied to the ship.	ST
		• The approved list of direct suppliers can be maintained either on board or ashore. The ship should contact the shore side office to get answers if needed during inspection or other situation.	ST

Purchasing

3.4.6 Purchasing of food materials	R	• Effective controls must be in place to ensure that approved suppliers are used during purchasing.	LEG[8, 9]
		• All food products of animal origin, whether sourced within or outside the EU, must comply with the certification requirements outlined in Commission Implementing Regulation (EU) 2020/2235 and must originate from countries and establishments authorised under Commission Implementing Regulation (EU) 2021/405.	LEG[8, 9]
		• All food products of non-animal origin subject to increased official controls under Commission Implementing Regulation (EU) 2019/1793 must comply with EU safety standards.	LEG[10]
		• When sourcing food from outside the EU, ships must ensure that suppliers provide the necessary health certificates and official documentation issued by the competent authority of the exporting country to verify compliance before products are accepted on board.	LEG[8, 9, 10]
3.4.7 Checking of foodstuffs	R	• A representative part of each delivery should be checked on arrival at the ship. Checks should include, but are not limited to: – temperature – where applicable (see items 3.4.8, 3.4.8.1 and 3.4.8.2); – pests or evidence of their presence; – packaging integrity (e.g., damage, leaks, dents); – sensory checks (e.g., appearance, colour, odour and texture); – labelling (e.g., expiration dates, etc.) (see item 3.4.13); and – certification (where applicable) and compliance (see item 3.4.6).	ST
		• Records of these checks should be maintained on board and be available for inspection (see item 3.4.9).	ST

Food safety

3.4.7.1 Defective items	R*	Any defective items, such as dented cans*, expired foodstuffs, improperly packaged foodstuff, or food unfit for human consumption must be rejected.	LEG[1]
3.4.7.2 Rejection	R	High-risk foods which do not meet the required standards (including temperature) must be assessed and if deemed unsafe or unsuitable for consumption, they must be managed appropriately. This may include being placed in quarantine, corrective actions taken, or rejecting the food delivery.	LEG[1]
3.4.7.3 Responsibility	R	It is the responsibility of the ship operator not to supply food non-compliant with the food information law described in items 3.4.13 to 3.4.13.4.	LEG[1]
3.4.8 Checking of temperatures	R	The temperature of quick-frozen foodstuffs must be stable and maintained, at all points in the product, at – 18 °C (– 0.4 °F) or lower, with possibly brief upward fluctuations of no more than 3 °C (5.5 °F) during transport.	LEG[11, 12]

Food of animal origin	Temperature of raw meat during transport
Meat of domestic ungulates	– Offal: not more than 3 °C (37.4 °F); – Other meat: not more than 7 °C (44.6 °F).
Fishery products	– Frozen fishery products: not more than – 18 °C (– 0.4 °F); – Fresh fishery products, thawed unprocessed fishery products, and cooked and chilled products from crustaceans and molluscs: at a temperature approaching that of melting ice.

3.4.8.1 Other high-risk foods	R	Other high-risk chilled foods should be maintained at a temperature of ≤ 5 °C (41 °F) during transport†.	ST
3.4.8.2 Temperature recording of quick-frozen foodstuffs	R	The means of transport of quick-frozen foodstuffs in EUMS must be fitted with suitable recording instruments to monitor, at frequent and regular intervals, the air temperature to which the quick-frozen foodstuffs are subjected. Temperature recording must be dated and	LEG[12]

* In this section 'dented' means in such a damaged condition that they may cause a food safety risk.

† SHIPSAN recommends high-risk food storage temperatures at ≤ 5 °C (41 °F) as best practice however some EU countries require that chilled food is transported in a temperature of < 8 °C (46 °F).

		stored by the food business operator for a period of at least one year, or for a longer period, depending on the nature and shelf life of the quick-frozen foodstuffs.	
3.4.9 Record keeping	R	Records of all deliveries, with delivery details (date and time of delivery, officer in charge, a temperature log during transport (for food purchased in EUMS)) and item details must be kept on board for at least 12 months electronically or in hard copies for traceability.	LEG[1, 13]

Storage and food information

The shelf life of stored food depends upon the nature of the food itself, its packaging, temperature and humidity. Foods, such as dairy products, meats and eggs will spoil rapidly if not protected from contamination and stored at proper temperatures. Food that is temperature abused will spoil rapidly and this can be identified by changes in odour, flavour, colour, and/or texture. Dry food staples such as flour, seasonings and canned goods should be stored in their original packages or decanted into closed containers.

Item	RCSA	Details	LEG/ST
		Storage and food information	
3.4.10 Protection against contamination	R	Food must be stored so that it is protected against contamination, deterioration, and infestation.	LEG[1]
3.4.10.1 Protection against cross-contamination	R	Different types of foodstuffs (including raw fishery products which are consumed while raw, or cooked/ready-to-eat, and different types of raw foods of animal origin) should be stored separately (so that products do not physically touch and so that one food cannot drip into another) to avoid any risk of cross-contamination, unless they will be cooked together in the same recipe.	ST
3.4.11 Storage capacity	R	Food stores should be sufficient in number and capacity to maintain adequate, safe food storage conditions.	ST
3.4.12 Good storage practices	R	Food and stored ingredients must be located away from sources of contamination (e.g., from odours or pollution).	LEG[1]
3.4.12.1 Exposed foodstuffs and potentially allergenic ingredients	R*	• Exposed foodstuffs should be covered, or otherwise protected, to prevent contamination. • Where separate storage is not feasible, sealed packaging/containers, physical barriers or separate shelving should be used to minimise risk.	ST ST

3.4.12.2 Storage of allergenic ingredients	R	All foods which contain allergens (**Table 3**, page 84) must be stored separately and must be marked or labelled to indicate the contents.	LEG[1]
3.4.13 Labelling of foodstuffs	R	• Ship operators must not supply food, which they know or presume to be non-compliant with the following requirements for the mandatory food information.	LEG[7]
		• The following mandatory food information must appear on the pre-packaging or on a label attached thereto, or on the commercial documents* referring to the foods and ingredients: a) the name of the food; b) the list of ingredients (except: in the case of glass bottles intended for reuse which are indelibly marked and which therefore bear no label, ring or collar; in the case of packaging or containers the largest surface of which has an area of less than 10 cm^2 where the information can be provided by other means or upon customer's request; in cases of beverages containing more than 1.2 % by volume of alcohol; and in the case of foods listed in **Table 4**, page 85); c) any ingredient or processing aid listed in **Table 3** (page 84) or derived from a substance or product listed in **Table 3** (page 84) causing allergies or intolerances used in the manufacture or preparation of a food and still present in the finished product, even if in an altered form; d) the quantity of certain ingredients or categories of ingredients (except: in the case of glass bottles intended for reuse which are indelibly marked and which therefore bear no label, ring or collar; and in the case of packaging or containers the largest surface of which has an area of less than 10 cm^2); e) the net quantity of the food; f) the date of minimum durability or the 'use by' date (see item 3.4.13.2) (**Table 5**, page 85). Foods that do not require an	LEG[7]

* Any official accompanying document that provides the following information could be accepted for prepacked food intended for supply to food business operators for preparation, processing, splitting or cutting up.
The mandatory food information must appear:
- on the pre-packaging; or
- on a label attached thereto; or
- on the commercial documents referring to the foods and ingredients where it can be guaranteed that such documents either accompany the food to which they refer or were sent before or at the same time as delivery.

However, mandatory food information for the name of food, the date of minimum durability or the 'use by' date, any special storage conditions and/or conditions of use and the name or business name and address of the food business operator must appear on the external packaging in which the prepacked foods are presented for marketing. Additionally, the 'use by' date shall be indicated on each individual prepacked portion.

indication of the date of minimum durability are included in **Table 6** (page 86);

g) any special storage conditions and/or conditions of use (except: in the case of glass bottles intended for reuse which are indelibly marked and which therefore bear no label, ring or collar; and in the case of packaging or containers the largest surface of which has an area of less than 10 cm^2);

h) the name or business name and address of the food business operator (except: in the case of glass bottles intended for reuse which are indelibly marked and which therefore bear no label, ring or collar; and in the case of packaging or containers the largest surface of which has an area of less than 10 cm^2);

i) the country of origin or place of provenance (except in the case of packaging or containers the largest surface of which has an area of less than 10 cm^2);

j) instructions for use where it would be difficult to make appropriate use of the food in the absence of such instructions (except: in the case of glass bottles intended for reuse which are indelibly marked and which therefore bear no label, ring or collar; and in the case of packaging or containers the largest surface of which has an area of less than 10 cm^2); and

k) with respect to beverages containing more than 1.2 % by volume of alcohol, the actual alcoholic strength by volume (except: in the case of glass bottles intended for reuse which are indelibly marked and which therefore bear no label, ring or collar; and in the case of packaging or containers the largest surface of which has an area of less than 10 cm^2);
a nutrition declaration (apart: from those foods listed in **Table 7** (page 87); from the case of glass bottles intended for reuse which are indelibly marked and which therefore bear no label, ring or collar; the case of packaging or containers the largest surface of which has an area of less than 10 cm^2; and the case of beverages containing more than 1.2 % by volume of alcohol).

Additional information presented in **Table 8** (page 88) is required for the certain foods.

- Mandatory food information must be available and must be easily accessible, for all foods. LEG[7]

3.4.13.1 Non-prepacked food	R	Where foods are offered for service or sale to the final consumer without pre-packaging or where foods are packed on the ship at the consumer's request or prepacked for direct service or sale: indication of any ingredient or processing aid or derived from a substance or product listed in **Table 3** (page 84) is mandatory.	LEG[7]
3.4.13.2 'Use by' date	R	• In the case of foods which, from a microbiological point of view, are highly perishable and are therefore likely after a short period to constitute an immediate danger to human health, they must be labelled with the 'use by' date (see item 3.4.1.1). • The appropriate date must be expressed in accordance with **Table 5** (page 85). • The 'use by' date must be indicated on each individual prepacked portion.	LEG[7] LEG[7] LEG[7]
3.4.13.3 Traceability	R	All foodstuffs must be traceable.	LEG[1, 4]
3.4.13.4 Durability of prepared food	R	High-risk food prepared on a ship or opened high-risk ready-to-eat prepacked foods which are held refrigerated for more than 24 hours should be clearly marked at the time of preparation or opening to indicate the date or day by which the food should be consumed (seven calendar days or less from the day the food is prepared or as specified on the label, whichever comes first). The day of preparation is counted as day one (see item 3.4.17.1).	ST
3.4.13.5 Durability of food frozen on board	R	• Pre-packed food can be frozen to extend its use-by date or durability period, provided that this is indicated on the manufacturer's food label and any instruction provided for the freezing process and conditions is followed. • Food which is prepared on board and then frozen, should be processed in accordance with HACCP principles, including determining the freezing process and food durability. • Pre-packed or non-prepacked food that has been frozen to extend its durability should be labelled and the label should include at least following information to allow traceability: – the name of the food; and – the date of freezing and/or defrost by date. See **Table 4** (page 85) for the detailed guidelines.	ST ST ST

Dry storage

3.4.14 Dry stores standards	R*	• Dry stores should be cool (preferably less than 25 °C (77 °F)), dry and clean.	ST

- Stored food should be kept elevated off the decks. ST
- Dry food packages should be handled with care to prevent damage to the packing. ST
- Food from cans and jars that are damaged, swollen or leaking should not be used. ST
- When packaging has been damaged after delivery then any loose dry food (flour, rice, etc.) should be decanted and stored in sealed labelled containers. ST
- Humidity should be controlled (for example through sufficient airflow or air changes) because moisture may affect the safety of food products. ST
- Cans and jars may be placed in dry stores but once opened some products (mustard, mayonnaise, etc.) require refrigeration where stated by the manufacturers. ST

3.4.15 Date of minimum durability R

- When a food product has passed its date of minimum durability ("Best Before" date), this indicates that the quality, taste or texture may have been affected. ST
- It is recommended that food which has passed the date of minimum durability is stored separately from products which are still in date. ST
- Ship operators may establish evidence-based written procedures for shelf-life extension of products past their "Best Before" date, defining the decision-making process and criteria. ST
- Dates of durability of dry stored products are described in item 3.4.13. ST

3.4.16 First in — first out R Stored food should be rotated and used on a First In First Out (FIFO) system taking into account the durability date. ST

Cold storage

3.4.17 Cold storage practices R

- Cold storage should be used to store high-risk foodstuffs which require temperature control to ensure their safety. This includes foods which may perish more readily at high temperatures (e.g., meat, fish or dairy products). ST
- Temperatures in cold stores should be checked at least daily using internal thermometers or external reading thermometers (see item 3.5.10 for calibration standards). ST
- Cold stores should be checked regularly and products that are spoiled or expired should be removed. Stored food should be rotated and used on a FIFO basis taking into account the durability date and 'use by' date. ST

3.4.17.1 Retention time of high-risk, ready-to-eat food	R	High-risk, ready-to-eat food, placed into cold storage, should be discarded if not consumed within seven days from the date of preparation or opening, or in accordance with the instructions on the manufacturer's label, whichever comes first, when stored at ≤ 5 °C (41 °F)*.	ST
3.4.18 Prevention of cross-contamination	R	Foodstuffs with different risk profiles (e.g., raw, and cooked) must be stored separately to avoid any risk of cross-contamination.	LEG[1]
3.4.18.1 Arrangement and labelling	R	When it is not possible to separate food with different risk profiles and these are placed in the same refrigerator or freezer, they should be arranged as described below: – raw meats, raw fish and shellfish, raw poultry and eggs should be stored at the bottom and according to their cooking temperature; – unprocessed vegetables and fruits should be stored in the middle; and – ready-to-eat food should be stored at the top.	ST
3.4.19 Cold storage of high-risk foods	R	Food business operators should ensure that high-risk food storage is at a temperature of ≤ 5 °C (41 °F)†.	ST
3.4.20 Storage of quick-frozen foodstuffs	R	The temperature of quick-frozen food must be stable and maintained, at all points in the product, at – 18 °C (– 0.4 °F) or lower, except where a higher or lower temperature is recommended for specific products by the manufacturer.	LEG[12]
3.4.20.1 Storage of all other frozen foodstuffs	R	The temperature of food other than quick-frozen should be maintained at all points in the product, at – 18 °C (– 0.4 °F) or lower, except where a higher or lower temperature is recommended for specific products by the manufacturer.	ST

Storage of unfit foodstuffs

3.4.21 Unfit foodstuffs	R	Food that are considered not suitable or unfit for human consumption must be marked and kept separately from other food until discarded.	LEG[1]

* SHIPSAN recommends a high-risk food storage temperature of ≤ 5 °C (41 °F) or below as best practice however some EU countries require that chilled food is maintained at a temperature of < 8 °C (46 °F): when high-risk, ready-to-eat food, is stored at a temperature between 5 °C (41 °F) and 8 °C (46 °F), then this food must be discarded if not consumed within 5 days from the date of preparation or opening, or according to the labelling instructions.

† SHIPSAN recommends a high-risk food storage temperature of ≤ 5 °C (41 °F) or below as best practice however some EU countries require that chilled food is maintained at a temperature of < 8 °C (46 °F).

Handling

During food handling, cross-contamination and physical contamination of products can occur. Cross-contamination is a key factor in foodborne illness, and it usually originates from four common sources: food itself, people, food contact equipment and work surfaces, and pests.

Good hygiene practices in food service are of crucial importance. For example, one key safety issue in food service is the use of utensils (e.g., tongs and spoons) because their inappropriate use could lead to the contamination of food. Waiting crew and any chefs involved in food service are usually responsible for keeping food safe and preventing cross-contamination.

Item	RCSA	Details	LEG/ST
		Handling	
3.4.22 Cross-contamination during handling	R	• The following foods should be kept separate from each other during handling and preparation to avoid cross-contamination: – raw foods which require cooking or processing before consumption (unless these are being used as an ingredient); and/or – fishery products which will be consumed raw; and – ready-to-eat/cooked foods (unless these are being used as an ingredient and will be re-cooked).	ST
		• Different types of raw foods of animal origin (e.g., beef, poultry, fish) should be handled separately from each other, unless they are to be cooked together as ingredients in the same dish/recipe.	ST
		• Utensils and equipment (knives, plates, spoons, cutting boards, meat slicers, etc.) should not be used to prepare raw food which requires cooking/processing and then used with ready-to-eat foods without cleaning and disinfection between uses.	ST
		• Separate food contact surfaces, equipment and utensils should ideally be provided to prevent the risk of cross-contamination between different types of food. When separate items are not available, cleaning and disinfection should be carried out between uses.	ST
3.4.22.1 Chopping boards	R	Chopping boards, knives, and other food-contact utensils must be cleaned and disinfected whenever changing from one type of food to another (e.g., from raw to cooked, from raw red meat to raw poultry).	LEG[1]
3.4.22.2 Heavy soiling of vegetables and fruits	R	Any heavy soiling should ideally be removed from vegetables and fruits, before being transferred to galley areas.	ST

3.4.22.3 Prevention of cross-contact	R	• Dedicated equipment and utensils should be used for allergenic ingredients whenever possible.	ST
		• When shared equipment is used, it should be thoroughly cleaned and visually inspected before handling non-allergenic foods.	ST
		• Food handlers should change any single-use gloves (where used), wash hands, clean, and disinfect work surfaces after handling allergens and before handling non-allergenic foods.	ST
3.4.22.4 Equipment used continuously	R	Equipment used continuously with high-risk foods should be cleaned and disinfected at least once every four hours.	ST
3.4.23 Fruits and vegetables	R	Fruits and vegetables which will not be peeled should be rinsed with potable water and/or disinfectant solutions (where necessary) designed for foodstuffs before food preparation to remove soil, bacteria, insects and chemicals.	ST
		Service	
3.4.24 Protection against contamination	R	Food in service must be protected against contamination.	LEG[1]
3.4.24.1 Cross-contamination during service	R	• Crew involved in serving food should use clean utensils (e.g., a spoon or ladle) to serve food.	ST
		• The food contact part of serving utensils (tongs, ladles, spoons, etc.) used for food service should not be in direct contact with hands.	ST
		• A clean dish should always be used for serving cooked and prepared foods.	ST
		• Cooked food should never be placed back into the same container it was stored in before cooking or during preparation.	ST
		• Crew who serve food should wear clean clothing.	ST
		• Sneeze guards (front and side guards) or suitable protection should be installed to prevent contamination of food on display or in service.	ST
		• Each food item should have a separate serving utensil.	ST
		• It is recommended that wash hands signs are placed at the main entrances to buffet food service areas.	ST
		• Food-handling staff should encourage passengers serving themselves not to handle food directly (e.g., hands, elbows, etc.), or otherwise potentially contaminate food (e.g., touching food with their jewellery such as loose bracelets, or chains).	ST

3.4.24.2 Information to consumers	R	• Consumers must be informed about the allergens of food in service as described in item 3.4.13.1, either through verbal communication or using written advice.	LEG[7, 14]
		• If verbal communication is used:	LEG[7, 14]
		– Clearly visible signs or written notices must be placed on menus or near food service areas, encouraging consumers to ask the crew about potential allergens in food items or dishes.	
		– Crew who are responsible to inform consumers about food allergens must be knowledgeable about the allergenic ingredients of food served and have a written information available for reference to help ensure they give consistent answers.	
		• If written format is used:	LEG[7, 14]
		– Allergenic ingredients should be listed alongside the food name, either in menus or on buffet labels/signs (for example self-service buffets).	
		– On self-service buffet stations, the allergen list should include only the allergens relevant to the specific food item.	
		– For menu-based dining, the allergen list should cover all allergens present in the entire dish.	
		– As an alternative, an allergen chart listing all allergens for all food items may be provided, as long as it is clearly visible to consumers.	
		• If there is a potential risk of cross-contact (allowing transfer of allergens between food items) despite the control measures, then Precautionary Allergen Labelling (PAL) statements (e.g., "May contain traces of nuts") should be used.	LEG[7, 14]

Temperature and time control

To ensure that food remains safe, food handlers are required to make sure that food is kept either cold or hot at an appropriate temperature. It is unsafe for many foods to be kept for a long time at ambient temperature because this can allow the growth of pathogenic bacteria, which may multiply to unsafe numbers, release toxins or allow spores to germinate.

Frozen food should be thawed in a way that prevents it remaining at ambient temperature for a sustained period. If food is thawed too far ahead of when it is actually needed then the core temperature may remain at ambient temperature for long periods.

Item	RCSA	Details	LEG/ST
		Temperature control	
3.4.25 Temperature control	R	Raw materials, ingredients, intermediate products, and finished products likely to support the reproduction of pathogenic microorganisms or the formation of toxins must not be kept at temperatures that might result in a risk to health. The cold chain must not be interrupted. However, limited periods outside temperature control are permitted, to accommodate the practicalities of handling during preparation, transport, storage, display and service of food, provided that it does not result in a risk to health.	LEG[1]
3.4.26 Devices and process	R	All refrigerators, freezers, cold stores, bain-maries, etc. should be capable of maintaining stored foods at the relevant temperatures.	ST
		Cooking	
3.4.27 Cooking temperatures	R	• The length and temperature of cooking should be sufficient to ensure the destruction of non-spore forming pathogenic microorganisms.	ST
		• For the safe preparation of whole cuts or joints of meat such as beef and pork all parts of them should reach a minimum of 63 °C (145 °F) or above for four minutes, or an equivalent temperature-time combination as described below, or a scientific assessment of equivalent safe food cooking temperatures should be made.	ST

Temperature	Time*
54.4 °C (130 °F)	112 minutes
55.0 °C (131 °F)	89 minutes
56.1 °C (133 °F)	56 minutes
57.2 °C (135 °F)	36 minutes
57.8 °C (136 °F)	28 minutes
58.9 °C (138 °F)	18 minutes
60.0 °C (140 °F)	12 minutes
61.1 °C (142 °F)	8 minutes
62.2 °C (144 °F)	5 minutes
62.8 °C (145 °F)	4 minutes
63.9 °C (147 °F)	134 seconds
65.0 °C (149 °F)	85 seconds
66.1 °C (151 °F)	54 seconds
67.2 °C (153 °F)	34 seconds
68.3 °C (155 °F)	22 seconds
69.4 °C (157 °F)	14 seconds
70.0 °C (158 °F)	0 seconds
** Holding time may include post oven heat rise*	

- For minced meat and minced fish, the centre of the food should reach a temperature of at least 68°C (155 °F) for 15 seconds or in accordance with the following table: ST

Temperature	Time*
63 °C (145 °F)	3 minutes
66 °C (150 °F)	1 minute
70 °C (158 °F)	1 second (instantaneous)

- For poultry, lagomorphs (e.g., rabbit), stuffed fish, stuffed meat, stuffed pasta, stuffed poultry or stuffing containing fish, meat or poultry, all parts of the food should reach a temperature of at least 74 °C (165 °F) for 15 seconds. ST
- For fish and meats including pork, beef, lamb, for which the cooking temperature is not specified above, all parts of the food, should reach a temperature of at least 63 °C (145 °F) for 15 seconds. ST
- Raw eggs that are not prepared for immediate service, should reach a temperature of at least 68 °C (155 °F) or above for 17 seconds or an equivalent temperature-time combination. ST
- Raw shell eggs that are broken and prepared in response to consumers' orders and for immediate service should reach a temperature of at least 63 °C (145 °F) or above for 15 seconds. ST
- Fruits and vegetables cooked for hot holding should be cooked to a temperature of 57 °C (135 °F). ST
- If cooking instructions, are provided by the manufacturer they should be followed. ST

3.4.27.1 Live bivalve molluscs R Live bivalve molluscs harvested from B and C production areas*, that have not been submitted to purification or relaying must be immersed in boiling water for the period required to raise the internal temperature of the mollusc flesh to at least 90 °C (194 °F) and maintain it for a minimum of 90 seconds. LEG[11]

3.4.27.2 Stirring R Heat should be distributed throughout soups/gravies/stews/custard and other liquid-based foods by stirring. ST

3.4.27.3 Frying oil R
- Frying oil should be changed when the content of total polar compounds is more than 25 %. ST

* EU Regulation (EC) No 627/2019: Class B Production Area: Water Quality: Between 230 and 4,600 *E. coli* per 100 g. Requirements Before Consumption: Purification (depuration) in clean seawater tanks for a specified time. Relaying (transferring to cleaner waters) for at least two months. Cooking at high temperatures if not purified or relayed. Class C Production Area: Water Quality: Between 4,600 and 46,000 *E. coli* per 100 g. Requirements Before Consumption: Must undergo relaying in a Class A area for at least two months. Not permitted for direct human consumption unless heat-treated (e.g., boiling at 90 °C for at least 90 seconds).

		• If a measuring device (cooking oil tester/food oil monitor) is not available, the frying oil should be changed if foaming occurs during heating, if it changes colour (darkens or lightens) or if it has/acquires unusual taste, smell and/or odour.	ST
3.4.27.4 Reduction of the presence of acrylamide	R	• Food business operators who produce the foodstuffs listed below, must apply mitigation measures provided for in **Table 9** (page 90): – French fries, other cut (deep fried) products and sliced potato crisps from fresh potatoes; – potato crisps, snacks, crackers and other potato products from potato dough; – bread; – fine bakery wares: cookies, biscuits, rusks, cereal bars, scones, cornets, wafers, crumpets and gingerbread, as well as crackers, crisp breads and bread substitutes. In this category a cracker is a dry biscuit (a baked product based on cereal flour); and – roast coffee.	LEG[15]
		• Food business operators must apply the additional mitigation measures set out in **Table 10** (page 91) if they operate: – in facilities under their direct control; and – under one trademark or commercial license, as a part of, or franchise of, a larger, interconnected operation which is managed by a food business operator that centrally supplies the foodstuffs listed above.	LEG[15]
3.4.28 Sushi	R	The food business operator must ensure that the fishery products to be consumed raw, have been preserved as frozen fishery products for a sufficiently long period to kill the viable parasites as described in item 3.4.28.1.	LEG[11]
3.4.28.1 Documentation	R	• For fishery products intended to be consumed raw or nearly raw, or for marinated, salted, or otherwise treated products where the process is not validated to destroy viable parasites, the products must undergo a freezing treatment as specified in Regulation (EC) No 853/2004, Annex III, Section VIII, Chapter III(D). In the absence of validated scientific parameters for marination or salting processes, these treatments should be considered insufficient to kill parasites, and the freezing requirement applies.	LEG[11]

- For fishery products derived from finfish or cephalopod molluscs: (a) fishery products intended to be consumed raw; or (b) marinated, salted and any other treated fishery products, if the treatment is insufficient to kill the viable parasite (the process is not validated to destroy viable parasites); the ship food operator must ensure that the raw material or finished product undergoes a freezing treatment in order to kill viable parasites that may be a risk to the health of the consumer. These fishery products must be accompanied by a document issued by the food business operator performing the freezing treatment, stating the type of freezing treatment that the products have undergone (freezing treatment as specified in Regulation (EC) No 853/2004, Annex III, Section VIII, Chapter III(D)). LEG[11]
- The food business operator must ensure that the fishery products intended to be consumed raw, which have undergone other acceptable treatment (other than freezing treatment) or process, are accompanied by documents stating that these fishery products originate from a fishing ground or fish farming which complies with the specific conditions required by legislation. LEG[11]

Cooling

3.4.29 Cooling guidelines R Where foodstuffs are to be held or served at chilled temperatures, they must be cooled as quickly as possible as described in item 3.4.29.1 following the heat-processing stage, or final preparation stage if no heat process is applied, to a temperature which does not result in a risk to health. LEG[1]

3.4.29.1 Cooling process R The temperature at the centre of the food product should be reduced from 57 °C (135 °F) to 21 °C (70 °F) in less than two hours; and from 21 °C (70 °F) to 5 °C (41 °F) or less within a further four hours. Records should be kept documenting the cooling of high-risk foods from a temperature after cooking of at least 57 °C (135 °F), or after final preparation, to 21 °C (70 °F) in less than two hours and to 5 °C (41 °F) or less within a further four hours. ST

3.4.30 Cooling methods R The following methods may be used to cool foods rapidly: ST
- placing the food in shallow pans;
- separating the food into smaller or thinner portions;
- using rapid cooling equipment, such as 'blast chillers';
- stirring the food in a container placed in an ice bath;
- placing the food in containers that facilitate the rapid transfer of heat;

- adding ice as an ingredient to the food;
- cooling food containers or food under running cold potable water;
- storing the food in a cool designated area;
- placing the food in pre-frozen or cold containers; and
- using a combination of the methods described above.

Ice cream

3.4.31 Temperature of frozen foods	R	Ice cream may be stored at a higher temperature only when it is about to be served.	ST

Thawing

3.4.32 Thawing hazards	R	High-risk foods must be thawed quickly or using a method that will prevent them being kept for long periods at ambient temperature.	LEG[1]
3.4.33 Good thawing practices	R	• Thawing may be conducted using one of the following methods, involved: – under refrigeration or in thawing cabinets at a temperature of ≤ 5 °C (41 °F)*. Thawed frozen foods should be cooked as soon as possible—preferably within 24 hours after they have fully defrosted. However, intact cuts of red meat (such as beef, pork, or lamb roasts, chops, and steaks) may be kept under refrigeration and safely cooked within 3 to 5 days after complete thawing, provided they are stored at 5 °C or below; – food may be thawed by completely submerging it in cold running potable water at a temperature not exceeding 21 °C (70 °F), with sufficient water flow to agitate and remove loose particles; – for ready-to-eat foods, the thawing process must not allow any portion of the food to rise above 5 °C (41 °F); – for raw animal foods requiring cooking, the total time during which any portion of the food remains above 5 °C (41 °F) must not exceed four hours, including thawing and preparation time; and – as part of cooking process by using a microwave with attention to ensure a proper thawing cycle-controlled time or temperature and only following any directions on the food packaging.	ST

* SHIPSAN recommends a thawing temperature of 5 °C (41 °F) or below as best practice; however, some EU countries require that frozen foods are thawed at a temperature of < 8 °C (46 °F).

- When using water to thaw food, cold running potable water should be used in a clean unstopped (i.e., no plug inserted) sink. ST
- Thawing should be carried out in a container that is larger than the food which is to be thawed. ST
- Thawed food should not be refrozen except where it is used as an ingredient in a food that is cooked and then frozen. ST
- Food should be covered completely unless it is an item which can be thawed in its original packaging or is otherwise protected. ST
- If food is thawed in a refrigerator which is also used for food storage, then it should be placed in a leak-proof container on the lowest shelves of the unit and below any stored items. ST
- While defrosting food, it should not be kept in contact with other types of food. ST
- All frozen foods should be thawed prior to cooking except foods that have manufacturer's instructions which state otherwise. ST

3.4.33.1 Run off liquid R The run off liquid must be held and disposed of appropriately to avoid any risk of cross-contamination. LEG[1]

3.4.34 Labelling R When the thawing method requires controlled time or temperature, these should be monitored. ST

3.4.35 Record keeping R When the thawing method requires controlled time or temperature, records of food thawing including core temperatures and thawing times should be maintained for at least 12 months and be available for inspection. ST

Reheating

3.4.36 Reheating temperatures R
- Reheating food should be carried out rapidly. The maximum time allowed should not be greater than two hours. The reheating process should be adequate to ensure food reaches a safe core temperature. ST
- The reheating process of high-risk food for hot holding should be adequate to ensure that the centre of the food reaches a temperature of at least 74 °C (165 °F) for 15 seconds or 82 °C (180 °F) for one second. ST

3.4.37 Reheating restrictions R It is recommended that food is not reheated more than once. ST

Hot holding

3.4.38 Hot holding temperature	R	High-risk food which is to be held hot should be kept at a temperature of at least 57 °C (135 °F) or above until required (except where time is used as a control as detailed in item 3.4.41).	ST
3.4.39 Temperature check	R	Checks should take place on a regular basis to ensure that high-risk foods are held at or above 57 °C (135 °F) (except where time is used as a control as detailed in item 3.4.41).	ST

Cold holding

3.4.40 Cold holding temperatures	R	If high-risk food is to be held cold, it should be kept at temperatures that are given in item 3.4.19 (storage temperatures), or time should be used as a control set out in item 3.4.41.	ST

Time as a control for perishable foods

3.4.41 Time as a control for served food	R	• Time without temperature control can be used as a public health control for perishable foods before cooking or for ready-to-eat perishable food that is displayed or held for immediate consumption.	ST
		• If time without temperature control is used as the public health control with a maximum of four hours, then the food: – Should have an initial temperature of 5 °C (41 °F) or less or 57 °C (135 °F) or greater before placement on time control (food may have an initial temperature of 21 °C (70 °F) or less before placement on time control if: ○ it is a ready-to-eat fruit or vegetable that becomes a perishable food after cutting or it is a ready-to-eat food in hermetically sealed packaging that becomes perishable after opening. **AND** ○ The food temperature does not exceed 21 °C (70 °F) within four hours from the time it became a perishable food. ○ The food is marked or otherwise identified to indicate four hours past the time it became a perishable food (regardless of whether the time between service setup and closing exceeds four hours). – Should not be placed on temperature control again. – Should be marked or otherwise identified to indicate the time four hours past the time when the food is removed from	ST

temperature control if the time between service set-up and closing is greater than four hours.
    - If food is on/in a time control unit (such as bains-marie, cold basins, soup wells) and service is under four hours, a 4-hour discard label is not needed.
    - If the time control unit meant to be cold holding or hot holding is not operational or used as intended, the unit is considered a counter, and the food stored within it should be labelled with its 4-hour discard time. This does not apply to self-service buffet lines.
    - Containers of perishable food under time control and placed on preparation counters should be labelled with the discard time, even if the outlet is open less than four hours.
  - Should be discarded within four hours of placement on time control.
- If time without temperature control is used as the public health control up to a maximum of six hours, then the food: ST
  - Should have an initial temperature of 5 °C (41 °F) or less when removed from temperature control and the food temperature should not exceed 21 °C (70 °F).
  - Should be monitored to ensure the warmest portion of the food does not exceed 21 °C (70 °F).
  - Should be marked or otherwise identified to indicate the time when the food is removed from temperature control and the time six hours later (regardless of whether the time between service setup and closing exceeds six hours).
  - Should be discarded within six hours of placement on time control or if the food temperature exceeds 21 °C (70 °F).
  - Should not be placed on temperature control again.

3.5 Equipment and utensils

Materials used in the design and the construction of equipment and utensils should not affect the safety or quality of food. Equipment and utensils should be designed and constructed with materials that are durable and easy to clean. The materials used should retain their properties when used under normal conditions.

Item	RCSA	Details	LEG/ST
		Characteristics of materials	
3.5.1 Properties of materials	R	Materials used in the construction of equipment and utensils must be: – food safe;	LEG[16]

- non-toxic;
- suitable for food contact;
- easily cleanable;
- corrosion-resistant;
- smooth;
- non-absorbent;
- resistant to chipping, scratching, scoring and decomposition; and
- resistant to the damaging effects of detergents and disinfectants.

Examples of appropriate materials for equipment and utensils:
- stainless steel;
- food grade plastics and laminates;
- copper and copper alloys (used only where rendered corrosion-resistant or where exposure to food is clearly and specifically limited to non-acidic (pH > 6) food and beverage);
- ceramic and enamelled ware; and
- glass.

Migration

3.5.2 Migration of materials to foods	R	• Food contact materials must be made of substances that may not reasonably migrate or affect the characteristics of food. They must not be made of hazardous materials or impart a colour, taste or odour to food.	LEG[1, 16]
		• Food business operators must have in place systems and procedures to allow identification of the businesses from which and to which, materials or articles intended to come into contact with food, used in their manufacture, are supplied.	LEG[1, 16]
		• Food business operators must ensure that all food contact materials do not allow the migration of hazardous substances into food in quantities that could endanger human health.	LEG[1, 16]
		• If sourced from within the EU: A Declaration of Compliance (DoC) must be available for regulated materials, in accordance with Regulation (EC) No 1935/2004, Regulation (EU) No 10/2011 (for plastics), and Directive 84/500/EEC (for ceramics).	LEG[1, 16]

3.5.2.1 Sourced from outside the EU	R	If sourced from outside the EU: Food contact materials should meet equivalent safety standards to those set by the EU regulations, particularly Regulation (EC) No 1935/2004. A Declaration of Compliance (DoC) or equivalent safety certificate or specific laboratory reports should be obtained from the manufacturer or supplier. If compliance cannot be demonstrated, the material should not be used in food operations.	ST
		Utensils	
3.5.3 Characteristics of utensils	R	• Rims, bases, handles and any other ledges or crevices of pots and pans should be easily cleanable and kept in sound condition. • Containers and similar receptacles for unpackaged moist foods should be: – readily removable; – easily cleanable and be capable of being drained.	ST ST
3.5.3.1 Appropriateness	R	Materials and articles that are not yet in contact with food but are intended to come into contact with it must be: labelled with the phrase "Suitable for food contact", or bear the glass and fork symbol ( ), or be clearly intended for food contact by their nature (e.g., a cooking spoon, a plate, or a pot).	LEG[16]
		Design and construction	
3.5.4 Design of equipment	R	• Equipment and utensils must be designed and constructed to facilitate cleaning. • Equipment must be designed and constructed to prevent accumulation of dirt and debris.	LEG[1] LEG[1]
3.5.4.1 Easy access	R	Equipment, control systems and services connected to the equipment should be designed so as to allow easy access for maintenance and cleaning.	ST
3.5.5 Maintenance	R	There should be a suitable maintenance and cleaning programme or system in place for equipment and surfaces.	ST
3.5.5.1 Condition of equipment	R	Equipment must be kept in good order, repair and condition.	LEG[1]
3.5.5.2 Out of order equipment	R	Out of order devices should have sings or labels that clearly state that the devices are out of order and that they are not to be used.	ST

3.5.6 Good condition	R	All articles, fittings and equipment with which food comes into contact must be so constructed, be of such materials and be kept in such good order, repair and condition as to minimise any risk of contamination.	LEG[1]
3.5.7 Placing of equipment	R	There must be sufficient height between the equipment and the deck to allow adequate access for inspection, cleaning and maintenance of the equipment and to allow deck cleaning.	LEG[1]
3.5.8 Drainage	R	Drainage facilities must be designed and constructed to avoid the risk of contamination of foodstuffs.	LEG[1]
3.5.8.1 Base plates	R	Base plates used to support and fix equipment should have smooth, continuous and sloping surfaces to aid drainage.	ST
3.5.9 Temperature control	R	Where necessary, suitable temperature-controlled handling and storage conditions of sufficient capacity must be provided for maintaining foodstuffs at appropriate temperatures and designed to allow those temperatures to be monitored and, where necessary, recorded.	LEG[1]
3.5.9.1 Temperature measuring devices	R	• Equipment such as refrigerators, freezers, ovens, bain-maries, and dishwashers should have working temperature measuring devices installed to help ensure that appropriate temperatures are achieved and allow effective temperature monitoring system. • Temperature measuring devices or thermometers on equipment should be periodically checked with a calibrated manual thermometer. This should be recorded and maintained on board for at least 12 months.	ST ST
3.5.10 Calibration	R	Food temperature measuring devices should be accurate and where necessary calibrated in accordance with the manufacturer's instructions.	ST
3.5.11 Location of temperature measuring devices	R	• Hot and cold food holding equipment should be equipped with at least one temperature measuring device that is positioned to allow easy observation of the device's temperature display, where temperature control is needed or a temperature monitoring system implemented. • In a mechanical refrigerated or hot storage unit, the sensor of the thermometer should be located to measure the air temperature in the warmest part of a mechanically refrigerated unit and in the	ST ST

		coolest part of a hot storage unit or a temperature monitoring system implemented.	
3.5.12 Capacity of equipment	R	• Equipment for food should be sufficient in number and capacity to maintain safe food storage, processing, and service. • Equipment used for food storage/holding (such as fridges, freezers, bain-maries) should have a data plate that specifies the maximum capacity of the unit.	ST ST
3.5.13 Transport equipment	R	The exposed surfaces and food contact space of food transport equipment should be easy to clean, disinfect and be kept in good repair.	ST
		Dish/pot/glass washing machines	
3.5.14 Characteristics of washing machine	R	Exposed surfaces of dish, glass and pot washing equipment should be corrosion-resistant, smooth, and easily cleanable.	ST
3.5.15 Coating	R	Coatings used on temperature measuring devices should be resistant to cracking.	ST
3.5.16 Temperature thermostat	R	Wash tanks and pumped rinse tanks designed to heat water should be equipped with a temperature thermostat for maintaining the proper water temperature in the tank.	ST
		Freezers and refrigerators	
3.5.17 Types of freezers and refrigerators	R	All types of refrigerators and freezers should have controls capable of maintaining safe temperatures.	ST
3.5.18 Cleaning and maintenance	R	Refrigeration components should be accessible for necessary cleaning and maintenance.	ST
		Hot holding equipment	
3.5.19 Temperature measuring devices	R	Temperature measuring devices should be accurate to ± 1 °C (± 2 °F) in the intended range of use.	ST
		Ice making machine	
3.5.20 Protection of	R	• The lids and doors on ice making machines should be kept closed when not in use.	ST

ice pans and bins		• When top openings into ice pans and bins are subject to potential overhead contamination from drink dispensers or water stations, they should be protected during use and holding. • Ice scoops should be stored in a hygienic manner so as not to contaminate the ice. The hand contact parts of the ice scoop should not be allowed to come into contact with ice. Hand washing is always mandatory before handling ice. • Ice should normally be stored inside the machines. It may be transferred to a clean lidded ice bin/container for transport or service when required.	ST ST ST
3.5.21 Use of potable water	R	Potable water must be used for making ice.	LEG[1]

Sinks

3.5.22 Resistance to corrosion	R	Food and equipment washing sinks must be made of a durable material and corrosion-resistant particularly if they come into contact with chemicals.	LEG[1, 16]
3.5.23 Materials	R	Stainless steel is preferred; other materials may be used if they are equally durable and non-absorbent.	ST
3.5.24 Drainage	R	Utensil washing sinks should be equipped with a draining board and splash back. The splash back area over the sink must be of an easily cleanable material.	ST
3.5.25 Design	R	Utensil washing sinks with three compartments (triple bowl) are preferred to single bowl or double sinks to allow an effective wash, rinse, and disinfection operation.	ST
3.5.26 Taps	R	• Every sink should have a supply of potable water at cold and hot temperatures (e.g., mixer taps or separate hot and cold taps). • Hand washing sink taps should preferably open and close with non-hand operated (sensor, elbow, knee, or foot) activation.	ST ST
3.5.27 Separate sinks	R	Separate sinks should be provided for food, utensil, and hand washing.	ST
3.5.28 Hand washing facilities	R	• Hand washing facilities must be available in all food-handling areas, including food preparation, service, and warewashing areas, and toilet facilities used by food staff.	LEG[1]

		• Hand washing facilities must be sufficient in number, suitably located, designated exclusively for hand washing, and supplied with potable water, liquid soap, hygienic hand-drying means, and waste bins, as described in section 7.2.	LEG[1]
3.5.29 Drain	R	The drain of food and equipment washing sinks should be designed as described in item 9.3.3.	ST

3.6 Cleaning, disinfection and storage of working utensils

Cleaning is the removal of food residues, dirt, grease and other undesirable soiling and debris. The risk of contamination of food by pathogenic microorganisms is reduced when utensils and equipment are kept clean. It is a legal requirement (Regulation (EC) No 852/2004) to keep premises, equipment, utensils and materials clean to help to ensure the safety of food. Disinfection is used in order to reduce the number of pathogenic and other microorganisms to safe levels by using physical or chemical means. Applying appropriate methods of cleaning and disinfection to work surfaces and utensils can control the number of pathogenic microorganisms' present. Therefore, cleaning and disinfection are an essential and integral part of a food business operator.

Item	**RCSA**	**Details**	**LEG/ST**
		Cleaning and disinfection	
3.6.1 Cleaning of utensils and equipment	R	All utensils and equipment that may come into contact with food must be kept clean (see item 3.6.4).	LEG[1]
3.6.1.1 Disinfection of utensils	R	All utensils and equipment that may come into contact with food should be disinfected after cleaning (see item 3.6.6).	ST
3.6.1.2 Cleaning procedures for allergen control	R	Utensils and equipment for allergenic foods must be cleaned using validated methods that effectively remove allergen residues.	LEG[1]
3.6.1.3 Validation of cleaning procedures for allergen control	R	Cleaning procedures should include checking for the absence of visible debris and, where appropriate, testing for allergen residues.	ST
3.6.2 Cleaning Schedule/Plan	R	• In a ship food operation, a suitable Cleaning Schedule or Plan should always be in place.	ST
		• Cleaning Schedule/Plan records should be maintained and be available for inspection.	ST

Cleaning Schedule/Plan

This should include:

- the areas, surfaces or items to be cleaned;
- the types of cleaning materials to be used;
- the methods of cleaning and disinfection;
- the frequency of cleaning (before/after use, daily, weekly, monthly);
- any safety precautions for crew required;
- the function and station of the crew member doing the cleaning;
- a signature of the person responsible for cleaning and disinfection; and
- a signature of the supervisor/manager responsible for ensuring and checking the standards of cleaning.

3.6.3 Cleaning frequency	R	• Utensils and equipment should be cleaned both between tasks and during any food handling when cross-contamination could occur, such as after contact with high-risk foods. • Food temperature measuring devices (e.g., temperature probes) should be cleaned and disinfected before and after use.	ST ST

Methods of cleaning utensils

3.6.4 Manual washing method	R	• A sink with at least three compartments should be used for manual utensil washing or another system to ensure proper cleaning and disinfection of utensils. • In any operations where this is not possible, the sink should be cleaned and disinfected between uses to ensure that effective washing, rinsing and disinfection can be maintained. • Manual washing should include the five stages listed below. – **Pre-cleaning**: removal of food waste by scraping, sweeping, wiping, or pre-rinsing. Pre-soaking may also be used to help effective cleaning. – **Main cleaning** (first sink): loosening of surface waste and grease using hot water, detergent, and brushes. – **Rinsing** (second sink): removal of any detergent traces using clean water. – **Disinfection** (third sink): killing of microorganisms to a safe level as described in item 3.6.6. – **Drying**: using suitable techniques (e.g., air drying, wiping with a clean cloth or disposable paper towel suitable for food-contact surfaces).	ST ST ST
3.6.5 Dish/pot/glass washing machine	R	Machine dish/pot/glass washing should follow the five stages listed below. – **Pre-cleaning**: removal of food waste manually before loading the machine.	ST

- **Main cleaning**: with clean hot water and detergent.
- **Rinsing**: removal of detergent using clean water. Normally known as 'intermediate rinse' in many conveyor and 'flight' type machines.
- **Disinfection**: killing microorganisms as described in point 3.6.6. Normally known as the 'final rinse' in many conveyor and 'flight' type machines.
- **Drying**: air drying. This may be achieved by blown warm air on some machines.

Disinfection

3.6.6 Methods of disinfection	R	• Utensils and equipment that come into contact with food should be disinfected using one or more of the following. – Hot water at a minimum temperature of 77 °C (171 °F) or above for at least 30 seconds (manual washing) or 82 °C (179.6 °F) (this is dish washing machine water temperature at the manifold). The minimum temperature at the surface of the utensil in the dishwashing machine should not be less than 71 °C (160 °F). – Steam (steam can be unsuitable for machines and systems containing plastic materials which are destroyed by high temperatures). – A chemical disinfectant in accordance with manufacturer's instructions.	ST
		• Personal Protective Equipment (PPE) should be used where necessary in order to avoid scalding.	ST

Cleaning equipment

3.6.7 Maintenance	R	Cleaning equipment should be kept clean and well maintained.	ST

Use of cleaning equipment

3.6.8 Safety of cleaning chemicals	R	Cleaning and disinfection chemicals used in food areas must be food safe and designed for use on food contact surfaces.	LEG[17]
3.6.9 Correct use of cleaning chemicals	R	• Cleaning chemicals should be used in accordance with the manufacturer's instructions (e.g., contact time, concentration, doses, etc.).	ST
		• Manual mixing instructions should be available to be used when automatic dosing systems are out of order.	ST

		• Surfaces to which cleaning chemicals have been applied should be rinsed with clean water. Some cleaning chemicals can be left on surfaces when this is indicated in the manufacturer's instructions.	ST
		• Disinfectants do not have cleaning properties and they should not be used as detergents. However, some cleaning chemicals such as detergent-sanitisers may do both tasks and this will be indicated in the manufacturer's instructions.	ST
		Storage of utensils and equipment	
3.6.10 Storage	R	Only utensils and equipment for food preparation and service should be stored in food handling and preparation areas.	ST
3.6.11 Protection	R	• Loose and portable equipment should not be stored in direct contact with the deck.	ST
		• The utensils and equipment stored should be kept clean and dry.	ST
		• Utensils and equipment should be protected against contamination.	ST
		Frequency of cleaning and disinfection of cleaning and disinfection equipment	
3.6.12 Cleaning frequency of equipment	R	Cleaning equipment should be cleaned: – after each use; – throughout the day at a frequency to help reduce any risk of contamination.	ST
		Storage of cleaning equipment	
3.6.13 Storage of cleaning equipment	R	• Cleaning equipment should be stored in a separate area, cupboard, or locker away from food or food contact surfaces.	ST
		• Storage rooms should be dry, clean, and well ventilated.	ST
3.6.14 Storage of cleaning chemicals	R	• Cleaning chemicals and disinfectants must not be stored in areas where food is handled.	LEG[1]
		• Cleaning chemicals must be stored in a clearly labelled cupboard or locker and away from food or food contact surfaces (see Chapter 8).	LEG[1]

Referenced legislation

1. Regulation (EC) No 852/2004 on the hygiene of foodstuffs and Commission Regulation (EU) 2021/382 of 3 March 2021 amending the Annexes to Regulation (EC) No 852/2004 of the European Parliament and of the Council on the hygiene of foodstuffs as regards food allergen management, redistribution of food and food safety culture
2. Commission Notice 2022/C 355/01 on the implementation of food safety management systems covering Good Hygiene Practices and procedures based on the HACCP principles, including the facilitation/flexibility of the implementation in certain food businesses
3. Commission Regulation (EC) No 2073/2005 on microbiological criteria for foodstuffs can be used here as a verification/validation step of the HAACP plan
4. Regulation (EC) No 178/2002 laying down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety
5. Council Directive 84/500/EEC on the approximation of the laws of the Member States relating to ceramic articles intended to come into contact with foodstuffs
6. Commission Regulation (EU) No 10/2011 of 14 January 2011 on plastic materials and articles intended to come into contact with food Text with EEA relevance
7. Regulation (EC) No 1169/2011 on the provision of food information to consumers, amending Regulations (EC) No 1924/2006 and (EC) No 1925/2006 of the European Parliament and of the Council, and repealing Commission Directive 87/250/EEC, Council Directive 90/496/EEC, Commission Directive 1999/10/EC, Directive 2000/13/EC of the European Parliament and of the Council, Commission Directives 2002/67/EC and 2008/5/EC and Commission Regulation (EC) No 608/2004
8. Commission Implementing Regulation (EU) 2021/405 of 24 March 2021 laying down the lists of third countries or regions thereof authorised for the entry into the Union of certain animals and goods intended for human consumption in accordance with Regulation (EU) 2017/625 of the European Parliament and of the Council
9. Commission Implementing Regulation (EU) 2020/2235 of 16 December 2020 laying down rules for the application of Regulations (EU) 2016/429 and (EU) 2017/625 of the European Parliament and of the Council as regards model animal health certificates, model official certificates and model animal health/official certificates, for the entry into the Union and movements within the Union of consignments of certain categories of animals and goods, official certification regarding such certificates and repealing Regulation (EC) No 599/2004, Implementing Regulations (EU) No 636/2014 and (EU) 2019/628, Directive 98/68/EC and Decisions 2000/572/EC, 2003/779/EC and 2007/240/EC
10. Commission Implementing Regulation (EU) 2019/1793 of 22 October 2019 on the temporary increase of official controls and emergency measures governing the entry into the Union of certain goods from certain third countries implementing Regulations (EU) 2017/625 and (EC) No 178/2002 of the European Parliament and of the Council and repealing Commission Regulations (EC) No 669/2009, (EU) No 884/2014, (EU) 2015/175, (EU) 2017/186 and (EU) 2018/1660
11. Regulation (EC) No 853/2004 laying down specific hygiene rules for food of animal origin
12. Council Directive No 89/108/EEC on the approximation of the laws of the Member States relating to quick-frozen foodstuffs for human consumption
13. Commission Regulation (EC) No 37/2005 on the monitoring of temperatures in the means of transport, warehousing and storage of quick-frozen foodstuffs intended for human consumption
14. Commission Notice of 13 July 2017 relating to the provision of information on substances or products causing allergies or intolerances as listed in Annex II to Regulation (EU) No 1169/2011 of the European Parliament and of the Council on the provision of food information to consumers
15. Regulation (EU) No 2017/2158 establishing mitigation measures and benchmark levels for the reduction of the presence of acrylamide in food
16. Regulation (EC) No 1935/2004 on materials and articles intended to come into contact with food
17. Regulation (EU) No 528/2012 concerning the making available on the market and use of biocidal products

Table 3: Substances or products causing allergies or intolerance

1. Cereals containing gluten, namely: wheat (such as spelt and khorasan wheat), rye, barley, oats or their hybridised strains, and products thereof, except: – wheat based glucose syrups including dextrose*, – wheat based maltodextrins, – glucose syrups based on barley, and – cereals used for making alcoholic distillates including ethyl alcohol of agricultural origin;

* And the products thereof, in so far as the process that they have undergone is not likely to increase the level of allergenicity assessed by the Authority for the relevant product from which they originated.

2. Crustaceans and products thereof;
3. Eggs and products thereof;
4. Fish and products thereof, except:
   - fish gelatine used as carrier for vitamin or carotenoid preparations, and
   - fish gelatine or Isinglass used as fining agent in beer and wine;
5. Peanuts and products thereof;
6. Soybeans and products thereof, except:
   - fully refined soybean oil and fat,
   - natural mixed tocopherols (E306), natural D-alpha tocopherol, natural D-alpha tocopherol acetate, and natural D-alpha tocopherol succinate from soybean sources,
   - vegetable oils derived phytosterols and phytosterol esters from soybean sources, and
   - plant stanol ester produced from vegetable oil sterols from soybean sources;
7. Milk and products thereof (including lactose), except:
   - whey used for making alcoholic distillates including ethyl alcohol of agricultural origin, and
   - lactitol;
8. Nuts, namely: almonds (*Amygdalus communis* L.), hazelnuts (*Corylus avellana*), walnuts (*Juglans regia*), cashews (*Anacardium occidentale*), pecan nuts (*Carya illinoinensis* (Wangenh.) K. Koch), Brazil nuts (*Bertholletia excelsa*), pistachio nuts (*Pistacia vera*), macadamia or Queensland nuts (*Macadamia ternifolia*), and products thereof, except for nuts used for making alcoholic distillates including ethyl alcohol of agricultural origin;
9. Celery and products thereof;
10. Mustard and products thereof;
11. Sesame seeds and products thereof;
12. Sulphur dioxide and sulphites at concentrations of more than 10 mg/kg or 10 mg/L in terms of the total SO_2 which are to be calculated for products as proposed ready for consumption or as reconstituted according to the instructions of the manufacturers;
13. Lupin and products thereof; and
14. Molluscs and products thereof.

Table 4: Omission of the list of ingredients

The following foods shall not be required to bear a list of ingredients:

- fresh fruit and vegetables, including potatoes, which have not been peeled, cut or similarly treated;
- carbonated water, the description of which indicates that it has been carbonated;
- fermentation vinegars derived exclusively from a single basic product, provided that no other ingredient has been added;
- cheese, butter, fermented milk and cream, to which no ingredient has been added other than lactic products, food enzymes and micro-organism cultures essential to manufacture, or in the case of cheese other than fresh cheese and processed cheese the salt needed for its manufacture; and
- foods consisting of a single ingredient, where:
  - the name of the food is identical to the ingredient name, or
  - the name of the food enables the nature of the ingredient to be clearly identified.

Table 5: Date of minimum durability, 'Use by' date and date of freezing

1. The date of minimum durability shall be indicated as follows:
   a) the date shall be preceded by the words:
      - 'Best before …' when the date includes an indication of the day,

- 'Best before end …' in other cases;

b) the words referred to in point (a) shall be accompanied by:
- either the date itself, or,
- a reference to where the date is given on the labelling.

If need be, these particulars shall be followed by a description of the storage conditions which must be observed if the product is to keep for the specified period;

c) the date shall consist of the day, the month and possibly, the year, in that order and in uncoded form.

However, in the case of foods:
- which will not keep for more than three months, an indication of the day and the month shall be sufficient,
- which will keep for more than three months but not more than 18 months, an indication of the month and year shall be sufficient,
- which will keep for more than 18 months, an indication of the year shall be sufficient;

d) subject to Union provisions imposing other types of date indication, an indication of the date of minimum durability shall not be required for foodstuff listed in **Table 4** (page 85).

2. The 'use by' date shall be indicated as follows:

a) it shall be preceded by the words 'use by …';

b) the words in point (a) shall be accompanied by:
- either the date itself, or,
- a reference to where the date is given on the labelling.

Those particulars shall be followed by a description of the storage conditions which must be observed;

c) the date shall consist of the day, the month and, possibly, the year, in that order and in uncoded form;

d) the 'use by' date shall be indicated on each individual prepacked portion.

3. The date of freezing or the date of first freezing for frozen meat, frozen meat preparations and frozen unprocessed fishery products shall be indicated as follows:

a) it shall be preceded by the words 'Frozen on …';

b) the words referred to in point (a) shall be accompanied by:
- the date itself, or,
- a reference to where the date is given on the labelling;

c) the date shall consist of the day, the month and the year, in that order and in uncoded form.

Table 6: Foods that an indication of the date of minimum durability shall not be required

- Fresh fruit and vegetables, including potatoes, which have not been peeled, cut or similarly treated; this derogation shall not apply to sprouting seeds and similar products such as legume sprouts.
- Wines, liqueur wines, sparkling wines, aromatised wines, and similar products obtained from fruit other than grapes, and beverages falling within CN code 2206 00 obtained from grapes or grape musts.
- Beverages containing 10 % or more by volume of alcohol.
- Bakers' or pastry cooks' wares which, given the nature of their content, are normally consumed within 24 hours of their manufacture.
- Vinegar.
- Cooking salt.

- Solid sugar.
- Confectionery products consisting almost solely of flavoured and/or coloured sugars.
- Chewing gums and similar chewing products.

Table 7: Foods which are exempted from the requirement of the mandatory nutrition declaration

1. Unprocessed products that comprise a single ingredient or category of ingredients;
2. Processed products which the only processing they have been subjected to is maturing and that comprise a single ingredient or category of ingredients;
3. Waters intended for human consumption, including those where the only added ingredients are carbon dioxide and/or flavourings;
4. A herb, a spice or mixtures thereof;
5. Salt and salt substitutes;
6. Table top sweeteners;
7. Products covered by Directive 1999/4/EC of the European Parliament and of the Council of 22 February 1999 relating to coffee extracts and chicory extracts, whole or milled coffee beans and whole or milled decaffeinated coffee beans;
8. Herbal and fruit infusions, tea, decaffeinated tea, instant or soluble tea or tea extract, decaffeinated instant or soluble tea or tea extract, which do not contain other added ingredients than flavourings which do not modify the nutritional value of the tea;
9. Fermented vinegars and substitutes for vinegar, including those where the only added ingredients are flavourings;
10. Flavourings;
11. Food additives;
12. Processing aids;
13. Food enzymes;
14. Gelatine;
15. Jam setting compounds;
16. Yeast;
17. Chewing-gums;
18. Food in packaging or containers the largest surface of which has an area of less than 25 cm^2 (3.875 in^2); and
19. Food, including handcrafted food, directly supplied by the manufacturer of small quantities of products to the final consumer or to local retail establishments directly supplying the final consumer.

Table 8: Foods which the labelling must include additional particulars

Category of food	Type of food	Particulars
Foods packaged in certain gases	Foods whose durability has been extended by means of packaging gases authorised pursuant to Regulation (EC) No 1333/2008 on food additives.	"Packaged in a protective atmosphere".
Foods containing sweeteners	Foods containing a sweetener or sweeteners authorised pursuant to Regulation (EC) No 1333/2008 on food additives.	"With sweetener(s)" this statement shall accompany the name of the food.
	Foods containing both an added sugar or sugars and a sweetener or sweeteners authorised pursuant to Regulation (EC) No 1333/2008 on food additives.	"With sugar(s) and sweetener(s)" this statement shall accompany the name of the food.
	Foods containing aspartame/aspartame-acesulfame salt authorised pursuant to Regulation EC) No 1333/2008 on food additives.	"Contains aspartame (a source of phenylalanine)" shall appear on the label in cases where aspartame/aspartame-acesulfame salt is designated in the list of ingredients only by reference to the E number. "Contains a source of phenylalanine" shall appear on the label in cases where aspartame/aspartame-acesulfame salt is designated in the list of ingredients by its specific name.
	Foods containing more than 10 % added polyols authorised pursuant to Regulation (EC) No 1333/2008 on food additives.	"Excessive consumption may produce laxative effects".
Foods containing glycyrrhizinic acid or its ammonium salt	Confectionery or beverages containing glycyrrhizinic acid or its ammonium salt due to the addition of the substance(s) as such or the liquorice plant Glycyrrhiza glabra, at concentration of 100 mg/kg or 10 mg/L or above.	"Contains liquorice" shall be added immediately after the list of ingredients, unless the term "liquorice" is already included in the list of ingredients or in the name of the food. In the absence of a list of ingredients, the statement shall accompany the name of the food.
	Confectionary containing glycyrrhizinic acid or its ammonium salt due to the addition of the substance(s) as	"Contains liquorice – people suffering from hypertension should avoid excessive consumption" shall be added immediately after the list of

	such or the liquorice plant Glycyrrhiza glabra at concentrations of 4 g/kg or above.	ingredients. In the absence of a list of ingredients, the statement shall accompany the name of the food.
	Beverages containing glycyrrhizinic acid or its ammonium salt due to the addition of the substance(s) as such or the liquorice plant Glycyrrhiza glabra at concentrations of 50 mg/L or above, or of 300 mg/L or above in the case of beverages containing more than 1.2 % by volume of alcohol*.	"Contains liquorice – people suffering from hypertension should avoid excessive consumption" shall be added immediately after the list of ingredients. In the absence of a list of ingredients, the statement shall accompany the name of the food.
Beverages with high caffeine content or foods with added caffeine	Beverages, with the exception of those based on coffee, tea or coffee or tea extract where the name of the food includes the term 'coffee' or 'tea', which: • are intended for consumption without modification and contain caffeine, from whatever source, in a proportion in excess of 150 mg/L, or, • are in concentrated or dried form and after reconstitution contain caffeine, from whatever source, in a proportion in excess of 150 mg/L.	"High caffeine content. Not recommended for children or pregnant or breast-feeding women" in the same field of vision as the name of the beverage, followed by a reference in brackets and in accordance with this Regulation to the caffeine content expressed in mg per 100 mL.
	Foods other than beverages, where caffeine is added with a physiological purpose.	"Contains caffeine. Not recommended for children or pregnant women" in the same field of vision as the name of the food, followed by a reference in brackets and in accordance with this Regulation to the caffeine content expressed in mg per 100 g/mL. In the case of food supplements, the caffeine content shall be expressed per portion as recommended for daily consumption on the labelling.

* The level shall apply to the products as proposed ready for consumption or as reconstituted according to the instructions of the manufacturers.

Table 9: Mitigation measures to be applied by ship operators (first category)

1. Where potato products are produced the following mitigation measures shall be used:
• For French fries and other cut (deep fried) potato products: – use potato varieties with a lower sugar content, when these are available and if they are compatible with the food product being prepared. Consult with the potato providers to advise on the best suited potato varieties; and – potatoes shall be stored at a temperature higher than 6 °C. • Before the frying process: For frozen potato products follow the cooking instructions. Otherwise with fresh potatoes used for French fries, one of the following measures must be used to reduce the sugar content, where possible (and where this is compatible with the food product being prepared): – wash and soak them in cold water. Rinse the strips in clean water before frying; – soak them for a few minutes in warm water. Rinse the strips in clean water before frying; and – blanch potatoes where possible, as this helps reduce the levels of acrylamide. • When frying French fries or other potato products: – use frying oils and fats which allow them to fry quickly and/or at lower temperatures; – use frying temperatures which are as low as possible (taking into account food safety requirements); and – skim frying oils and fats frequently to maintain quality by removing fines and crumbs. • When cooking French fries, it is recommended that colour guides are made available to provide guidance on the optimal combination of colour and low levels of acrylamide.
2. For bread and fine bakery wares production use the following mitigation measures in the baking process:
• Where it is possible and compatible with the production process and hygiene requirements: – use the longest possible yeast fermentation time; – optimise the moisture content of the dough, so products have as low moisture content as possible; and – use lower oven temperatures and longer cooking times. • Products should be baked to a lighter colour endpoint and dark roasting of crust avoided – where the dark colour is a result of strong roasting and not related to the specific composition or nature of the product itself. For example, where it has a naturally dark crust.
3. When preparing toasted sandwiches, ensure that sandwiches are toasted to the optimal colour:
• It is recommended that (where available) colour guides developed for specific types of sandwiches, are used to provide guidance on the optimal combination of colour and low levels of acrylamide. • When using pre-packed bread or bakery products which are to be finished off, the cooking instructions should be followed. • It is recommended that colour guides are displayed at locations used to prepare toasted sandwiches.

Table 10: Mitigation measures to be applied by ship operators in addition to the measures referred to in **Table 9** (page 90) (second category)

1. General requirement	For applicable food products supplied in Europe all food suppliers must have implemented the mitigation measures provided in Regulation (EU) No 2017/2158.
2. French fries and other cut (deep fried) potato products	• Follow the instructions on food storage provided by the food suppliers; • provide Standard Operating Procedures (SOPs), including monitoring of fryer temperatures and cooking times; and • monitor the colour of finished products to verify that the mitigation measures are effective.
3. Bakery products	Monitor the colour of finished products to verify that the mitigation measures are effective.
4. Coffee	Food business operators should request that food suppliers provide evidence to that the level of acrylamide in supplied coffee is lower than the benchmark level specified (Roast Coffee: 400 µg/kg, Instant (Soluble) Coffee: 850 µg/kg) and this should be checked. This may not be possible for all coffee types depending on the blend and roast characteristics. In these cases, a justification should be provided by the coffee supplier.

Table 11: Recommendations on auditing food safety culture

During inspections, ship operators should demonstrate that all food handlers are aware of food safety principles relevant to their tasks and that an appropriate food safety culture is implemented. The inspectors can verify the food safety culture by:
• Checking food safety culture surveys (for example, where questionnaires are used) carried out on the ship. • Interviewing (see shortened questionnaire below) staff and by observation: – checking knowledge of the food handlers interviewed about the importance of providing safe and suitable food; – checking the behaviour and attitude of food handlers as regard food hygiene; – checking the commitment of the management and communication with others departments; and – checking that the leadership engage with all food handlers in promoting food safety practices. • Checking the resources available. The implementation of food safety culture requires time and resources. Excessive time pressures and stress during food production may indicate problems in maintain an effective food safety culture. • Organising a survey using a questionnaire.
In particular, in small food operations the inspector may assess the awareness of the crew by observation and talking to the relevant crew. **To avoid subjective perception the verification of food safety culture should be carried out by verifying objective data, for instance, food hygiene practices, trainings followed by crew, checking documentation on the flow of information and feedback between crew and officers or checking performance using internal inspections results, microbiological analysis, follow-up of any non-conformities, etc.** **An example of checklist on Food Safety Culture for competent authorities:**

Food safety culture perception	Yes	No	Comments
Has the engagement and the involvement concerning hygiene and food safety been extended to the whole ship? • Commitment of the management/officers. • Commitment of the food handlers.			
Are sufficient resources necessary to operate in a hygienic and food safe way available on the ship?			
Are all food handlers aware of the risks concerning hygiene and food safety and has these under control?			
Has the transfer of communication on hygiene and food safety issues been ensured within the ship?			
Are the food operation management team engaging with food handlers on hygiene/safety performance and compliance?			
Is sufficient objective data available to verify the food safety culture principles?			

4. POTABLE WATER SAFETY

4. POTABLE WATER SAFETY

Ships must provide an adequate supply of safe water for drinking, washing, preparing food, supplying recreational water facilities such as swimming pools and spas, fire control, steam production, dishwashers, laundry, air conditioning, boilers, deck washing, toilets, hair/beauty treatments and refrigeration. Potable water consumed by passengers or crew must be provided under good hygienic conditions. It should be of an appropriate quantity and of a quality that it will not cause immediate or long-term harm to people drinking it. In particular, it must be free from any microorganisms, parasites, chemicals or other substances which, in the numbers or concentrations present, constitute a risk to human health. Waterborne disease outbreaks may occur on passenger ships due to failures in water safety systems.

Water is usually sourced from potable supplies on shore or generated at sea from sea water. Ensuring safe bunkering of water is essential to reducing potential risks for passengers and crew. For water supplied from a recognised water utility, the microbiological and chemical quality is the responsibility of the producer. However, ships must ensure that bunkered water is of potable quality, as well as ensure that the actual process of bunkering distribution and storage of water within the ship is safe and prevents chemical or microbial contamination. In line with the WHO and International Water Association (IWA) guidance, the systems and controls for the provision of safe water on passenger ships should be included within an overall Water Safety Plan (World Health Organization, 2023).

4.1 Guidance on production, development, and use operation of Water Safety Plans (WSPs)

The management of potable water on ships should cover design, construction, commissioning, operation, monitoring and maintenance, in order to ensure that there are hygienic safeguards for the whole water supply process. Directive (EU) 2020/2184 on the quality of water intended for human consumption requires passenger ship that produce water to implement a risk-based approach to water safety. The WHO has developed a HACCP-like system for potable water called a WSP and EU SHIPSAN has adopted this approach for managing potable water quality on passenger ships. Ships implementing a WSP will also comply with the requirements of Directive (EU) 2020/2184.

Legal requirements (LEG)/Recommended standards (ST)/River cruise ship applicability (RCSA)

Item	RCSA	Details	LEG/ST
		Water Safety Plan (WSP)	
4.1 Risk-based approach to water safety	R	From 1 January 2029 passenger ships operators must ensure that risk assessment and risk management of the water supply system are carried out.	LEG[1]

4.1.1 WSP	R	• Passenger shipping operators should apply hazard analysis principles to write and implement a WSP in order to ensure the safety and quality of potable water. It is also advised to apply hazard analysis principles to other water systems such as laundry water and technical water. • The WSP steps include: a) system assessment; b) monitoring; and c) management and communication; and are described in **Annex 18** (page 325).	ST ST
		Team establishment	
4.2 WSP team	R	A WSP team should be designated, consisting of a team leader and crew or other trained personnel responsible for the WSP implementation such as managers, engineers, water quality controllers, medical staff, facilities managers and technical crew.	ST
4.3 Training	R	Crew or other personnel responsible for the application of the WSP should be trained and have adequate knowledge of the management of potable water systems, monitoring procedures, control measures, operational limits and corrective actions. A competency framework for crew responsible to implement the WSP is given in **Annex 19** (page 333).	ST

4.2 System assessment

An assessment should be conducted for the whole potable water supply system from supply to consumer including the sources of water, water bunkering and production, treatment, storage and distribution.

Item	**RCSA**	**Details**	**LEG/ST**
		System description	
4.4 System description	R	• The system description must include all processes and components of the water systems from the source of water to the consumer. • The water processes and components that may result in direct human exposure (ingestion, contact, and inhalation) must be identified and described.	LEG[1] LEG[1]

4.4.1 Diagram	R	The description may include a diagram or schematic which identifies all the key steps and processes within all the identified water systems (e.g., potable water, technical water, etc.).	ST

Identification of possible hazards and risk assessment

4.5 Possible hazards	R	During the system assessment, possible hazards should always include at a minimum: – faecal microorganisms such as *E. coli, Enterococci*, *Cryptosporidium* spp. and enteric viruses; – *Legionella* spp. and *Mycobacterium* spp.; – contamination by chemical agents caused by exposure to heavy metals, disinfection residual, disinfection by-products, pesticides, toxic Volatile Organic Compounds (VOCs); and – physical agents: sediments and particulates, pipe materials, pipe and tank liner materials, sloughed biofilms or iron and manganese films.	ST
4.5.1 Risk assessment of the system	R	Passenger shipping operators must ensure that the risk assessment of the supply system: – takes into account the results of the risk assessment and risk management of the source water; – includes a description of the ship potable water system from bunkering and production, treatment, storage and distribution of water to the point of supply; – identifies the hazards and hazardous events in the supply system and includes an assessment of the risks they could pose to human health through use of water intended for human consumption, taking into consideration risks stemming from leakages and leaking pipes; and – includes a general analysis of the potential risks associated with distribution system, and with related products and materials.	LEG[1]

Identification of potentially hazardous events

All potential events or situations that could lead to the presence of a hazard must be identified and listed. Potentially hazardous events should be clearly documented in a table (**Annex 18**, page 325).

Item	RCSA	Details	LEG/ST
		Identification of potentially hazardous events Possible hazardous events should include at a minimum the following items.	
4.6 Contaminated source water	R	Contaminated water sources from: – bunkered water from a potable supply; and – sea water used to produce potable water on board.	ST
4.7 Contamination during bunkering, production and treatment	R	• Water contaminated during bunkering by the filling hose, filling line, or shore side/barge or truck connections. • Water contaminated with sea water due to a missing or malfunctioning conductivity meter or automatic dumping valve. • Corrosive water due to failure of mineralisation.	ST ST ST
4.7.1 Contamination during treatment	R	• Contamination from disinfection by-products. • Contamination from treatment chemicals.	LEG[1] LEG[1]
4.8 Contamination during storage	R	Contamination of or bacterial growth in potable water during storage caused by: – ingress of foreign materials or other substances caused by improper design and construction of storage tanks; – sediment in storage tanks; – incorrect cleaning of storage tanks; – biofilm growth in storage tanks pipework and fittings contributing to contamination with *Legionella* spp., *Pseudomonas aeruginosa*, *Mycobacterium* spp. and amoebae; – damaged or defective storage tanks or their linings; – ingress of foreign materials or other substances during maintenance or repair of storage tanks; – backflow (backpressure or backsiphonage); – cross-connection with technical, black or grey water systems; – poor temperature control or inadequate disinfection; – presence of stagnant water for more than seven days; – poor hygiene in repair works allowing potential microbial contamination to enter the system; and – deliberate attempts to contaminate water supplies.	ST

4.9 Contamination through distribution system

R

Contamination of potable water or microorganism growth in the distribution system, in particular due to: ST

- backflow;
- poor design and construction of piping system components;
- existence of deadlegs/blind lines in the distribution system;
- damaged pipes;
- chemical contamination through the use of the wrong distribution construction materials;
- contamination during maintenance or the repair of piping system;
- biofilm growth in pipework and fittings contributing to contamination with *Legionella* spp., *Pseudomonas aeruginosa*, *Mycobacterium* spp. or amoebae;
- contamination due to stagnant water for example in infrequently used outlets (stagnant lines) or other part of the water system where water remains stagnant for more than seven days;
- poor hygiene in repair works allowing microbial contamination to enter the system;
- deliberate attempts to contaminate water; and
- corrosion in the distribution system.

Control measures

4.10 Control measures

R

On the basis of the outcome of the risk assessment, passenger ship operators must ensure that control measures are defined and implemented for the prevention and mitigation of each of the hazards or hazardous events identified in the system that could compromise the quality of water intended for human consumption. LEG[1]

Control measures — bunkered water source

4.11 Supplier water quality reports

R

Where available and supplied to the ship any supplier water quality/safety reports should be checked for compliance with the Directive (EU) 2020/2184 requirements, before loading potable water **Annex 20** (page 334). If this report is not available, then, the tests described in item 4.12 should be performed. ST

4.12 Water quality tests

R*

- If the report mentioned in item 4.11 is not available, routine basic water quality tests of the supplied potable water (pH, free halogen, *E. coli* test) should be performed before bunkering. ST
- It is recommended that bunkered water should only be consumed after the result of *E. coli* test is confirmed as negative. ST

Control measures — water production (potable water)

4.13 Filtration of sea water	R*	Sea water should be filtered to remove particulate matter before it is processed.	ST
4.14 Risk assessment	R*	When taking sea water for potable water production, every effort should be made to avoid the uptake of potentially contaminated water. A risk assessment should be performed to ensure that the water loaded for production is of appropriate quality. The uptake of sea water should be avoided in areas identified as polluted, in coastal waters, in very shallow water, and during the discharge of any type of waste (for example sewage and grey water).	ST
4.15 Equipment	R*	A water production (evaporator, reverse osmosis unit) should be fitted with a double step conductivity sensor with alarm function and an automatic switch-off or discharge. Conductivity levels should be measured continuously through an automatic system.	ST
4.16 Treatment	R*	• Produced water intended to supply the potable water system, prior to disinfection should be conditioned (e.g., remineralised) to reduce the aggressive nature of the water. • Conditioned water should be disinfected by passing through an automatic halogenation unit. The halogen residual disinfectant concentration should be at least 2.0 mg/L (ppm) and the pH adjusted not to exceed 7.8 within 30 minutes of the start of the bunkering and production processes. Alternative disinfection methods with residual effect can be acceptable provided a scientific assessment is conducted to ensure its efficacy is established. • During chlorination of the conditioned water, the amount of halogen injected should be controlled by a flow meter or a free halogen analyser. • It is recommended that pH level is maintained to between 6.5 and 7.8.	ST ST ST ST
4.17 Maintenance and cleaning	R*	Regular maintenance and a cleaning schedule should be implemented for the components of water production.	ST

Control measures — bunkering

4.18 Bunkering equipment	R	All equipment used to bunker water should be used exclusively for this purpose, including the equipment on water boats, barges or trucks (tanks, hoses, pipe system and pumps).	ST
4.19 Hoses	R	• Ships should be equipped with hoses that are exclusively used for potable water loading and which are marked with "POTABLE WATER HOSE ONLY" (or a similar phrase).	ST
		• Equipment used to bunker or discharge any non-potable water should have incompatible fittings, which cannot be used for the potable water supply system.	ST
		• Equipment used to bunker water should be kept clean and in good condition.	ST
4.20 Flushing	R	Filling hoses should be flushed for 15-30 seconds with potable water at full bunkering speed before use. Filling line connections and filling hose connections should be disinfected (for example using a free residual chlorine solution at 100 mg/L (ppm) for two minutes, corresponding to a Concentration × Time (CT) value of 200 mg/L/min) before each use.	ST
4.21 Drainage and caps	R	Filling hoses should be kept clean, drained and capped at both ends or otherwise protected after use.	ST
4.22 Avoidance of contamination	R	Filling hoses should be handled with caution to avoid water contamination from the ground, pier or deck surfaces or from the harbour water.	ST
4.23 Storage in lockers	R	• Filling hoses should be stored in lockers used exclusively for this purpose. The lockers should be marked with "POTABLE WATER HOSE ONLY" (or a similar phrase) with letters at least 1.3 cm (0.5 in) high.	ST
		• Lockers should be placed at least 45 cm (18 in) above the deck, and should be made of non-toxic and non-corrosive material.	ST
4.24 Disinfection	R	Filling hoses should be disinfected at least every six months (e.g., superchlorinated using a 100 mg/L (ppm) halogen residual with a contact time of one hour), or whenever contamination has occurred.	ST
4.25 Caution on cross-connection	R	There should be no cross-connection between the potable water filling line and any non-potable piping system. The potable water filling line	ST

should not pass through any non-potable water piping system or through a non-potable liquid.

4.26 Filling line	R	• The filling line should be marked with "POTABLE WATER FILLING" (or a similar phrase) in letters at least 1.3 cm (0.5 in) high stamped on a non-corrosive material.	ST
		• The filling line should be capped when not in use. Filling line caps should be connected using suitable chains so that they cannot come in contact with the deck. The internal parts of the filling line and the caps should be protected from contamination.	ST
4.27 Colour of filling line	R	The filling line should be painted as per ISO 14726 or according to the colour coding used by the ship.	ST
4.28 Disinfection during bunkering	R	• Potable water should be disinfected by passing through an automatic halogenation unit during bunkering. The halogen residual disinfectant concentration should be at least 2.0 mg/L (ppm) at the time of bunkering. Alternative disinfection methods can be acceptable provided a scientific assessment is conducted to ensure its efficacy is established.	ST
		• During bunkering, the amount of halogen injected should be controlled by a flow meter or a free halogen analyser.	ST
		• It is recommended that the pH level is maintained between 6.5 and 7.8 within 30 minutes of the start of the potable bunkering process.	ST

Control measures — storage

4.29 Storage tank construction	R	Every potable water storage tank should be provided with a vent located and constructed so as to prevent contamination. The vent or combined vent and overflow should terminate with the open end pointing downward and should be suitably protected (for example screened with a corrosion-resistant and vermin-proof mesh screen).	ST
4.30 Coating materials of tanks	R	The coating materials of potable water storage tanks must not be toxic and must not allow contamination of water by substances that are toxic or otherwise hazardous to human health, in accordance with Directive (EU) 2020/2184, Article 11 and Annex V ("EU positive list") or must be approved by a competent authority of the country of manufacture or origin, provided that such approval ensures an equivalent level of health protection.	LEG[1]

4.30.1 Coating application	R	Only trained operatives should apply tank coatings. Coatings should be applied correctly including the surface pre-treatment, pre-washing, coating method, film thickness, curing time, curing temperature, humidity, number of layers, after-washing, etc., and all procedures should be documented.	ST
4.31 Caution on cross-connection	R	No cross-connections should exist between storage tanks and the non-potable water systems.	ST
4.32 Ease of cleaning and maintenance	R	Potable water storage tanks should be accessible for cleaning and maintenance.	ST
4.33 Non-potable piping systems and potable water storage tanks	R	Piping systems carrying sewage or other non-potable liquids should not pass through potable water tanks.	ST
4.34 Labelling of potable water storage tanks	R	Potable water storage tanks should be identified with the words "POTABLE WATER" (or a similar phrase) in letters at least 1.3 cm (0.5 in) high.	ST
4.35 Ventilation and cleaning	R	Potable water storage tanks should be opened up, emptied, ventilated and cleaned at a suitable frequency based on the findings of operational monitoring and inspections.	ST
4.36 Hygienic codes of practice	R	• Hygienic practices and procedures for cleaning and maintenance should be used and records kept available for inspection. • During cleaning maintenance or repair the workers should have written procedures for physical cleaning and disinfection of potable water storage tanks.	ST ST
4.37 Post-repair disinfection	R	Post repair tank cleaning and disinfection should always be carried out.	ST
4.38 Separation of potable and non-potable water tanks	R*	• Potable water storage tanks should not share any common wall with a tank holding non-potable water or other liquids. • Any ship with tanks which are not independent of the shell of the ship (skin tanks) should have suitable protection and safety measures in place to prevent any potential contamination of the stored potable water.	ST ST

Control measures — distribution system

4.39 Colour of potable water piping	R	Potable water piping should be painted blue or striped in accordance with ISO 14726, at five-metre (15 feet) intervals. It is advised to show the direction of flow of the potable water with an arrow.	ST
4.40 Avoidance of sewage or tanks holding non-potable liquids	R	Potable water piping should not pass under or through sewage or tanks holding non-potable liquids.	ST
4.41 Protection against backflow	R	• Appropriate backflow prevention assemblies should be installed where contamination from backflow can occur (**Annex 21**, page 338).	ST
		• The system should be protected against backflow by either backflow preventers (e.g., reduced pressure, vacuum breakers) or air gaps.	ST
		• Backflow prevention assemblies (backflow preventers and air gaps) should be maintained in good condition.	ST
		• Backflow prevention assemblies (backflow preventers and air gaps) should be inspected annually and any failed units should be replaced or repaired depending on the type of the assembly.	ST
		• Testable backflow preventers should be tested after installation and at least every 12 months or in accordance with the manufacturer's instructions.	ST
4.42 Disinfectant halogen residual	R*	• The disinfectant halogen residual should be maintained at a minimum of 0.2 mg/L (ppm) and not more than 5.0 mg/L (ppm) of free chlorine in all sites of the distribution system (see also item 4.45). Alternative means of disinfection with a residual effect can be acceptable provided a scientific assessment is conducted to ensure its efficacy is established.	ST
		• An automatic halogenation unit should be used for water disinfection. The automatic halogenation unit should be fitted with a warning alarm and backup halogenation pump that switches over automatically if the primary pump fails. The amount of halogen injected should be controlled by a free halogen analyser.	ST
4.43 Coating materials	R*	Coating materials used in the piping system must not be toxic and must not allow contamination of water by substances that are toxic or otherwise hazardous to human health, in accordance with Directive (EU) 2020/2184, Article 11 and Annex V ("EU positive list") or must	LEG[1]

be approved by a competent authority of the country of manufacture or origin, provided that such approval ensures an equivalent level of health protection.

4.44 Maintenance	R	Hygienic practices and procedures for maintenance and repair work should be used. During maintenance or repair, the workers should have written procedures for maintenance of piping systems. The relevant section of the system needs to be disinfected following any repair works.	ST
4.45 Maintenance of temperature in cold water distribution system	R	In cold water distribution systems, water temperatures should ideally be maintained at less than 25 °C (77 °F) throughout the system to provide effective *Legionella* control. However, this may not be achievable in all systems, particularly those in hot climates. Maintaining residual disinfection between 0.5 mg/L (ppm) free chlorine and 5 mg/L (ppm), or using alternative disinfection methods and technology, will contribute to the effective control of *Legionella* in such circumstances.	ST
4.46 Hot water distribution system temperature	R	Throughout the hot water distribution system, water temperatures should be maintained at ≥ 50 °C (122 °F).	ST
4.46.1 Shower head	R	• Shower heads and hoses should be cleaned, descaled and disinfected quarterly or more frequently if necessary using a solution with a halogen residual level of 10 mg/L (ppm) for 60 minutes, or an equivalent CT value (if not feasible, then with hot water at ≥ 70 °C (158 °F) for at least 5 minutes). • Shower head cleaning and disinfection should be recorded and maintained on board for at least 12 months.	ST ST
4.47 Insulation of pipes and storage tanks	R	All pipes and storage tanks should be insulated, when necessary, to help ensure that water is maintained, as far as possible, outside the temperature range of 25-55 °C (77-131 °F) to minimise the risk of *Legionella* growth.	ST
4.48 Heating and cooling	R	• Heaters or calorifiers should ensure that hot water is heated to at least 60 °C (140 °F) and that a temperature of at least 50 °C (122 °F) is maintained throughout the distribution system, including on return to the heater or calorifier.	ST

		• Where cold water is regularly stored and distributed at ≥ 25 °C (77 °F) cooling of water may be considered or the disinfection residual levels may be increased (see item 4.45).	ST
4.49 Prevention of scalding	R	• To prevent scalding, hot water signs may be displayed to warn users about the risk. • In nursery and play areas temperature limiting valves or alternative safety measures may be used for taps in children facilities to avoid scalding. A maximum water temperature of 43 °C (109 °F) is recommended.	ST ST
4.49.1 Thermostatic Mixing Valves	R	Thermostatic Mixing Valves (TMVs) should be fitted as close to the outlet as possible and ideally less than two metres (6.5 feet). The thermostatic mixing valves should ideally provide an over-ride mechanism for hot water flushing. If not, then regular cleaning descaling and disinfection of the thermostatic mixing valves and downstream piping should be performed.	ST
4.49.2 Identification of stagnant lines	R	Identify sections of the piping system where water remains stagnant, such as deadlegs/blind lines or stagnant lines. These should be minimised and managed through regular flushing.	ST

4.3 Operational monitoring

Control measures should be monitored in order to spot any deviations from the critical limits. Operational monitoring should include measurement of selected water parameters, and the equipment and construction inspection procedures. Operational monitoring should provide early warning of failure of halogenation or any other critical limit violations to enable effective water system management. In most cases, operational monitoring involves basic water quality tests (pH, halogen residuals) and routine hygienic observations.

An operational monitoring plan should be put in place and include the following basic elements:

- choose the parameters to be monitored (observable or measurable);
- define the location for monitoring (e.g., sample point, observation location) and frequency of monitoring;
- determine how the parameter will be monitored (e.g., list the equipment required for monitoring water systems);
- determine which crew members are responsible for observing or measuring each parameter;
- define the limit of acceptability for the control measure's performance; and
- decide what corrective actions are required to restore acceptable performance of the control measure.

Item	RCSA	Details	LEG/ST
		Operational limits	
4.50 Parameters	R	Operational monitoring must provide rapid insight into operational performance and water quality problems and allow rapid pre-planned remedial action. Such operational monitoring programmes must be system-specific, taking into account the outcomes of the identification of hazards and hazardous events and the risk assessment of the system, and must be intended to confirm the effectiveness of all control measures in bunkering, production, treatment, distribution and storage.	LEG[1]
		Operational monitoring parameters	
4.51 Monitoring of free halogen at far point	R	The free halogen residual at a far point of the distribution system should be measured continuously with the use of a halogen analyser and connected to a chart recorder or electronic data logger with certified data security features. **Operational limit:** free halogen residual equal to or greater than 0.2 mg/L (ppm) and equal to or less than 5.0 mg/L (ppm).	ST
4.52 Monitoring of free halogen and pH during bunkering and production	R	During bunkering and during production the free halogen residual and pH should be measured hourly. This can be checked manually using a test kit or spectrophotometer, or automatically by using probes and data logging equipment. **Operational limits:** free halogen residual equal to or greater than 2.0 mg/L (ppm) and equal to or less than 5.0 mg/L (ppm); pH within the range of 6.5 to 7.8.	ST
4.53 Measurement of chlorine and pH before bunkering	R	Before bunkering chlorine and pH should be measured in order to adjust the halogen and pH dosages. **Operational limit:** pH within the range of 6.5 to 7.8.	ST
4.54 Monitoring of pH of water in the distribution system	R	The pH of water in the distribution system should be measured at least daily in order to evaluate the effectiveness of the halogenation process. **Operational limit:** pH within the range of 6.5 to 7.8.	ST
4.55 Bunkered water quality verification	–	A water sample for *E. coli* testing should be taken from the supplied water before bunkering. Alternatively, a copy of the most recent microbiological report from each supplier should be obtained and held on board for a minimum of 12 months.	ST

Operational limit: negative test result before the water is used or a negative supplier report for *E. coli*.

4.56 Monitoring of temperature

R For recirculation hot water systems, the temperature of the water leaving and returning to the heater should be measured daily. ST

Operational limit: temperature of water less than 25 °C (77 °F) or equal to or greater than 50 °C (122 °F) at any point, in the recirculation hot water system. If the acceptable operational limit cannot be achieved, additional operational limits should be established and implemented as described in items 4.45 and 4.48.

4.57 Inspection of bunkering procedures and equipment

R Bunkering procedures should be supervised and all potable water equipment inspected at least monthly in order to ensure that the standards are met. ST

Operational limit: appropriate handling of hose, incompatible fittings system of the filling hose or line with any non-potable water, appropriate storage of the filling hoses, adequate labelling, appropriate construction materials, cross-connections not found, the hoses are not making contact with the ground or sea water.

4.58 Inspection of potable water storage tanks

R Potable water storage tanks should be inspected after installation and during and after maintenance, or when conditions indicate that there is a problem and at least once every 24 months in order to identify potential defects or inadequate functioning. ST

Operational limit: absence of dirt inside the tank; water does not appear turbid; inspection covers are not damaged and are in place; absence of cracks and corrosion in tank structure; tank lining is in good condition; and cross-connections not found.

4.59 Cleaning and disinfection of storage tanks

R Potable water storage tanks should be cleaned and disinfected at least every 24 months or as needed considering the inspection findings. ST

Operational limit: proper cleaning and disinfection procedures observed.

4.60 Testing of backflow prevention

R Backflow prevention assemblies should be periodically inspected at least every 12 months. Testable backflow prevention assemblies should be tested after each installation and at least every 12 months or in accordance with the manufacturer's instructions. ST

Operational limit: no defects in the backflow prevention assemblies spotted during inspection or testing.

4.61 Inspection of the piping system	R	Visual inspections of the potable water distribution system (pipes, connections, stagnant water) should be conducted routinely — ideally every 12 months where practicable, during routine maintenance or as recommended by manufacturers. **Operational limit:** absence of leakage, corrosion or cross-connections, no presence of stagnant lines or blind lines and documented results of inspections conducted every 12 months.	ST
4.62 Repair and maintenance of piping system	R	The maintenance and repair procedures should be supervised. **Operational limit:** proper maintenance and repair procedures observed.	ST
4.63 Avoid stagnant water	R	A monitoring programme should be implemented to ensure that stagnant water does not exist in the water distribution system (**Annex 22**, page 339). **Operational limit:** water does not remain stagnant in any part of the water distribution system for more than seven days.	ST

4.4 Management Plan

Item	**RCSA**	**Details**	**LEG/ST**
		Corrective actions	
4.64 Corrective actions	R	When operational monitoring shows that the existing control measures are not operating effectively, corrective actions should be taken to ensure that they are performing appropriately again as soon as possible.	ST
		Verification monitoring	
4.65 Microbiological indicator parameters	R*	• The microbiological quality of the water supplied for human consumption on passenger ships must be monitored according to Annex II of Directive (EU) 2020/2184 (**Annex 20**, page 334).	LEG[1]
		• The following indicator parameter must be measured regularly: – *E. coli* (the presence of *E. coli* in the water distribution system must be checked by taking at least four random potable water samples at least monthly for testing) (**Annex 20**, page 334).	LEG[1]
4.65.1 Legionella and additional indicator parameter	R	• Water samples must be checked for *Legionella* spp. as part of the risk assessment of distribution systems. Samples for *Legionella* in distribution systems must be taken at risk points for proliferation of *Legionella*, points representative for systemic exposure to *Legionella*, or both.	LEG[1]

- The frequency of testing must be based on the risk assessment of the distribution system. LEG[1]
- Water samples must be checked for levels of lead (Pb) as part of the risk assessment of distribution systems. LEG[1]

4.66 Chemical indicator parameters

R The chemical quality of water supplied for human consumption must be monitored according to Annex II of Directive (EU) 2020/2184 (**Annex 20**, page 334). LEG[1]

4.67 Halogen/pH analysers and test kits

R
- Halogen and pH analyser chart recorders or electronic data loggers should be checked and calibrated when necessary and maintained in accordance with the manufacturer's instructions. ST
- A manual comparison test should be conducted at least daily to verify if the calibration is correct. ST
- The free residual halogen measured by the halogen analyser should be within ± 0.2 mg/L (ppm) of the free residual halogen or ± 0.2 of the pH measured by the manual test. The halogen and pH analyser/s should be recalibrated if there is more than a 0.2 difference between the two readings. ST
- The daily, manual comparison test or calibration should be recorded either on the recorder analyser chart or in a suitable log. ST
- The sample used for the calibration of the analysers should be taken as close as possible to the position of the analyser (probe). ST
- The test kit used to perform the manual tests and to calibrate the halogen and pH analysers should be graduated in increments no greater than 0.2 in the range of free residual halogen and pH normally maintained in the potable water. ST
- The test kits used on the ship should be calibrated, checked for accuracy and appropriately operated by following the manufacturer's instructions. ST
- Test of accuracy should be conducted using manual tests carried out at least weekly and using methods recommended by the manufacturers. ST
- The standard solutions where applicable should be accompanied by a certificate and should be maintained according to the manufacturer. ST
- The instructions for every type of measurement should always be followed. ST
- The test kit should be equipped and only operated using reagents that have not expired and are compatible with the specific test kit in accordance with the manufacturer's instructions. ST

		• The vials and other equipment accompanying the test kit should be clean and in good condition.	ST

Record keeping

4.68 Record keeping	R	The WSP should always include record keeping procedures including the following: – water safety parameters monitored on the ship; – the outcome of routine inspections and any incident investigations on the ship; – details of training programmes and courses for crew or other personnel; – details of any water safety certifications (for materials, equipment, chemicals, etc.) kept on the ship; – the monitoring programme for the ship (as recommended in items 4.50-4.63); – a list of water treatment methods used on the ship (disinfection, filtration, mineralisation, etc.); – calibration records of equipment used to monitor the main control measures and the operational equipment used at the control measures; and – operational and maintenance procedures.	ST
4.69 Duration of water record keeping	R	Potable water safety records should be kept for at least 12 months on board and be available for inspection.	ST

Referenced legislation

1. Council Directive 2020/2184 on the quality of water intended for human consumption

5. RECREATIONAL WATER SAFETY

5. RECREATIONAL WATER SAFETY

Recreational Water Facilities (RWFs) on board passenger ships include outdoor and indoor swimming pools, hot tubs and spas, and wading and splash pools which are normally associated with children's activities. A number of infectious diseases can be acquired in RWFs that can cause diarrhoea, or skin, ear, eye or upper respiratory tract infections. Enteric pathogens such as *Cryptosporidium parvum* have commonly been associated with RWFs, but other pathogens can be involved including *Legionella* spp. and *Pseudomonas aeruginosa*. Pathogens can enter the RWFs from bathers, from the sea in salt water pools, through the use of contaminated potable water in potable water pools, or through sewage contamination. A comprehensive set of guidelines is available that provides best practice for operating swimming pools (Pool Water Treatment Advisory Group, 2024).

Special care and management of RWFs is needed in order to provide a safe and hygienic environment that does not facilitate communicable disease transmission. Appropriate management includes treatment (including disinfection and filtration), regular cleaning, daily inspections and a maintenance plan.

Legal requirements (LEG)/Recommended standards (ST)/River cruise ship applicability (RCSA)

Item	RCSA	Details	LEG/ST
		Management	
5.1 Documentation of Management Plan	R	Each ship should have a documented Management Plan or written procedures for all RWFs on board. These should consist of at least the following.	ST
5.2 Treatment Plan	R	• A Treatment Plan or procedures containing the description and documentation of: – treatment processes (disinfection, filtration, etc.); – the disinfectant residual used; – filter type and filter rates; – backwash procedures and frequency; – turnover periods; – maximum bather loads; and – draining frequency.	ST
		• It should be consistent with recommended standards given in items 5.9-5.23, 5.38, 5.44 and 5.46-5.50.	ST
5.3 Monitoring Plan	R	A Monitoring Plan or procedures containing a description and documentation of:	ST

- operational limits and monitoring results;
- sampling and testing procedures (test kits, etc.);
- frequency of sampling and recording; and
- corrective actions in case of adverse results.

Recommended standards for monitoring are given in items 5.24-5.31, 5.43 and 5.45.

5.4 Cleaning Plan	R	A Cleaning Plan or procedures containing a cleaning programme for each RWF (see items 5.32-5.33 and 5.41-5.42).	ST
5.5 Maintenance Plan	R	A Maintenance Plan or procedures containing a maintenance programme for each RWF (see items 5.34-5.37).	ST
5.6 Emergency Plan	R	An Emergency Plan or procedures containing the response plan for emergencies such as accidental injuries (first aid kit and auxiliary equipment).	ST
5.7 Accidental Faecal/Vomit Release Plan	R	There should be a plan or procedures for dealing with vomit or faecal accidents (e.g., based on the model version in **Annex 23**, page 340).	ST
5.7.1 Training	R	Crew or other personnel responsible for the Management Plan and procedures of the RWF should be trained and have adequate knowledge of the management of all RWFs on board.	ST
5.8 Record keeping	R	RWF records should be kept on board and be available to inspectors for at least 12 months, except for the hot tubs/spa pools records, which should be kept on board for at least 24 months. A complete list for record keeping is given in **Table 12** (page 127).	ST

Operational mode of RWFs

5.9 Water source	R*	The water source for recreational water facilities should be either sea water or potable water.	ST
5.10 Potable water pools and sea water recirculating pools	R*	When either potable water or recirculated sea water is used the water should be circulated through an appropriate treatment system that contains at least filtration coagulation (when necessary) and halogenation or alternative means of disinfection with residual effect and pH control.	ST

5.11 Turnover period

R For RWFs in recirculating mode, the circulation rate of water should be such that the turnover period does not exceed the values given below. ST

Recreational water facility	Maximum turnover period
Swimming pools	6 hours
Small hot tubs/whirlpool spas (spa pools)	0.5 hours
Large hot tubs/spa pools (with depth of more than 1 m (3 ft) and tub volume of more than 6 m^3 (1,600 gal) of water)	2 hours
Leisure waters up to 0.5 m (1.6 ft) deep	1 hour
Leisure waters ≥ 0.5 m (1.6 ft) deep	2 hours
RWFs used only by babies	0.5 hours

5.12 Salt water pools: flow-through pools

–

- Flow-through seawater supply systems for RWFs should be used only while the vessel is underway and at least 20 kilometres (approximately 10.8 nautical miles) from the nearest land. ST
- When a ship is operating a flow-through pool, every effort should be made to avoid the uptake of potentially contaminated water. An assessment should be performed to ensure that the water is of appropriate quality. The uptake of sea water should be avoided in areas identified as polluted, in coastal waters, in very shallow water and during the discharge of any type of waste (for example sewage and greywater). ST
- If a ship is operating a flow-through pool, the pool water supply should be shut off or closed 20 kilometres (10.8 nautical miles) from land and then either changed to recirculation mode or drained. ST
- Flow-through pools should remain empty while in port and not refilled until the ship is 20 kilometres (10.8 nautical miles) from land. ST
- For continual use while in port RWFs should be switched to a recirculation mode that includes a filtration and halogenation system or alternative disinfection system. ST
- Prior to opening the RWF to the public, the required free residual halogen and pH levels should be achieved. ST

Water treatment

The treatment system for RWFs should include the following.

a. Filtration

5.13 Backwashing and cleaning	R	• All granular filters should be backwashed at least as recommended by the filter manufacturer/supplier, when the allowable turbidity value has been exceeded, when a certain length of time, as defined by risk assessment and manufacturers guidelines, without backwashing has passed or when a pressure differential is observed (preferably daily). Backwashing should be conducted when the pool is not in use. • Additional standards for frequency of backwashing in hot tubs/spa pools can be found in item 5.44. • Cartridge filters should be cleaned at least at the frequency recommended by the manufacturer or supplier, when the allowable turbidity value is exceeded, or when the period defined by the risk assessment and manufacturer's guidelines has elapsed (preferably daily).	ST ST ST
5.14 Backwash water	R	The backwash water is regarded as waste and should be discarded to the waste system.	ST
5.15 Filter	R	• The filters should be examined regularly and the media (granular or cartridges) changed as recommended by the manufacturer/supplier. • When cartridge filters are used, at least one replacement filter should be available. • Additional standards for filter inspection of hot tubs/spa pools can be found in item 5.43.	ST ST ST

b. Disinfection

5.16 Disinfectant choice	R	Halogenation with chlorine or bromine should be used. Alternative means of disinfection with residual effect may also be used.	ST
5.17 Automatic dosing	R	• Disinfection should be automatically controlled. • Halogenating systems should be operated properly and well maintained.	ST ST
5.18 Residual disinfectant	R	Automatic dosing of halogen disinfectant should be such that a residual is maintained in the water of the pool at all times between the acceptable limits given in **Table 13** (page 129) and **Table 14** (page 130).	ST

5.18.1 Monitoring of residual disinfectant and pH	R	• Each RWF should be equipped with halogen and pH analyser-chart recorders or electronic data loggers with certified data security features, capable of continuously recording free halogen residual and pH.	ST
		• The sample line for the analyser probe should be taken either directly from the RWF or from the return line before the balance (compensation) tank, and sample taps should be provided for analyser calibration.	ST
		• Automatic monitoring systems should include alarms that alert when halogen or pH values are out of the acceptable range, with audible alarms located in a continuously occupied space (for example, the engine control room).	ST
		• Analyser-chart recorders and data loggers should record measurements at intervals of 15 minutes or less, and charts should be initialled, dated, and changed daily.	ST
		• A manual comparison test should be conducted before opening each RWF to verify calibration, with analyser readings within 0.2 mg/L (ppm) for free halogen and 0.2 units for pH. For RWFs open longer than 24 hours, a manual comparison test should be conducted every 24 hours.	ST
		• Manual samples collected directly from the RWF tub should also be tested daily and compared with analyser readings in the equipment area to verify accuracy.	ST
		• In the event of equipment failure, free halogen residual and pH should be measured manually at the RWF or return line at least every four hours for swimming pools and at least hourly for all other RWFs.	ST
		• Manual readings should be recorded in a log or chart, retained for at least 12 months, and made available for inspection.	ST
		• Repairs on malfunctioning analyser-chart recorders or data loggers should be completed within 30 days of failure.	ST
		• Logs and charts should include notations of any corrective actions taken when halogen or pH values are outside acceptable ranges.	ST
5.19 UV radiation disinfection	R	In RWF other than baby pools, secondary methods of disinfection may be installed (e.g., UV radiation) in addition to halogenation. When secondary method of disinfection is installed it should be capable of inactivating *Cryptosporidium parvum* and *Giardia lamblia*. These systems should be installed and operated in accordance with the manufacturer's instructions.	ST

5.20 UV radiation disinfection in baby pools	R	A UV disinfection system should be installed after filtration and before halogen-based disinfection in RWFs used by babies and young children. The system should operate at an intensity sufficient to inactivate *Cryptosporidium parvum* and *Giardia lamblia*, be maintained according to the manufacturer's instructions, and have at least one spare UV lamp available on board.	ST

c. Coagulation

5.21 Coagulation as an option	R	Coagulation (the addition of chemicals known as coagulants) should be available for use where necessary in the treatment process to increase filtration efficiency.	ST

d. pH adjustment

5.22 Automatic pH adjustment	R	• The pH value in RWFs should be maintained within the recommended range (**Table 13** (page 129) and **Table 14** (page 130)) to ensure optimal treatment. • pH adjusting systems should be operated and well maintained.	ST ST

e. Addition of fresh water (replenishment)

5.23 Addition of fresh water (dilution of pollutants)	R	The treatment process should also include the routine addition of fresh water. The recommended rate is at least 30 L per bather per day.	ST

Monitoring

5.24 Water quality parameters	R	The water quality parameters which are listed in **Table 13** (page 129) and **Table 14** (page 130) should be monitored according to the given frequency and should be within the acceptable ranges in all parts of the pool.	ST
5.25 Test kits	R	• Test kits for measuring free halogen residual, pH and total halogen should be available (a cyanuric acid test kit is also required if a cyanurate is used for disinfectant stabilisation). The test kits should be cared for and used by trained individuals. • The test kit used to perform the manual tests and to calibrate the halogen and pH analysers should be graduated in increments no greater than 0.2 in the range of free residual halogen and pH normally maintained in the RWF. • The test kits used should be calibrated, checked for accuracy and appropriately operated using the manufacturer's instructions.	ST ST ST

- Accuracy checks should be conducted using manual tests carried out at least weekly and using methods recommended by the manufacturers. ST
- Calibration of test kits can be performed using certified standard solutions with known values for parameters such as chlorine or pH, allowing users to verify that the kit produces accurate readings. For electronic or digital test kits, built-in calibration modes or manufacturer-supplied calibration kits may be used, typically involving one-point or multi-point calibration procedures. Calibration equipment should be maintained in accordance with the manufacturer's instructions. ST
- The test kit instructions should always be followed. ST
- Test kits should only be operated using reagents that are in date and which compatible with the specific test kit in accordance with the manufacturer instructions. ST
- The vials and other equipment provided with the test kit should be clean and in good condition. ST
- Calibration checks, and recalibration where necessary, should be completed in accordance with the manufacturer's instructions and documented. ST

5.26 Sampling procedures R It is recommended that the sampling procedures provided in **Annex 24** (page 341) are used. ST

5.27 Record keeping of tests R All chemical and microbiological tests should be documented and made available during inspections (**Table 12**, page 127). ST

5.28 Verification R Periodic checks for the physical, chemical and microbiological parameters detailed in **Table 13** (page 129) and **Table 14** (page 130) should be conducted. ST

5.29 Calibrations R

- Calibration checks of automatic controllers/analysers should be regularly conducted as per the manufacture's/supplier's instructions, or whenever there is a significant difference between electronic readings and manual tests. ST
- Halogen and pH analyser-chart recorders should be checked at least daily and where necessary calibrated and the calibration recorded on the chart or in a log. ST
- A manual comparison test should be conducted at least daily to verify calibration. Calibration should be made whenever the manual test value is greater than 0.2 higher or lower than the analyser reading. ST

		• The daily, manual comparison test or calibration should be recorded either on the recorder chart or in a log.	ST
		• The sample used for the calibration of the analysers should be taken as close as possible to the position of the analyser (probe).	ST
5.30 Halogen and pH analyser records	R	• Electronic records of the halogen residual and pH levels should be available during inspections.	ST
		• Logs and charts should contain records of any unusual operating water events and any corrective actions taken.	ST
		• Logs and charts should be kept for at least 12 months for review during inspections.	ST
		• Electronic data loggers with certified data security features are acceptable as an alternative record.	ST
		Corrective actions	
5.31 Corrective actions	R	• When water standards do not meet the acceptable limits, the RWF should be closed.	ST
		• An investigation should be conducted and suitable corrective actions taken and recorded. Suggestions for an investigation and remediation plan are provided in **Annex 25** (page 342).	ST
		Cleaning	
5.32 Cleaning of RWFs	R	• RWFs should be kept clean, in a good working order and sound condition.	ST
		• Regular cleaning of RWFs is required and should include draining of the pools, scrubbing tub walls, cleaning of skimmers, strainers, balance tanks and all other removable parts.	ST
		• Additional standards for cleaning of hot tubs/spas can be found in items 5.41 and 5.42.	ST
5.33 Cleaning materials	R	Cleaning materials should be compatible with pool materials and water treatment chemicals.	ST
		Equipment maintenance	
5.34 Pool hydraulics	R	Pool hydraulics and equipment should be checked regularly and maintained to operate correctly.	ST

Periodic checks of equipment

5.35 Equipment requiring periodic checks

R

Periodic checks and maintenance should be carried out on: ST

- filter equipment including pressure gauges and flow meters;
- water pumps;
- chemical feeders and controllers;
- overflow system;
- gates (inlets and outlets): gates should be securely maintained over outlet drains and other suction outlets to prevent bather entrapment; and
- air ventilation systems (for indoor pools): adequate ventilation should be provided in closed environments for the removal of fumes, vapours or volatile substances (at least 12 L of fresh air/m^2/s (0.3 gal/ft^2/s) of water surface).

5.36 Operability of components

R

All mechanical components should work as per manufacturer's/supplier's instructions. ST

5.37 Operating manuals on board

R

Operating manuals for all RWFs should be kept in an accessible location. ST

Special and additional standards for hot tubs/spa pools

For spa pools and hot tubs the following additional standards should be applied.

5.38 Thermometers — automatic control

R

- Thermometers and automatic mechanisms that control the temperature to below 40 °C (104 °F) should be installed. ST
- The accuracy of the thermometer sensors should be checked periodically. ST
- Hot tubs/spas should not exceed a water temperature of 40 °C (104 °F). ST
- The water temperature should be measured within the tub. ST

5.39 Spa timer

R

Use of a spa pool timer is recommended (and the maximum recommended time is 15 minutes). ST

5.40 Anti-entrapment measures

R

Anti-entrapment measures in hot tubs/spas should be documented and in accordance with item 5.54. ST

5.41 Weekly thorough cleaning

R

Routine cleaning of hot tubs, spa pools and associated equipment (flexible hoses, balance tanks, water lines, etc.) should be carried out, at least weekly or when the pools are drained (see item 5.49). ST

5.42 Monthly cleaning of jets	R	Where installed the air jets or water jets nozzles should be removed (where possible), inspected and cleaned once a month.	ST
5.43 Daily filter inspection	R	Filters should be checked daily or in accordance with the manufacturer's instructions (monitoring flow rates, filter pressure gauges, visual indicators or alarms).	ST
5.44 Filter backwashing or cleaning	R	Granular filters of hot tubs and spas should be backwashed whenever they are drained, or more frequently as needed (see item 5.13). Cartridges of hot tubs and spas should be cleaned as per manufacturer's instructions whenever they are drained, or more frequently as needed (see item 5.13).	ST
5.45 Disinfectant monitoring	R	See item 5.18.	ST
5.46 Hot tub/Spa pool connected to swimming pool	R	If a hot tub/spa pool is connected to a swimming pool and uses the same operational equipment, then the standards for turnover periods and disinfectant levels of the hot tub/spa pool should supersede those for the swimming pool.	ST
5.47 Superhalogenation	R	Conduct daily shock treatment (superhalogenation), before draining (depending on the draining frequency) or after the hot tub/spa pool is closed, by increasing the disinfectant level to at least 10 mg/L (ppm) for one hour or using an equivalent combination of time and concentration (the concentration of disinfectant should be maintained at the required levels at all points and for the required time).	ST
5.48 Heating to 70 °C (158 °F)	R	Alternatively, the hot tub/spa pool water may be heated to at least 70 °C (158 °F) on a daily basis when the unit is closed.	ST
5.49 Draining	R	• Complete draining, cleaning and changing of water should be completed at least daily except as below. • When daily complete draining is not practical or feasible (for example due to legal environmental restrictions for discarding treated water at sea), then complete draining should take place at least every 72 hours in small spa pools and hot tubs. • Large spa pools/hydrotherapy pools (with depth of more than 1 m (3 ft) and tub volume of more than 6 m^3 (1,600 gal) of water) should be drained and cleaned at least every 30 days.	ST ST ST

Swimmers safety and hygiene in RWF

5.50 Safety	R	• The water circulation and treatment system should always be used when RWFs are operational.	ST
		• Use of the RWF should only be allowed when bathing water standards are within the acceptable limits described in **Table 13** (page 129) and **Table 14** (page 130).	ST
5.51 No glass on the sides	R	Areas adjacent to RWF should be kept free from any glass objects and items that may cause injury.	ST
5.52 No water accumulation	R	There should be no water accumulation on the sides of the pool when accidents may occur from slippery deck.	ST
5.53 Anti-entrapment — drains, inlet and outlet design	R	• Inlets, outlets, grilles and covers should be designed according to EN 13451-3. For ships not complying with the European Standards EN 13451-3, the anti-entrapment/anti-entanglement requirements as described in the latest version of the VSP Operations Manual are also acceptable (**Table 15**, page 131).	ST
		• Grilles should have gaps less than 0.8 cm (0.31 in) and be designed according to EN 13451-1. For ships not complying with the European Standards EN 13451-3, the anti-entrapment/anti-entanglement requirements as described in the latest version of the VSP Operations Manual are also acceptable (**Table 15**, page 131).	ST
		• Anti-entrapment devices should be certified by an accredited institute.	ST
		• RWFs should not be used if any of the inlets and outlets, are uncovered, or obstructed or if covers are not correctly in place, unsecured or damaged or if there are exposed pools spouts.	ST

5.54 Anti-entrapment

R In addition to the standards described in item 5.53, entrapment should be prevented as described in the following A or B options. ST

A.

The maximum allowable water flow rate indicated by the manufacturer of each outlet must be followed. This should be in accordance with EN 113451-3. At least one of the either (a), (b), or (c) should be satisfied (this is not applicable to skimmers):

a) multiple suction outlet system designed in such a way that:
- a minimum of two functioning suction outlets per pump are installed;
- the distance between the nearest points of the perimeters of the devices is ≥ 2 m (6.5 ft); and
- if any one of the suction outlets becomes blocked, the flow through the remaining suction outlets should accommodate 100 % of the flow rate;

b) in case of suction outlet systems with only one grille, the grille should be designed in such a way that either:
- one bather cannot cover more than 50 % of the opening; or
- raised grilles domed opposite to the flow direction, with prevalent peripheric suction. The height of the dome should be at least 10 % of the main direction; or
- single grilles with a surface of the area circumscribed to the suction openings ≥ 1 m^2 (10.8 ft^2);

c) there is a gravity feed tank.

Ships not complying with the European Standards EN 13451-3, the anti-entrapment/anti-entanglement requirements as described in the latest version of the VSP Operations Manual are also acceptable.

B. VSP Operations Manual requirements

Anti-entrapment/anti-entanglement requirements for drain covers and suction fittings in RWFs are shown in (**Table 15**, page 131). This does not apply to facilities with zero depth where the drains are not under direct suction.

Each manufactured anti-entrapment drain cover must be stamped with the following information. Alternatively, documentation from the manufacturer confirming compliance with these requirements must be provided.

- certification standard and year;
- type of drain use (single or multiple);
- maximum flow rate (in gallons or litres per minute) (or in accordance with current VGBA);
- type of fitting (suction outlet);

- life expectancy of cover;
- mounting orientation (wall, floor, or both);
- manufacturer's name or trademark; and
- model designation.

The design of field fabricated American Society of Mechanical Engineers (ASME) compliant drain covers and suction fittings should be fully specified by a registered design professional in accordance with ASME A112.19.8-2007. The specifications should fully address cover/grate loadings, durability, hair, finger and limb entrapment issues, cover/grate secondary layer of protection, related sump design, and features specific to the RWF.

A letter from the shipyard should accompany each field fabricated ASME compliant drain cover fitting. At a minimum the letter should specify the shipyard, name of the ship, specifications and dimensions of the drain cover, as detailed above, as well as the exact location of the RWF for which it was designed. The name of and contact information for the registered design professional and signature should be on the letter.

5.55 Lifesaving equipment R

- Lifesaving equipment, including at least one appropriately sized shepherd's hook and flotation device, should be securely mounted in a conspicuous and easily accessible location and clearly marked "For emergency use only." ST
- This equipment should be provided near each RWF deeper than 1 m (3 ft) to ensure prompt response in case of an emergency. ST

5.56 Marks for depth R Marks should notify the depth where it exceeds 1 m (3 ft). ST

5.57 "No Lifeguard on duty" signs R Lifeguards should be present; otherwise, a warning sign informing passengers that no lifeguard is on duty should be posted in plain view in clear legible letters (**Annex 26**, page 343). ST

5.58 "No diving" signs R Warning signs prohibiting diving should be placed in pools or areas of pools less than 1.8 m (6 ft) deep (**Annex 26**, page 343). ST

5.59 Bather load R

- The allowable number of bathers should be posted in plain view. ST
- For calculating the maximum number of bathers that can use a swimming pool at a time, the following table should be used: ST

Water depth	Maximum bathing load
< 1.0 m (3.3 ft)	One bather per 2.2 m^2 (23.7 ft^2)
1.0-1.5 m (3.3-4.9 ft)	One bather per 2.7 m^2 (29.0 ft^2)
> 1.5 m (4.9 ft)	One bather per 4.0 m^2 (43.0 ft^2)

- For calculating the maximum bather load in hot tubs/spas, the following factor should be used: ST
  - one person per 20 L (5 gal) per minute (1.2 m^3/h (300 gal/h)) of recirculation flow.
- If bathers do not comply with this, they should be advised to respect the maximum bather load. ST

5.60 Bather hygiene R Bather hygiene advice signs should be placed where they can be easily seen in both the pool area and in changing rooms. Signs should request bathers not to swim when they have health problems and to shower before using the pool. ST

5.61 Other warning signs R Other signs that prohibit or discourage unsafe behaviour, warn susceptible people, prohibit the use of the pool when experiencing diarrhoea, vomiting or fever, and to encourage safe practices should be posted in plain view in the pool and in the changing rooms (where available). ST

5.62 Other safety issues R Other safety issues of RWFs are covered by SOLAS conventions and EN standards 15288-1 and 15288-2. ST

Decorative fountains

5.63 Decorative fountain water R Potable water should be used as a source for decorative fountains. ST

5.64 Disinfection R Water should be disinfected with a halogen or with another chemical disinfectant which provides a residual effect. Where chlorine is used the free residual level should be at least 1 mg/L (ppm). Other secondary methods of disinfection (e.g., UV radiation) can be used in addition to chemicals. ST

5.65 Maintenance R All parts of the decorative fountains (pool, buffer/compensation tank, and piping) should be maintained in good condition, clean and free from algae, sediment and scale. ST

5.66 Microbiological testing R Water samples from recirculating decorative fountains should be collected at least every six months and tested for the presence of *Legionella* spp. Acceptable limits are shown in **Table 16** (page 132). ST

Jetted tubs (whirlpool baths)

5.67 Draining and disinfection R
- Jetted tubs (whirlpool baths) should be drained, cleaned, and disinfected at least daily when operated as fill-and-drain systems. ST

- Continuously filled jetted tubs should be equipped with automatic halogenation and continuous monitoring of disinfectant residual and pH, or, where manual dosing is applied, the disinfectant residual and pH should be verified at least daily. ST
- In all cases, operational parameters should comply with the recommended standards for hot tubs/spa pools to ensure effective microbiological control (**Table 14**, page 130). ST

Table 12: Recommended standards for record keeping for RWF

Section	Record keeping	Details	Minimum frequency
Treatment	Water quality parameters (see **Table 13** and **Table 14**)	Date, time and test value of parameters	As stated in **Table 13**, **Table 14** and **Table 16**.
	Backwash	Date and time	Whenever needed and applied (see items 5.13 and 5.44).
Equipment	Filter inspection	Date, time and condition	Daily (see items 5.15 and 5.43).
	Filter media or cartridge change	Date and time	Whenever a filter media or cartridge needs to be changed.
	Shock treatment	Date and time	As applicable (see item 5.47 and 5.48).
	Draining of pools	Date and time	As applicable (see item 5.49).
	Maintenance work	Date, time, process and type of equipment	Whenever it is carried out — as manufacture's/supplier's advice. *This can be recorded in the engineering or other logs.*
	Repair work	Date, time, description of problem and repair job	Whenever it occurs. *This can be recorded in the engineering or other logs.*
	Calibration of analysers	Date, time, result of manual and electronic measurements	Daily.
Cleaning	Cleaning	Date	As applicable (e.g., weekly).

Emergencies	Accidental faecal or vomit releases	Date, time of closure, corrective actions taken and time of opening	Whenever it occurs.
	Water quality parameters out of limits	Date, time, parameter values and corrective actions taken	Whenever it occurs.
	Injuries/deaths *This can be recorded in the medical log or other incident reports.*	Date, time, description of event and its reasons	Whenever it occurs.
Other	Operation of flow-through mode	Date and time of operation	Whenever it occurs.
	Training	Date, time, name, position, trainer and training hours	Before starting work for the first time and thereafter as necessary.

Table 13: Physical, chemical and microbiological parameters tested in swimming pools and leisure water pools (excluding sea water flow-through RWF) their acceptable limits and frequency of testing

Parameters	Acceptable limits	Minimum testing frequency
Physical		
Temperature*	Recommended temperature: 25-28 °C (77-82 °F) Maximum temperature: 30 °C (86 °F)	Every day
Chemical		
Free disinfectant residual	1-5 mg/L	Continuously with an analyser-chart recorder/electronic data logger and manually prior to opening
pH	7.0-7.8	Continuously with an analyser-chart recorder/electronic data logger and manually prior to opening
Turbidity*	< 0.5 NTU	Every day
Alkalinity*	80-200 mg/L ($CaCO_3$)	Every week
Combined chlorine*	No more than half the free halogen concentration	Every day
Cyanuric acid (in case chlorinated isocyanurates are used)	50-100 mg/L	Every day
Microbiological		
Heterotrophic Plate Count*	< 200 cfu/mL	Every two months

* Parameters tested optionally.

E. coli, *Pseudomonas aeruginosa*	< 1/100 mL	Every two months
Other microbiological parameters	Decision on case by case basis considering the operational monitoring results and the risk assessment findings, or whenever there is outbreak public health event.	

Table 14: Physical, chemical and microbiological parameters tested in hot tubs/spas their acceptable limits and frequency of testing

Parameters	Acceptable limits	Minimum testing frequency
Physical		
Temperature	≤ 40 °C (≤ 104 °F)	Every day
Chemical		
Disinfectant	3-10 mg/L for chlorine disinfection (free residual) 4-10 mg/L for bromine disinfection (total bromine residual (free and combined))	Continuously with an analyser-chart recorder/data logger and manually prior to opening
pH	7.0-7.8	Continuously with an analyser-chart recorder/data logger and manually prior to opening
Turbidity*	< 0.5 NTU	Every day
Alkalinity*	80-120 mg/L ($CaCO_3$) (when certain stabilised forms of bromine are used (e.g., BCDMH) some guidelines require higher values for alkalinity (150-200 mg/L))	Every week
Combined chlorine*	No more than half the free halogen concentration	Every day
Cyanuric acid (in case chlorinated isocyanurates are used)	50-100 mg/L	Every day

* Parameters tested optionally.

Microbiological		
E. coli, *Pseudomonas aeruginosa*	< 1/100 mL	Every two months
Legionella spp.	< 1 CFU/L	Every three months*
Other microbiological parameters	Decision on case-by-case basis considering the operational monitoring results and the risk assessment findings, or whenever there is outbreak public health event.	

Table 15: Antientrapment Requirements for Recreational Water Facilities in the Vessel Sanitation Program 2011 Operations Manual

Option*	Drainage/recirculation system	Cover design	Secondary antientrapment requirement†
Gravity only			
1	Multiple drains (2 or more drains greater than 1 metre/ 3.3 feet apart)	Not ASME compliant – manufactured or field fabricated	Alarm
2	Multiple drains (2 or more drains greater than 1 metre/ 3.3 feet apart)	ASME compliant – manufactured or field fabricated	None
3	Single unblockable drain (per ASME A112.19.8)	Not ASME compliant – manufactured or field fabricated	Alarm
4	Single unblockable drain (per ASME A112.19.8)	ASME compliant – manufactured or field fabricated	None

* *Legionella* testing can take place every six months when for the 24 previous consecutive months: a) *Legionella* test results were negative for the hot tub/spa, and b) no legionellosis cases have been associated with travel on the ship (including after-cruise travel-associated cases identified by public health authorities).

* Options 1 through 5 are for fittings that are not under direct suction. These include both fittings to drain the RWF and fittings used to recirculate the water. Options 6 through 8 are for fittings that are under direct suctions. These include fittings to drain the RWF and fittings used to recirculate the water.

† Definitions:

- Alarm = the audible alarm must sound in a continuously manned space AND at the RWF. This alarm is for all draining: accidental, routine, and emergency.
- GDS (Gravity Drainage System) = a drainage system that uses a collector tank from which the pump draws water. Water moves from the RWF to the collector tank due to atmospheric pressure, gravity, and the displacement of water by bathers. There is no direct suction at the RWF.
- SVRS (Safety Vacuum Release System) = a system which stops the operation of the pump, reverses the circulation flow, or otherwise provides a vacuum release at a suction outlet when a blockage is detected. System must be tested by an independent third party and found to conform with ASME/ANSI A112.19.17 or ASTM standard F2387.
- APS (Automatic Pump Shut-off system) = a device that detects a blockage and shuts off the pump system. A manual shut-off near the RWF does not qualify as an APS.

5	Single blockable drain or multiple drains (less than 1 metre/ 3.3 feet apart)	ASME compliant – manufactured or field fabricated	GDS
Suction fitting			
6	Multiple drains (2 or more drains per pump with drains greater than 1 metre/ 3.3 feet apart)	ASME compliant – manufactured or field fabricated	None
7	Single unblockable drain (per ASME A112.19.8-2007	ASME compliant – manufactured or field fabricated	SVRS or APS
8	Single BLOCKABLE drain or multiple drains (less than 1 metre/ 3.3 feet apart)	ASME compliant – manufactured or field fabricated	SVRS or APS

Table 16: Chemical and microbiological parameters tested in recirculating decorative fountains, their acceptable limits and frequency of testing

Parameters	Acceptable limits	Minimum testing frequency
Chemical		
Disinfectant	> 1 mg/L Cl (free residual) > 1 mg/L Br (total bromine residual (free and combined))	Every day
Microbiological		
Legionella spp.	< 1 CFU/L	Every six months
Other microbiological parameters*	Whenever there is an outbreak.	

* Parameters tested optionally.

6. PEST MANAGEMENT

6. PEST MANAGEMENT

Passenger ships may provide conditions suitable for the survival and growth of pest populations. Insects, rodents and other pests can gain access directly from the ships' open and technical spaces, can be carried in shiploads, or can be found on humans or animals as ectoparasites. Pests on board ships may contaminate stored foods, transmit illness on board, or introduce diseases to different areas of the world. Early identification of their presence through use of an integrated pest management (IPM) system is important to avoid large infestations.

Legal requirements (LEG)/Recommended standards (ST)/River cruise ship applicability (RCSA)

Item	RCSA	Details	LEG/ST
		Integrated Pest Management Plan	
6.1 Pests	R	Passenger shipping companies are responsible for ensuring that pest infestations are eliminated on their ships. Where pests are introduced onto a ship immediate actions must be taken to control them.	LEG[1]
6.2 IPM management team	R	• A designated pest management team should be established and trained so as to recognise common shipboard insects and rodents at every stage of their life cycle and know pests' behaviour. • The team should have specific knowledge of pest surveillance methods and appropriate knowledge of housekeeping, effective hygiene, maintenance and safe use in pesticide application.	ST ST
6.3 IPM Plan content	R	A written IPM Plan should be established and implemented as described in the following paragraphs.	ST
6.4 Responsibilities	R	Crew positions and responsibilities in a designated pest management team should be written in the IPM Plan.	ST
6.5 Inclusiveness	R	All common shipboard insects and rodents should be taken into consideration in the IPM Plan. These include, but are not limited to cockroaches, flies, mosquitoes, bedbugs, fleas, bees, mites, ants, beetles, pests of stored products, fruit flies and rodents.	ST
6.6 Monitoring	R	• Passive and active surveillance should be conducted for evidence of pests. All potential risk areas should be included (food preparation, storage and service areas, garbage rooms, cabins,	ST

		technical spaces, open deck including potential breeding sites for mosquitoes and other pests). • The location of suitable monitoring traps or other passive monitoring devices should be included in the IPM plan.	
6.7 Inspections	R	For active surveillance periodic scheduled visual inspections should be conducted including surveillance at night and during periods of no or minimal activity. During inspections, the following should be checked: – the presence of pests or other evidence such as droppings/faeces, cast skins or urine, gnawing, signs, traces, footprints, smells; – leaking water supplies and wastewater drain lines, damp and wet areas; – harbourage and cover areas including warm spaces such as equipment/machine rooms; – access to points of entry and luggage/supplies; – unsanitary conditions and access to food and water; and – areas with standing water (lifeboat covers, bilges, scuppers, awnings, gutters, air treatment plants, etc.).	ST
6.8 Trap placement	R	• Passive surveillance should be conducted by placement of suitable traps, which should be checked and replaced in accordance with the IPM Plan. • If active surveillance identifies evidence of the presence of pests such as rodents, then further monitoring should be carried out.	ST ST
6.9 Control measures	R	When pests or evidence of pests (e.g., casts) are found, control measures should be applied. Follow-up inspections should be conducted to check that control measures for pests have been effective.	ST
6.10 Record keeping	R	• Active and passive surveillance should be recorded, including the locations inspected, dates, time, the names of crew involved, the number, the species and the lifecycle stage (where applicable) of pests or any other evidence of pest infestation found, the control measures applied (including details of any pesticides used) and results of any follow up inspections. • Records and training documents should be kept for at least 12 months and be available during inspections.	ST ST
6.11 Biocidal products	R	A list of the pesticides carried on board should be maintained and be available during inspections.	ST

intended for pest control			
6.12 IPM evaluation	R	The IPM Plan should be evaluated for effectiveness periodically. It should be revised whenever needed — for example when there is a significant change in the ship structure or after a significant refit. The evaluation should be undertaken more frequently where a pest infestation exists but cannot be controlled.	ST
6.13 Availability of IPM	R	The IPM Plan should be available during the inspection.	ST
6.14 Supplies	R	Pesticides and traps (for insects and rodents) should be available on board and during the inspection.	ST
		Specific pest control preventive measures	
6.15 Exclusion of pests	R	All entry points where pests may enter the food preparation, service areas and cabins must be protected from the entry of pests.	LEG[2]
6.15.1 Food supplies and preventive measures	R	• Incoming food and supplies should be routinely inspected for evidence of pests. • Air curtains should be placed in areas to prevent fly entrance at the indoor food and garbage areas and buffet self-service areas. Alternatively, automatic doors, rotating doors or other effective controls should be installed.	ST ST
6.15.2 Food areas and preventive measures	R	• Insect-control devices that electrocute or stun flying insects should not be used in food areas. • Insect light traps should not be placed over food storage, preparation, or service areas, nor over clean equipment.	ST ST
6.16 Rat guards	R*	• Rat guards or other appropriate rodent prevention measures should be fitted when the ship is in port on arrival and until one hour before the ship leaves port. • Single-line, multiple-line, or conical rat guards should be used on mooring lines, according to the manufacturer's specifications, to effectively prevent pest migration along the lines. – Lines or group of lines should closely match the diameter of the rat guard. – Rat guards should be placed as far from the pier as safely possible: where practical at least 2 metres (6.6 feet) from the pier and 0.6 metres (2 feet) from the ship.	ST ST

- The point of the rat guard cone (where applicable) should face the ship. Two or more closely placed lines should be grouped to pass through one rat guard.
- Rat guards on different lines should be placed side-by-side. Any gap between the sleeve and the line should be blocked with material which cannot be easily removed or destroyed.
- The position of the rat guards should be checked regularly.

• Rat guards should be made of a durable and non-chewable material. ST

6.17 Harbourage	R	Precautions should be taken to prevent harbourage in food areas as described in Chapter 3 of the manual (cleaning of all food preparation areas, hygienic waste management, etc.).	ST
6.18 Cleaning	R	Traps and insect control devices should be cleaned or replaced at regular intervals, in order to maintain hygienic conditions.	ST

Pesticides

6.19 Trained crew	R	Pesticides must be applied only by persons who are trained in the application methods and use of the pesticide being applied.	LEG[3]
6.20 Health and safety	R	Health and safety procedures must be implemented to protect the passengers and crew before and after the pesticide application.	LEG[3, 4]
6.21 Storage and handling of pesticides	R	Pesticides must be stored and handled in accordance with the provisions described in Chapter 8 of the manual.	LEG[4]

Referenced legislation

1. International Health Regulations 2005
2. Regulation (EC) No 852/2004 on the hygiene of foodstuffs
3. Council Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work
4. Regulation (EU) No 528/2012 concerning the making available on the market and use of biocidal products

7. HOUSEKEEPING AND OTHER SHIP FACILITIES

7. HOUSEKEEPING AND OTHER SHIP FACILITIES

Housekeeping plays an important role in maintaining a ship in a condition that is not harmful to health and, therefore, contributes to public health protection. It is necessary that all accommodation and public spaces are maintained to a hygienic standard.

7.1 Accommodation and spaces used by passengers and crew

Accommodation facilities for both guests and crew, and public spaces such as corridors, lounges, public toilets, bars and restaurants, should achieve hygienic standards in terms of design, construction and cleaning. Accommodation spaces should have suitable and sufficient means of natural or mechanical ventilation, and have adequate natural and/or artificial lighting. Cleaning and disinfection is a key component of housekeeping. An effective cleaning and disinfection protocol for all areas of the ship not only makes the ship more visibly appealing but, more importantly, reduces the risk of infection transmitted through environmental sources.

Legal requirements (LEG)/Recommended standards (ST)/River cruise ship applicability (RCSA)

Item	RCSA	Details	LEG/ST
7.1.1 Free from sources of infection or contamination	R	Passenger ship operators must ensure the ships for which they are responsible are free from sources of infection or contamination.	LEG[1, 2]
7.1.1.1 Maintenance	R	Accommodation and public spaces should be maintained in good repair.	ST
7.1.1.2 Housekeeping policy	R	Housekeeping policies should be implemented including standard operating procedures, a training plan for staff (see item 7.1.15), a cleaning and disinfection plan/schedule (see item 7.1.5), a documented verification process (see item 7.1.5.1) and strategies for implementing housekeeping practices (see items under 7.1).	ST
		Construction and maintenance	
7.1.2 Materials and construction	R	• The construction of decks, deckheads and bulkheads in accommodation and public spaces should allow effective cleaning. Materials should be suitable to allow the type of cleaning appropriate to the area.	ST
		• Joints between decks and bulkheads should be constructed so as to avoid gaps and crevices.	ST

Cleaning, disinfection and body fluid spillage policy

7.1.3 Cleaning and disinfection of surfaces

R

- Decks, bulkheads, deckheads, surfaces of furniture and other surfaces should be kept clean and in good condition. Other surfaces include, but are not limited to door handles, hand rails, elevator buttons, telephones, keyboards, and tabletops. ST
- High-risk areas may require additional cleaning and disinfection, such as frequently touched surfaces, isolation rooms, medical facilities, public toilets, crew changing areas, waste handling areas which handle soiled items, beauty salons and treatment rooms, nursery and play areas. Disinfectants should be applied as described in items 8.11 and 8.14, and those used for general housekeeping of cabins and public areas should be effective against Norovirus. ST
- Disinfectants used on surfaces potentially contaminated with blood or other body fluids should be effective against bloodborne pathogens. This applies to any such surface or equipment, including but not limited to those in medical facilities, beauty salons, and areas where blood spills have occurred. ST

7.1.4 Carpeting and other deck coverings

R

- Carpeting and deck surfaces should be kept clean. ST
- During GI outbreaks vacuum cleaning of carpets and floors should not be performed when the infectious agent may be transmitted through environmental surfaces, since vacuuming has the potential to recirculate pathogenic microorganisms. ST

7.1.5 Cleaning and Disinfection Plan/Schedule

R

- A Cleaning and Disinfection Plan/Schedule should be implemented in all accommodation and public spaces. ST
- The Cleaning and Disinfection Plan/Schedule should at least include written procedures for the: ST
  - areas, surfaces, or items to be cleaned/disinfected;
  - type of cleaning/disinfection, materials to be used for each area, surface, or item (see also item 7.1.7);
  - order and method of cleaning and disinfection;
  - frequency of cleaning/disinfection (before/after use, daily, weekly, monthly); and
  - any safety precautions including the appropriate Personal Protective Equipment (PPE) to use for the different tasks performed (see item 7.1.9).

7.1.5.1 Monitoring and verification	–	A documented verification monitoring process should be in place including regular inspections, monitoring of indicators (**Annex 27**, page 344), implementation of corrective actions and where necessary any revision to the housekeeping policies/procedures.	ST
7.1.6 Frequency	R	Decks, bulkheads, deckheads, surfaces or furniture should be cleaned throughout the day at a frequency to help reduce any risk of contamination.	ST
7.1.7 Principles of cleaning and disinfection and avoiding cross-contamination	R	• Surfaces and equipment should be cleaned prior to disinfection.	ST
		• Cleaning and disinfection procedures should be carefully implemented to avoid any risk of cross-contamination.	ST
		• Housekeeping staff should perform hand hygiene (with soap and water or using hand sanitisers/rubs): – before entering new location, which is to be cleaned and disinfected (e.g., before entering a cabin); – before entering a housekeeping storage space; – after completing cleaning tasks; – before donning and after doffing PPE; – after handling waste; and – after handling soiled or contaminated equipment or materials.	ST
		• Housekeeping crew should not wear jewellery on their hands (except for a plain wedding band) to help allow good hand hygiene.	ST
		• Cleaning and maintenance equipment, including mops, brooms and rags, should be: – used in accordance with a colour-coding system or any other system in place to clearly identify their intended use and prevent cross-contamination; – cleaned, disinfected, and dried after use and in such a manner to avoid cross-contamination; – clearly distinguished when used in areas with different levels of contamination, and cleaned separately; – stored in designated and labelled areas, so that they do not contaminate food or other equipment or surfaces; and – maintained in good condition.	ST
7.1.8 Body fluid spillage policy	R	• A procedure for dealing with body fluid spillages (urine, blood, vomiting and diarrhoea) should be in place.	ST
		• In the event of an incident such as body fluid spillage (e.g., faeces, vomit), appropriate disinfectants should be used.	ST

- Only trained crew should carry out the cleaning and disinfection of the area. ST
- The trained crew should use PPE (e.g., face mask, gloves, and aprons in case of a potential contamination from GI-related vomit or diarrhoea), which should be disposable, where possible. ST
- The cleaning materials and disposable protective clothing should be placed in sealed bags, which should be incinerated or carefully disposed of as hazardous waste to avoid any contamination. ST
- Cleaning equipment should be decontaminated and non-disposable clothing laundered. ST
- Given the potential risk of infection, passengers and other crew should not be allowed into an area where there has been a spillage until the area is cleaned. ST
- If linen is soiled with body fluids, it should be washed separately (see item 7.6.4 and 7.6.5). ST
- All soiled linen should be washed as soon as possible. ST
- Damaged or heavily soiled linen which cannot be effectively laundered should be disposed of in a sealed bag as hazardous waste and incinerated. ST

Housekeeping uniforms

7.1.9 Uniform policy R

- All housekeeping staff should maintain a high degree of personal cleanliness. ST
- Housekeeping staff should wear suitable clean protective clothing (e.g., uniforms, aprons). ST
- Protective clothing or uniform should completely cover other clothing. ST
- Protective clothing or uniform should be changed regularly or as soon as they get dirty. ST

Ventilation

7.1.10 Ventilation R*

- All spaces on board where crew or passengers work, reside, or transit should be adequately ventilated to ensure air quality and comfort. ST
- There should be suitable and sufficient means of mechanical ventilation to all accommodation spaces. ST
- Ventilation systems should be constructed so that filters and other parts requiring cleaning or replacement are readily accessible. ST
- Drains in air handling units should be regularly inspected in order to ensure they are properly working and kept in good condition. ST

- Condensate trays and sumps should be kept clean and regularly disinfected. ST
- Filters of air handling unit, ducts and all parts of the ventilation system should be routinely cleaned. ST
- Potable water should be used to clean ventilation systems. ST
- Carbon dioxide sensors may be installed in different areas of the ship as a proxy indicator of occupancy and ventilation adequacy. ST
- Ventilation systems should, where technically feasible, be adjusted to accommodate variations in real-time occupancy to maintain acceptable indoor air quality. ST
- Temperature and humidity should be optimised to ensure that all spaces, including lounges and public areas, are adequately ventilated while considering energy use. ST
- Ventilation systems, including Air Changes per Hour (ACH) rates should be adjusted according to space size, occupancy, and expected thermal conditions. ST
- In dining rooms, bars, and spaces of high occupancy: ST
  - regular dehumidification should be performed to maintain relative humidity (RH) levels between 40 % and 60 %; and
  - enhanced ventilation or air filters should be used to ensure clean air.
- Effective air-conditioning systems should be operated in gyms to create a comfortable environment. ST
- Medical areas should have High Efficiency Particulate Air (HEPA) filtration installed on the exhaust system and only use fresh air, which is not recirculated in order to help control the spread of infectious diseases. ST

7.1.11 Ventilation systems R The ventilation system for cabins should be controlled to maintain satisfactory air quality. ST

7.1.12 Isolated air points R
- Air intake points should be located away from air exhaust points to allow for proper air circulation. ST
- Air intake and exhaust points should be screened to prevent the entry of pests. ST

Lighting

7.1.13 Lighting R Accommodation and public spaces should have adequate natural and/or artificial lighting. ST

7.1.14 Intensity of lighting in different spaces	R	In high-risk areas such as toilets and hand washing facilities, lighting levels should be increased so as to allow effective cleaning and the monitoring of cleaning standards.	ST
		Training	
7.1.15 Knowledge	R	• Staff should be aware of the principles of effective cleaning and disinfection, as appropriate (see **Annex 28**, page 345).	ST
		• Crew members who are responsible for supervising cleaning and disinfection and performing housekeeping procedures should be fully trained and aware of their tasks prior to starting work in their area of responsibility (see **Annex 28**, page 345).	ST

Referenced legislation
1. International Health Regulations, 2005
2. ILO Maritime Labour Convention, 2006

7.2 Toilets and hand washing facilities

Hand washing is an important hygiene practice for passengers and crew, reducing the likelihood of pathogenic contamination of food, water and environment and reducing the risk of disease transmission. Hand washing should take place after activities such as using the toilet, smoking, sneezing, coughing, and changing nappies.

Item	RCSA	Details	LEG/ST
		Construction and maintenance	
7.2.1 Location	R	• Flush toilets must be available and connected to an effective drainage system.	LEG[1]
		• Toilets must not open directly into spaces in which food is handled.	LEG[1]
7.2.1.1 Ventilated space	R	There should be a ventilated space between the toilets and the food areas.	ST
7.2.2 Drainage	R	Decks in the toilet facilities should be designed to ensure that there is no accumulation of pooled water under normal operation conditions.	ST
7.2.3 Hand washing	R	Hand washing facilities should be provided within, or adjacent to, toilets.	ST

7.2.3.1 Hand washing easily accessible	R	Hand washing facilities should be easily accessible for use.	ST
7.2.4 Equipment of hand washing facilities and toilets	R	• Hand washing facilities should include hot and cold running water, preferably from a single mixing outlet, single-service paper or cloth towel dispenser or drying device, suitable liquid soap in dispenser or detergent.	ST
		• Waste bin should be located close to the hand washing facility and sized to accommodate the quantity of paper towel waste generated.	ST
		• Toilets should be supplied with toilet paper and a waste bin.	ST
7.2.5 Signs	R	• Signs should be posted in the toilet/sanitary accommodation requesting that passengers and crew wash their hands after using the toilet.	ST
		• Hand washing signs should always be posted in crew hand washing facilities adjacent to all food-handling areas including the galley.	ST
		• Hand washing signs should be posted in hand washing facilities close to dining areas advising passengers to wash their hands before eating. A pictogram can be used instead of text on the sign.	ST
		It is recommended that posters or signs showing the hand washing method (an example infographic is given in **Annex 17**, page 324) are at crew hand washing facilities in and adjacent to food areas and dining areas.	
7.2.6 General cleaning procedures	R	Surfaces such as toilet seats, flush handles or pulls, door handles should be cleaned and disinfected frequently throughout the day.	ST

Referenced legislation

1. Regulation (EC) No 852/2004 on the hygiene of foodstuffs

7.3 Nursery and play areas

In general, the three most important ways of preventing the spread of infectious disease in nursery and play areas are: 1) effective hand washing, 2) exclusion of sick children and crew, and 3) immunisation of children and crew. To promote and enable effective hand washing, sinks and other hand washing facilities need to be readily accessible and appropriately located.

Item	RCSA	Details	LEG/ST
		Hand washing	
7.3.1 Hand washing facilities	R	• Hand washing facilities should be located within or close to the nursery and play areas.	ST
		• Hand washing facilities should be positioned at an appropriate height for crew and children.	ST
		• Hand washing liquid soap provided in the hand washing facilities should be suitable for use by children.	ST
		• Hand washing water accessible to children in nursery and play areas should not exceed 43 °C (110 °F) to prevent risks of scalding.	ST
7.3.2 Supervision of children's hand washing	R	Crew should supervise and observe children so that they wash their hands at appropriate times using the correct method. It is recommended that the hand washing method (an example infographic is given in **Annex 17**, page 324) are be posted at the hand washing facilities.	ST
		Nappy (diaper) changing area	
7.3.3 Location of nappy changing area	R	• An area specifically set aside for changing nappies should be provided.	ST
		• The nappy changing area should be located inside the nursery and play areas.	ST
7.3.4 Hand washing facility	R	The nappy changing area should include a hand washing facility.	ST
7.3.5 Nappy changing table	R	Nappy changing tables should be constructed of impervious, non-absorbent, non-toxic, smooth, durable and easily cleanable material. They should be equipped with single-use paper towels or other material to put on the table or pillow and discarded after use.	ST
7.3.6 Equipment	R	• The area should be equipped with cleaning wipes, soiled nappy bin, detergent, and disinfectant. An emergency supply of disposable nappies is required.	ST
		• Gloves and aprons should be available in the nursery and play areas.	ST
7.3.7 Signs	R	Signs should be posted in the nappy changing area requiring crew to wash their hands after each nappy change.	ST

7.3.8 Protective measures for nappy changing	R	• The nappy changing area (table or mat) should be thoroughly cleaned after each nappy change with detergent and warm water and disinfected if soiled.	ST
		• The nappy changing area (table or mat) should be thoroughly cleaned and disinfected at the end of each day.	ST

Toilets

7.3.9 Separate toilet facilities	R	Separate toilet facilities should be provided for the children in the nursery and play area.	ST
7.3.10 Signs in toilets	R	Signs should be posted in the toilets requiring crew to wash their hands and the children's hands after toilet use.	ST

Cleaning and disinfection

7.3.11 General cleaning procedures	R	Surfaces that children touch should be cleaned and disinfected frequently throughout the day. Tables or high chair trays should be cleaned before and after they are used for eating.	ST
7.3.12 Body fluid spillages	R	When body fluid spillages occur, proper cleaning procedures should be followed (refer to the ship's body fluid spillage policy).	ST

Waste disposal

7.3.13 Waste disposal	R	Waste materials should be handled and removed from nursery and play areas according to Chapter 9.	ST

Toys

7.3.14 Materials of toys	R	• Toys must be designed and manufactured in such a way as to meet hygiene and cleanliness requirements in order to avoid any risk of infection, sickness, contamination, or injury to children.	LEG[1]
		• Damaged or broken toys that can cause injury to children or that cannot be cleaned effectively must be removed.	LEG[1]
7.3.15 Cleaning of toys	R	• Toys, especially those in rooms with younger children, should be cleaned at the end of each day by washing in warm water and detergent, rinsing, disinfecting, and drying them.	ST
		• Toys which become dirty or which have been used by a child known to be ill should be immediately removed from the play area. Such toys should be cleaned, rinsed, and disinfected immediately if the toy is to be used again that day, or put aside for cleaning, rinsing, and disinfection at the end of the day.	ST

		• Many toys can be cleaned in dishwashers. Balls used in ball pits/pens should be cleaned at least once per week; if balls are known to have been contaminated they should be washed before they are used again.	ST
		Infection surveillance	
7.3.16 Guidance on childhood infections	R	Written guidance on the symptoms of common childhood infectious illnesses should be provided for passengers and nursery and play area crew. This guidance should be made available for review during inspections.	ST
7.3.17 Reporting of ill children	R	• Parents should be encouraged to tell crew working in these areas when any children are ill.	ST
		• Crew working in this area should be aware of the symptoms of common childhood infectious illnesses and evidence of their training are to be made available during the inspection.	ST
		• If a child seems unwell, the child should be separated from other children and medical advice sought.	ST
		• Parents should be informed that the child needs to be picked up as soon as practicable.	ST
7.3.18 Exclusion policies	R	• Nursery and play areas should have an exclusion policy. Crew working in these areas should have knowledge of the policy and records of their training should be available during the inspection.	ST
		• Medical advice should be sought from medical staff or other designated crew prior to exclusion from nursery and play areas.	ST
		• Confirmation by medical staff or other designated crew should be given electronically or in written form prior to an excluded child re-entering the nursery or play area.	ST

Referenced legislation

1. Directive 2009/48/EC on the safety of toys

7.4 Hairdresser's, beauty salons and gyms

Hairdressing and cosmetic services are not considered high-risk for transmission of any serious infections. However, some common infections have been associated with hairdresser/beauty salons, including bacterial infections such as impetigo and furuncles (boils), viral infections such as herpes simplex and verrucae (warts) and fungal infections such as tinea capitis and tinea corporis (ringworm infections). Infestations such as head lice are also common. Treatments such as depilatory waxes and lotions, as well as make-up and other lotions and gels, can also act as sources for disease transmission if they are incorrectly handled. To prevent the spread of microbial infections or

infestations of head lice, crew should maintain the premises and equipment in a hygienic condition, and undertake procedures in a safe and appropriate manner.

Crew in hairdresser's, beauty salons and gyms should receive training according to their duties. Training should include issues such as the spread of pathogenic microorganisms, cross-contamination, personal health and hygiene, hand washing and cleaning and disinfection techniques. The EU legislation requires that gym operators take care of the structural safety and adequate maintenance of gym equipment.

Item	RCSA	Details	LEG/ST
		Training	
7.4.1 Training	R	Crew working in hairdresser's and beauty salons should demonstrate knowledge about the risk of transmission of infectious diseases and hygienic practices, according to their duties.	ST
		Hand washing	
7.4.1.1 Hand washing	R	A hand washing facility (which meets 7.2.4 requirements) should be installed in the hairdresser's and beauty salon. It is recommended that the hand washing method (an example infographic is given in **Annex 17**, page 324) is posted at the hand washing facilities.	ST
		Services	
7.4.2 Use of razors	R	New, single-use, disposable razor blades should be used for each customer and disposed of in accordance with item 9.5.5.	ST
7.4.2.1 Use of acupuncture needles	R	• Acupuncture needles and electrical acupuncture devices must comply with recognised medical device safety and quality standards. • In the EU, such products must bear the CE marking in accordance with Regulation (EU) 2017/745. • Products sourced from outside the EU should carry equivalent certification under a recognised regulatory system (e.g., FDA approval in the U.S., NMPA in China, or other national authorities).	LEG[1] LEG[1] LEG[1]
7.4.3 Use of cosmetics	R	• A new batch of depilatory waxes and lotions should be made for each customer. • Makeup, lotions, waxes, and gels should not be reused and should be administered with either a disposable, or clean and disinfected, applicator.	ST ST

7.4.3.1	R	Cosmetics on board ships must be used, stored, and disposed in line with the instructions for use and disposal.	LEG[2]
		Treatment of wounds	
7.4.4 Wounds treatment	R	Minor wounds should be treated according to the company policy. In the case of more serious wounds, medical advice should be sought.	ST
		Cleaning and disinfection	
7.4.5 Cleaning of equipment	R	All items such as combs, brushes, scissors, clippers, manicuring and pedicure instruments and make-up equipment should be cleaned and disinfected or sterilised when necessary and between each customer. This should be recorded and records should be available for inspection.	ST
		Waste disposal	
7.4.6 Sharps disposal	R	Waste materials, including any sharps, must be removed from hairdresser and beauty salon areas in accordance with section 9.5.	LEG[3, 4]
		Gym	
7.4.7 Characteristics of gym equipment	R	• Gym equipment should be kept clean. • Disposable disinfecting sprays, swabs/paper towels, or sanitary wipes/washable rags should be made available for use by customers.	ST ST

Referenced legislation

1. Regulation (EU) 2017/745 of the European Parliament and of the Council of 5 April 2017 on medical devices, amending Directive 2001/83/EC, Regulation (EC) No 178/2002 and Regulation (EC) No 1223/2009 and repealing Council Directives 90/385/EEC and 93/42/EEC (Text with EEA relevance)
2. Regulation (EC) No 1223/2009 of the European Parliament and of the Council of 30 November 2009 on cosmetic products (recast)
3. Directive 2008/98/EC on waste
4. Council Directive 2010/32/EU implementing the Framework Agreement on prevention from sharp injuries in the hospital and healthcare sector concluded by HOSPEEM and EPSU

7.5 Pet/animal housing areas

Where kennels for pets are provided they must be kept in a clean and hygienic condition. Crew should be trained according to their duties.

Item	RCSA	Details	LEG/ST
		Construction	
7.5.1 Facilities designed to be cleanable	R	Animal housing areas should be constructed and equipped with materials that can be easily cleaned and disinfected. All decks, surfaces and fittings should be constructed of smooth, impervious, durable, and preferably light-coloured material.	ST
7.5.2 Air circulation	R	Kennels should be designed and constructed so as to provide animals with adequate space for effective air circulation.	ST
7.5.3 Deck design	R	Decks should be designed, constructed, and maintained to minimise leakage of urine and faeces.	ST
		Cleaning and disinfection	
7.5.4 Faeces and soiled bedding	R	Faeces, urine, other body fluid and soiled bedding should be removed promptly.	ST
7.5.5 Cleaning of surfaces	R	All surfaces should be cleaned thoroughly to remove organic matter before disinfection.	ST
		Waste disposal	
7.5.6 Storage of waste	R	Animal waste should be managed as infectious medical waste (section 9.5).	ST
		Monitoring of infections	
7.5.7 Common infections	R	Written guidance on symptoms of common animal infectious illnesses should be provided for crew.	ST
7.5.8 Daily monitoring for illness	R	Animals should be monitored at least daily for signs of illness, and receive appropriate care by the owners.	ST
7.5.9 Isolation of infected animals	R	Animals suspected or known to be infected with a pathogen should be isolated from passengers and from other animals.	ST

7.6 Laundry

Soiled clothing and linen may be a source of contamination from pathogenic microorganisms, especially when they are from ill persons (e.g., cases of gastroenteritis). Transmission of skin infections can be prevented by thorough washing of linen and clothing. Washing of clothing and linen

at appropriate water temperatures with soap or detergent is an effective means of destroying and diluting microorganisms. Proper handling including transport and storage of linen and clothing is important to avoid cross-contamination and to protect crew.

Item	RCSA	Details	LEG/ST
		Construction and maintenance	
7.6.1 Availability of laundry facilities	R	• Appropriately situated and equipped laundry facilities should be available.	ST
		• Adequate space should be available for storing soiled and clean linen and clothes and avoiding cross-contamination.	ST
		• The water supplied to the laundry machines should have appropriate quality and any health risks associated with the water should be identified and controlled as described in the potable water safety Chapter 4.	ST
7.6.2 Equipment of laundry facilities and record keeping	R	• The laundry facilities provided for use should include: – washing machines; and – drying machines or adequately heated and ventilated drying rooms.	ST
		• All washing machines should be fitted with accurate thermometers to which sensing elements are correctly placed to register the actual wash temperature, i.e., the temperature of the wash water in contact with the load. Temperatures and thermometers should be checked routinely and the results be recorded. Periodic service reports (e.g., annually or as recommended by the manufacturer) can verify accuracy. If not included in regular service, thermometer accuracy should be checked periodically using a calibrated thermometer, data logger, or other suitable method.	ST
		• Washing machine surfaces and buttons should be cleaned and disinfected regularly.	ST
		• Finishing equipment* like tumble dryers, flatwork ironers and presses should be able to dry linen and clothes in full, to avoid any mould growth during storing.	ST
7.6.3 Soiled linen and clothes	R	• Soiled and clean linen and clothes should be handled appropriately so as to avoid cross-contamination.	ST
		• All soiled linen and clothes should be bagged or placed in containers at the site of collection unless a laundry chute is used.	ST

* The finishing equipment is not a part of the disinfection process and not adequate for destroying or reducing microorganism.

- Soiled linen should be sorted out into categories according to the soil level and can be classified into three categories: ST
  a) high grade contaminated (e.g., linen from medical facilities, from isolation cabins, or cabin linen from cases of communicable diseases which is transmitted through contaminated linen and linen soiled with body substances). Heavily soiled items (e.g., saturated with blood, vomit, or faeces) should be disposed of as infectious medical waste in a sealed and properly labelled bag;
  b) possibly contaminated or contaminated (e.g., clothes of food/beverage crew, restaurant linen and uniforms, uniforms of housekeeping crew, cabin linen, toilet rags, housekeeping rags and mops); and
  c) all other.
- Soiled linen and clothes of each of the three categories should be handled and washed separately in order to avoid cross-contamination. Washing is also done by the type of item (e.g., bedspreads, sheets, etc., are washed separately). ST
- During the transfer of laundry bags, there should be no risk of cross-contamination en route. ST
- All soiled linen should be washed as promptly as possible. ST

7.6.4 High grade contaminated linen and clothes R

- High grade contaminated laundry items should be placed separately in clearly marked or clearly designated water soluble or other laundry bags (as below) before transfer to the laundry. Where water soluble bags are used, temperatures above 30 °C (86 °F) during transport should be avoided in order to maintain the stability if linen and clothes are wet. ST
- If linen is soiled with body substances (e.g., faeces), it should be washed separately without opening the bags (wherever possible), with a pre-wash sluice cycle. ST
- Crew should wear PPE, such as face masks, gloves, and apron, when dealing with laundry of this category. ST
- Used PPE of crew should be disposed of as infectious medical waste in a sealed bag. ST
- If alternative methods are chosen to transport high grade contaminated laundry, ships should demonstrate that these effectively contains the contaminated linen and prevents exposure during transport. ST
  – **Use of impermeable bags**: Place contaminated linen in sturdy, leak-proof bags that are clearly labelled. These bags should be handled with care to prevent punctures or leaks.

– **Minimal handling**: Handle contaminated linen with minimal agitation to reduce the risk of aerosolising infectious agents.
– **Personal Protective Equipment (PPE)**: Staff should wear appropriate PPE, such as face masks, gloves, and aprons, when handling contaminated linen.
– **Dedicated laundry processes**: Ensure that contaminated linen is processed separately from other laundry, using appropriate wash cycles that include thermal or chemical disinfection.

If fabric laundry bags are used rather than waterproof bags, they should be laundered with the contents of the bag.

7.6.5 Washing of linen and clothes

– • Each category of soiled linen and clothes should be washed in a washing cycle that is effective to achieve the required level of cleanliness and where necessary disinfection. ST
• Linen of category (a) and (b) should be washed with an adequate amount of detergent at a minimum temperature of 65 °C (149 °F) for a minimum of 10 minutes or at a minimum temperature of 71 °C (160 °F) for a minimum of three minutes. ST
• Where temperatures below 65 °C (149 °F) are used, the correct amount of detergent and disinfectant should be used for the required effective contact time (e.g., adding sodium hypochlorite solution to the penultimate rinse with contact time at least five minutes at a concentration of 150 mg/L). ST

7.6.6 Linen and clothes carts

– • Linen and clothes should be stored in a designated dry location and above the deck level to avoid any cross-contamination with other linen and clothes. Additionally, clean linen and clothes should be stored separately from soiled linen and clothes to avoid cross-contamination. ST
• Separate trolleys/carts should be used for soiled and clean linen and clothes. ST
• Trolleys/carts used to transport soiled linen and clothes should be cleaned and disinfected after each period of use. ST

7.6.7 Personal hygiene

– • A hand washing facility should be located close to the soiled laundry areas. The hand washing facility should be supplied as described in section 7.2. ST
• Crew should wash their hands on entering the laundry and before starting work. ST

- Crew should wash their hands before moving from soiled to clean areas, before handling clean linen and clothes and before exiting the laundry. ST
- Crew working in the dirty area of a laundry should not then work in clean areas, without prior changing their working clothes. ST

8. HAZARDOUS CHEMICAL AGENTS

8. HAZARDOUS CHEMICAL AGENTS

Hazardous chemical agents used on ships include biocides (disinfectants and pesticides), cleaning chemicals, paints, degreasers, caustic substances, refrigerants, fuels, etc. Appropriate handling helps prevent potential health risks. Biocidal products must be authorised and contain approved active substances. Following label instructions and Safety Data Sheets, especially regarding application concentrations and contact times, is essential for preventing and controlling diseases on board.

Legal requirements (LEG)/Recommended standards (ST)/River cruise ship applicability (RCSA)

Item	RCSA	Details	LEG/ST
		Management	
8.1 Risk assessment	R	Hazardous chemical agents used in the accommodation/public spaces must be identified and their risk must be assessed (**Annex 29**, page 349).	LEG[1]
8.2 Biocidal products	R	• Biocidal products used on board must be authorised in line with the provisions in Regulation (EU) No 528/2012.	LEG[2]
		• Biocidal products which obtained final approval under the International Convention for the Control and Management of Ships' Ballast Water and Sediments must be considered as authorised under Chapter VIII of Regulation (EU) No 528/2012.	LEG[2]
		• Biocidal products used on board the ship must comply with the terms and conditions of the authorisation stipulated in accordance with Article 22(1) and the labelling and packaging requirements laid down in Article 69 of Regulation (EU) No 528/2012.	LEG[2]
		Labelling	
8.3 Original manufacturer's container labelling	R	• All hazardous chemical agents in their original containers must carry a legible manufacturer's label.	LEG[3, 4]
		• The labels must be written in a language that the crew can read and understand.	LEG[3, 4]
8.4 Working containers	R	Working containers of hazardous chemical agents, when filled from bulk containers, must be clearly identifiable. The manufacturer's name, the product name and the relevant safety and environmental details listed on the manufacturer's label must be included.	LEG[1, 3]

8.4.1 Labelling information	R	If it is not possible to provide on the working container all the relevant safety and environmental details that are listed on the manufacturer's label, then: – the working containers, together with the nature of those contents and any associated hazards, should be clearly identifiable; – all other information should be readily available in the Safety Data Sheet (SDS) at the place where working containers are stored; and – biocidal products decanted for use over more than one day should be labelled with an expiry date.	ST
8.5 Unlabelled containers	R	Unlabelled hazardous chemical containers must never be used in food areas.	LEG[3, 4]

Packaging

8.6 Packaging design and material	R	Packaging containing hazardous chemical agents must be easily identifiable and must comply with the following requirements: – the packaging must be designed and constructed so that the contents cannot escape, except in cases where other more specific safety devices are prescribed; – the materials constituting the packaging and fastenings must not be susceptible to damage, or liable to produce hazardous compounds when in contact with the contents; – the packaging and fastenings must be strong and solid throughout to ensure that they will not loosen and will safely meet the normal stresses and strains of handling; and – packaging fitted with replaceable fastening devices must be designed so that it can be refastened repeatedly without the contents escaping.	LEG[3]

Storage

8.7 Storage area specifications	R	• All storage areas for hazardous chemical agents should be clearly labelled to indicate the types of materials stored within.	ST
		• These areas should be locked when not in use to prevent unauthorised access that might initiate spills or leaks that could contaminate food, packaging materials, utensils or equipment.	ST
		• Food items should not be permitted inside these storage areas.	ST
		• Required PPE, spill kits, and eye wash stations should be readily accessible and located near hazardous chemical agents' storage areas.	ST

8.8 Chemical agents' storage	R	• Cleaning and disinfection chemical agents must not be stored in areas where food is handled. • If stored near to food preparation or serving areas the chemical agents must be suitably secured to prevent contamination.	LEG[4] LEG[4]
8.8.1 Secondary containment	R	Where it is necessary to store chemicals, which are known to produce a dangerous reaction when mixed, in close proximity to each other, the chemicals in use should be stored in a secondary watertight, corrosion resistant container or bund of a size that will contain 110 % of the maximum content of the primary container. This storage practice should be applied in any area where such chemicals are required to be placed in close proximity, e.g., automatic halogenation and pH adjustment units. Ships should implement appropriate containment solutions to manage potential spills or leaks from hazardous chemical agents in storage.	ST
8.9 Containers	R	Containers previously used to store hazardous chemical agents cannot be used to store or transport food.	ST

Safety Data Sheets

8.10 Safety Data Sheets	R	• The designated crew member must ensure that the SDS is obtained by the supplier before the hazardous chemical agent is first supplied to the workplace. These may be stored, either electronically or as hard copies, but must always be readily available and accessible to crew and medical staff and written in a language that they can understand. • SDS must be available where chemical agents are stored and where working containers are filled from bulk containers.	LEG[1, 5] LEG[1, 5]

Application

8.11 Handling and disposal	R	• Hazardous chemical agents must be handled and disposed of in accordance with procedures which take into consideration how the chemical agent is used, how it is chemically altered during use, requirements specific to the ship, and the information contained on the SDS. • Biocidal products (e.g., disinfectants, pesticides) must be used in compliance with the following terms and conditions as specified in the labelling and manufacturer instructions: – the uses for which the biocidal product is authorised; – directions for use, frequency of application and dose rate; – the expiry date relevant to normal conditions of storage;	LEG[2, 4] LEG[2, 4]

		– the period of time needed for the biocidal effect (contact time); and – the interval to be observed between applications of the biocidal product or between application and the next use of the product treated, or the next access by humans or animals to the area where the biocidal product has been used. • Proper use must involve the rational application of a combination of physical, biological, chemical, or other measures as appropriate, whereby the use of biocidal products is limited to the minimum necessary and appropriate precautionary steps that are taken.	LEG[2]
8.11.1 Testing, calibration and verification	R	• The calibration of chemical dispensers used to dispense disinfectant solutions from bulk containers should be regularly checked and maintained to ensure accurate and consistent dispensing. • A verification procedure (such as using test strips) should be implemented to check that automatically dispensed disinfectants have the correct concentration and that the dispenser is functioning correctly: – routinely and in accordance with any manufacturer's instructions, where provided; – wherever a new working container is filled from a non-automated or dispensing system; and – when a deviation or failure is likely, for example, after any repairs or maintenance work have been completed on the chemical dispensing equipment.	ST ST
8.11.2 Instructions for manual mixing	R	Instructions should be available for mixing chemicals and disinfectants for situations where the automated chemical dispensing equipment is out of order.	ST
8.12 Training	R	• Appropriate training and information must be given to those crew exposed to hazardous chemical agents in relation to potential health hazards and the safe use and handling of hazardous chemical agents. • Personal Protective Equipment (PPE) training, including, where appropriate, demonstrations of correct use, must be provided to crew. • Crew must be informed of the potential risks against which the wearing of specific PPE protects them.	LEG[1] LEG[6] LEG[6]

8.13 Hand washing facilities	R	A hand washing facility should be provided in locations where working containers are filled from bulk containers of hazardous substances and where mixing takes place. The hand washing facility should comply with the standards set out in section 7.2.	ST
8.14 PPE	R	Appropriate PPE must be provided to and used by the handlers of hazardous chemical agents, in accordance with the ships health and safety policy and as per the SDS instructions.	LEG[6]

Referenced legislation

1. Council Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work
2. Regulation (EU) No 528/2012 concerning the making available on the market and use of biocidal products
3. Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006
4. Regulation (EC) No 852/2004 on the hygiene of food stuffs
5. Regulation (EC) No 1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency
6. Council Directive 89/656/EEC on the minimum health and safety requirements for the use by workers of personal protective equipment at the workplace

9. WASTE MANAGEMENT

9. WASTE MANAGEMENT

Daily ship operations generate significant amounts of waste which must be properly controlled and managed to avoid health and environmental risks. Without adequate treatment, waste can harbour pathogens and pose serious threats to public health. Adopting control measures, such as appropriate storage of waste and safe handling procedures, will help to safeguard public health on board ships. To address these risks, the IMO established the International Convention for the Prevention of Pollution from Ships (MARPOL), an international convention on ship pollution, while the EU enforces regulations on waste control, handling, and disposal.

9.1 All types of wastes

Legal requirements (LEG)/Recommended standards (ST)/River cruise ship applicability (RCSA)

Item	RCSA	Details	LEG/ST
		General requirements/recommended standards	
9.1.1 Written procedures	R*	Written procedures must be in place for the storage, handling, and discharge of sewage, grey waters, oily bilge, and for the disposal of garbage including hazardous waste (infectious medical waste and other types). These procedures must outline waste control measures and corrective actions in emergency situations (in case of accidental discharge, spillage or cross-contamination).	LEG[1]
9.1.2 Certificates and records	R*	The following certificates and records must be available during inspection: – Garbage Management Plan; – Garbage Record Book, where each discharge operation or completed incineration and any accidental loss must be reported; – advance notification form for waste delivery to port reception facilities (MEPC.1/Circ.834/Rev.1 & Annex 2 of Directive (EU) 2019/883) – must be available on board, preferably in electronic form, at least until the next port of call and must be made available upon request to the relevant Member States' authorities; – Waste Delivery Receipt (MEPC.1/Circ.834/Rev.1 & Annex 2 of Directive (EU) 2019/883) – must be available on board for at least two years, and must be made available upon request to the Member States' authorities;	LEG[1, 2]

		– exemption certificate confirming that the ship meets the necessary conditions and requirements for the application of the exemption of delivering waste and stating the duration of the exemption; – International Sewage Pollution Prevention Certificate (valid for five years maximum); – International Oil Pollution Prevention Certificate (valid for five years but with annual revalidation); – oil record books detailing bunkering, transfer, usage and means of disposal; and – International Air Pollution Prevention Certificate (valid for five years but with annual revalidation).	
9.1.2.1 Voluntary records	–	The Sewage Discharge Record Book/Log should be available during inspection (voluntary*).	ST
9.1.3 Separate containers	R	Separate receptacles or containers must be used for the segregation of food waste, plastics and other recyclable waste (such as paper/cartons, cans), cooking oil, international catering waste originating from means of transport operating internationally, incinerator ashes, e-waste, cargo residues not harmful to the marine environment (non-HME), cargo residues harmful to the marine environment (HME), domestic and operational waste such as hazardous waste including infectious medical waste, oily rags.	LEG[2, 3, 4]
9.1.3.1 Labelling	R	Receptacles/containers should be clearly labelled and distinguishable by colour, graphics, shape, size and/or location. The ISO 21070:2017 could be used for sea-going vessels or the ISO 24146-1:2024 for river ships.	ST
9.1.4 Knowledge of crew	R	• Crew should have knowledge of the health risks involved with waste accumulation and spoilage, and of the correct use of PPE. • Consumption of food and beverages should be prohibited in the waste handling areas.	ST ST
9.1.5 Use of PPE	R	Appropriate PPE must be used when collecting, transferring and handling waste to mitigate the risks present.	LEG[5, 6]

* At present, the Sewage Discharge Record Book/Log is voluntary. Therefore, inspectors should not request it as a mandatory record, but may review it if the operator chooses to maintain one.

9.1.5.1 Availability of PPE	R	The following should be made available to all crew who collect or handle waste: – helmets, with or without visors — depending on the operation; – face masks — depending on the operation; – ear protection — depending on the operation; – eye protectors (safety goggles) — depending on the operation; – overalls (coveralls); – leg protectors and/or industrial boots; and – disposable gloves or heavy-duty gloves (waste workers).	ST
9.1.6 Disposal of waste/notification procedures	R*	• The master of a ship calling at a European Union port must, before leaving that port, deliver all its waste carried on board to a port reception facility in accordance with the relevant discharge norms laid down in the MARPOL Convention.	LEG[1, 2]
		• A ship must proceed to the next port of call without delivering the ship generated waste if it can be demonstrated that there is sufficient dedicated storage capacity for all ship-generated waste that has already been and will be accumulated during the intended voyage of the ship until the port of delivery, or if they have an exemption certificate as per Annex 5 of Directive (EU) 2019/883.	LEG[2]
		• The operator, agent or master of a ship must truly and accurately complete the advance waste notification and notify all the information contained therein to the authority or body designated for this purpose by the Member State in which that port is located: – at least 24 hours prior to arrival, if the port of call is known; – as soon as the port of call is known, if this information is available less than 24 hours prior to arrival; or – at the latest upon departure from the previous port, if the duration of the voyage is less than 24 hours.	LEG[2]
9.1.7 Incinerators	–	• Incinerators must comply with MARPOL 73/78, Annex VI, and must not begin processing waste until the correct temperature has been reached.	LEG[1]
		• The operating times of incinerators, garbage type, volumes incinerated and ships position must be recorded in the Garbage Record Book.	LEG[1]

9.1.7.1 Emissions	–	Arrangements should be in place to monitor emissions from final exhaust, i.e., by Closed-Circuit Television (CCTV), where applicable.	ST

9.2 Garbage

Item	RCSA	Details	LEG/ST
		Receptacles and containers	
9.2.1 Hygienic Waste Management	R	Garbage must be collected, handled and disposed of in a hygienic manner and at a frequency so that garbage does not accumulate, except in designated garbage storage areas.	LEG[3]
9.2.2 Capacity of receptacles	R	There must be an adequate number of appropriate receptacles or containers for food waste, international catering waste and recyclables in every area of the ship where garbage is expected to be generated or discarded.	LEG[3]
9.2.3 Tightly covered receptacles	R	Food waste must be deposited in tightly covered receptacles, or in closed compartments, unless ship food operators can demonstrate to the competent authority that other types of containers or waste evacuation systems used are appropriate.	LEG[3]
9.2.4 Receptacle construction specifications	R	Garbage receptacles or containers must be of an appropriate material and design, be kept in sound condition, be non-absorbent, durable, leak-proof, be easy to clean and, if necessary, to disinfect. They must not attract pests, and receptacles must have a lid so they can be closed when not in use.	LEG[3]
9.2.5 Cleaning procedures	R	• A cleaning plan/schedule should be implemented for garbage receptacles from all areas including public toilets and cabin waste bins. • Soiled food waste bins and recyclables receptacles should be cleaned (when empty) in specific areas designated only for this purpose away from food areas. These areas should have access to water, detergent, and suitable drainage.	ST ST
		Garbage handling in galleys	
9.2.6 Avoiding contamination	R	Garbage must not be a direct or indirect source of contamination (e.g., through contact with surfaces that food is prepared on, or by attracting pests).	LEG[3]

9.2.7 Garbage accumulation	R	Food waste and other refuse must be removed from food preparation areas as quickly as possible, so as to avoid their accumulation.	LEG[3]
9.2.8 Transportation	R	• Interiors of garbage lifts, garbage chutes, sorting tables or any other surfaces in the galley coming into contact with garbage should be made of easily cleanable, corrosion-resistant, non-absorbent and durable materials. • Drains should be installed at the bottom of all lift shafts including provision platform lifts and dumbwaiters.	ST ST

Garbage storage room

9.2.9 Garbage room location	R*	Garbage, international catering waste bins and recyclable receptacles should be stored in a designated garbage storage room separate from food-handling operations. The garbage room should: – have restricted access or supervised access for crew who do not work in garbage handling operations; – be as close to the changing room used by the waste handlers; and – have access which is free from obstructions, as far as practicable.	ST
9.2.10 Garbage room size and design	R	• Each ship must have a garbage storage space of adequate size to accommodate the maximum quantity of waste produced between the most distant unloading periods, or when unloading is prohibited. • The garbage room must be designed and managed in such a way as to enable it to be kept clean and, where necessary, free of animals and pests.	LEG[2, 3] LEG[3]
9.2.11 Garbage room specification	R*	The garbage room should: – be constructed and maintained so as to be pest-proof; – be easily cleaned and disinfected; – be ventilated and illuminated; – have a constructed system which will prevent pooling of water; – have a refrigerated space for the storage of wet garbage; – have a hand washing facility with potable hot and cold water and equipped as described in item 7.2.4, and a deck drain and signage stating "Wash your hands"; – be provided with suitable absorbent material for dealing with any spillages of oil-containing waste; and – have a first aid kit, which includes eye wash solution.	ST

9.2.12 Cleaning procedures	R	• The garbage room should be cleaned regularly and maintained at appropriate cleaning status so that odours are minimised as much as possible.	ST
		• Schedules and procedures for cleaning and disinfection should be established for the garbage room and the equipment used.	ST
		Garbage processing treatment and disposal	
9.2.13 Garbage processing and treatment	–	• Food refuse grinders or disposal units located in sculleries or other food-handling areas should be operated with potable water only.	ST
		• Processes and techniques to compact, or to comminute garbage should be adopted.	ST
		• Compactors should be installed in a suitable location with adequate room to allow the safe operation and for storage of processed waste.	ST
		• A hand washing facility should be available close to garbage processing areas equipped as described in item 7.2.4 with a deck drain and signage stating "Wash your hands".	ST
9.2.14 International catering waste disposal	R	International catering waste must be disposed of to the port reception facilities for incineration or disposal to approved landfill sites.	LEG[7]
		Changing room for crew members	
9.2.15 Changing room	–	• New ships* should provide a designated changing area for crew working in the garbage handling area/room.	ST
		• The changing facility should: – be easily accessible; – include suitable storage facilities for clothes; – be located as near as possible to the garbage room; and – have access to a hand washing facility.	ST

9.3 Sewage and grey water

Item	RCSA	Details	LEG/ST
		Drain lines	
9.3.1 Drainage system	R*	Separate, leak-proof, isolated drainage systems must be provided for sewage and grey water.	LEG[1]

* Ships that the keel is laid after 01/01/2017.

9.3.1.1 Operation and labelling	R	• Drainage systems should operate effectively to prevent the overflow of toilets or shower stalls in passenger and crew cabins. • Drain lines carrying sewage and grey water should be easily identified by labelling or other signs, e.g., coloured stripes on all waste system components (black colour for waste media according to ISO 14726).	ST ST
9.3.2 Passage of drain lines carrying sewage	R	Drain lines carrying sewage and grey water should not be allowed to pass through ice machines, ice storage bins, or potable water tanks, or directly over: – food preparation areas; – food serving areas; – food storage areas; – bars, galleys or buffets; – wash areas for food equipment or utensils; – cabins; and – potable water treatment equipment.	ST
9.3.3 Backflow prevention	–	Drains from equipment used for the preparation/processing/storage/handling of food including fixtures, sinks, appliances, compartments, refrigerators should not be directly piped to the ship's wastewater system. Instead there should be an indirect connection, so that drainage is either through an air-break or an air gap.	ST
		Holding tanks and treatment system	
9.3.4 Ventilation	R	Ventilation of sewage-holding tanks should be adequate and emissions should be driven outside of the ship and away from any air intakes.	ST
		Discharge of sewage and grey water	
9.3.5 Overflow	–	Sewage and grey water should not be routinely overflowing into the bilge.	ST
9.3.6 Discharge	–	No discharge of any type of sewage, sewage residuals or grey water must be allowed within an area from which water for a water supply is drawn or in any area restricted for the discharge of waste by any national or local authority.	LEG[1]
9.3.7 Hose and connections	–	• For discharge to port reception facilities, a dedicated hose and connections large enough to allow rapid discharge of waste should	ST

be used. This hose should be durable, impervious, and of a smooth interior surface, its couplings should be designed not to allow connection to any other bunker or discharge pipe.

- All waste hoses should be provided by the port reception facility. ST
- If the hose is supplied by the ship: ST
  - it should be labelled "FOR WASTE DISCHARGE ONLY"; and
  - after use and if the hose is stored on board, it should be thoroughly flushed with clean water, and stored in a convenient place, labelled "WASTE DISCHARGE HOSE". The method of flushing should not present any risk of contamination to the potable water supply.

9.3.7.1 Discharge lines – Discharge lines must be fitted with a standard discharge connection in accordance with IMO MARPOL Annex IV Regulation 10 and must be capable of being capped or blanked. Addition of an end cap or blank to both hose ends, when stored, may be substituted for flushing. LEG[1]

9.3.8 Cleanable surfaces and disinfection R

- Areas subject to routine splashes or spillages of waste should have cleanable features. ST
- Areas should be thoroughly cleaned and disinfected after splashing from sewage and grey water. ST

9.4 Hazardous waste, oil waste and sludge

Item	RCSA	Details	LEG/ST
		Hazardous waste storage and handling	
9.4.1 Storage and handling	R	Hazardous waste must not be mixed, either with other sources/types of hazardous waste or with other waste, substances or materials. Mixing includes the dilution of hazardous chemical agents with water.	LEG[5]
9.4.1.1 Storage	R	• Hazardous waste should be stored in a designated locked area. The storage room should be separate from other types of waste storage, be of sufficient size, and kept clean and well ventilated, emissions should be driven outside of the ship and away from any air intakes.	ST
		• Hazardous chemical waste of different composition should be stored separately if they could cause unwanted chemical reactions.	ST
		• Oily rags are capable of spontaneous combustion and should be stored in metal containers with tightly fitting lids. Oily rags should not be allowed to accumulate.	ST

Item	RCSA	Details	LEG/ST
		Hazardous waste disposal	
9.4.2 Hazardous waste disposal	R	• Hazardous waste (both solid and liquid) must be disposed of by approved contracted firms or agencies specifically authorised to manage hazardous waste according to national legislation. Where the port or other agent selects the waste contractor and not the ship, this standard applies to the port or other agent making that selection. • If the ship has to arrange disposal of extra waste that cannot be accommodated by port reception facilities, discharge must be done using an approved hazardous waste contractor.	LEG[5] LEG[5]
9.4.3 Oily bilge and sludge	–	• Oily bilge and sludge must be treated and disposed of in accordance with the provisions of IMO, MARPOL 73/78, Annex I. • The Oil Record Book Part I must be completed on each occasion, on a tank-to-tank basis if appropriate, whenever any machinery space operations take place in the ship as these are specified by the IMO, MARPOL 73/78, Annex I.	LEG[1] LEG[1]
9.4.4 Oil separators and 15 – 5 ppm oil content meters	–	The 15 – 5 ppm oil content meter must be tested periodically and before operations are commenced.	LEG[1]
9.4.5 Overboard valves	–	Overboard valves must be sealed when not in use, unless the valve is otherwise rendered inoperable, i.e., white box. It is recommended that the seal number is recorded in the oil record book.	LEG[1]

9.5 Medical waste

Item	RCSA	Details	LEG/ST
		Medical waste storage and handling	
9.5.1 Knowledge of crew	R	Medical waste should be handled by crew with proper training.	ST
9.5.2 Medical Waste Storage	R	A specific storage location for medical waste must be designated.	LEG[5]
9.5.2.1 Location	R	This area should be located inside the medical facilities or the garbage room.	ST
9.5.2.2 Medical waste container scheme	R	A recommended scheme for medical waste is given in the table below.	ST

Recommended scheme for medical waste (§ 7.1 WHO, 2014)

Type of Waste	Container marking	Type of container
Highly infectious waste	"HIGHLY INFECTIOUS" with biohazard symbol	Strong, leak-proof plastic bag, or container capable of being autoclaved
Other infectious waste, pathological and anatomical waste	Biohazard symbol	Leak-proof plastic bag or container
Sharps	"SHARPS" with biohazard symbol	Puncture-proof container
Chemical and pharmaceutical waste	Labelled with appropriate hazard symbol	Plastic bag or rigid container

9.5.3 Infectious waste handling

R Infectious waste must be handled with care and PPE must be used. LEG[5]

9.5.4 Infectious waste storage

R
- Infectious waste must be stored in a clearly marked space identified for this purpose only, or disinfected (e.g., by steam). LEG[5]
- Bags and containers for infectious waste must be marked with the international infectious substances symbol (see picture below). LEG[5]

International infectious substances symbol

9.5.5 Sharps storage and handling

R
- Used or opened sharps must all be collected together regardless of whether or not they are contaminated. LEG[8]
- Sharps must be collected in clearly marked and technically safe UN containers and retained on board for final disposal ashore. LEG[8]
- Containers must be puncture-proof and impermeable with tight fitting covers that are difficult to break open after closure. LEG[8]
- Containers must be equipped with an interim (if applicable) and a permanent closure feature. LEG[8]
- Sharp disposal containers must be placed as close as possible to the assessed areas where sharps are being used or are to be found. LEG[8]

9.5.5.1 Used razor blades and shaving equipment	R	Used razor blades and shaving items from passengers, crew members or beauty salons should be carefully handled and disposed of in puncture-resistant, dedicated containers to prevent injury and maintain hygiene.	ST
9.5.6 Pharmaceutical and chemical waste	R	Chemical and pharmaceutical waste must be segregated to be incinerated on board or ashore.	LEG[5]
		Medical waste disposal	
9.5.7 Infectious waste disposal	–	• Infectious medical waste must be disposed of without endangering human health and without using processes or methods which could harm the environment.	LEG[5]
		• When infectious medical waste is incinerated, it must be placed straight in to the furnace, without first being mixed with other categories of waste and without direct handling. Incineration of waste is not permitted on board inland navigation vessels or ships operating on rivers.	LEG[9]
9.5.7.1 Disinfected infectious waste	–	If infectious waste has been disinfected, it can join the garbage collection and disposal mechanism.	ST
9.5.8 Sharps disposal	R*	Sharps (unused, contaminated or opened) must be disposed of in sharps containers ashore or incinerated as infectious medical waste.	LEG[5, 8]
9.5.9 Liquid medical waste disposal	–	Liquid medical waste, with the exception of chemical and pharmaceutical waste or any waste that can affect the operation of the sewage system, must be disposed of by discharging them into the sewage system.	LEG[5]
9.5.10 Non-infectious, non-hazardous	R	Non-infectious, non-hazardous waste can be handled and stored as garbage not requiring steam disinfection or special handling.	ST
9.5.11 Expired medicines	–	• Expired medicines should be logged and include each medicine type and the quantity of each type by the medical staff prior to disposal.	ST
		• Disposal should be ashore via a pharmacy or by incineration. Where controlled medicines are to be disposed of on board by incineration, the incineration should be witnessed by senior officers and a signed record kept.	ST

Referenced legislation

1. The International Convention for the Prevention of Pollution from Ships (MARPOL)
2. Directive 2019/883/EC on port reception facilities for the delivery of waste from ships, amending Directive 2010/65/EU and repealing Directive 2000/59/EC
3. Regulation (EC) No 852/2004 on the hygiene of food stuffs
4. Directive (EU) 2016/1629 laying down technical requirements for inland waterway vessels, amending Directive 2009/100/EC and repealing Directive 2006/87/EC entered into force on 6 October 2016 with the date of transposition and application of 7 October 2018
5. Directive 2008/98/EC on waste
6. Council Directive 89/656/EEC on the minimum health and safety requirements for the use by workers of personal protective equipment at the workplace
7. Regulation (EC) No 1069/2009 laying down health rules as regards animal by-products and derived products not intended for human consumption and repealing Regulation (EC) No 1774/2002 (Animal by-products Regulation)
8. Council Directive 2010/32/EU implementing the Framework Agreement on prevention from sharp injuries in the hospital and healthcare sector concluded by HOSPEEM and EPSU
9. Directive 2010/75/EU on industrial emissions (integrated pollution prevention and control)

10. BALLAST WATER MANAGEMENT

10. BALLAST WATER MANAGEMENT

Ballast water and hull fouling are a primary means for transporting aquatic species between ports. Many species of bacteria, plants, and animals can survive in a viable form in ballast water and sediment carried in ships, even after several months. Organisms transported in ballast water and sediments in ballast tanks are a potential threat to human health. Subsequent discharge of ballast water or sediment into the waters of port states may result in the establishment of harmful aquatic organisms, which may threaten indigenous human, animal and plant life, as well as the marine environment.

Legal requirements (LEG)/Recommended standards (ST)/River cruise ship applicability (RCSA)

Item	RCSA	Details	LEG/ST
		Management	
10.1 Ballast Water Management Plan and Ballast Water Record Book	–	The following records must be available during inspection: – Ballast Water Management Plan; – Ballast Water Record Book – this may be an electronic record system, or integrated into another record book or system (which should be maintained on board for a minimum of two years after the last entry has been made and thereafter in the company's control for a minimum of three years); – International Ballast Water Management Certificate (issued for a period specified by the Administration that shall not exceed five years); and – Type Approval Certificate of Ballast Water Treatment Systems.	LEG[1]
		Discharge	
10.2 Discharge of ballast water	–	• Unless exempted or granted a waiver, ships must have a Ballast Water Management System (BWMS) that ensures compliance with the D-2 standard for ballast water discharge which specifies the following limits: – Less than 10 viable organisms per m^3 greater than or equal to 50 µm in minimum dimension. – Less than 10 viable organisms per mL between 10 µm and 50 µm in minimum dimension. – Less than 1 cfu per 100 mL of Toxicogenic *Vibrio cholerae*. – Less than 250 cfu per 100 mL of *Escherichia coli*. – Less than 100 cfu per 100 mL of Intestinal Enterococci.	LEG[1]

- All ballast water management systems used to meet the D2 standard must be type-approved by the relevant maritime authorities, and, if the system uses active substances, it must also undergo specific IMO approval in line with the Procedure for Approval of Ballast Water Management Systems that Use Active Substances (G9). LEG[1]

10.3 Sediment disposal – Sediments from spaces designated to carry ballast water must be removed and disposed of in accordance with the Ballast Water Management Plan. LEG[1]

10.4 Monitoring water quality – The microbiological water quality must be monitored for compliance with the proposed parameters. LEG[1]

Referenced legislation

1. International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004 (the "Ballast Water Management Convention")

Reference list — Part A

Aarnisalo K., Tallavaara K., Wirtanen G., Maijala R. and Raaska L. (2006). The hygienic working practices of maintenance personnel and equipment hygiene in the Finnish food indu+645+456stry. Food Control 17(12): 1001-1011.

Addiss D.G., Yashuk J.C., Clapp D.E. and Blake P.A. (1989). Outbreaks of diarrhoeal illness on passenger cruise ships, 1975-85. Epidemiol Infect 103: 63-72.

ALBERTA Association of Recreation Facility Personnel. (2006). Pool Standards, 2006 for the swimming pool, wading pool and water spray park regulation.

American Bureau of Shipping. (2005). ABS Garbage Management Manual, Regulations for the Prevention of Pollution by Garbage from Ships – Annex V of MARPOL 73/78.

American College of Emergency Physicians. (2014). Health Care Guidelines for cruise ship medical facilities.

Andersen E. and Løfsgaard B.E. (2013). Safe, Sufficient and Good Potable Water Offshore - A guideline to design and operation of offshore potable water systems. 3rd edition. Norwegian Institute of Public Health.

Anon. (2003). US Navy shipboard pest control manual. USA Department of the Navy and Navy Disease Vector Ecology and control Center (Bancor, Washington) reviewed by J.A. Corneil, Washington.

Association Port Health Authorities. Ship Sanitation Inspection Guide, Draft No 2 for Consultation, Ship Sanitation Working Group.

Association Port Health Authorities. (2002a). Good Practice Guides, Environmental Protection, Issue 1 / Sheet 1.

Association Port Health Authorities. (2002b). Good Practice Guides Ship Inspections, Issue 1/ Sheet 1.

Benkel D.H., McClure E.M., Woolard D., Rullan J.V., Miller G.B.Jr, Jenkins S.R., Hershey J.H., Benson R.F., Pruckler J.M., Brown E.W., Kolczak M.S., Hackler R.L., Rouse B.S. and Breiman R.F. (2000). Outbreak of Legionnaires' disease associated with a display whirlpool spa. International Journal of Epidemiology 29(6): 1092-1098.

Bolton D.J., Meally A., Blair I.S., McDowell D.A. and Cowan C. (2008). Food safety knowledge of head chefs and catering managers in Ireland. Food Control 19(3): 291-300.

Bonnefoy X., Kampen H. and Sweeney K. (2008). Public health significance of urban pests. WHO Regional Office for Europe, Denmark.

BRC Global Standards. (2012). Understanding High Risk and High Care. BRC Global Standard for Food Safety Issue 6.

Capunzo M., Cavallo P., Boccia G., Brunetti L., Buonomo R. and Mazza G. (2005). Food hygiene on merchant ships: the importance of food handlers' training. Food Control 16: 183-188.

Centers for Disease Control and Prevention. (2009). Maritime Illness and Death Reporting System: Reporting Instructions.

Centers for Disease Control and Prevention. (2010). Fecal Incident Response: Recommendation for pool staff.

Centers for Disease Control and Prevention. (2011). Vessel Sanitation Program - 2011 Construction Guidelines. U.S. Public Health Service, Centers for Disease Control and Prevention/ National Center for Environmental Health.

Centers for Disease Control and Prevention. (2011). Vessel Sanitation Program - 2011 Operations Manual. U.S. Public Health Service, Centers for Disease Control and Prevention/ National Center for Environmental Health.

Centers for Disease Control and Prevention. (2017). Definitions of Signs, Symptoms, and Conditions of Ill Travelers.

Centers for Disease Control and Prevention. (2018). Vessel Sanitation Program 2018 – Operations Manual. U.S. Department of Health and Human Services U.S. Public Health Service Centers for Disease Control and Prevention/ National Center for Environmental Health.

Centers for Disease Control and Prevention. (2023). Guidance for cruise ships on the management of acute respiratory illness (ARI) due to viral infection.

Centers for Disease Control and Prevention. (2024). Model Aquatic Health Code. 5th edition.

Centers for Disease Control and Prevention. (2025). Vessel Sanitation Program 2025 Construction Standards. Atlanta, GA: Centers for Disease Control and Prevention; 2025.

Centers for Disease Control and Prevention. (2025). Vessel Sanitation Program 2025 Environmental Public Health Standards. Atlanta, GA: Centers for Disease Control and Prevention; 2025.

Chadwick House Group Ltd. (2010). Industry Guide to Good Hygiene Practice: Catering Guide – Ships, Industry Guides to Good Hygiene Practice. London, UK.

City of Bradford Metropolitan District Council. Cleaning schedule. Department of Environment and Neighbourhoods, Environmental Health, Health Protection, West Yorkshire, UK.

Cliver D. (2009). Control of Viral Contamination of Food and Environment. Food and Environmental Virology 1: 3-9.

Codex Alimentarius Commission. (1993). CAC/RCP 39-1993: Code of hygienic practice for precooked and cooked foods in mass catering. Food and Agriculture Organization/ World Health Organization Food Standards.

Codex Alimentarius Commission. (2001). Food Hygiene – Basic Texts – 2nd edition. Food and Agriculture Organization/ World Health Organization Food Standards Programme, Rome.

Colorado Department of Public Health and Environment. (2002). Infectious diseases in child care settings. Guidelines for child care providers. Communicable Disease Epidemiology Program.

Council of Europe. (2002). Policy statement concerning metals and alloys. Technical document – Guidelines on metals and alloys used as food contact materials. Council of Europe's policy statements concerning materials and articles intended to come into contact with foodstuffs. Strasbourg.

Cruise Lines International Association. (2006). CLIA Industry Standard: Cruise industry waste management practices and procedures.

Cyngor Sir County Council. (2007). Food hygiene supervision and training. Environmental Health Department.

D'Agnese J.J. (1988). An integrated pest management system works for cruise ships. Pest Control 50: 220-224.

D'Agnese J.J. (2001). Integrated pest management system guide for cruise ships.

David M., Gollasch S., Cabrini M., Perkovic M., Bosnjak D. and Virgilio D. (2007). Results from the first ballast water sampling study in the Mediterranean Sea - the Port of Koper study. Marine Pollution Bulletin 54: 53-65.

Defense Commissary Agency (DeCA) Manual 30-22.01. (2025). Integrated Pest Management.

Dejong B. (2002). Outbreak of salmonellosis on a ferry between Sweden and Poland. Eurosurveillance 19.

Department of Health and Community Services. (1998). Standards for commercial skin penetration, hairdressing, and beauty and natural therapy. Environmental Health Program.

Department of Public Health. (2007). The food safety legislation explained – Document for consultation.

Department of Public Health NSW. (1996). Public swimming pool and spa guidelines. Department of the Navy. (2001). Bumed instruction 6250.14A – Procurement of deratting/deratting exemption certificates. Bureau of Medicine and Surgery. Washington DC.

Environmental Protection Agency. (2008). Cruise Discharge Assessment Report – United States EPA842-R-07-005.

Epping Forest District Council. (2006). Food Safety. Food safety information. General requirements for kitchen. Environmental Health Services. Essex, UK.

Epping Forest District Council. (2006) Food Safety. Food safety information. Sinks and washing up. Environmental Health Services. Essex, UK.

Epping Forest District Council. (2006) Food Safety. Food safety information. Training for food handlers. Environmental Health Services. Essex, UK.

European Centre for Disease Prevention and Control. (2013). Prevention of norovirus infection in schools and childcare facilities. Stockholm: ECDC; 2013.

European Centre for Disease Prevention and Control. (2023). Factsheet for health professionals on COVID-19.

European Centre for Disease Prevention and Control. (2024). Proposed case definitions for RSV infection under EU epidemiological surveillance.

European Commission. (2018). Commission Implementing Decision (EU) 2018/945 of 22 June 2018 on the communicable diseases and related special health issues to be covered by epidemiological surveillance as well as relevant case definitions.

European Hygienic Engineering and Design Group. (2004). Document 8 – Hygienic equipment design criteria second edition. UK.

European Hygienic Engineering and Design Group. (2007). Materials of construction for equipment in contact with food. Trends in Food Science and Technology 18(S1): S40-S50.

Eurostat. (2015). Number of seaborne passengers embarked and disembarked in all ports, 1997-2012 (in 1000).

Executive Council of New Zealand. (2007). Health (Hairdressers) Regulations 1980. SR 1980/143. Department of Health.

EU SHIPSAN ACT joint action. (2016). European Manual for Hygiene Standards and Communicable Disease Surveillance on Passenger Ships. 2nd edition.

Favero M.S. (1984). Whirlpool spa associated infections: Are we really in hot water? American Journal of Public Health 74(7): 653-655.

Fields B.S., Haupt T., Davis J.P., Arduino M.J., Miller P.H. and Butler J.C. (2001). Pontiac fever due to Legionella micdadei from a whirlpool spa: possible role of bacterial endotoxin. The Journal of Infectious Diseases 184(10): 1289-1292.

Fijan S., Sostar-Turk S. and Cencic A. (2005). Implementing hygiene monitoring systems in hospital laundries in order to reduce microbial contamination of hospital textile. Journal of Hospital Infection 61: 30-38.

Finnish Consumer Agency. (2003). Consumer agency's guidelines for the promotion of safety at swimming pools and family spas. Publication series 2/2003.

Food and Agriculture Organization. (1998). Food Quality and Safety Systems – A training manual on Food Hygiene and the Hazard Analysis and Critical Control Point (HACCP) System. Publishing Management Group, Rome.

Food and Agriculture Organization. (2003). Section 2 - Recommended International Code of Practice - General Principles of Food Hygiene.

Food and Agriculture Organization and World Health Organization. (2023). General Principles of Food Hygiene. Codex Alimentarius Code of Practice, No.CXC 1-1969. Codex Alimentarius Commission. Rome.

Food and Drink Federation. Hygiene Fact File 2, Food storage Fact File 3 and Food Preparation Fact File 4. Foodlink. London, UK.

Food Standards Agency. (2006). Food Hygiene – A Guide for businesses. Food Safety Agency Publications, UK.

Forest of Dean District Council, Tewkesbury Borough Council, Cheltenham Borough Council, Gloucester City Council, Costwold District Council, Stroud District Council. A Guide to Hazard Analysis for caterers. UK.

Gloucester City Council. (2001). Environmental Health Factsheet. Cleaning and Disinfection. Gloucester, UK.

GP Wild (International), Business Research and Economic Advisors (BREA). (2015). The cruise industry - Contribution of Cruise Tourism to the Economies of Europe. 2015 Edition.

Halton Borough Council. (2009) Training for food handlers. The food and health and safety unit. Runcorn, Widnes, UK.

Hartlepool Borough Council. Construction of Food Preparation Rooms. Hartlepool, UK.

Health and Safety Executive. (2017). The control of legionella and other infectious agents in spa-pool systems.

Health Protection Agency. (2003). Guidelines for water quality on board merchant ships including passengers essels. London, UK.

Health Protection Agency. (2006). Management of Spa Pools - Controlling the Risks of Infection. London, UK.

Herwaldt B.L., Lew J.F., Moe C.L., Lewis D.C., Humphrey C.D., Monroe S.S., Pon E.W. and Glass R.I. (1994). Characterization of a variant strain of Norwalk virus from a food-borne outbreak of gastroenteritis on a cruise ship in Hawaii. J Clin Microbiol 32(4): 861-866.

Ho M.S., Glass R.I., Monroe S.S., Madore H.P., Stine S., Pinsky P.F., Cubitt D., Ashley C. and Caul E.O. (1989). Viral gastroenteritis aboard a cruise ship. Lancet 2: 961-965.

International Association for Food Protection. (2003). Food Safety at temporary events.

International Committee on Seafarers' Welfare. (2005). Guidelines for Food Safety on Merchant Ships. Watford – Hertfordshire, UK.

International Council of Marine Industry Associations. (2007). The ICOMIA Guide to On board Treatment of Grey Water.

International Labour Organization. (2014). Maritime Labour Convention, 2006.

International Maritime Organization. Guidelines for ballast water management and development of ballast water management plans (G4) (resolution MEPC.127(53)).

International Maritime Organization. Guidelines for ballast water management equivalent compliance (G3) (resolution MEPC.123(53)).

International Maritime Organization. Guidelines for risk assessment under regulation A-4 of the BWM Convention (G7) (resolution MEPC.162(56)).

International Maritime Organization. International Convention for the Control and Management of Ships' Ballast Water and Sediments.

International Maritime Organization. (1996). Recommendations on the safe use of pesticides in ships. London.

International Maritime Organization. (2002). Guidelines for ships operating in artic ice-covered waters.

International Maritime Organization. (2004). Large passenger ship safety, Medical facilities.

International Maritime Organization. (2006). Guidelines for the Implementation of Annex V of MARPOL.

International Maritime Organization. (2006). MARPOL.

International Maritime Organization. (2011). Amendments to the Annex of the protocol of 1978 relating to the international convention for the prevention of pollution from ships, 1973 (resolution MEPC.201(62)).

International Maritime Organization. (2012). Guidelines for the implementation of MARPOL Annex V (resolution MEPC.219(63)).

International Maritime Organization. (2013). Standard format for the advance notification form waste delivery to port reception facilities. MEPC.1/Circ.644/Rev.1.

International Maritime Organization. (2013). Standard format for the waste delivery receipt following a ship's use of port reception facilities. MEPC.1/Circ.645/Rev.1.

International Maritime Organization. (2017). Guidelines for the Implementation of MARPOL ANNEX V.

Jolliffe L. (2008). Cruise ship tourism. Tourism Management 29: 604-605.

Jones F. and Bartlett C.L.R. (1985). Infections associated with whirlpools and spas. Journal of Applied Bacteriology Symposium Supplement: 61S-66S.

Kababjian R. (2010). Disinfection of public pools and management of fecal accidents. Journal of Environmental Health 58: 8-12.

Kansas Department of Health and Environment. (2008). Prevention of infectious disease transmission associated with public swimming and bathing facilities (swimming pools, spas, whirlpools, hot tubs, interactive fountains, and water parks). Technical Guidance Tool for Local Health Departments and Environmental Health Staff.

Koo D., Maloney K. and Tauxe R. (1996). Epidemiology of diarrheal disease outbreaks on cruise ships, 1986 through 1993. JAMA 275: 545-547.

Kura F., memura-Maekawa J., Yagita K., Endo T., Ikeno M., Tsuji H., Taguchi M., Kobayashi K., Ishii E. and Watanabe H. (2006). Outbreak of Legionnaires' disease on a cruise ship linked to spa-bath filter stones contaminated with Legionella pneumophila serogroup 5. Epidemiol Infect 134: 385-391.

Lee J., Cartwright R., Grueser T., and Pascall M.A. (2007). Efficiency of manual dishwashing conditions on bacterial survival on eating utensils. Journal of Food Engineering 80: 885-891.

Lew J.F., Swerdlow D.L., Dance M.E., Griffin P.M., Bopp C.A., Gillenwater M.J. Mercatente T.M. and Glass R.I. (1991). An outbreak of shigellosis aboard a cruise ship caused by a multiple-antibiotic-resistant strain of Shigella flexneri. Am J Epidemiol 134(4): 413-420.

Loehr L.C., Beegle-Krause C.J., George K., McGee C.D., Mearns A.J. and Atkinson M.J. (2006). The significance of dilution in evaluating possible impacts of wastewater discharges from large cruise ships. Marine Pollution Bulletin 52: 681-688.

Lois P., Wang J., Wall A. and Ruxton T. (2010). Formal safety assessment of cruise ships. Tourism Management 25: 93-109.

London Borough of Hillingdon. (2007). Your Guide to Food Safety. UK.

Montville R., Chen Y. and Schaffner D.W. (2002). Risk assessment of hand washing efficacy using literature and experimental data. International Journal of Food Microbiology 73: 305-313.

Mouchtouri B., Kourentis L., Dirksen-Fischer M., Militzer K.C., Dionisio M., Janiec J., Kokosharova G., Anagnostopoulos L., Kostara E., Andrioti Bygvraa D., Thorné Å., Vasileiou C., Bras I., Hadjichristodoulou C., and Consultation Group. (2021). EU HEALTHY GATEWAYS Tool for Public Health Contingency Plan Development and Assessment for Ports (Milestone 7.9 – Deliverable 7.2). Version 1.

Mouchtouri V.A., Anagnostopoulou R., Samanidou-Voyadjoglou A., Theodoridou K., Hatzoglou C., Kremastinou J. and Hadjichristodoulou C. (2008). Surveillance study of vector species on board passenger ships, risk factors related to infestations. BMC Public Health 8: 100.

National Association of State Public Health Veterinarians. (2007). Compendium of measures to prevent disease associated with animals in public settings.

National Health and Medical Research Council. (2005). Staying healthy in child care. Preventing infectious diseases in child care, 4th edition. Australian Government.

National Pest Management Association. (2006). Urban IPM handbook: an integrated approach to management of pests in and around structures. Fairfax, VA.

National Standards Authority of Ireland. (2007). Hygiene in the catering sector. Irish Standard I.S. 340:2007.

Nebraska Department of Health and Human Services. (2009). Swimming Pool's Operator Manual.

Neghab M., Gorgi H.A., Baghapour M.A., Rajaeefard A. and Moemenbellah-Fard M.D. (2006). Bacterial Contamination of the swimming pools in Shiraz, Iran; Relationship to Residual Chlorine and Other Determinants. Pakistan Journal of Biological Sciences 9: 2473-2477.

Norovirus Working Group. (2007). Guidance for the management of Norovirus infection in cruise ships. Maritime and Coastguard agency, and Association of Port Health Authorities and Health Protection Agency.

Nuneaton and Borough Council. (2005). Cleaning in food premises – Detailed information.

Odihiri R. (2005). European Commission Working Document EMB/1104 on food contact materials. Food Standards Agency, UK.

Oxford City Council. (2010). Food hygiene training. Oxford, UK.

Polglaze J. (2003). Can we always ignore ship-generated food waste? Marine Pollution Bulletin 46: 33-38.

Pool Water Treatment Advisory Group. (2024). Code of Practice.

Porter J.D., Ragazzoni H.P., Buchanon J.D., Waskin H.A., Juranek D.D. and Parkin W.E. (1988). Giardia transmission in a swimming pool. American Journal of Public Health 78: 659-662.

Raspor P. (2008). Total food chain safety: how good practices can contribute? Trends in Food Science and Technology 19: 405-412.

Rhonda Cynon Taf. (2010). A Guide to compliance with Food Hygiene Legal Requirements for caterers.

Rooney R.M., Bartram J.K., Cramer E.H., Mantha S., Nichols G., Suraj R. and Todd E.C. (2004). A review of outbreaks of waterborne disease associated with ships: evidence for risk management. Public Health Rep 119(4): 435-442.

Seaman P. and Eves A. (2006). The management of food safety--the role of food hygiene training in the UK service sector. International Journal of Hospitality Management 25(2): 278-296.

Simsir M., Kumruoglu L.C. and Ozer A. (2009). An investigation into stainless-steel/structural-alloy-steel bimetal produced by shell mould casting. Materials and Design 30(2): 264-270.

Snyder J.D., Wells J.G., Yashuk J., Puhr N. and Blake P.A. (1984). Outbreak of invasive Escherichia coli gastroenteritis on a cruise ship. Am J Trop Med Hyg 33(2): 281-284.

South Kesteven District Council. (2003). Cleaning and disinfection. Guidelines for Food businesses. Environmental Health Services Council Offices, Lincolnshire.

South West London Health Protection Unit. (2003). Guidelines for the control of infection and communicable disease in nurseries and other institutional early years settings in South West London Sector.

Spitalny K.C., Richard M.D.L., Vogt M.D. and Witherell M.P.H. (1984). National survey on outbreaks associated with whirlpool spas. American Journal of Public Health 74(7): 725-726.

State of Arkansas. Rules and regulations pertaining to swimming pools and other related facilities.

Stahl Wernersson E., Johansson E. and Hakanson H. (2004). Cross-contamination in dishwashers. Journal of Hospital Infection 56(4): 312-317.

Sturchler D.A. (2006). Exposure: a guide to sources of infections. ASM Press.

Tatem A.J., Hay S.I. and Rogers D.J. (2010). Global traffic and disease vector dispersal. Proceedings of the National Academy of Sciences of the United States of America 103(16): 6242-6247.

Tatfeng Y.M., Usuanlele M.U., Orukpe A., Digban A.K., Okodua M., Oviasogie F. and Turay A.A. (2005). Mechanical transmission of pathogenic organisms: the role of cockroaches. J Vector Borne Dis 42(4): 129-134.

Tebbutt G.M. (1984). A microbiological study of various food premises with an assessment of cleaning and disinfection practices. Journal of Hygiene 93(2): 365-375.

The European Food Information Council. (2006). European Food Safety System: a shared responsibility.

United States Department of Agriculture. (2006). Safe food handling.

USA Consumer Product Safety Commission. (2005). Guidelines for entrapment hazards: Making pools and spa safer.

USC Foundation for Cross-Connection Control and Hydraulic Research. (1993). Ninth Edition of Manual to Use New Testing Procedure.

US Department of Health and Human Services. (2013). US FDA Food Code 2013.

US Food and Drug Administration. (2023). Food Code 2022 Recommendations of the United States Public Health Service Food and Drug Administration.

US Food and Drug Administration Center for Food Safety and Applied Nutrition. (2007). National Science Teachers Association. Food Safety A to Z – Reference Guide.

Veiros M.B., Proenta R.P.C., Santos M.C.T., Kent-Smith L. and Rocha A. (2009). Food safety practices in a Portuguese canteen. Food Control 20: 936-941.

World Health Organization. (2001). Sustainable development and healthy environments. Sanitation on ships. Compendium of outbreaks of foodborne and waterborne disease and Legionnaires' disease associated with ships, 1970-2000.

World Health Organization. (2006a). Guidelines for safe recreational water environments. Volume 2: Swimming pools, spas and similar recreational water environments.

World Health Organization. (2006b). Pesticides and their application for the control of vectors and pests of public health importance. Department of Control of Neglected Tropical Diseases. WHO Pesticide evaluation scheme (WHOPES).

World Health Organization. (2007a). International Medical Guide for ships, 3rd edition.

World Health Organization. (2007b). Interim technical advice for inspection and issuance of ship sanitation certificates.

World Health Organization. (2011a). Guide to ship sanitation. 3rd edition.

World Health Organization. (2011b). Guidelines for drinking-water quality, 4th edition.

World Health Organization. (2011c). Handbook for Inspection of Ships and Issuance of Ship Sanitation Certificates.

World Health Organization. (2011d). Water safety in buildings.

World Health Organization. (2012). Water Safety Plans – Training package.

World Health Organization. (2014). Global epidemiological surveillance standards for influenza.

World Health Organization. (2014). Safe management of wastes from health-care activities. 2nd edition.

World Health Organization. (2018). WHO Guidance for Contingency Planning.

World Health Organization. (2023). Water safety plan manual – step-by-step risk management for drinking-water suppliers. 2nd edition.

World Health Organization. (2025). International Health Regulations (2005) as amended 2014, 2022 and 2024.

PART B

Guidelines for managing cases of communicable diseases on board passenger ships

Guideline I: Prevention and control of acute respiratory illness (ARI) on passenger ships

Guideline II: Prevention and control of gastroenteritis on passenger ships

Guideline III: Prevention and control of legionellosis on passenger ships

Guideline IV: Prevention and control of vaccine-preventable diseases on passenger ships; focusing on measles, rubella, and varicella

Guideline I

Prevention and control of acute respiratory illness (ARI) on passenger ships

Purpose

- To reduce the incidence and transmission of ARI on board passenger ships.
- To provide guidance on the management of ARI cases on board passenger ships.
- To give general guidance for pandemic respiratory illness preparedness.

Overview

This document is intended for the staff on ships who have a role in preventing and managing acute respiratory illness (ARI), but also describes the functions of competent authorities at ports.

Annex 30 (page 351) presents background information on influenza, COVID-19, and RSV including virus characteristics, modes of transmission, epidemiological data, risk groups, and information specific to Europe.

A. Guidelines for the prevention and control of acute respiratory illness (ARI) on passenger ships

1 Pre-embarkation

Information, education and communication targeting passengers

Competent governmental authorities, travel agencies, travel companies, passenger shipping companies, and/or other businesses operating in the tourism sector should provide pre-travel information about preventing, mitigating and controlling the risk of communicable diseases, including respiratory infections, as a part of their travel information.

Vaccination

Vaccination of crew and passengers is an effective way of preventing outbreaks of ARI. Passenger shipping companies should recommend vaccination for crew at risk of complications of influenza, RSV, and COVID-19 (1-3) (see **Annex 30**, page 351). An annual programme of vaccination against seasonal influenza and COVID-19 may be considered (4-8). Crew vaccination including names, dates, and vaccination type, should be maintained in order to help in decision making regarding public health measures during a potential outbreak situation.

It is recommended passengers at risk of severe disease should be vaccinated for seasonal influenza (5, 7, 9-11) at least two weeks before the voyage, in order to develop immunity before boarding the ship. Passengers should also be advised to stay up to date with vaccines for other vaccine-preventable diseases (such as COVID-19 and RSV) if recommended by a healthcare provider (5). Travel companies and travel agencies should advise travellers to seek health information from a medical professional prior to their cruise.

Considerations to minimise the introduction of ARIs onto the ship

Travel companies and travel agencies can provide pre-travel information to customers about health issues with their travel package. Information may be provided before the voyage regarding symptoms of ARI, the importance of preventive measures such as delaying travelling, while ill, as well as avoiding close contact with ill persons before travel. Information about the importance of immediate symptom reporting should be provided for all passengers and crew and not working while ill for all crew.

Health screening for symptoms of ARI (and also acute gastroenteritis) before embarkation is another option to help identify ill passengers or crew. Examples of health screening include:

- pre-travel advice not to travel if symptomatic;
- signage, posters and other communication materials providing information and encouraging individuals to report symptoms; and
- questionnaires for reporting symptoms.

The use of pre-boarding health screening measures, including but not limited to questionnaires designed to identify symptoms of respiratory infection, may also be considered. Depending on the epidemiological situation, recommendations from health authorities, or the presence of ongoing outbreaks, such screening could include temperature checks, visual assessments of travellers for signs of illness, verification of recent medical or vaccination records, or other measures considered appropriate to the specific public health context.

Annex 31 (page 359) presents example questionnaires which could be used prior to embarkation. Passengers, crew or visitors who report symptoms of respiratory infection should be assessed by medical staff.

2 During the voyage

Information, education and communication targeting passengers

Information, education and communication materials targeting passengers should be available in the national common languages spoken by passengers.

Education and increased awareness of influenza and other respiratory pathogens are important for all crew and passengers (6, 8, 12-14).

Medical staff should be trained regularly about clinical characteristics, diagnosis and treatment, preventive measures, surveillance and reporting requirements of respiratory infections (15).

Crew should receive general health awareness training about ARI to:

- recognise the signs, symptoms and modes of transmission;
- understand the measures that help prevent the spread including hand washing, coughing and sneezing etiquette, social distancing, waste disposal, wearing masks, elimination of handshaking events; and
- recognise and report people with symptoms to designated crew.

Crew should be trained to properly use PPE (respirator (FFP2, or equivalent standard) or well-fitted medical mask and gloves).

Information should be provided to ARI cases, and their close contacts* (e.g., cabin mates) on the prevention and spread of ARIs.

* "Close contact": A close contact in a ship is considered to be a passenger or crew member who had an opportunity to acquire infection due to close proximity and in such association with an infected person within the period of communicability, or enclosed environment for a prolonged period of time.
For crew members, this includes, but is not limited to: working in the same area or shifts as an infected person; socialising with an infected person, including sharing meals, engaging in group activities, or participating in crew gatherings; leading or participating in indoor recreational, social, or training activities where close proximity is required; providing direct care for an infected person or having unprotected exposure to respiratory secretions or body fluids (e.g., being coughed on); entering the cabin of an infected person while they were inside, without wearing appropriate PPE; engaging in physical contact with an infected person (e.g., handshaking, hugging, kissing, intimate relationships).

During an outbreak, all passengers should be provided with guidance about ARI, including the information above, any preventive measures being implemented and updates on the situation when deemed necessary. This may be achieved by distributing leaflets as described above (2, 15).

Information, education and communication targeting crew members

Development of training plans and their content

Passenger shipping companies should provide a training plan including regular and on-going training on the prevention and control of ARI. Training and guidance should include:

- common respiratory infection symptoms;
- reporting of symptoms immediately;
- good hygiene practices including frequent hand hygiene, respiratory etiquette, physical distancing and face mask use; and
- respiratory infection prevention and control.

Training should be monitored by observing practices and reinforced/updated using refresher training (16), where necessary.

Medical staff should receive training or information, including on the following:

a. ARI case and syndrome definitions;
b. ARI reporting internally and the competent authorities;
c. completion of ship medical logs and records;
d. management of ARI cases;
e. procedures for significant public health issues and events including isolation, contact identification/tracing and quarantine;
f. the outbreak management plan; and
g. appropriate clinical specimen collection, storage and transport.

Information and instructions should be provided to crew members in English, and if possible in their national language. Information provided should be related to their role in implementing the ship's outbreak management plan, the detection and management of respiratory infection cases and contacts on board, and other relevant information as described in **Box 1**.

For passengers, this includes, but is not limited to: sharing a cabin with an infected person; travelling together as family members, companions, or in the same tour group; participating in common activities with an infected person, such as attending classes, entertainment events, or social gatherings; sitting in close proximity during meals, or being waited on by a crew member who is a case; engaging in physical contact with an infected person (e.g., handshaking, hugging, kissing, intimate relationships).

Close contacts should be identified based on case-by-case risk assessment, considering exposure risk, duration, and setting of interaction.

Box 1: Content of instructions/training targeting crew members

Crew training instructions should include the following:

- the ship's outbreak management plan, including their specific role and responsibilities;
- advantages of vaccination against seasonal influenza, COVID-19 and RSV, when recommended by a healthcare provider;
- ARI signs and symptoms;
- actions if they develop ARI symptoms (e.g., to not come to work or to stop work and self-isolate, inform their designated supervisor/manager and medical staff);
- personal protective equipment and hygiene measures (e.g., protocols for PPE and face mask use, including correct fitting, respiratory etiquette and hand hygiene); and
- environmental measures (e.g., protocols for routine and enhanced cleaning and disinfection measures in an outbreak).

The passenger shipping company should encourage crew members to promptly report symptoms by ensuring a supportive environment and providing appropriate care and assistance when they are unable to work.

Knowledge about respiratory infections should be checked and where reinforced using refresher training.

Periodic training exercises (table-top or drill format) may be used to reinforce ARI prevention and response readiness.

Communication strategy

A communication strategy should be implemented and detail the content of messaging and the appropriate types and frequency of communication. Both the routine communication plan related to ticketing, pre-arrival procedures, terminal and ship operations, together with ARI outbreak-related procedures, should be included (**Annex 32**, page 360).

Supplies and personal protective equipment

Sufficient supplies of PPE should be available on board to deal with ARI cases/outbreaks, including:

- medical face masks and respirators (FFP2 or equivalent standard);
- eye protection (goggles or face shields); and
- disposable gloves, and long-sleeved impermeable gowns (aprons could also be included) (17).

It is recommended that face masks do not have exhalation valves, since they may allow the release of exhaled droplets. Supplies of PPE, including FFP2 masks, should be available in different sizes, and crew members should be adequately trained in selection and use. PPE should always be used in combination with other personal protective measures (e.g., good hand hygiene and respiratory etiquette) (17). Additional supplies included in **Box 2**.

Box 2: Additional medical supplies to consider

- Antivirals (e.g., oseltamivir, zanamivir) and other therapeutics for influenza and COVID-19;
- antibiotics for treatment of secondary pneumonia;
- antipyretics;
- thermometers;
- intravenous fluids;
- oxygen set;
- ethanol 70% hand antiseptic;
- prednisone;
- diagnostic tests (RT-PCR panel kits, RADTs);
- specimen collection equipment (for shore-based or onboard testing);
- disinfectants;
- hand hygiene supplies;
- tissues; and
- no-touch bins for waste disposal.

Embarkation and disembarkation ports

It is recommended that adequate supplies of disinfectants, hand hygiene supplies, tissues, medical face masks, and waste disposal bins (as appropriate) are maintained at embarkation/disembarkation ports.

Surveillance

Passive surveillance

Standardised surveillance data for acute respiratory illness should be recorded in the acute respiratory illness log of the ship's medical log (see Part A, Chapter 2) (7, 9-11, 17-19) . A standardised definition for acute respiratory illness and severe acute respiratory infection should be used as defined in Chapter 2.

Model specific surveillance logs are included in **Annex 8** (page 286) for passengers and in **Annex 9** (page 290) for crew members.

The ARI illness log data should be routinely reviewed to assess any trends in disease frequency (15).

If an outbreak is identified, the ship's captain should be informed and actions should be taken to contain the outbreak. The cases should be reported to the competent authorities at the next port of call (see Part A, Chapter 2).

Designated crew or shoreside staff (as appropriate) should conduct an epidemiological and environmental health review in cooperation with the competent authority, which may include:

- reviewing medical data collected in the medical log;
- identifying trends or associations among cases;
- coordinating and overseeing prevention and control measures, and awareness policy; and
- coordinating outbreak management, if necessary.

Active surveillance (case finding)

Ships announcements should be considered to encourage reporting of illness. Case finding may include directly contacting passengers (e.g., passenger surveys) and crew and asking about current and recent illness. It is recommended that any findings are recorded.

Management of cases

A flow chart illustrating the recommended response to an acute respiratory illness event (individual cases or an outbreak) on board a ship is provided in Annex 33 (page 363).

Diagnosis and treatment

Diagnostic tests

Passenger ships should have diagnostic testing capabilities for respiratory infections such as influenza A and B and COVID-19, as well as for other infections that could present with similar symptoms, including Group A *Streptococcus*, *Streptococcus pneumoniae*, and *Legionella* (2).

Inventories of syndromic point-of-care tests for respiratory pathogens and rapid diagnostic tests for respiratory viruses, which can detect multiple respiratory pathogens simultaneously, are available at: https://www.shipsan.eu/.

Treatment

Treatment including antivirals should be given based on medical assessment and in accordance with ECDC, WHO and other health authority recommendations.

Antivirals may be given prophylactically to close contacts of influenza cases or during influenza outbreaks (1, 2, 7, 9, 10) and in particularly to those at high risk of complications.

Isolation

All patients presenting with ARI symptoms should be individually isolated for at least 24 hours after they are free of fever (without the use of fever-reducing medications) and their symptoms improve. Patients who remain afebrile but symptomatic should also be individually isolated for at least 24 hours and until their symptoms improve (2, 9, 10, 13).

Isolated individuals should comply with isolation requirements and remain in their cabins. Meals should be delivered and used items (e.g., glasses, plates and utensils) should be retrieved from outside the door without entering the cabin.

Only essential staff should have direct contact with isolated individuals and should wear PPE during interactions. Crew involved in the care of cases (including housekeeping and food and beverage staff) should not be in an at-risk group for respiratory illness complications.

If anyone has to enter a cabin during the isolation period (such as medical, housekeeping or technical staff), the isolated person should wear a respirator (FFP2 or equivalent standard) or a well-fitting medical face mask.

After the end of the isolation period, it is advised that these individuals are encouraged to use the following precautions for an additional five days:

- frequent hand hygiene and strict respiratory etiquette;
- the use of a respirator or well-fitted medical face mask when in public space;
- physical distancing and limiting non-essential contact especially with at-risk groups, or avoidance of crowded areas if distancing is not possible; and
- maximising fresh air through open windows/doors (if possible) (2).

Crew members who have completed isolation should also be encouraged to use these measures for five days once they return to work. Asymptomatic patients with ARI should be isolated in a cabin for five days, or alternatively must use the following measures for five days:

- use of a respirator (FFP2 or equivalent standard) or well-fitted medical face mask when outside their cabin;
- practice frequent hand hygiene and strict respiratory etiquette;
- use physical distancing and limit non-essential contact especially with at-risk groups, or by avoiding crowded areas if distancing is not possible; and
- maximising fresh air through open windows/doors (if possible).

Management of contacts

Contact tracing is recommended for confirmed influenza cases, and contacts may be given antivirals, particularly those at high-risk for complications (2). Contact tracing may also be considered if there is an outbreak of COVID-19, in order to help inform any targeted testing strategies.

All contacts that develop ARI symptoms should be encouraged to be seen by medical staff and tested. All contacts who are traced should be provided with written information and instructions as described in **Box 3**.

Box 3: Recommended advise for ARI contacts

ARI contacts should be given advice (e.g., written information or instructions).

- Self-monitor for common ARI symptoms associated with influenza, COVID-19, or RSV.
- Avoid non-essential close contact with others, where possible, and particularly high-risk individuals/groups.
- Limit interaction with others.
- Practice frequent hand hygiene (washing and use of hand sanitisers) and strict respiratory (coughing and sneezing) etiquette.
- Wear a face mask immediately after any initial mild symptoms appear.
- Take immediate precautions if they develop ARI symptoms (e.g., stay in your cabin and report symptoms to the ship medical staff).

Hygiene measures and personal protective equipment

Respiratory etiquette

Good respiratory (coughing and sneezing) etiquette by passengers and crew members should be encouraged. Advise should include:

- covering your nose and mouth with disposable tissues when sneezing/coughing, or using your elbow if tissues are not available;
- immediately disposing of the tissue in a hands-free (no touch) bin; and
- then washing your hands using water and soap or using an alcohol-based hand rub solution (17).

Supplies of tissues and hand sanitisers should be made available in the appropriate locations as described in the section **Supplies and equipment**. Advice on respiratory etiquette may be provided to passengers via recorded communications, leaflets, infographics, electronic posters, etc.

Face mask use

Passengers with ARI should be encouraged to wear a face mask (respirator or well-fitted medical face mask) while symptomatic and when outside of their cabin (17).

Individuals who have to enter an isolation cabin should follow the precautions provided in the Isolation guidance above.

Individuals who wear a face mask should be advised on how to properly don, doff and dispose of it (16). People at high risk for severe illness should be advised to wear a respirator (FFP2 or equivalent standard) during the voyage.

During significant ARI outbreak, the targeted indoor use of face masks (FFP2 or equivalent standard respirators or well-fitting masks) by crew should be considered. Additionally, during ARI outbreaks passengers may also be advised to wear a well-fitting face mask while indoors.

Hand hygiene

High standards of hand hygiene should be maintained. Passengers and crew should be encouraged to frequently wash their hands using soap and water as shown in **Annex 17** (page 324), or if hands are not visibly soiled, to use an alcohol-based hand antiseptic.

Alcohol-based hand antiseptics containing 60 to 90 % ethanol/isopropanol are effective against respiratory viruses and should be available, preferably in touchless dispensers, in places where hand sanitising would be useful and no hand washing facilities exist. For example, at entrances and gangways, targeted crew, and work areas, near elevators, reception areas, entertainment venues, casinos, bars, and restaurants.

Advice should be provided to passengers and crew members on good hand hygiene. This information may include communications or guidance on:

- hand washing techniques, as detailed in **Annex 17** (page 324);
- situations where hand washing is considered essential. For example:
  - before boarding and after disembarkation,
  - after assisting a symptomatic individual,
  - after contact with potentially contaminated environmental surfaces,
  - before eating or drinking,
  - after using the toilet/restrooms, and
  - before wearing and after removing face masks and other PPE;
- when hand sanitisers should be used, instead of hand washing and the correct method for hand rubbing;
- respiratory etiquette (for coughing and sneezing), including the use of disposable tissues; and
- avoiding touching your eyes, nose or mouth.

Cleaning and disinfection

Crew responsible for cleaning and disinfection contaminated areas should be trained to:

- properly use PPE (gloves, masks);
- follow protocols to safety clean and disinfect any items which may have been contaminated by bodily fluids;
- properly manage waste; and
- avoid any risk of cross-contamination.

In non-outbreak situations, environmental infection control should focus on regular cleaning (and disinfection, where needed) of accommodation and public spaces. The ship's medical facility should also have a cleaning and disinfection plan.

During ARI outbreaks, frequently touched surfaces should be disinfected regularly (e.g., door handles, hand rails, elevator buttons, telephones, keyboards, tabletops, chair arms, toilet flush handles, tap handles, equipment handles, slot machines, sports equipment and other similar equipment). Additionally, procedures for cleaning and disinfection of cabins or other rooms occupied by infected individuals should be developed.

Disinfectants are classified as biocidal products and are regulated by the Biocidal Products Regulation (BPR) (EU) No 528/2012 (20). Disinfectants used should be effective against influenza virus and SARS-CoV-2, and applied as per the manufacturer's instructions (concentration, contact time, etc.).

Different disinfectants and protocols may be needed for porous and non-porous surfaces. The European Chemicals Agency (ECHA) has published lists of active substances that have either been

approved or are being reviewed for use in disinfectant products, and the list of products authorised under the BPR (21). The lists can be accessed here: https://echa.europa.eu/covid-19.

Cleaning and disinfection at the medical facilities

Frequently touched surfaces in medical facilities should be cleaned and disinfected using hospital grade disinfectants which are effective against respiratory viruses (22). If these are unavailable, surfaces can be cleaned using a neutral detergent disinfection using 0.05-0.1 % sodium hypochlorite (for example a dilution of 1:100 to 1:50 if household bleach at an initial concentration of 5 %). For surfaces which may be damaged by sodium hypochlorite, clean with a neutral detergent and then a 70 % ethanol may be used to disinfect.

The floor of medical facilities should be regularly cleaned.

Reusable medical devices that are not single use should be disinfected in accordance with manufacturers' instructions.

Non-medical equipment, including telephones, tablets, keyboards, should be regularly cleaned and disinfected.

Cleaning and disinfection of areas occupied by an infected person

Specific procedures should be implemented in cabins or other ship spaces used by confirmed ARI case (20).

After ventilating with fresh air (where possible), the area should be cleaned carefully using a neutral detergent, and then surfaces disinfected with virucidal disinfectant or 0.05 % sodium hypochlorite or 70 % ethanol

Textiles and fabrics should be washed using the hottest laundry machine setting (~90 °C, where possible) and a laundry detergent. If it is not possible to use a hot-water cycle as this would damage the material, a lower temperature cycle may be used, where possible, and either bleach or another laundry product designated for decontamination added.

Cleaning and disinfection of restroom areas

Toilets, bathroom sinks and sanitary facilities should be cleaned, avoiding any splashing, where possible, and then disinfected using a virucidal disinfectant (or a 0.1 % sodium hypochlorite solution) as per the manufacturer's instructions (20).

Where reusable cleaning equipment is used, materials (such as cloths, sponges, etc.) should be placed in a disinfectant solution that is effective against respiratory viruses or 0.1 % sodium hypochlorite solution used.

Laundry procedures

Bed linen, towels, laundry and other textiles used by ARI cases should be stored in a designated laundry bag until it is washed using a hot-water cycle with laundry detergent at ~90 °C (on the hottest-water setting) (20, 23).

If it is not possible to use a hot-water cycle due to the material being washed, a lower temperature wash cycle may be used and either bleach or another laundry additive designed for decontamination added.

Waste management

Waste which may be infectious (for example from cabins of confirmed ARI cases) should be handled separately from the other types of waste on board and properly labelled and disposed of (see Part A, Chapter 9).

Personal protective equipment

Health care workers and crew that come into contact with ARI cases, including entering an isolation cabin, should wear face masks (respirator or well-fitted medical face mask) and disposable gloves at a minimum.

Additional PPE such as eye protection (goggles or face shield) and body protection (gown or apron) may also be considered based on a risk assessment (17).

It is recommended that crew responsible for cleaning potentially contaminated areas (e.g., restrooms and waste management rooms) wear a face mask and gloves at a minimum. Additional PPE, such as eye and body protection, may also be considered based on a risk assessment of tasks (24).

All personnel should be trained and provided with appropriate well-fitted PPE (24).

3 Before disembarkation

Reporting

Ship Declaration of Health (SDH)

In accordance with the International Health Regulations 2005 (IHR), the competent authority of the next port of call must always be informed if an infection or death has occurred on board. For ships on international voyages, the Ship Declaration of Health (SDH) should be completed and sent to the competent authority unless there are specific local requirements in the port of call. Some ports require the submission of SDH by all ships.

The ship communication form (S2) (**Annex 12**, page 302), or a similar form or system which includes the same information, may be used in addition to the SDH for recording or reporting any additional information.

National requirements for reporting

Additional reporting may be required in accordance with the applicable national legislation in the port of call.

In the EU:

- A specific case definition for reporting of influenza has been adopted. Possible, probable and confirmed cases of influenza must be reported to the competent authorities. **Figure 1** details the clinical, epidemiological and laboratory criteria of reporting and the reporting requirements for seasonal influenza.
- A specific case definition for COVID-19 has been adopted and should be reported to the competent authorities (25). For reporting COVID-19, the definition of a confirmed case can be found in **Figure 2**.

European guidance (Commission Implementing Decision (EU) 2018/945) details communicable diseases that need to be reported to the competent authorities, and their specific case definitions.

As part of a review of the list of notifiable diseases, case classifications as well as clinical, epidemiological and laboratory criteria have been proposed for reporting of COVID-19 (**Figure 2**) and RSV (**Figure 3**) in the EU (26).

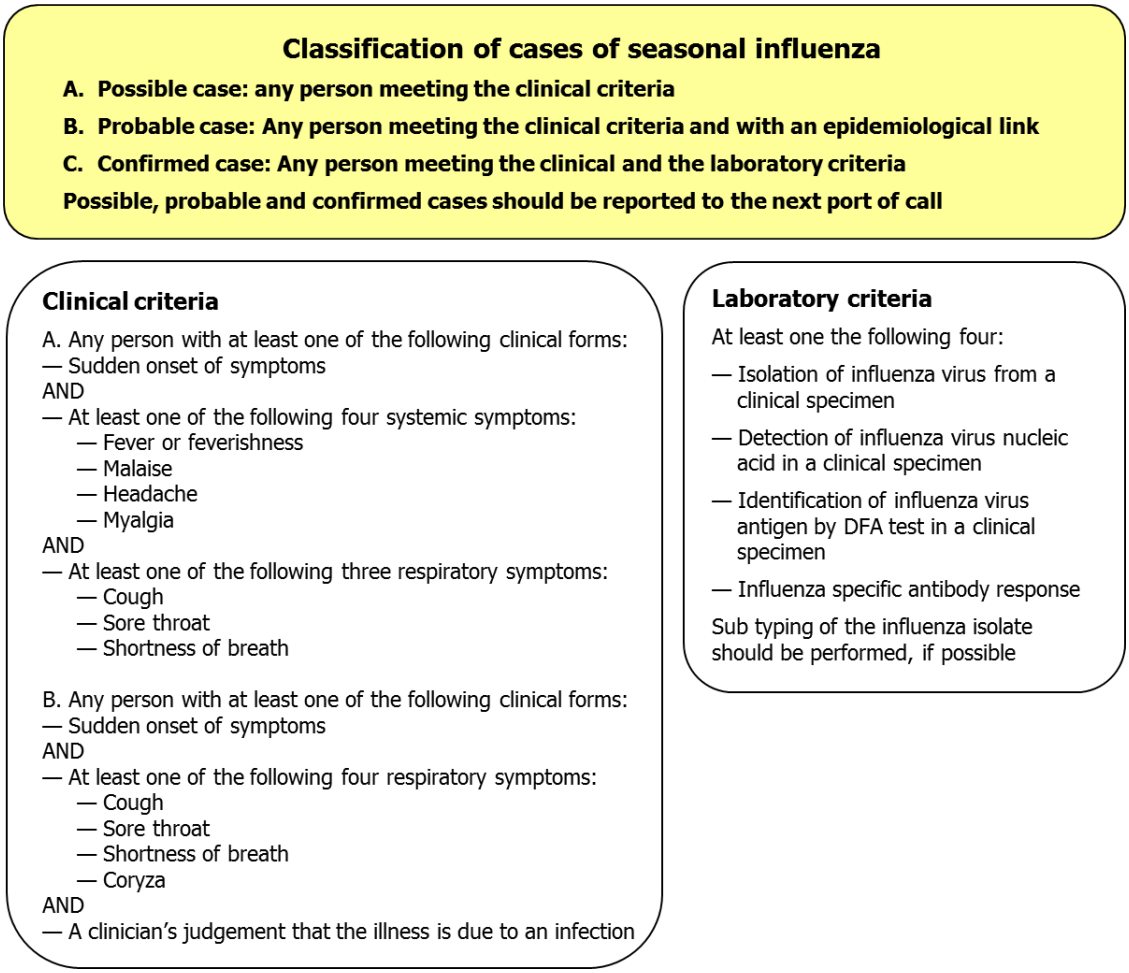


Figure 1: Requirements for reporting of seasonal influenza to the competent authorities in the EU

Classification of cases for coronavirus disease 2019 (COVID-19)
A. Possible case: any person meeting the clinical criteria (ARI or Severe Acute Respiratory Illness (SARI))
B. Probable case: any person meeting the clinical criteria (ARI or SARI) and the epidemiological criterion
C. Confirmed case: any person meeting the laboratory criteria
Clinical criteria
At least one of the following: - ARI - SARI
Laboratory criteria
At least one of the following: - Detection of SARS-CoV-2 nucleic acid in a clinical specimen - Identification of SARS-CoV-2 antigen in a clinical specimen[1] - Isolation of SARS-CoV-2 from a clinical specimen [1] Antigen tests used in healthcare and other settings where testing can be performed by trained/professional staff, e.g., pharmacies.
Epidemiological criteria
- Contact with a confirmed human case in the 14 days prior to onset of symptoms

Figure 2: Proposed requirements for reporting of COVID-19 to the competent authorities in the EU

Classification of cases for respiratory syncytial virus (RSV)
A. Possible case: any person meeting the clinical criteria (ARI or SARI)
B. Probable case: any person meeting the clinical criteria (ARI or SARI) and the epidemiological criterion
C. Confirmed case: any person meeting the laboratory criteria
Clinical criteria
At least one of the following: - ARI - SARI
Laboratory criteria
At least one of the following: - Detection of RSV nucleic acid in a clinical specimen - Identification of RSV antigen in a clinical specimen[1] - Isolation of RSV from a clinical specimen [1] Antigen tests used in healthcare and other settings where testing can be performed by trained/professional staff, e.g., pharmacies.
Epidemiological criteria
- Contact with a confirmed human case

Figure 3: Proposed requirements for reporting of RSV to the competent authorities in the EU

Shore side identification

The competent authorities should be informed if any support is needed before arrival at the port. Details about what assistance is required should be provided, such as:

- the number of ill people who need hospitalisation;
- the number of clinical specimens which need to be sent for examination; and
- any supply needs: disinfectants, PPE, medication, etc.

Factors for shortening or postponing voyages

In some situations passenger shipping companies may consider additional public health precautions to shorten or finish a voyage early, or delay the subsequent voyage (16). This should be based on a public health risk assessment and consider a number of factors, including:

- whether there is significant and ongoing transmission of ARI;
- whether severe ARI is the cause of significant and sustained transmission, including deaths among passengers and/or crew during a voyage;
- shortages of medical supplies and equipment for the management of ARI cases (e.g., oxygen, antipyretics and antivirals, diagnostic tests, PPE);
- the potential for ARI cases to overwhelm onboard medical facilities, including an inability to maintain adequate staffing levels to provide medical care and maintain safe ship operations (2); and
- other factors, such as the characteristics of the infectious agent (e.g., a new virus, strain, or variant with potential for increased severity or transmissibility) and the likely immunity of the ship population.

4 Disembarkation

Disembarkation should be managed to avoid ARI cases who are still symptomatic coming into contact with other individuals who are disembarking or those who are about to board the ship.

It is recommended that any symptomatic ARI cases are asked to wear a face mask while disembarking.

During an outbreak situation, disinfection of frequently touched surfaces in the terminal after disembarkation is completed should be considered (such as handrails, handles, etc.).

Interoperability of ship and port outbreak management plans

Ships should have a written "contingency plan/outbreak management plan" for the prevention, detection and control of possible ARI cases on board (16, 17).

The suitability and effectiveness plan should be checked. For example, by monitoring practices during real events or by using table-top-exercises. The plan should be updated, where necessary, based on these results.

The interoperability of the ship's contingency plan/outbreak management plan, the public health emergency contingency plan of their home port, and any other contingency ports should be ensured (see definitions in **Box 4**).

Box 4: Definitions of ports in an itinerary

Home port: the port where a voyage normally starts and where the majority of passengers normally embark and disembark. The home port should fulfil the criteria of a contingency port. It is recommended that ships have, at least one additional contingency port when sailing on long voyages and on itineraries that are longer than 7-night. The home port would normally be the contingency port, but additional contingency ports may be defined if necessary.

Contingency port: a port where compatibility (interoperability) of the ship's contingency plan and the port's contingency plan has been ensured. Any severe ARI outbreak could be managed at this port, including complete evacuation of the ship, if needed, as well as isolation of cases and quarantine of contacts ashore.

Transit/Away port: a port of call which is an intermediate stop on a ship's voyage where passengers may get on or off ship for tours, excursions, or visits.

At a minimum the ship's contingency plan/outbreak management plan should include the following:

- roles and responsibilities for outbreak management;
- training on the implementation of roles and responsibilities, including a training plan, frequency, and targeted content for all crew members;
- detection ARI cases, including surveillance and monitoring, and any testing requirements;
- thresholds and alert levels;
- reporting of ARI and notification of incidents or outbreaks;
- management of possible/confirmed ARI cases and their contacts, including protocols for isolation, contact identification/tracing, and quarantine;
- disembarkation of cases and their contacts, including transport to land-based medical facilities, if required;
- personal protective measures, including protocols for face mask use, hand hygiene, physical distancing, etc.;
- environmental measures, including protocols for routine and enhanced cleaning and disinfection measures, if there are elevated ARI levels on board, protocols for effective ventilation, etc.; and
- communication, including both internal and external communication with competent authorities at ports.

5 Competent authorities' actions

In the EUMS, the actions of competent authorities at ports in response to infectious diseases occurring on passenger ships are regulated by the IHR 2005, EU legislation and national legislation.

The competent authority is to take appropriate measures to protect public health on board and to mitigate the spread of a disease.

The responsibilities of competent authorities regarding their response to an ARI case or outbreak may vary depending on the country. Generally, their role is to:

- conduct a risk assessment in case of a threat of infectious diseases;
- advise, implement, or supervise response measures to be taken;
- ensure that all appropriate measures are in place to protect public health on board; and
- prevent the spread of a communicable disease from the ship to the community.

These measures should be in accordance with international and national laws and commensurate with the risk that the disease poses without causing unnecessary interference with international traffic. Consequently, public health measures should not disrupt the ship's itinerary, disembarkation, or travellers' ability to enjoy the voyage and destination, unless the rationale behind this is provided and such actions are fully justified.

Consistent policy, coordination, and standardisation of competent authorities' actions among the EU countries and within the same country are important in order to prevent outbreaks and to avoid the duplication of actions and unnecessary interventions (27).

Personnel at competent authorities may consider visiting a ship when an outbreak occurs to monitor the necessary measures to contain the outbreak.

In response to outbreaks of ARI, competent authorities may be involved in:

- ensuring that all necessary measures described previously have been taken on board the ship in order to help prevent spread;
- receiving specimens from ships and sending them to the laboratory for analysis;
- supervising or planning the disembarkation of ill individuals, with precautions to avoid further spread;
- arranging transport of persons with severe symptoms to a health care facility;
- notifying all possible, probable, or confirmed cases in compliance with the national surveillance requirements; and
- communicating any information to the public, if necessary.

B. Specific guidance during a pandemic

A pandemic is an epidemic of communicable disease, which has spread over several countries or continents, usually affecting a large number of people.

During a pandemic situation, additional or more rigorous control measures may need to be implemented both on ships and on land. Any control measures imposed should be commensurate with the risk that the causative agent of the pandemic poses.

Important factors that can be used for assess this risk include:

- the characteristics of the infectious agent, such as pathogenicity and virulence (hospitalisation rate, case fatality rate, etc.);
- immunity of the travelling population, general public, and risk groups; and
- the incidence and geographical distribution of the disease based on information provided by local, national, European, or international organisations and agencies, such as ECDC and WHO.

The types of control measures implemented are likely to change as a pandemic evolves. Control measures are likely to be stringent at the beginning of a pandemic as little may be known about an emerging pathogen, new virus strain or variant, and with limited geographic spread, focus will be on preventing the spread of the disease to new areas.

As information on severity of disease, infectivity and risk groups is gathered, it is likely that control measures will be adapted to suit the evolving situation. As the disease spreads globally, a shift in control strategies is likely.

The WHO and ECDC will provide information and guidance regarding public health interventions during a pandemic. Ships should adopt relevant policies to comply with any public health measures that the competent authorities in Member States implement.

The following guidelines may be modified and applied during a pandemic, depending on the characteristics of the pandemic.

Pre-embarkation

Denial of boarding: This will depend on the severity of the disease and the infectivity of the infectious agent. During the first period of the pandemic, it is reasonable that travellers with symptoms would be denied boarding. If the virus is highly pathogenic and the disease has a high fatality rate, then denial of boarding for symptomatic passengers would continue for the duration of the pandemic. In situations where the symptoms are mild to moderate, this approach may be relaxed, and affected individuals may be isolated on board.

Vaccination: Vaccination of crew and passengers, with priority to those in at-risk groups, could be considered when a vaccine for a new strain of virus becomes available. Vaccination might also be considered for employees working in the tourist sector, such as guides, agents, tour operators, bus drivers, and terminal station personnel, during pandemic situations.

During the voyage

Epidemiological information: Affected individuals may be asked for information regarding contacts with individuals with relevant symptoms or visits to affected countries. This could be done either by the ship crew or in collaboration with a competent authority at ports.

Communication: Reminder messages through public announcements, newsletters, or information broadcast on ship televisions may be used to increase awareness during a pandemic. Information which should be disseminated to travellers includes the symptoms, preventive measures, such as hygiene rules, special consideration for high-risk groups, and instructions on what to do in case of relevant symptoms.

Isolation: The likely duration of isolation periods will also depend on other disease characteristics, such as severity and infectivity. During the first period of a pandemic, the characteristics of the causative agent, including the period of infectivity, are not likely to be known. Use of isolation and PPE would therefore be essential.

Quarantine: Quarantine of crew or passengers that are not displaying symptoms but are suspected to be infected due to contact with cases may also need to be considered.

Before disembarkation

Reporting: Additional requirements for disease reporting as well as for reporting all previous ports of call may be implemented by national authorities.

Preparedness planning

Arrangements for medical treatment and ambulance services: Ship operators should review and develop arrangements for passengers and crew members to receive medical treatment ashore, including possible air evacuation. This should be described in both the written contingency plan of the ship and at minimum, the contingency plan of the home port. The possibility of using additional contingency ports during the voyage should also be considered.

Arrangements for repatriation: Ship operators should develop contingency plans for any necessary repatriations and crew changes at ports included in the itinerary.

It is recommended that repatriation plans for passengers and crew members are established and incorporated into the ship's contingency plan, considering different scenarios for partial or complete ship evacuation. Repatriation and visa arrangements should be the responsibility of the cruise ship operators, unless these are covered by the passengers' travel insurance, and should be completed in consultation and accordance with Member State regulations.

Home ports should ideally have nearby airports that operate international flights, allowing for the repatriation of passengers and crew as necessary. Criteria for permitting repatriation and air travel (based on exposure to cases and laboratory results) should also be considered during the planning process by both the competent authorities at ports and the ship operator.

Additionally, the public health policies of both airlines and countries of origin should be considered when planning repatriation processes. Crew members should be considered as essential workers and permitted to travel in the context of travel restrictions.

Procedures for isolation and quarantine ashore: Pre-defined arrangements should be established between the shipping company and the competent authorities of the home port (and other contingency ports, if applicable) regarding procedures for the isolation of cases and the quarantine of their contacts, if necessary.

Shore-based facilities for isolation and quarantine should be pre-identified and agreed, as well as the cost-recovery approach for the implementation of health measures. Residents of the country of disembarkation could be quarantined at home, in accordance and compliance with local and national rules and procedures.

These pre-defined arrangements should be clearly described in the written contingency plans of both the ship and the port. Transport plans and hygiene protocols should be established and incorporated into the contingency plans of the ship and the port.

Guideline II

Prevention and control of gastroenteritis on passenger ships

Purpose

This chapter sets out recommendations for the prevention and control of gastroenteritis on passenger ships. The overview is followed by detailed guidance on how to recognise outbreaks of viral gastroenteritis, the modes of transmission for all forms of gastroenteritis, implementing control measures, and managing outbreaks.

1 Overview

Everyone may be affected by illnesses or conditions which cause gastroenteritis, both on land and while travelling on ships. Although passenger ships do not have a higher incidence of infectious gastroenteritis than similar establishments on land, outbreaks on ships tend to be reported by the media more often, which may give the impression that they occur more frequently.

Gastroenteritis may be acquired directly from another person, through contaminated food, drinking water, or via environmental sources. These infections may be caused by viruses, bacteria, or protozoa. Gastroenteritis can also be caused by a release of toxins from bacteria or fungi that have grown in food or by chemical contamination of food or water.

The major modes of infection include hand-to-mouth transmission (by touching contaminated surfaces), consumption of contaminated food or beverages, and, in the case of viral infections, inhalation or ingestion of aerosolised particles. The characteristics of viruses mean that viral infections may spread very easily and require prompt interventions if this is to be prevented. Viral gastroenteritis, such as norovirus infection, is unpleasant but usually resolves quickly without side-effects. By contrast, bacterial gastroenteritis, such as salmonella infection, usually takes longer to develop and may cause more severe, longer-lasting symptoms. It may require hospitalisation and, in severe cases, can be life-threatening.

Norovirus is the most common cause of gastroenteritis outbreaks worldwide and frequently occurs in settings such as schools, retirement homes, and hospitals. When a ship outbreak occurs, it is usually because someone is infected ashore and comes on board while ill or incubating the virus. Individuals experiencing diarrhoea or vomiting due to norovirus excrete large numbers of viral particles, which can easily contaminate surfaces. Vomiting creates clouds of aerosolised virus which can spread the virus over large areas. One person with norovirus can potentially infect a large number of people. An outbreak may persist if effective control measures are not implemented promptly.

For all types of gastroenteritis, good personal hygiene and proper food-handling practices, together with ensuring safe food and water sources, are the key issues in the outbreak prevention.

2 How to differentiate gastroenteritis outbreaks

The presenting symptoms indicate the nature of the illness **Table 17**.

Table 17: Typical symptoms distinguishing viral from bacterial gastroenteritis

Symptom	Viral infection	Bacterial infection
Onset	Usually sudden. People go from feeling well to feeling ill very quickly. May be confused with sea-sickness.	Onset is often more gradual.
Vomiting	Usually present. May be the only symptom. Often occurs frequently in a short period of time.	May be present.
Diarrhoea	Often present, usually very watery.	Almost always present. May be bloody.
Fever	Rare.	Affects up to 25 % in those > 65 years old.
Headache, muscle aches	Fairly frequent.	Can occur, but less frequently.
Abdominal cramps	Frequent.	Frequent.
Severity	Usually mild.	Usually more serious, often severe, occasionally life-threatening.
Duration of symptoms	Short-lived. Usually 1-2 days.	Often 5-10 days.

The incubation period of viral gastroenteritis (and in particular norovirus) is short, usually 24-48 hours. Symptomatic individuals excrete very large numbers of viral particles in their faeces or vomit. The infective dose is very low (probably 10-100 virus particles). These two characteristics contribute to a high rate of secondary cases among people sharing a cabin. Usually, only supportive medical treatment is required.

Viral gastroenteritis may well be the cause of illness if the following characteristics apply:

- an abrupt onset of symptoms;
- fever is absent;
- the severity of illness is mild rather than serious;
- there is a steep rise in cases on a daily basis; and
- secondary cases are common among close contacts.

If the symptoms of the initial cases are more consistent with bacterial infection or food intoxication, then the emphasis should be on an immediate investigation into possible food- or water-borne infection. In either case (viral or bacterial infection), the emphasis should be on early implementation of specific control measures (section 6.1) to prevent spread.

3 Modes of transmission of gastrointestinal illness

The main modes of transmission of gastrointestinal illness is shown in **Table 18**.

Table 18: Main modes of transmission of gastrointestinal illness

Mode of transmission	Description	Common pathogens involved
Direct faecal-oral	• Hands become contaminated, e.g., with faeces during handshaking with a person who visited the toilet and did not wash their hands adequately afterwards. If the individual subsequently touches their mouth, then transfer of microorganisms takes place. • The infective dose of each organism is critical here. The infective dose for *Salmonella* is approximately 1,000 bacteria, usually equivalent to visible faecal contamination. • Normal hand washing with soap and hot water will reduce the bacterial load on the skin below that necessary to cause infection. • The infective dose for *Shigella* or Norovirus is approximately 10 organisms; so that even hands that look clean can still easily transfer an infective dose.	*Salmonella*, *Shigella*, Norovirus
Foodborne	• Food becomes contaminated, usually by contact with human or animal faeces. • If contamination is bacterial, they may then multiply in the food if it is not stored at an appropriate temperature (e.g., at 5 °C (41 °F) or less). • A major route of infection is by cross-contamination between raw and cooked/ready-to-eat food which is not thoroughly reheated (to above 63°C (145 °F)) before serving. This can also affect foods which are not cooked or are only lightly cooked (e.g., salads and shellfish). • Contamination can occur from infected food handlers touching ready-to-eat foods that are handled without subsequent cooking (e.g., salads, and sandwiches).	*Salmonella*, *E. coli*, Norovirus, Hepatitis A
Toxin production	• A microorganism grows within food, producing a bacterial toxin, which then causes illness (e.g., *Clostridium perfringens*). • This is commonly found when temperature control of cooked food has been poor, with food left at warm temperatures for extended periods. • Many of the toxins produced, such as by *Clostridia* or *Staphylococcus aureus*, are heat-stable and will not be destroyed by any subsequent reheating.	*Clostridium perfringens*, *Staphylococcus aureus*, *Bacillus cereus*
Waterborne	• Caused by faecal contamination of potable water supplies. • Risk factors include failure of the water disinfection process. • Protozoa such as *Cryptosporidium* spp. are resistant to chlorine disinfection. • Failure to control could be due to the high level of contamination, e.g., when chlorine is deactivated upon	*Cryptosporidium* spp., Norovirus, *E. coli*, Hepatitis A

	contact with high protein content in dirty water and, therefore, making it ineffective. • Contaminated recreational water can be a source of infection.	
Environmental contamination (via surfaces)	• The microorganisms are transferred by touching things or surfaces which have become contaminated. • This is particularly important for viral infections, where airborne spread is readily facilitated by aerosols created by vomiting or toilet flushing. • These aerosols can disperse quite widely and the virus particles then settle out on surfaces.	Norovirus, Rotavirus, Adenovirus
Transmission from animals or vectors	• GI pathogens can be transmitted from animals (e.g., pets or domestic animals) to humans. • Rodents and insects, such as flies and cockroaches, can act as vehicles and contaminate food or surfaces.	*Salmonella*, *Campylobacter*, *E. coli*

4 Activity plan

The recommended prevention and outbreak control activities implemented by different agencies (the ship, port health authorities, others) is summarised in the **Table 19**.

Table 19: Recommended prevention and outbreak control activities

Levels (stages)		Actions by the ship	Actions by the port health authorities	Actions by others
0	Every day preventive measures	Section 5.1	• Port health plan in place; and • provide advice when requested.	Section 5.2
1	Low-level gastroenteritis* activity on the ship (section 5.3)	• Notify GI outbreak management team and crew and initiate control measures (section 5.3); • promote awareness of GI cases to passengers; • emphasise proper hand washing methods and when to wash; and • begin enhanced cleaning and disinfection throughout the ship in accordance with level 1 policies.	Provide advice when requested.	None

* The SHIPSAN case definition for gastroenteritis is:
- Bloody diarrhoea: three or more loose or watery stools in 24 hours or what is above normal for the individual (e.g., individuals with underlying medical condition that may affect interpretation) and blood in stool.
- Acute gastroenteritis (without blood): acute diarrhoea (three or more episodes of loose stools in a 24-hour period or what is above normal for the individual, e.g., individuals with underlying medical condition that may affect interpretation); or vomiting and at least one of the following symptoms: one or more episodes of loose stools in a 24-hour period, abdominal cramps, headache, muscle aches, or fever (EU SHIPSAN ACT joint action, 2016).

2	During an outbreak†	• Activate Gastroenteritis Outbreak Management Plan (section 6); • immediate control measures (section 6.1); • SDH/notify port health authority of next port of call; and • use the SHIPSAN ship communication form, or similar form or system which includes the same information.	• Disembarkation precautions; • review on-board control measures; • convene outbreak control meeting, if required; • provide advice and support to ship; • inspect, if appropriate; • consider need to notify in-country public health authorities; and • notify next port of call.	Section 6.2
3	After the outbreak	• Residual deep cleaning, if necessary; • lessons learned; modification of the Gastroenteritis Outbreak Management Plan, if required; and • use the SHIPSAN ship communication form, or similar form or system which includes the same information.	• Determine if the ship is safe to sail; • inform the next port-of-call, if necessary; and • forward results of microbiological samples.	Section 7

5 Everyday preventive measures/actions

5.1 Level 0 Everyday preventive measures/actions by the ship

General

- Examples of preventive measures are shown in (**Annex 34**, page 365).
- Advice and information may be given to passengers, either when they arrive or in the event of an outbreak (identifying symptoms, personal hygiene, and guidance for those who become affected).
- There should be regular training/briefing of crew to help maintain levels of awareness.

Medical

- The GI log (see Part A, Chapter 2) should be maintained and monitored, including elevated cases and outbreak thresholds.
- Early diagnosis is crucial. Medical staff should be aware of the case and outbreak definitions.

† The definition of an outbreak is an increase in the number of cases of gastroenteritis above the number normally occurring in that ship over a defined period of time and itinerary.
For reporting purposes, two different thresholds should be used. An initial report should be prepared and sent to the competent authority at ports, when the percentage of reportable cases reaches 2 % or more among passengers or 2 % or more among crew. A second report should be sent when the number of cases reaches 3 % or more among passengers or 3 % or more among crew (https://www.cdc.gov/mmwr/volumes/70/ss/ss7006a1.htm).

- It is recommended that anyone who presents with gastrointestinal symptoms should be isolated. For passengers, this should be for a minimum of 24 hours, preferably 48 hours, after resolution of their symptoms and for food handling and medical crew for a minimum of 48 hours. Ill people should be separated from those who are well, whenever practicable.
- People should be encouraged to report if they become symptomatic and isolated in their cabins, so they only use their own bathrooms/toilet facilities. Where required, treatment should be provided in their cabins whenever possible. Provide hygiene advice to cases and any contacts. Provide room service (including food, beverages and linen) where appropriate.
- Where possible, crew should be isolated on their own or, where several are affected, they may be accommodated together (cohorting).
- The importance of effective hand hygiene should be emphasised (see hand hygiene below).
- A pre-prepared standard questionnaire about illness/activities/meals should be available in the ship's hospital (for example, see **Annex 10**, page 296).
- Faecal specimens should be collected for analysis from GI cases, especially if the number of cases rises above background levels. Proper faecal specimen collection containers should be available.

Cleaning

- Standard cleaning and disinfection procedures should be carried out by trained and supervised crew.
- There should be an agreed protocol for action in the event of a vomiting or diarrhoea event in a public area. These should immediately be covered and the area cordoned off until it has been cleaned and disinfected by designated cleaners.
- Disinfectants effective against norovirus should be always available and used routinely in the cabins of any passengers/crew suffering from gastroenteritis (**Annex 35**, page 366).
- Environmental cleaning and disinfection should be completed (**Annex 36**) using an appropriate virucidal disinfectant. All public toilets and hand contact surfaces, e.g., handrails, should be cleaned on a regular basis and the frequency increased if case numbers are elevated. Public toilets should be cleaned routinely and according to the level of the gastroenteritis action plan (e.g., every four hours and increasing to hourly when open during an outbreak).
    - The most effective way of removing viral contamination is to clean with detergent before applying disinfectant. Fresh sodium hypochlorite solution (1,000 to 5,000 mg/L) with a contact time of 5 to 10 minutes is considered effective against norovirus. However, it is an irritant, frequently controlled under health and safety legislation and unsuitable for use on many soft fabrics which will be discoloured by it and it is likely to also damage some soft metals and other surface finishes.
    - Other disinfectants have been developed that are less damaging to furnishings and are now commonly used by the passenger ship industry. The advantages and disadvantages of these products need to be considered. A list of some disinfectants for which virucidal activity is claimed is shown in (**Annex 35**, page 366).

- Cleaning crew (trained) should wear disposable gloves routinely. Depending on their role/tasks they may need to use additional protective clothing (e.g., re-usable/disposable gloves and aprons).

Hand hygiene

- Explaining what is meant by "thorough hand washing" is important; for example using warm water and rubbing hands and fingers together, using a liquid soap, for at least 20 seconds followed by thorough drying with a disposable paper towel (**Annex 17**, page 324). This is essential to physically remove microorganisms from the skin. Using alcohol-based hand gel alone is not recommended, as these hand sanitisers alone are not sufficiently effective against norovirus (**Annex 35**, page 366).

5.2 Level 0 Everyday preventative action by shipping companies

- Some shipping lines provide health advice to passengers and crew before joining the ship and may also use a pre-embarkation health questionnaire (see **Annex 34**, page 365) or provide advice. Provision of routine health advice for guest should be considered. If there has been an outbreak on the previous cruise, passengers should be informed of this together with guidance for hand washing and reporting of any gastrointestinal symptoms.
- There should be protocols for disembarking symptomatic passengers and for any coach providers, taxi companies, and airlines (as appropriate). There should also be a contingency plan or advice provided for those too unwell to travel.
- It is recommended that guidance and campaigns promoting hand washing in passengers and crew are used.

5.3 Level 1 Low-level gastroenteritis activity — action by the ship

- There should be an agreed Gastroenteritis Outbreak Management Plan, which specifies the duties of crew members and responsibilities of the outbreak management team. HACCP based principles may be applied to identify critical control points and help to develop a plan for outbreak management.
- The ship should have clearly defined thresholds for determining when there are raised numbers of cases on board and which trigger the introduction of control measures. This will depend on the number of passengers, the length of the cruise and on the itinerary. Examples of such thresholds include:
  - six gastrointestinal cases within six hours;
  - 1 % of guests on ships with less than 1,000 passengers;
  - 0.5 % of guests on ships with more than 1,000 passengers;
  - a cluster of gastroenteritis cases in one area of the ship; and
  - cruise ship GI surveillance data has shown that the probability of an outbreak occurring was 11 % if 4 per 1,000 passengers reported symptoms within the first 2 days of the voyage, and this increased to 23 % if 5 per 1,000 passengers reported within the first 3 days. The following

table (**Table 20**) presents the number of GI cases reported in every 1,000 passengers and the probability of an outbreak to occur.

Table 20: Probability of a GI outbreak based on the number of reported GI cases per 1,000 passengers

Number of GI cases reported in every 1,000 passengers	Probability of an outbreak (PPV)	ROC Area (95 % CI)
First two days of the cruise 1 2 3 4	 4.63 % 6.82 % 6.68 % 11.07 %	0.743 (0.555-0.932)
First three days of the cruise 1 2 3 4 5	 3.50 % 7.61 % 14.64 % 22.76 % 23.10 %	0.873 (0.718-1.000)

- Surveillance data can be used by the ship to estimate the GI threshold levels of an outbreak.
- Cruise ship GI surveillance data has shown that a 0.45 % daily attack rate is indicative of a pending outbreak (28).
- Symptomatic people should be confined to their own cabins. Their close contacts should be given appropriate hygiene and hand washing advice.
- Recommended immediate control measures when the Level 1 GI case threshold is reached include:
  - informing the outbreak management team and crew;
  - promoting awareness of GI cases to passengers using communication updates;
  - emphasising the need for proper and targeted hand washing and to rapidly report any GI symptoms to the medical centre;
  - initiating enhanced and targeted cleaning/disinfection throughout the ship in accordance with the Level 1 guidance in the GI Outbreak Management Plan. This should specify areas and surfaces to clean, the frequency of cleaning, and the virucidal disinfectant(s) to use; and
  - ensuring that medical staff record and analyse the GI log case data and factors, such as diarrhoea to vomiting ratios, then produce and track a daily epidemic curve for the voyage.

6 Level 2 Management of an outbreak

6.1 Level 2 Management of an outbreak — actions by the ship

It is vital that the ship has a written Gastroenteritis Outbreak Management Plan (**Annex 37**, page 370), and that crew are aware of their roles and responsibilities. The plan should include the following:

- Clearly identifiable outbreak criteria. A system should be implemented to monitor the GI log so that elevated cases of gastroenteritis above what might be expected will be identified and trigger an alert.
- Arrangements for clinical support to diagnose cases. It is recommended that telephone advice is available.
- Declaring an outbreak. Normally, a gastroenteritis outbreak on board a ship is defined as when there is an increase in the number of cases of gastroenteritis above the number normally occurring on that ship over a defined period of time and on a specific itinerary. For GI outbreak alert reporting purposes, two different thresholds should be used:
    - an initial report should be prepared and sent to the competent authority at ports when the percentage of reportable GI cases reaches 2 % or more among passengers or 2 % or more among crew; and
    - a second report should be sent when the number of cases reaches 3 % or more among passengers or 3 % or more among crew (see also table footnotes).

  The recommended case definition is EITHER acute diarrhoea (three or more episodes of loose stools in 24 hours or what is above normal for the individual, e.g., for individuals with underlying medical conditions that may affect interpretation) OR vomiting and at least one additional symptom (one or more episodes of loose stools, abdominal cramps, headache, muscle aches, or fever).
- Immediate control measures to be implemented when an outbreak is confirmed.
    - Inform the outbreak management team, and other management and crew.
    - Implement regular and proactive communication with passengers and crew. These communications may be delivered via multiple ways such as through the ship's television system, public announcements, and written messages in the daily programme, to:
        a. raise awareness about the outbreak situation;
        b. encourage passengers and crew to immediately report any symptoms to the medical facility;
        c. instruct individuals to self-isolate from the onset of the first symptom;
        d. reinforce the importance of following all public health instructions from the ship's medical or public health team; and
        e. remind everyone of key hygiene measures, such as frequent and proper hand washing with soap and water, especially after using the toilet and before eating – consistent messaging will help ensure timely reporting, reduce transmission risk, and support effective outbreak control on board; and
        f. commence an enhanced cleaning regime, in accordance with the ship's outbreak management procedures – this should specify the areas to be cleaned, the frequency of cleaning, and the virucidal disinfectant(s) to be used.
    - Consider limiting or stopping self-service of food and beverages wherever possible. On ships where this is impracticable, consider other precautions such as use of individual portions/items and mandatory hand hygiene at entry to buffet.

- Convene an on board outbreak management team (OMT). The role of the team should be to help coordinate ongoing outbreak management and they should ensure the following are considered:
  - who is leading OMT and who should be part of this team;
  - whether an outbreak is actually occurring;
  - what additional prevention or control measures are needed;
  - providing information to passengers and crew (e.g., thorough hand washing, immediate reporting of symptoms, remaining isolated until medically assessed);
  - providing guidance to individuals experiencing any gastrointestinal (GI) symptoms that they should remain in their cabin or designated isolation areas – this includes avoiding all movement outside the cabin and refraining from using any public or communal facilities, particularly recreational water facilities such as pools, hot tubs, or spas;
  - collecting appropriate specimens and, where appropriate, arranging shore-side testing;
  - collecting and analysing epidemiological data, such as food histories, to help identify the cause of the outbreak – a standard gastrointestinal disease questionnaire should be used (**Annex 10**, page 296);
  - investigating galleys, potable water supplies, or recreational water areas, where appropriate; and
  - liaising with shore-side Port Health as requested and in accordance with local regulations or guidance.
- Submit an SDH to the next port of call as required.

6.2 Level 2 Outbreak actions by agencies and owners

- Passenger shipping line — will need to consider whether additional support to the ship is necessary, or if additional control measures are needed.
- Port health authorities — guiding questions to consider could include: Is the ship managing the outbreak satisfactorily? Is an outbreak-focused inspection necessary? Have the arrangements for collection of biological specimens been made known to the ship? Is additional support to the ship required? Are changes to the disembarkation procedures necessary? Is there a need to involve other agencies, e.g., the in-country health protection service? Have arrangements for sending information to the ship after departure been made clear (e.g., microbiology test results)? Is there a need to contact the port health authority at the next port of call?
- In-country health protection service — may need to consider if an epidemiological investigation is justified, or if additional support is needed by the port health authority.

7 Level 3 After the outbreak action

- There should be enhanced cleaning carried out on the ship during the turnaround to help prevent a continuation of illness into the next voyage.
- The results of any epidemiological investigation by the in-country health protection service should be shared with the port health authority, the ship and the passenger shipping company as early as possible, as operational decisions may remain to be taken depending on the outcome.

8 Further guidance

An extensive bibliography of scientific publications can be found on the EU SHIPSAN website. **Annex 34** (page 365) provides an example analysis in prevention of gastroenteritis transmission and **Annex 38** (page 371) describes the epidemiology of gastrointestinal illness on board ships.

The Centres for Disease Control Vessel Sanitation Program have publications on gastroenteritis and norovirus on board ships at https://www.cdc.gov/vessel-sanitation/php/data-research/cruise-ship-publications.html.

The Health Protection Agency (London) has published, jointly with the Association of Port Health Authorities and the Maritime and Coastguard Agency, *Guidance for the Management of Norovirus Infection on Cruise Ships* (29), available at https://www.gov.uk/government/organisations/public-health-england (select "Publications", then "Guidance" under the publication type and enter *cruise ships* in the dialogue box).

Guideline III

Prevention and control of legionellosis on passenger ships

Purpose

- To provide guidance on preventing the colonisation of ships' water systems by *Legionella* bacteria.
- To provide guidance for case/cluster/outbreak investigation.
- To promote a consistent approach to response actions by the EU competent authorities.

1 Overview

Legionnaires' disease was first recognised as a human infection in 1976 and the first ship associated case was recorded in the Mediterranean in 1977 (30). Since then it has continued to be a public health concern on passenger ships. The surveillance of Legionnaires' disease in Europe is undertaken by the European Legionnaires' disease Surveillance Network (ELDSNet), which is coordinated by ECDC. ELDSNet operating procedures describe the process that competent authorities follow for reporting and responding to cases of travel-associated Legionnaires' disease, including the deadlines required from network members in the country of infection to inform ECDC of the steps taken to investigate and control reported clusters on board accommodation sites including passenger ships. ECDC publishes in the website list of the current accommodation sites in EU/EEA countries with which clusters of Legionnaires' disease have been identified, but where the ELDSNet is unable to assess the risk of *Legionella* infection or believes there may be increased risk to travellers (https://www.ecdc.europa.eu/en/legionnaires-disease/threats-and-outbreaks/accommodation-site).
Moreover, operating procedures define the roles and responsibilities of the network's coordinating centre at ECDC, the national competent authorities in the collaborating countries (EUMS, Iceland and Norway), and the ELDSNet national network members nominated by their governments.
The guidelines for actions by competent authorities at ports described in this chapter are based on the ELDSNet operating procedures. Updated information on surveillance, prevention, and control of travel-associated Legionnaires' disease can be found at: http://ecdc.europa.eu.
Moreover, this chapter describes how the water systems can be colonised, how infection may occur, and details routine preventive measures.
Preventive and control measures, are based on the European Technical Guidelines for Prevention, Control and Investigation of Infections Caused by *Legionella* species (ESCMID Study Group for Legionella Infections, 2017) and the Directive (EU) 2020/2184 of the European Parliament and of the Council of 16 December 2020 on the quality of water intended for human consumption (recast).
Annex 39 (page 373) provides background information on Legionellosis, the causative agent, and outbreaks on ships. Up to date information on the European Technical Guidelines for the Prevention, Control and Investigation of Infections Caused by *Legionella* species can be found in ELDSNet website https://www.ecdc.europa.eu/en/about-us/partnerships-and-networks/disease-and-laboratory-networks/eldsnet.

What supports *Legionella* colonisation?

- **Water temperatures between 25-45 °C (77-113 °F)**: Due to the length of pipework it can be difficult to maintain high temperatures in all parts of ships hot water systems and low temperatures in the cold water system.
- **Design of the water system**: Ship water systems may be complex in nature and can be altered during refits; contain plumbing materials that may no longer be approved; may have deadlegs/blind lines; be difficult to control; or have limited access for monitoring, maintenance, and repairs.
- **Standing water**: Large capacity water tanks, and extended water storage time may result in a low residual disinfectant in the water. Low cabin occupancy, infrequently used outlets, and issues such as water system repairs need to be considered. Standing or stagnant water and low water flow encourages the formation of biofilms.
- **Build-up of deposits**: Scale, corrosion, and sludge may accumulate in water system components such as calorifiers, as well as throughout the system. These deposits increase the surface area available for biofilm attachment and reduce the flow rate within the pipework. Additionally, iron deposits serve as a growth factor for *Legionella* species, further supporting their proliferation within water systems.
- **Cleaning**: Cleaning and descaling of water system components, including pipes, taps, TMVs, thermos and pressure regulating valves, showers, and tank surfaces, may be difficult due to limited access to these areas.
- **Plumbing materials**: Natural rubber and natural fibres should not be used in washers and seals. Use of natural rubber, hemp, or other natural fibres in washers, seals, or pipe joints should be avoided. Excess jointing compounds can obstruct flow. Only materials approved for contact with drinking water and shown not to encourage microbial growth should be used.
- **Piping complexity**: Piping of recreational water facilities and other equipment is often complicated and in confined spaces, making it difficult to inspect, clean, and maintain.
- **Knowledge**: Limited expertise and lack of designated trained personnel regarding *Legionella* and water management systems are significant risk factors for Legionnaires' disease outbreaks. There should be at least one named responsible person appointed as described in paragraph 2.1.1.
- **System alterations**: Alterations and running repairs can result in stagnant water lines or deadlegs/blind lines and should not be carried out without a risk assessment.

How the infection occurs

Legionellosis can be contracted by inhaling aerosolised droplets of water or aspirating water contaminated by *Legionella* bacteria. The aerosolised droplets or particles can enter the lung of a person and start to multiply, causing an infection. Infection cannot be transmitted from person to person. There are two main types of respiratory infection caused by *Legionella*:

- Pontiac fever (an acute, self-limiting, influenza-like illness without pneumonia); and
- Legionnaires' disease (a rapid and potentially fatal pneumonia).

Legionella very rarely cause non-pneumonic infections. All are described by the term "legionellosis".

Legionella in ships' facilities

Legionella spp. can grow at any water system containing water between 25-45 °C (77-113 °F) but grow most rapidly between 30 °C (86 °F) and 45 °C (113 °F). They may colonise air conditioning systems, swimming pools and other recreational water facilities, saunas, evaporative condensers, humidifiers, water systems in dental units, respiratory therapy devices, taps, shower heads, water-closets, decorative fountains, hoses, filters, softeners and other features of the distribution system.

Legionella spp. have been isolated from water samples taken from hot and cold potable water distribution systems (31, 32) and hydrotherapy systems and spas (33, 34) of passenger ships.

Water distribution systems (35) and whirlpool spas for public or private use of passenger ships (33, 34) have been identified as a source of infections on board ship (36).

Legionella colonisation is a particular problem in hot tubs and spas because the water is maintained at a high temperature that supports the growth of the bacteria. Furthermore, dead skin cells and dirt from bathers act as nutrients, the piping provides a surface for biofilm growth as in potable water system, low water-to-bather volume ratio and, finally, bubbles create aerosolised water droplets that can be inhaled.

2 Legionellosis disease prevention and control on ships

2.1 Every day preventive measures on board ships

2.1.1 Medical issues

- Ship medical crew should be aware of the **symptoms** of legionellosis, **incubation period** and **case definition**, which are described in **Table 21** and **Table 22**.

Table 21: Legionnaires' disease and Pontiac fever characteristics (37)

Characteristics	Legionnaires' disease	Pontiac fever
Incubation period	2-10 days, rarely up to 20 days	5 hours - 3 days (most commonly 24-48 hours)
Duration	Weeks	2-5 days
Case–fatality rate	Variable depending on susceptibility; in hospital patients, can reach 40-80 %	No deaths
Attack rate	0.1-5.0 % of the exposed general population; 0.4-14.0 % in hospitals	Up to 95 % of the exposed population
Symptoms		
ILI (moderate to severe influenza)	+/–	+

Often non-specific	+	–
Loss of strength (asthenia), tiredness	+	+
High fever	+	+
Headache	+	+
Dry cough	+	+
Sometimes expectoration blood-streaked	+	–
Chills	+	+
Muscle pain (myalgia)	+	+
Joint pain (arthralgia)	–	+
Difficulty in breathing (dyspnoea), chest pain	+	–
Difficulty in breathing (dyspnoea), dry cough	–	+
Diarrhoea	25-50 % of cases	+
Vomiting, nausea	10-30 % of cases	In a small proportion of people
Central nervous system manifestations, such as confusion and delirium	50 % of cases	–
Renal failure	+	–
Hyponatraemia (Serum sodium < 131 mmol/L)	+	–
Lactate dehydrogenase levels (> 700 units/mL)	+	–
Failure to respond to beta-lactam antibiotics or aminoglycosides	+	–
Gram stain of respiratory specimens with numerous neutrophils and no visible organisms	+	–
Chest pain	+	–

Table 22: Case definition for Legionnaires' disease (38)

<u>Confirmed case</u> is any person with pneumonia AND with laboratory evidence of at least one of the following three:	
Laboratory criteria for confirmed diagnosis of legionellosis	– Isolation (culture) of *Legionella* spp. from respiratory secretions or any normally sterile site. – The presence of *L. pneumophila* urinary antigen determined using validated reagents/kits. – *L. pneumophila* serogroup 1 specific antibody response.
<u>Probable case</u> is any person with pneumonia AND at least one laboratory criterion for a probable case.	
Laboratory criteria for probable case*	– Detection of *Legionella pneumophila* antigen in respiratory secretions or lung tissue, e.g., by DFA staining using monoclonal-antibody derived reagents. – Detection of *Legionella* spp. nucleic acid in a clinical specimen. – *L. pneumophila* non-serogroup 1 or other *Legionella* spp. specific antibody response.

* Laboratory results should be confirmed by a national reference laboratory.

	– *L. pneumophila* serogroup 1, other serogroups or other *Legionella* species: single high titre in specific serum antibody. OR any person with pneumonia and at least one of the following epidemiological links: – Environmental exposure[1]. – Exposure to the same common source[2].

- **Surveillance**: Cases of pneumonia or other respiratory symptoms should be recorded in the ship medical log.
- **Laboratory diagnostic methods** for *Legionella* include the urinary antigen test and culturing the organism from body fluids and tissues. Commercial enzyme immunoassays kits are available for detecting *L. pneumophila* serogroup 1 antigen in urine and may be available on board. However, results of these tests should be interpreted with caution as false positive and false negative results can occur and kits cannot be used for the detection of all *Legionella* spp. and serogroups. Most kits can detect only *L. pneumophila* serogroup 1, but patients may have been infected by other serogroups. Samples should be sent to a shore laboratory for confirmation, preferably to a national reference laboratory or other laboratory experienced in the diagnosis of Legionnaires' disease.
- Designated crew should be responsible and trained to implement *Legionella* prevention and control measures. One **named person** should have overall responsibility for the implementation of measures for *Legionella* control. This named person should be trained in *Legionella* prevention and control. Other crew responsible for the operation of water systems on board should have knowledge of the importance of controlling *Legionella*.

2.1.2 Environmental health preventive measures

Water distribution system

Any Water Safety Plan (WSP) established on board the ship should include provisions for *Legionella* control. *Legionella* spp. colonisation should be considered in the risk assessment of water distribution system. Required prevention and control measures, operational monitoring, record keeping, and corrective actions are described in Part A, Chapter 4. Other measures such as temperature control, regular cleaning and disinfection, flushing, and actions after system repairs are described below.

[1] For example, persons with pneumonia could have had the same environmental exposure through staying in a hospital or hotel with laboratory-confirmed presence of *Legionella* in the water system. Although these people have not been tested for the disease there is an assumption that their pneumonia could be due to the same organism through the epidemiological link.

[2] For example, persons with pneumonia who were in the vicinity of a common source outbreak but did not get tested for the disease. For example, outbreaks on cruise ships or where exposure to infection may involve residents from more than one country could include cases with an epidemiological link who fall into this category but who return home and do not get tested for *Legionella* infection.

Construction — materials

All water systems components should be made of appropriate materials. Materials such as natural rubber, hemp and linseed oil based jointing compounds and fibre washers should not be used in water systems. Materials and fittings for use in water systems should have been shown not to support microbial growth and be suitable for use in contact with potable water.

Water systems should be designed to prevent stagnation, poor flow, and inadequate heat transfer.

Temperature control

Water systems should:

- avoid water temperatures between 25 °C (77 °F) and 49 °C (120 °F) to prevent *Legionella* colonisation and growth;
- ideally, maintain cold water below 25 °C (77 °F); and
- ideally, maintain hot water above 50 °C (122 °F).

It is recommended that hot water should be produced or stored at 60 °C (140 °F) and distributed so that a temperature of at least 50 °C (122 °F), and preferably 55 °C (131 °F), is achieved within one minute at outlets. Care is needed to avoid higher temperatures because of the risk of scalding.

In addition to the monitoring of the water temperature at the tap, it is useful to monitor the water temperature within the pipes by use of a contact thermometer to the flow immediately before the TMVs. This is particularly important when thermostatic mixer valves are fitted to outlets. Measurement of the temperature of the hot water in the flow and each return loops throughout the ship and not just the combined flows and returns to the water heater can rapidly detect areas of poor circulation. When operating efficiently, there should only be a few degrees difference in the temperatures of the individual flows and returns and a large flow and return difference should be investigated.

Flushing

Stagnation or slow water movement encourages biofilms to form in the water system.

All taps and showers should be run in cabins (passenger and crew) for several minutes at least once a week if they are unoccupied.

Regular cleaning and disinfection

The purpose of cleaning is to remove scale, salt, sediments, sludge, dirt, biofilm, and debris from the water tanks and distribution system.

Disinfection should be applied in order to reduce the number of microorganisms in the water to levels that cannot cause harm.

A schedule should be established for regular cleaning and disinfection of all water system components.

For example:

- filling hoses (flushed for at least three minutes with potable water before use and disinfected at least every six months);
- water system pumps (every six months);
- water tanks (every year);
- pipes and taps of the distribution system (every year);
- hot water heaters (every year);
- shower heads and taps (every six months or depending on the inspection and risk assessment findings); and
- hot water storage tanks (emptied when not in use).

Cleaning and chemical and thermal disinfection procedures for water distribution systems are described in **Annex 40** (page 375) and **Annex 41** (page 376).

Preventive measures during repairs and before cleaning

Before repairs to any parts of the water system with a low flow rate or where water may be static (stagnant), the water should be drained. Following repairs, that part of the system should be disinfected (**Annex 40** (page 375) and **Annex 41** (page 376)).

If tanks and calorifiers are heavily contaminated with organic materials, then disinfection is necessary before and after cleaning. Where possible, aerosol generation during cleaning should be avoided.

PPE should be worn during cleaning **Annex 42** (page 378).

Regular sampling

The parametric value for *Legionella* spp. in drinking water, as specified in Annex I, Part C of the European Drinking Water Directive (Directive (EU) 2020/2184), is 1000 cfu/L. This value should be referenced in risk assessments and compliance checks related to water safety on board. Sampling of the potable water system is recommended at least every six months and based on risk assessment, temperature monitoring and biocide levels. **Table 23** details the recommended action levels following routine *Legionella* sampling in hot and cold water systems.

Table 23: Action levels following *Legionella* sampling in hot and cold water systems (39)

Legionella bacteria (cfu/L)	Action required
Not detected	Acceptable
Less than 100 to 1,000	Refer to the Responsible Person or water safety group and ensure real-time monitoring (biocide levels, temperatures, etc.) are within target limits throughout the system.

More than 1,000 but less than 10,000	Either: (i) if a small proportion of samples (10-20 %) are positive, the system should be re-sampled. If a similar count is found again, then a review of the control measures and risk assessment should be carried out to identify any remedial actions; or (ii) if the majority of samples are positive, the system may be colonised, albeit at a low level, with *Legionella*. Disinfection of the system should be considered but an immediate review of control measures and a risk assessment should be carried out to identify any other remedial action required.
10,000 or above	The system should be re-sampled and an immediate review of the control measures and risk assessment carried out to identify any remedial actions, including whether a disinfection of the whole system or affected area is necessary.

Hot tubs and spa pools

The maintenance of hot tubs and spa pools is described in detail in the recreational water chapter of the manual (Part A, Chapter 5) and includes *Legionella* prevention measures.

- Treat hot tubs and spa pools with a free residual chlorine level of 3-10 mg/L and levels should be monitored.
- Regularly drain, clean, and replace the water.
- Backwash granular filters whenever they are drained, or more frequently as needed (see Part A, items 5.13 and 5.44).
- Clean and disinfect the whole system weekly or earlier based on the required draining frequency.
- Air injection lines and air lines should be cleaned and disinfected preferably weekly.

Table 24 details the recommended action levels following *Legionella* sampling in spa pools.

Table 24: Action levels following *Legionella* sampling in spa pools (39)

Legionella (cfu/L)	Action required
100 or above	• Close the pool immediately and exclude the public from the area. • Shock dose with 50 mg/L chlorine for at least five hours circulating the water sufficiently to ensure all parts of the pipe-work are disinfected. • Drain, clean, and re-disinfect. • Review the prevention and control measures and make any necessary improvements. • Refill and retest the water as soon as possible and again 1-4 weeks later. • Keep closed until no *Legionella* are detected, and prevention and control measures are seen to be working effectively.

Air handling and conditioning systems

Accumulations of water in ducts and drains should be avoided. Air handling and conditioning systems should be designed and constructed in order to avoid accumulation of water in ducts and allow

cleaning and disinfection. Standing water in duct and condensate trays can potentially be contaminated by *Legionella*.

Air conditioning filters should be inspected regularly and cleaned and disinfected, or replaced when necessary.

Drains should be regularly inspected in order to ensure that are properly working. Condensate trays and sumps should be regularly cleaned and disinfected.

Humidification, if required, should ideally be by steam injection. If spray-type humidifiers are installed, then regular cleaning, descaling (if necessary) and disinfection (at least every six months) of the water spray system including any make-up tanks is needed (39, 40).

2.2 Case/cluster/outbreak management

2.2.1 Medical issues

Identify cases and clusters

A possible case of Legionnaires' disease may be identified during medical consultations where clinical or radiological evidence of pneumonia may suggest Legionnaires' disease. However, microbiological diagnosis is necessary for confirmation.

Alternatively, cases may be identified after they have disembarked. In this case, the ship may receive information about the incident through the port health authorities, ELDSNet, or a national surveillance centre. Since the case may have been exposed to many possible sources of *Legionella* such as in a hotel or when using land-based facilities, case investigations should try to identify all potential sources of infection including the ship.

If the confirmed case was on the ship during the likely incubation period, investigation of potential sources should be conducted, including targeted water sampling before environmental control measures applied and appropriate environmental control measures implementation.

Microbiological diagnosis — specimen collection

See page 221, section 2.1.

Case investigation

Patients with pneumonia who are considered suspected cases of Legionnaires' disease should complete a case investigation questionnaire. Relatives may have to be asked if the patient is too ill to answer. An example of such a questionnaire is given in **Annex 43** (page 379). Case investigation is described in section 2.3, page 230.

2.2.2 Environmental measures

If a ship is the suspected source of infection, then the following environmental control measures should be considered and implemented as appropriate (39).

- Close any facility believed to have been the potential source of infection.
- Pre-disinfection sampling. Water samples should be collected by trained personnel from potential sources of exposure and sent for laboratory analysis – working in collaboration with the competent port health authority. Sampling points should be selected based on a risk assessment of the case and, where applicable, the outbreak investigations. The locations believed to be the most likely sources of infection should be targeted for sampling.
- Conduct a preliminary risk assessment of the water system, including checking water temperatures and reviewing any available ship schematics. This may help identify additional locations for targeted sampling.
- Implement disinfection (as per **Annex 40** (page 375) and **Annex 41** (page 376)).
- Review policies, systems, and procedures for *Legionella* prevention.
- Review maintenance and monitoring regimes and records.
- Interview crew responsible for operation and maintenance of water systems and medical staff.
- Arrange a targeted sampling schedule.
- Wait at least 48 hours and preferably 72 hours before taking samples after disinfection and flushing.
- Collect post-disinfection samples from representative sampling points in different 'loops' of the water distribution system.
- Collect targeted swab samples from fixtures/fittings of any recreational and decorative water facilities, cabin showers, taps, and hot tubs (jests, balance tanks).

Water distribution system

Pre-disinfection water system sampling

A targeted sampling schedule based on the initial investigation findings should be considered and arranged to obtain representative samples from the water system. Samples and/or swabs should be collected from the hot and cold water system at the following locations: cabin taps and showers heads, beauty salon, hairdressers, communal showers, recreational water facilities, air conditioning systems, and decorative water features. Sampling procedures are described in **Annex 44** (page 382).

Disinfection

Thermal or chemical disinfection should be conducted immediately after sampling. **Annex 40** (page 375) and **Annex 41** (page 376) describe thermal disinfection protocol and super-chlorination.

Recreational water facilities (RWFs)

Targeted water sampling should include all recreational water facilities including hot tubs/spa pools after also considering the initial investigation findings. Samples should ideally also be taken from the filter media, the pool, and the compensation (balance) tank, where possible.

If an RWF is suspected as the source of infection, it should be immediately closed. After pre-disinfection sampling, the facility should be drained, cleaned, and disinfected. The pool and all other

parts of the system including the balance tank should be drained, cleaned, and then disinfected. The disinfection should be completed using a 50 mg/L free residual chlorine solution for at least five hours. The RWF tub surfaces, the balance tank, and filter housing should be cleaned; the jets should be removed and cleaned. The filter media or cartridge should be changed. If positive tests are obtained from an RWF, or if epidemiological evidence links case exposure to the RWF, it should only be reopened once microbiological testing has confirmed that it is no longer contaminated with *Legionella*.

Air washers and humidifiers

Samples should be collected from the condensation trays in air conditioners and fan coils. After sampling, they should be drained, cleaned, and disinfected.

Decorative fountains

Samples should be collected from the fountain pool, balance tank, and filter and, if possible, from the warmest part of the system. Swabs may also be useful from the inside of jets and other internal surfaces.

After sampling, the systems should be drained, cleaned, and disinfected.

Following disinfection, water systems should be re-sampled and monitored for the presence of *Legionella*.

Post-disinfection sampling schedule

After disinfection of appropriate water systems/outlets, targeted post-disinfection samples should be collected a few days after the relevant system has been disinfected to allow it to re-stabilise and ensure the disinfectant has been flushed out.

System re-assessment

Once initial investigations, including any sampling, have been completed, the ship WSP and/or other *Legionella* control programme of the ship and company, and the water system schematics should be re-assessed and reviewed. Modifications to the water system might be needed and/or additional control measures may need to be implemented.

2.2.3 Reporting and measures to be taken to prevent recurrence

Reporting

Ship Declaration of Health (SDH)

For ships on international voyages, the SDH should be completed and sent to the competent authority if a case or suspected case of legionellosis has occurred. The SDH should include details of the number of people with pneumonia symptoms on board.

The SHIPSAN ship communication form (S2) (**Annex 12**, page 302), or a similar form/system including the same information, may be used in addition to the SDH for recording or reporting additional information.

National requirements for reporting

Additional reporting may be required in accordance with the national legislation of the port of call.

In the European Union, probable or confirmed cases must be reported to the port health/competent authorities **Table 22** (page 222).

The competent authorities should be informed if any support is needed (e.g., for clinical specimen examination, water sampling/testing, access to disinfectants, or required hospitalisations) before the ship arrives.

2.2.4 Measures to prevent recurrence

All necessary prevention and control measures, including disinfection, repairs, and change of RWF filter media, etc., should be taken to avoid the recurrence of cases in the next voyage.

2.3 Competent port authority actions

Competent authorities in Europe follow the guidelines and protocols detailed in the European Guidelines provided by ECDC (https://www.ecdc.europa.eu/en/publications-data/european-legionnaires-disease-surveillance-network-eldsnet-operating-procedures). The ELDSNet operating procedures provide a standardised approach to reporting cases and detecting and responding to clusters of Travel-Associated Legionnaires' Disease (TALD) across European Member States. The ELDSNet operating procedures define single cases and clusters of Legionnaires' disease as described below:

- **Single cases**: cases who, in the 2 to 10 days before the onset of illness, stayed at or visited a commercial accommodation site that has not been associated with any other cases of Legionnaires' disease, or cases who stayed at an accommodation site linked to other cases of Legionnaires' disease more than two years previously.
- **Clusters**: two or more cases that initially appear to be linked by space and which have sufficient proximity in dates of onset of illness (e.g., six months) to warrant further investigation. Consideration should be given to convening an outbreak control team if a cluster is identified.
- **Outbreaks**: an outbreak is defined as two or more cases where the onset of illness is closely linked in time (weeks rather than months) and in space, where there is suspicion of, or evidence of, a common source of infection, with or without microbiological support (i.e., common spatial location of cases from travel history). An outbreak control team should always be convened to investigate outbreaks.

If a case or clusters of Legionnaires' disease has been confirmed and ship water facilities identified as the source of infection, then other passengers and crew who have disembarked and have been exposed to the source of contamination should be contacted and asked if they have developed symptoms of Legionnaires' disease. The investigation should be undertaken by a competent authority.

The competent port authority should investigate and ships should provide them with the requested information*. Legionnaires' disease is a notifiable disease in the EU Member States. Port competent authorities must report any probable or confirmed case identified on ships, as well as the subsequent actions taken, to the national competent authority in accordance with any local or national rules and procedures.

* Rarely, cases are reported as travel-associated even when the travel history is longer than 10 days (up to a maximum of 14 days) before the onset of symptoms. A longer incubation period may sometimes be associated with underlying disease, especially among those who are immunosuppressed and the elderly.

Guideline IV

Prevention and control of vaccine-preventable diseases on passenger ships; focusing on measles, rubella, and varicella

Purpose

- To reduce the risk of outbreaks of vaccine-preventable diseases (VPDs).
- To provide guidance for the management of individuals who present with fever and an acute skin rash*, measles, rubella, or varicella.
- To provide guidance for case and outbreak management.
- To provide guidance to stakeholders and public health authorities for a consistent and proportionate response.

1 Overview

A literature review analysing data from 1990 to 2019 identified a total of 1,795 cases of vaccine-preventable diseases (115 outbreaks and 7 case reports). The majority of cases occurred among crew members (1,466/1,795; 81.7 %) and were varicella cases (1,497; 83.4 %) (41). The origin of crew cases was from sub-tropical countries in many reports. Measles (40 cases; 69 % among crew), rubella (47; 88.7 %), herpes zoster (9; 69.2 %), and varicella (1,316; 87.9 %) were more frequent among crew, while mumps cases were equally distributed among passengers and crew (22/22). Hepatitis A (73/92; 70.3 %), meningococcal meningitis (16/29; 44.8 %), and pertussis (9/9) were more frequent among passengers. Two outbreaks resulted in 262 secondary measles cases on land.
Outbreaks of vaccine-preventable diseases, such as varicella (n = 4), measles (n = 3), rubella (n = 2), meningococcal meningitis (n = 1), a multi-pathogen varicella-measles-rubella outbreak (n = 1), and a multi-country hepatitis A outbreak (n = 1), have been reported worldwide in recent years (1996-2015) on passenger ships (42). Most of these outbreaks were limited to crew members. In two measles outbreaks, crew were the likely index cases, leading to secondary cases among both crew members and passengers, as well as substantial spread to those on land (43, 44). Most outbreaks were protracted, lasting for over a month, with two outbreaks taking up to three months to control. The cause of the majority of these outbreaks was inadequately vaccinated crew members; a significant proportion of crew are non-immune to routine VPDs (41, 42, 45).

This guideline focuses on the three most common outbreak-prone VPDs on passenger ships, according to available evidence (41, 45): measles, rubella, and varicella.

* In the absence of a medical doctor, the master should regard any acute skin rash or eruption (excluding allergic reactions), with or without fever, as the grounds for suspecting the existence of a disease of an infectious nature. See Chapter 2 on Communicable Disease Surveillance.

These viruses all present with an acute skin rash and fever, are spread from person-to-person and are transmitted via the respiratory route. Infected individuals shed virus and are contagious a few days before the onset of clinical symptoms until several days afterwards.

- **Measles** virus is particularly contagious, with secondary attack rates exceeding 90 % among susceptible individuals, and disease can be more severe in infants and the elderly (46, 47).
- **Rubella** is typically a mild, self-limited illness in adults, but infection during pregnancy—especially in the first trimester—can result in severe adverse outcomes for the fetus. These include miscarriage, fetal death, stillbirth, or congenital malformations collectively known as congenital rubella syndrome (48).
- **Varicella** is the most commonly reported VPD on passenger ships and a frequent cause of outbreaks. Complications occur more frequently in individuals older than 15 years, and as crew members and most cruise ship passengers are adults, outbreaks have the potential to cause serious illness (49).
- Passenger ships and other congregate settings, provide an environment conducive to the transmission of such viruses, including shared ventilation systems for large populations, tightly spaced beds or bunks, and prolonged close social interactions, as well as visiting potentially endemic areas (50-52). Passengers may originate from diverse countries with variable vaccine schedules and coverage, so efforts for prevention and timely control are particularly important.

This guidance details recommended measures for the prevention of VPDs, including the diagnosis, surveillance, and control of acute skin rash cases, as well as specific control measures for measles, rubella, and varicella cases and outbreaks.

Figure 4 provides a summary of the public health response to a case of acute skin rash.

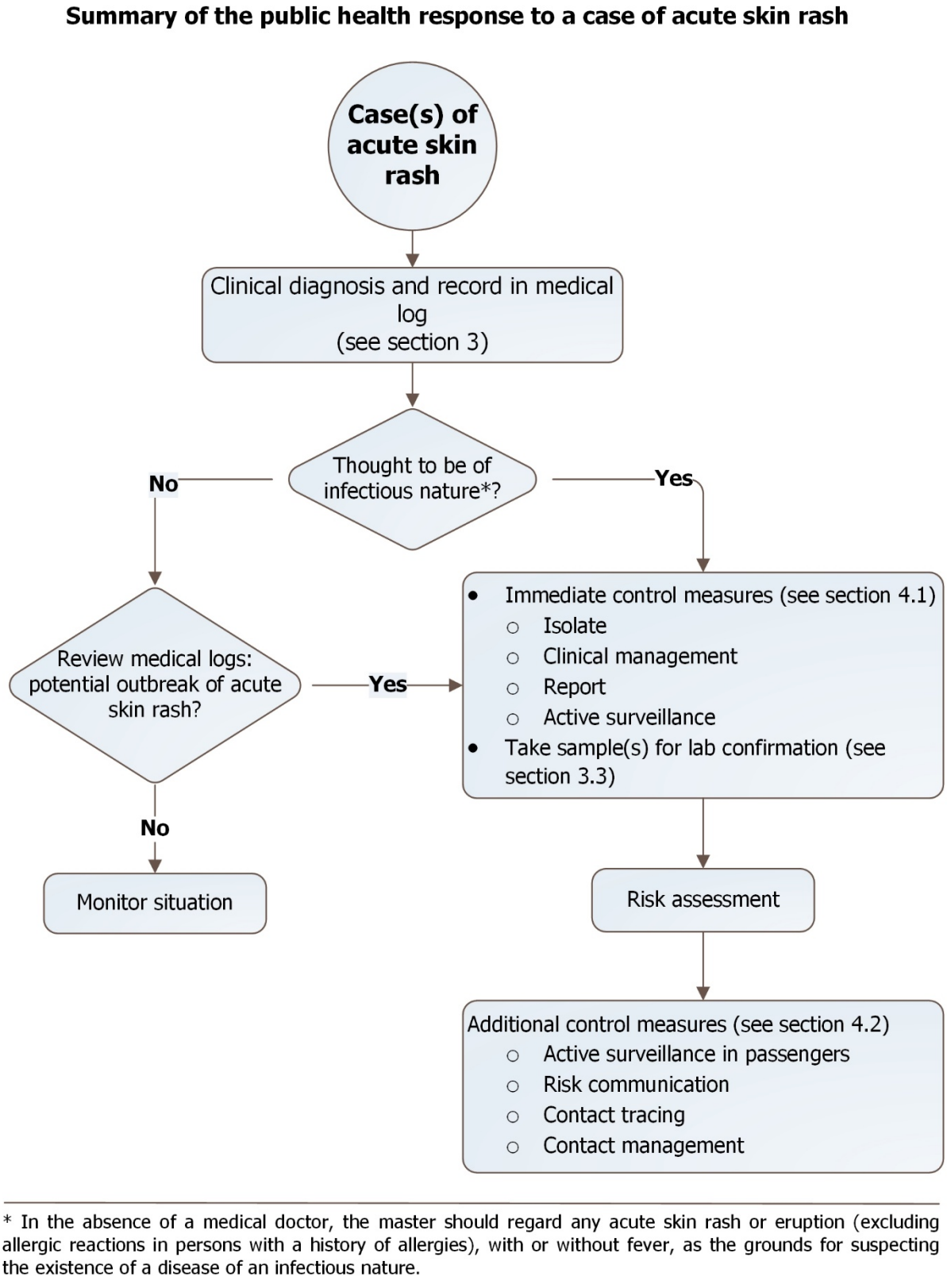


Figure 4: Summary of the public health response to a case of acute skin rash

2 Prevention of vaccine-preventable diseases

2.1 Pre-embarkation preventive measures

Crew

- Seafarers should carry their general vaccination certificates, as well as specific certificates (e.g., Yellow Fever), as required under international health regulations and for port entry (when applicable). These may be requested by port health authorities or shipping company medical staff.
- It is recommended that passenger shipping companies help provide and document any required vaccinations for crew members as part of their occupational health programmes, e.g., as part of pre-employment medical examinations.
- Shipping companies should undertake or arrange for the seafarer to have an individual pre-employment exam in accordance with maritime medicine vaccination guidelines and consider routine and mandatory vaccines, including those for specific occupational risks (53, 54).
- In the absence of documented vaccination or a history of infection, serological testing for measles, rubella, and/or varicella can be undertaken to provide evidence of immunity to infection.
- In the absence of documented vaccination or a history of infection, companies may choose to vaccinate crew members with the required multivalent (Measles-Mumps-Rubella, MMR) and/or varicella (Measles-Mumps-Rubella and Varicella, MMRV) vaccine without undertaking serological testing, provided they are to be vaccinated. This strategy is highly recommended when crew originate from a country with poor vaccine coverage*, or hold positions that put them in contact with high-risk populations (e.g., childcare, medical, or beauty salon personnel) (55-57).
- Up-to-date medical records of staff and their vaccination status should be kept.
- In line with the WHO Handbook for Inspection of Ships and Issuance of Ship Sanitation Certificates (58), a list of staff taking care of children and the vaccines they have received (vaccination list) is required.
- The 'International Certificate of Vaccination or Prophylaxis' should be used appropriately in accordance with the IHR (**Annex 45**, page 386).

Passengers

- It is recommended that passengers (regardless of their itinerary) are advised to visit their health care provider in order to seek travel advice and ensure that routine vaccinations (including MMR(V)) are up to date. This is in line with existing travel health guidelines such as:
  - World Health Organization 'Vaccines and travel'. Available at: https://www.who.int/travel-advice/vaccines.

* Measles and rubella vaccine coverage data is available by country at: https://immunizationdata.who.int/; for varicella, a higher susceptibility of young adults to infection from tropical countries has been found compared to temperate countries (World Health Organization, 2014).

  - Public Health England and the National Travel Health Network and Centre's 'Cruise ship travel'. Available at: https://travelhealthpro.org.uk/news/670/cruise-ship-travel.
  - Public Health Scotland 'Travel and international health'. Available at: https://publichealthscotland.scot/population-health/health-protection/travel-and-international-health/overview/travel-advice/.
  - US Centers for Disease Control and Prevention Yellow Book Section 2 'Preparing International Travelers'. Available at: https://www.cdc.gov/yellow-book/hcp/preparing-international-travelers/index.html.
  - US Centers for Disease Control and Prevention Yellow Book Section 2 'Vaccination & Immunoprophylaxis — General Principles'. Available at: https://www.cdc.gov/yellow-book/hcp/preparing-international-travelers/vaccination-and-immunoprophylaxis-general-principles.html.
- It is recommended that a health screening be conducted at embarkation to help identify symptomatic passengers and crew, who can then be medically assessed.
- It is recommended that travel companies and travel agencies provide health advice to passengers before joining the ship (e.g., as part of the travel package), including information on vaccine-preventable diseases.

General advice to travellers

- Travellers should discuss their travel destinations with their medical provider and request any relevant travel-specific vaccinations depending on their potential exposures on board, while ashore, and based on their risk groups (52, 54).
- Pregnant women and women of childbearing age should be advised to check their immunity to rubella before travel (59).

2.2 During voyage (every day) preventative measures

General

- Implement standard cleaning and disinfection procedures.
- Routine health advice should be available to passengers and crew, including personal hygiene and thorough hand washing.
- There should be an up-to-date Outbreak Management Plan or procedures for managing cases and outbreaks.

Supplies and equipment

Adequate medical supplies and equipment should be available on board to respond to cases and outbreaks.

3 Diagnosis of fever with acute skin rash and surveillance

3.1 Clinical diagnosis

Measles, rubella, and varicella all involve an acute skin rash. In general, clinical signs are unreliable as the sole criteria for diagnosis; therefore, laboratory assessment is recommended for accurate diagnosis (see section 3.2). There is a wide range of other infectious and non-infectious agents that may cause acute skin rash, including vector-borne diseases (such as dengue fever, chikungunya, and rickettsial disease), scabies, viral haemorrhagic fevers, meningococcal disease, dermatological conditions, and cutaneous drug reactions.

Medical staff should be adequately trained and aware of the symptoms, incubation periods, infectious periods, and case definitions of measles, rubella, and varicella (**Table 25**). Treatment should be given based on a case-by-case evaluation and in accordance with ECDC and WHO guidelines (60). Advice on these or other acute skin rash conditions should be gained from the competent authorities when needed.

Table 25: The main clinical characteristics of measles, rubella, and varicella (46, 60-62)

Characteristics	Measles	Rubella (German measles)	Varicella (Chickenpox)
Agent	Measles virus	Rubella virus	Varicella-zoster virus
Signs and symptoms	• Fever • Maculopapular rash (i.e., non-vesicular rash) • Cough **or** coryza (runny nose) **or** conjunctivitis (red eyes) • Koplik spots (small red spots with blueish white centres) on mucous membranes, 1-2 days before the measles rash	• Maculopapular rash • Swelling of the lymph glands behind the ears and at the back of the neck (cervical, suboccipital, or post-auricular adenopathy) **or** joint pain and stiffness (arthralgia/arthritis) • Fever, malaise, and upper respiratory symptoms before rash in older children and adults	• A rash of red spots, rapidly becoming fluid-filled blisters (vesicles) • Often intensely itchy • Appearance of new vesicles over three to four days, as older lesions form crusts and heal • Fever
Incubation period	7-18 days (usually 10-14 days)	12-23 days (usually 14-17 days)	10-21 days (usually 14-16 days)
Infectious period: • **Before rash onset**	4 days	7 days	1-2 days

• **After rash onset**	4 days	7 days (infants with CRS may shed virus for up to 1 year)	Until all lesions are crusted (usually about 5 days)
Subclinical cases		Rubella virus infections are asymptomatic or subclinical in > 50 % of instances, but infected individuals can still shed and transmit the virus	
Duration	Generalised rash:4-7 days	Adult prodrome:1-5 days	Vesicular rash:3-4 days
Case-fatality rate	• < 1 % in developed countries • 3-5 % in developing countries (reaching 10-30 % in some localities)	33 % of infants born with CRS die before their first birthday	• 1:100,000 in children age 1-14 years • 6:100,000 in persons age 15-19 years • 21:100,000 in adults (*most deaths occur in immunocompetent children and adults*)
Reported attack rates among ship crew (42)	2.4 %	0.8-6.0 %	3.4 %
Transmission route	Airborne or droplet, contact with naso-pharyngeal secretions	Droplet or direct contact with naso-pharyngeal secretions	Airborne or droplet, contact with vesicles
Complications	• Otitis media (*middle ear infection*) • Pneumonia • Laryngotracheobronchitis (croup) • Diarrhoea • Encephalitis	• In pregnancy: can transmit the infection to the fetus, which, as a result, may be born deaf and with heart and eye defects • Arthralgia • Leukopenia • Thrombocytopenia • Encephalitis	• Bacterial infection of the skin lesions causing, renewed fever, redness and swelling of the skin around the infected area • Pneumonia • Haemorrhagic complications • Encephalitis

3.2 Laboratory diagnosis and confirmation

- It is recommended, where feasible, that cases of acute rash and fever suspected to be of infectious nature are confirmed by laboratory testing.
- Laboratory criteria for testing can be found in the case definitions (**Annex 46**, page 387).

- For countries in the measles elimination phase (which includes all countries in Europe), laboratory investigation of all suspected sporadic measles cases is mandatory.
- During an outbreak, laboratory confirmation should be sought for at least the initial 5-10 cases. Once an outbreak is confirmed, subsequent cases can be confirmed primarily based on an epidemiological link to a laboratory-confirmed case. However, laboratory confirmation should be sought for all suspected cases in pregnant women, even if the outbreak has been confirmed and regardless of background incidence or the number of previously confirmed cases (46).

Diagnostic procedures, specimen collection, and transportation

Whenever possible, the competent authority should contact the relevant laboratory in order to get advice on the specimen collection and transportation procedures.

For maculopapular rash (or suspected measles or rubella):

Diagnosis is usually done by:

- Virus genome detection by Polymerase Chain Reaction (PCR) in a throat swab or oral fluid collected within seven days after the onset of exanthema; or
- Immunoglobulin M (IgM) testing in serum. In approximately one third of infected individuals, IgM appears on the third day after onset of exanthema (skin rash) and persists for at least 28 days.

Specimen collection and transportation:

- Collect a throat (oropharyngeal), nasal, or nasopharyngeal (NP) sample using a synthetic swab and place it in a tube with viral transport medium.
- Collect whole blood (5 ml for older children/adults and 1 ml for infants/younger children) in a sterile dry tube and process to serum.
- Ensure samples are correctly labelled and are accompanied by a specimen form.
- Transport samples in accordance with Directive 2008/68/EC on the inland transport of dangerous goods, using triple layer packaging, at 4-8 °C (39-46 °F).
- Send samples to the laboratory as soon as possible; ideally, specimens should be received within 48 hours.

When rash consists of fluid-filled blisters (or suspected Varicella):

Material from skin lesions is the preferred specimen for laboratory confirmation of varicella disease (49).

Specimen collection and transportation:

- Vesicular lesions: Remove the top of the vesicle, swab the base vigorously enough to ensure cell collection, put the dry swab into a snap-cap tube or other closable container, and ship at room temperature.

- Scabs: Collect several dry scabs from crusted-over lesions and place each in a separate small zip-top bag or other container for shipping.
- No transport medium is needed, and specimens may be stored at room temperature indefinitely.
- Ensure samples are correctly labelled and are accompanied by a specimen form.
- Transport samples using triple packaging and in accordance with Directive 2008/68/EC on transport of dangerous goods.

3.3 Surveillance

All cases of vaccine-preventable diseases and acute skin rashes thought to be of infectious nature should be recorded in the standardised illness ship medical log (see Part A, Chapter 2). In the absence of a medical doctor, the master should regard any acute skin rash or eruption*, with or without fever, as the grounds for suspecting the existence of a disease of an infectious nature. For possible, probable, and confirmed cases of measles, rubella, and varicella, standardised surveillance definitions should be used, such as the EU case definitions provided in **Annex 46** (page 387). In such cases, the ship should also consider contacting a Telemedical Maritime Assistance Service (TMAS) to receive expert medical advice and support for assessing and managing the suspected infectious disease case.

> **A skin rash is defined as:** abnormal areas on the skin that may appear as discoloured bumps or flat spots or areas, or blisters or bumps containing fluid or pus that are intact or crusted over.

Due to the highly infectious nature of some VPDs, all cases (even one individual case) or outbreaks of acute skin rash thought to be of infectious nature constitute an alert and should lead to the filling out of the ship communication form (see form S2, page 302, and Part A, Chapter 2). All cases should be reported to the competent authority via the Ship Declaration of Health.

* Excluding allergic reactions in persons with a history of allergies.

In determining whether there is an outbreak, the following outbreak definitions can be used:

As for other infectious diseases, the outbreak definition is 'the occurrence of cases of disease with a frequency in excess of what would normally be expected (for the specific itinerary and time)'. Normal expectancy is determined from historical/baseline data for the ship.

In the WHO European Region, outbreaks of measles and rubella are defined as follows (47):

Measles outbreak: two or more laboratory-confirmed cases which are temporally related (with dates of rash onset occurring between 7 and 21 days apart) and epidemiologically or virologically linked, or both;

Rubella outbreak: two or more laboratory-confirmed cases which are temporally related (with dates of rash onset occurring between 12 and 46 days apart) and epidemiologically or virologically linked, or both.

A suggested Varicella outbreak definition is as follows.

Varicella outbreak: two or more laboratory-confirmed cases which are temporally related (with dates of rash onset occurring between 10 and 21 days apart) and epidemiologically or virologically linked, or both. For consistency with CDC operational thresholds and enhanced vigilance on passenger ships, a threshold of three or more linked cases may be used as a trigger for outbreak response and notification.

4 Case and outbreak management on the ship

- It is vital that the ship has a medical isolation management plan (see 1.11 in Chapter 1) and crew involved are aware of their responsibilities.
- Due to the contagious nature and elimination goals for measles and rubella, just one case of acute rash thought to be of infectious nature is a serious health event and should lead to **implementation of the immediate control measures** described below (4.1.1-4.1.5).

Although laboratory confirmation is required for suspected measles and rubella cases, immediate control measures should be implemented before the laboratory result is received.

4.1 Immediate control measures

4.1.1 Isolation and PPE

- Isolation of all acute skin rash cases suspected to be infectious in nature immediately upon identification (46).
- Isolation in a single-berth cabin (without other occupants) with the door closed. Isolate suspected or confirmed measles cases individually in a negative air pressure isolation room, and if not available in a single-berth cabin with door closed and without other occupants.
- Isolate until:

  - measles, rubella, and varicella are ruled out by laboratory (46); or
  - the duration of the infectious period of the suspected disease, see **Table 25** (if in doubt, until seven days after rash onset).
- Crew members may return to work when they are no longer infectious (63).
- No visit/contact should be permitted by MMRV unimmunised persons (for rubella, it is important for unimmunised pregnant women not to be in contact with a case).
- Regular hand washing should be performed by the patient and the carer(s).

4.1.2 Report

- See Surveillance section 3.3 for case definitions and forms.
- Immediately report any case or outbreak to the competent authority at the next port of call — submit the SDH or report as required by the country. Information on the control measures implemented should also be included.
- Liaise with the shore-side competent authority in accordance with national regulations and practices.
- Regular updated reports should be provided to the relevant competent authority regarding any further cases and the outcome.

4.1.3 Clinical/case management including personal protective equipment

- The WHO Medical guide for ships (3rd edition) (60) describes treatment for various infectious diseases, including varicella and rubella.
- Patients should be nursed by someone immune to the disease. If the disease has not yet been confirmed, the carer(s) should have immunity to MMRV.
- Regular hand washing should be encouraged by the patient and the carer(s).
- Collect appropriate specimens (see Section 3.2 above) and arrange for appropriate shore-side testing.

Persons with suspected communicable diseases should not be permitted to sail. Each situation must be assessed on a case-by-case basis in line with WHO guidance (46), and any disembarked individual should be referred promptly to the competent health authority for evaluation and management.

4.1.4 Cleaning and disinfection

Linen and other articles may be soiled by discharges from the nose and throat, and should be effectively cleaned and disinfected (see Part A, items 7.1.3 and 7.6.5). Infectious waste should be handled and stored appropriately (see Part A, items 9.5.3 and 9.5.4).

4.1.5 Active surveillance

- If a case occurs, a review of crew and passenger medical logs should be conducted to retrospectively check for any acute skin rash cases (63).
- Case finding among crew who were in contact with the case should be conducted by the ship's medical staff.

4.2 Supplementary control measures based on risk assessment

An assessment of the likelihood of transmission should be conducted only after careful, individual risk assessment on a case-by-case basis. Guidance should be sought from the relevant competent authority. The measures detailed below should be considered based on the risk assessment of all probable and confirmed VPD cases, and may also be considered when a possible case is assessed as likely to have a VPD based on their symptoms, immunisation status, travel history, belonging to a high-risk population, or the presence of a known outbreak (see outbreak definitions in 3.3).

4.2.1 Active surveillance in passengers

- Case finding should be expanded to include directly contacting passengers (interview case to identify contacts, health advice for passengers including to report illness, e.g., through distributing leaflets) and findings should be recorded in a log. An example of such a log can be found at **Annex 45** (page 386).
- Case finding should continue among embarking passengers and crew on subsequent voyages for one incubation period after the last confirmed infection (64).

4.2.2 Risk communication

- Passengers should be notified (on board, disembarking, and embarking), particularly pregnant women, about the risk for exposure to rubella, measles, or varicella, if present, and advised to report immediately if they become unwell with acute skin rash.
- Crew should be encouraged to report if they become symptomatic and to stay in their cabins until seen by medical personnel.

4.2.3 Contact tracing: identification of passengers and crew following exposure to an ill person

Persons (passengers and crew) who have been in contact with a VPD case during the infectious period should be identified and followed up. Contact investigation should include an assessment of their susceptibility to infection (see below) and their overall health status, including pregnancy status and risk factors for severe illness (46). It is best practice to keep a log (line-list) of contacts. An example of such a log can be found at **Annex 45** (page 386).

Contact tracing is usually considered when control interventions are expected to be effective. For example, for measles and varicella, the main intervention for preventing further spread is Post-Exposure Prophylaxis (PEP) (see below). Contact tracing of passengers and crew is strongly recommended if PEP can still protect susceptible persons, prevent complications, and limit further transmission — provided that risk assessment, available resources, and the feasibility of control allow this (65, 66).

A definition of a case 'contact' should be defined for the event (case or outbreak). The following are suggestions:

- a person who has had ≥ 5 minutes of direct face-to-face contact with a case during the infectious period (see **Table 25** for infectious periods) (49);

- those who have shared confined space (e.g., shared bedroom or working area) in close proximity for a prolonged period of time, such as one hour, with a case during the infectious period;
- crew-contacts, including intimate partners, cabin mates, bathroom mates, dining mates, workmates, and social contacts (63);
- on small passenger ships, all passengers and crew could be considered close contacts, as living conditions on board are comparable to those in general households (67).

Generally, all passengers and crew should be considered during contact tracing. For measles, priority should be given to children under two years of age, as they are likely to be unvaccinated (or not fully vaccinated) and have a higher risk of complications; as well as pregnant women and immunocompromised patients, who might benefit from Human Normal Immunoglobulin (HNIG) (see national recommendations) (65). Contact tracing can be escalated according to the magnitude and severity of the event.

Contact tracing after disembarkation

Contact tracing of disembarked passengers and crew is highly resource-intensive; therefore, a risk assessment should be conducted to determine whether it is needed and, if yes, then over which time period (e.g., those having disembarked in the last X days). Countries close to measles elimination may consider contact tracing of all passengers if a probable or confirmed case of measles arrives who has been travelling while being infectious, even after the time for effective PEP has elapsed. The rationale is to identify secondary cases and ensure appropriate interventions to limit further spread (65).

To enable contact tracing after disembarkation, the ship should ensure that passenger lists include up-to-date contact details (phone number, home address, and passport number) and are available for all passengers and crew, and that these can be shared in a timely way with public health authorities. Personal data must be kept confidential as per IHR article 45 and EU legislation (Regulation (EU) 2016/679 and Regulation (EU) 2018/1725).

4.2.4 Contact management: management of passengers and crew following exposure to an ill person

(i) Monitor health:

Recommend contacts, among passengers and crew members, to monitor their health for the duration of the incubation period (for up to 21 days for measles, 23 days for rubella, and 21 days for varicella) after their last exposure to an infectious case, and report any symptoms to the shipboard infirmary immediately. If a contact is pregnant, medical advice should be sought.

(ii) Quarantine:

In certain situations, it may also be advisable to quarantine **susceptible persons who were high-risk exposure case contacts** (68) (see definition in the box below), e.g., crew mates who share the same cabin. Advice should be sought from the relevant competent authority.

(iii) Post-exposure prophylaxis for measles and varicella:

When a case has been confirmed as measles or varicella, post-exposure vaccination of **susceptible persons who were case contacts** plus administration of immunoglobulin to risk groups could be recommended on a case-by-case basis (see below). It may be necessary to expand outbreak response immunisation **beyond case contacts to include all susceptible persons** (46).

A risk assessment should be conducted to determine which crew and/or passengers with no, or unknown, history of infection should be vaccinated. Should susceptible contacts have already disembarked then contact tracing may be required (see above). Cooperation should be established with the relevant competent authority for decision-making and contact tracing implementation.

> **Susceptible persons:** Persons without a history of laboratory-confirmed infection, and without immunisation records demonstrating the receipt of the age-appropriate number of doses of vaccine or serologic evidence of immunity (presence of IgG) should be considered susceptible. In some countries, persons born prior to a certain time are considered immune (e.g., in the United States of America those born before 1957 are considered immune to measles and rubella) (47).

If an outbreak is still ongoing, the shipping company should provide advice for the vaccination of **susceptible embarking passengers** (68). Advice should be sought from the relevant competent authority.

Measles:

- Where consent has been given by the contact, vaccine should be given within 72 hours of exposure (46).
- Human normal immunoglobulin (HNIG) (a pooled plasma preparation rich in IgG antibodies, providing passive immunity against specific infections) may be recommended for susceptible contacts with a high risk of complications (contacts under one year of age, pregnant women, or immunocompromised persons), after local risk assessment and according to national guidelines. HNIG should be used as soon as possible after exposure and may be used within six days of exposure (61).

Varicella:

- Vaccination within three to five days of exposure to the virus will prevent most cases of varicella (46).
- If a crew member develops varicella while in port, or if a susceptible crew member is exposed to a case, consider vaccinating all susceptible crew members to prevent an outbreak (46).
- Consider vaccinating passengers with contact to infected crew member(s) if requested (49).
- High-risk contacts for whom varicella vaccine is contraindicated (e.g., pregnant women or immunosuppressed persons) should be evaluated for administration of Varicella Zoster Immunoglobulin (VZIG). VZIG should be administered as soon as possible but may be effective if

administered as late as 10 days after exposure (49). An alternative to VZIG administration is oral Acyclovir (80 mg/kg/day) for seven days. It should be administered in the seven days following the exposure.

- Susceptible crew members who receive the first dose of varicella vaccine or VZIG may return to work immediately after vaccination. Susceptible crew members that do not receive varicella vaccine should have no passenger contact, minimise contact with other crew members, and be placed under health monitoring for signs and symptoms of varicella (63).

Rubella:

- Immunisation of contacts will not necessarily prevent infection or illness (62) and is therefore not recommended.

Additional information

Immunisation efforts in an outbreak setting aim to reduce the extent and duration of the outbreak and to help interrupt transmission by raising population immunity. When deciding on the need, target groups and the most appropriate strategies for outbreak response immunisation, it is important to take into account the results of the assessment of risk of a large-scale outbreak, the financial and human resources, vaccine availability, the regulatory framework, and attitudes towards immunisation and the disease among potential target groups and health care workers. The potential impact of the intervention will be greater if it is implemented early in the course of the outbreak and in settings with a substantial number of susceptible individuals, where the risk of widespread transmission is higher (46).

For guidance on reviewing proof of vaccination or other prophylaxis, WHO guidance is available (69). Under the International Health Regulations (2005), vaccination or other prophylaxis must be administered after the agreement of the traveller or his/her parents or guardians (article 23). Requirements related to vaccination and other prophylaxis can be found under IHR articles 23 (informed consent, safety standards), article 31 (health measures relating to entry of travellers), article 32 (treatment of travellers), article 36 (certificates of vaccination or other prophylaxis), article 40 (charges for health measures). Vaccines and prophylaxis for travellers administered under the IHR should be of suitable quality and approved by WHO (69).

Vaccination or prophylaxis as a health measure to contain infectious diseases on board ships should be based on the International Labour Organization (ILO) Maritime Labour Convention (MLC), 2006, Regulation 4.1, where applicable.

5 Control measures by competent authorities and other stakeholders (agencies and owners)

Competent authorities are responsible for supervising or applying health measures on a ship when evidence for public health risk exists. For VPDs, this may include (69):

- event verification;

- assistance with diagnosis (e.g., differential diagnosis, laboratory testing);
- assistance with ascertaining immediate arrangements via preliminary assessment and reporting;
- undertaking a risk assessment to determine a proportionate response, including contact tracing;
- assistance with outbreak investigation and response, including:
  - assistance with conducting case and contact tracing, particularly of disembarked passengers; and
  - applying control measures, including facilitating the distribution or supply of treatment or vaccines;
- communication from the port to the national level (to the IHR and Early Warning and Response System (EWRS) Focal Point), and between ports, as required;
- inspection of control measures, including as a minimum:
  - varicella: standard precautions, laundry and eating utensils handling, and ventilation of the isolation cabin;
  - measles: isolation practices; and
  - rubella: standard precautions.

Reference list — Part B

1. Centers for Disease Control and Prevention. Update: influenza activity -- United States, 1997-98 season. MMWR MorbMortalWklyRep. 1997;46(46):1094-8.
2. Centers for Disease Control and Prevention. Guidance for cruise ships on the management of acute respiratory illness (ARI) due to viral infection. (2023). [Available from: https://www.cdc.gov/port-health/php/maritime-guidance/guidance-for-cruise-ships-on-management-of-acute-respiratory-illness-ari-due-to-viral-infection.html].
3. European Vaccination Information Portal. (2023). COVID-19 2023. [Available from: https://vaccination-info.europa.eu/en/covid-19-0].
4. American College of Emergency Physicians. (2023). Cruise ship health care guidelines. [Available from: https://www.acep.org/siteassets/new-pdfs/preps/acep-cruise-ship-health-care-guideliness-final-october-2023.pdf].
5. Centers for Disease Control and Prevention. (2023). People with Certain Medical Conditions. [Available from: https://archive.cdc.gov/www_cdc_gov/coronavirus/2019-ncov/need-extra-precautions/people-with-medical-conditions.html].
6. International Maritime Health Association. (2009). Interim Guidance regarding Influenza A(H1N1) for the Maritime Community.
7. Miller JM, Tam TW, Maloney S, Fukuda K, Cox N, Hockin J, et al. Cruise ships: high-risk passengers and the global spread of new influenza viruses. ClinInfectDis. 2000;31(2):433-8.
8. World Health Organization. (2009). Interim WHO Technical advice for case management of pandemic (H1N1) 2009 on ships - Draft.
9. Brotherton JM, Delpech VC, Gilbert GL, Hatzi S, Paraskevopoulos PD, McAnulty JM. A large outbreak of influenza A and B on a cruise ship causing widespread morbidity. EpidemiolInfect. 2003;130(2):263-71.
10. Centers for Disease Control and Prevention. Influenza B virus outbreak on a cruise ship--Northern Europe, 2000. MMWR MorbMortalWklyRep. 2001;50(8):137-40.
11. Ferson M, Paraskevopoulos P, Hatzi S, Yankos P, Fennell M, Condylios A. Presumptive summer influenza A: an outbreak on a trans-Tasman cruise. CommunDisIntell. 2000;24(3):45-7.
12. Cruise Line International Association. (2009). Cruise Industry Influenza Protocol.
13. Centers for Disease Control and Prevention. Influenza in travellers to Alaska, the Yukon Territory, and on west coast cruise ships, summer of 1999. CanCommunDisRep. 1999;25(16):137-9.
14. Uyeki TM, Zane SB, Bodnar UR, Fielding KL, Buxton JA, Miller JM, et al. Large summertime influenza A outbreak among tourists in Alaska and the Yukon Territory. ClinInfectDis. 2003;36(9):1095-102.
15. Centers for Disease Control and Prevention. (1999). Preliminary Guidelines for the Prevention and Control of Influenza-Like Illness Among Passengers and Crew Members on Cruise Ships.
16. Mouchtouri et al. (2022). EU HEALTHY GATEWAYS Advice Guidelines for restarting cruise ship operations after lifting restrictive measures in response to the COVID-19 pandemic. [Available from: https://www.healthygateways.eu/].
17. Mouchtouri et al. (2023). HEALTHY SAILING: D3.4 Evidence-based guidelines for prevention, mitigation and management of COVID-19 on board large passenger vessels (interim version). [Available from: https://healthysailing.eu/].
18. Miller J, Tam T, Afif C, Maloney S, Cetron M, Fukata K, et al. Influenza A outbreak on a cruise ship. Can Commun Dis Rep. 1998;24(2):9-11.
19. Mouchtouri et al. (2024). HEALTHY SAILING Procedures for syndromic surveillance. [Available from: https://healthysailing.eu/].
20. European Centre for Disease Prevention and Control. (2020). Disinfection of environments in healthcare and non-healthcare settings potentially contaminated with SARS-CoV-2. Stockholm.

21. European Chemical Agency. (Accessed December 2025). COVID-19 information. [Available from: https://echa.europa.eu/el/covid-19].
22. European Centre for Disease Prevention and Control. (2023). Considerations for infection prevention and control practices in relation to respiratory viral infections in healthcare settings. Stockholm.
23. European Centre for Disease Prevention and Control. (2020). Infection prevention and control in the household management of people with suspected or confirmed coronavirus disease (COVID-19). Stockholm.
24. European Centre for Disease Prevention and Control. (2021). Infection prevention and control and preparedness for COVID-19 in healthcare settings - sixth update. Stockholm.
25. European Centre for Disease Prevention and Control. (2024). Factsheet for health professionals on COVID-19. [Available from: https://www.ecdc.europa.eu/en/infectious-disease-topics/z-disease-list/covid-19/factsheet-covid-19].
26. European Centre for Disease Prevention and Control. (2024). Proposed case definitions for RSV infection under EU epidemiological surveillance: European Centre for Disease Prevention and Control 2024.
27. Mouchtouri V, Black N, Nichols G, Paux T, Riemer T, Rjabinina J, et al. Preparedness for the prevention and control of influenza outbreaks on passenger ships in the EU: the SHIPSAN TRAINET project communication. EuroSurveill. 2009;14(21).
28. Centers for Disease Control and Prevention. (2011). Vessel Sanitation Program - 2011 Operations Manual. U.S. Public Health Service, Centers for Disease Control and Prevention/ National Center for Environmental Health.
29. Health Protection Agency. (2007). Guidance for the management of norovirus infection in cruise ships.
30. Meenhorst PLvdMJWaBJ. Sporadic cases of Legionnaires' disease in the Netherlands. Ann Intern Med. 1979;90:529-32.
31. Goutziana G, Mouchtouri VA, Karanika M, Kavagias A, Stathakis NE, Gourgoulianis K, et al. Legionella species colonization of water distribution systems, pools and air conditioning systems in cruise ships and ferries. BMCPublic Health. 2008;8:390.
32. Azara A, Piana A, Sotgiu G, Dettori M, Deriu MG, Masia MD, et al. Prevalence study of Legionella spp. contamination in ferries and cruise ships. BMCPublic Health. 2006;6:100.
33. Kura F, memura-Maekawa J, Yagita K, Endo T, Ikeno M, Tsuji H, et al. Outbreak of Legionnaires' disease on a cruise ship linked to spa-bath filter stones contaminated with Legionella pneumophila serogroup 5. EpidemiolInfect. 2006;134(2):385-91.
34. Jernigan DB, Hofmann J, Cetron MS, Genese CA, Nuorti JP, Fields BS, et al. Outbreak of Legionnaires' disease among cruise ship passengers exposed to a contaminated whirlpool spa. Lancet. 1996;347(9000):494-9.
35. Castellani PM, Lo MR, Goldoni P, Mentore B, Balestra G, Ciceroni L, et al. Legionnaires' disease on a cruise ship linked to the water supply system: clinical and public health implications. ClinInfectDis. 1999;28(1):33-8.
36. Lee S EC, Ritter T, Rodriguez LO, Tardivel K, Kozak-Muiznieks NA, Willby M, Ortiz N, Cohen AL, Smith JC. Two Outbreaks of Legionnaires Disease Associated with Outdoor Hot Tubs for Private Use—Two Cruise Ships, November 2022–July 2024. MMWR Morbidity and Mortality Weekly Report. 2024;73:950-4.
37. World Health Organization. (2007). Legionella and the prevention of Legionellosis.
38. European Commission. (2018). Commission Implementing Decision (EU) 2018/945 of 22 June 2018 on the communicable diseases and related special health issues to be covered by epidemiological surveillance as well as relevant case definitions.
39. European Working Group For Legionella Infections. (2007). 4th EWGLI training course "Investigating outbreaks of legionnaires' disease: risk assessment, sampling and control".
40. U. K. Maritime Coastguard Agency. (1998). Contamination of ships' air conditioning systems by Legionella bacteria. Marine guidance note (as amended). MGN 38 (M+F).

41. Mouchtouri VA, Lewis HC, Hadjichristodoulou C. A Systematic Review for Vaccine-Preventable Diseases on Ships: Evidence for Cross-Border Transmission and for Pre-Employment Immunization Need. Int J Environ Res Public Health. 2019;16(15).

42. Anagnostopoulos et al., editor Mapping the literature for the passenger shipping industry. Public Health Congress on Maritime Transport and Ports 2024; (2024).

43. Lanini S, Capobianchi MR, Puro V, Filia A, Del Manso M, Karki T, et al. Measles outbreak on a cruise ship in the western Mediterranean, February 2014, preliminary report. Euro surveillance: bulletin Europeen sur les maladies transmissibles = European communicable disease bulletin. 2014;19(10).

44. Nieto-Vera J, Masa-Calles J, Davila J, Molina-Font J, Jimenez M, Gallardo-Garcia V, et al. An outbreak of measles in Algeciras, Spain, 2008--a preliminary report. Euro surveillance: bulletin Europeen sur les maladies transmissibles = European communicable disease bulletin. 2008;13(20).

45. Anagnostopoulos L, Vasileiadis S, Kourentis L, Bogogiannidou Z, Voulgaridi I, Nichols G, et al. Scoping review of infectious disease prevention, mitigation and management in passenger ships and at ports: mapping the literature to develop comprehensive and effective public health measures. Trop Med Health. 2025;53(1):3.

46. World Health Organization. Guidelines for measles and rubella outbreak investigation and response in the WHO European Region. Copenhagen: WHO Regional Office for Europe; 2013.

47. World Health Organization. Measles Fact Sheet. 2024.

48. World Health Organization. Rubella Fact Sheet. 2024.

49. US Centers for Disease Control and Prevention. (2014). Guidance for Cruise Ships on Varicella (Chickenpox) Management. Atlanta, Georgia.

50. Ziebold C, Hassenpflug B, Wegner-Brose H, Wegner K, Schmitt HJ. An outbreak of rubella aboard a ship of the German Navy. Infection. 2003;31(3):136-42.

51. Public Health Agency Canada. (2005). Canada Communicable Disease Report (CCDR). Ottawa, Ontario, Canada.

52. Mitruka K, Felsen CB, Tomianovic D, Inman B, Street K, Yambor P, et al. Measles, rubella, and varicella among the crew of a cruise ship sailing from Florida, United States, 2006. J Travel Med. 2012;19(4):233-7.

53. Schlaich C, Riemer T, Preisser AM. 31.1 Vaccination/immunization in the maritime environment. In: Canals L, Carter T, Hansen H, Horneland AM, Schreiner AH, Seidenstücker K, et al., editors. Textbook of Maritime Medicine v2. Norway: The Norwegian Centre for Maritime Medicine; 2014.

54. World Health Organization. Vaccine-preventable diseases and vaccines. International travel and health. Geneva: World Health Organization; 2014.

55. Idnani N. Varicella among seafarers: a case study on testing and vaccination as a cost-effective method of prevention. Int Marit Health. 2010;61(1):32-5.

56. Acevedo F, Diskin AL, Dahl E. Varicella at sea: a two-year study on cruise ships. Int Marit Health. 2011;62(4):254-61.

57. World Health Organization. Varicella and herpes zoster vaccines: WHO position paper, June 2014. WHO Weekly Epidemiological Record. 2014;89(25):265-88

58. World Health Organization. Handbook for Inspection of Ships and Issuance of Ship Sanitation Certificates. Geneva, Switzerland: WHO; 2011.

59. Slaten DD and Mitruka, K. (2013). Cruise Ship Travel In M. Centers for Disease Control and Prevention and Gary W. Brunette M, MPH (Ed.), CDC Health Information for International Travel 2014, The Yellow Book. US-CDC.

60. World Health Organization. WHO International Medical Guide for Ships 3rd ed. Geneva: World Health Organization; 2007.

61. Public Health England. Immunisation against infectious disease (the green book). London: Public Health England; 2013.
62. American Public Health Association. Control of Communicable Diseases Manual. 19th ed. Heymann DL, editor. Washington DC: American Public Health Association; 2008.
63. Cramer EH, Slaten DD, Guerreiro A, Robbins D, Ganzon A. Management and control of varicella on cruise ships: a collaborative approach to promoting public health. J Travel Med. 2012;19(4):226-32.
64. Centers for Disease Control and Prevention. Rubella among crew members of commercial cruise ships--Florida, 1997. MMWR Morb Mortal Wkly Rep. 1998;46(52-53):1247-50.
65. European Centre for Disease Prevention and Control. Risk Assessment Guidelines for Diseases Transmitted on Aircraft. 2nd ed. Stockholm: ECDC; 2010.
66. Robert Koch Institute. Contact Tracing Risk Assessment Profile (CT-RAP) for public ground transport. Berlin, Germany: Robert Koch Institute; 2011.
67. Schlaich C. Targeting public health events on ships. J Travel Med. 2012;19(4):207-9.
68. European Centre for Disease Prevention and Control. Rapid risk assessment - Measles on a cruise ship, Mediterranean Sea, 5 March 2014. Stockholm, Sweden: ECDC; 2014.
69. World Health Organization. (2016). Handbook for management of public health events on board ships. [Available from: https://www.who.int/publications/i/item/handbook-for-management-of-public-health-events-on-board-ships].

ANNEXES

Annex 1: River cruise ships variations

1. Medical facilities and capabilities

Currently, river cruise ships are not required by international laws to have designated medical facilities or on-board medical staff. However, it is essential that first aid can be administered when needed. Care must also be provided for passengers with infectious diseases until they can be medically evacuated. Staff should have access to a doctor on call for medical advice and must be well-informed about the risks of infectious disease outbreaks. Additionally, they should be familiar with the ship's outbreak protocols and trained to implement them effectively.

Item	RCSA	Details	LEG/ST
		Medical staff, medicines, facilities construction and maintenance	
1.1 Medical staff, equipment and medicines	R*	• A designated doctor on call should be available for consultation at all times. Contact information should be readily available.	ST
		• Ships must have at least one trained staff member that is responsible for the medical inventory, first response in case of illness, surveillance and reporting of illness and contact with the designated doctor on shore.	LEG[1]
		• At least one staff member must have received recent training (max one year) and capabilities on the following: – knowledge of existing life-saving equipment for emergency situations, of procedures to follow in case of leakage, fire, person over board, evacuation, including crisis and crowd management, and of medical first aid on board vessel; – ability to assist in the case of leakage, fire, man over board, collision and evacuation, including crisis and crowd management, to use life-saving equipment in emergency situations and to perform medical first aid on board vessel; – Infection Control Training, including understanding infectious diseases modes of transmission, symptoms and incubation periods, preventive measures, hand hygiene protocols, use of personal protective equipment (PPE) and response isolation procedures, cleaning and disinfection practices, surveillance, reporting and documentation requirements, Outbreak Management and Response, Food Safety and Hygiene, Vaccination and Immunisation Policies, and Communication Strategies in Infection Control; and – Emergency Drills and Continuous Professional Development, including regular participation in emergency response drills,	LEG[1]

		with scenarios for medical emergencies and infectious disease outbreaks. Ongoing education to stay updated on best practices and emerging health threats.	
		• Ships may have a basic inventory of over-the-counter medicines, including drugs for general consumption: antithermic, antidiarrhoeal, antiallergic motion sickness medicines, to give out after teleconsultation with a doctor.	ST
1.2 Medical facilities and capabilities	R*	• River cruise ships should have medical capabilities as described in items 1.2.1 and 1.3.	ST
		• A designated place for storage of first aid and other equipment and medicines must be available on board.	LEG[2]
		• The contact details of the person responsible for first aid and relevant activities should be communicated to passengers and crew on board.	ST
1.2.1 Medical facilities description	R*	Medical supplies and medicines, when necessary to be available on board, should be protected, stored, and locked in cupboards.	ST
1.3 Isolation and quarantine facilities	R*	• River cruise companies should make every effort to provide individual isolation for passengers, preferably in their own cabin, until shore-based isolation can be arranged.	ST
		• River cruise ships should have the capability to provide temporary quarantine until shore-based quarantine is arranged.	ST
1.6 Medical waste management – sharps and biomedical waste	R*	If injections or other sharp equipment are used as part of first aid, appropriate sharps and biomedical waste capability must be in place.	LEG[3]
1.6.2.1 Sharps disposal by passengers	R*	Passengers that use sharps, such as diabetes patients, should be responsible themselves for appropriate sharps containers.	ST
1.8 Medical procedures	R*	The following procedures are considered to be the minimum required on board: – maintenance and calibration for medical equipment, such as thermometers or blood pressure monitors; – a system of appropriate medical records and communication confidentiality (either digital or analogue) that is well organised, legible, and consistent; – Body Fluid Spillage (BFS) team trained and updated regularly;	ST

		– a manual of first aid procedures, including remote medical consultation; – a management plan for communicable diseases; and – an Emergency Preparedness Plan.	
1.9 Hygiene Plan and implementation	R*	• A hygiene plan should be implemented among designated staff on board.	ST
		• The Hygiene Plan should include disinfection, sterilisation (unless single use instruments are used), hand washing, laundry, medical waste management, and correct use of PPE.	ST
		• The following PPE should be available: single-use (disposable) polyethylene gloves, rubber gloves, sterile gloves, plastic aprons, plastic goggles, surgical face masks, full-face masks, N95/KN95/FFP2 masks, fluid-resistant or impermeable boot and shoe covers, fluid-resistant or impermeable gown.	ST

Additional referenced legislation for river cruise ships

1. Directive (EU) 2020/12 of 2 August 2019 supplementing Directive (EU) 2017/2397 of the European Parliament and of the Council as regards the standards for competences and corresponding knowledge and skills, for the practical examinations, for the approval of simulators and for medical fitness
2. ILO Maritime Labour Convention, 2006
3. Directive 2010/32/EU implementing the Framework Agreement on prevention from sharp injuries in the hospital and healthcare sector concluded by HOSPEEM and EPSU

2. Communicable disease surveillance

Item	RCSA	Details	LEG/ST
2.3 Surveillance log	R*	• In addition to the normal daily illness medical log there should be a log or records for surveillance of the syndromes described in **Annex 8** (page 286) for passengers and in **Annex 9** (page 290) for crew members.	ST
		• Data collected by using surveillance logs should be collated (aggregated) and reviewed (summarised/analysed, electronically where possible) on a daily basis for each voyage. Log data when requested by competent authorities should be transmitted, electronically and in analysable formats.	ST

3. Food safety

Item	RCSA	Details	LEG/ST
3.4.4 Supplier's list	R*	Passenger shipping companies should inspect the main suppliers' establishments or otherwise assess the safety of the operation before they are added to any approved supplier list*.	ST
3.4.5 Details of list	R*	• An approved list of main direct suppliers should be used and should include either the name of the company or person, their address and documentation to prove the suppliers establishments' permit/registration or other food safety approval.	ST
		• The ship food operators and main food suppliers should have a written agreement, detailing specifications regarding the safe standards of foodstuffs supplied to the ship.	ST
		• The approved list of direct main suppliers can be maintained either on board or ashore. The ship should contact the shore side office to get answers if needed during inspection or other situation.	ST
3.4.7.1 Defective items	R*	Any defective items, such as dented can†, expired foodstuffs, improperly packaged foodstuff or food unfit for human consumption must be rejected or assessed on arrival and deemed safe or unsafe for use.	LEG[1]
3.4.12.1 Exposed foodstuffs and potentially allergenic ingredients	R*	• Exposed foodstuffs should be covered, or otherwise protected, to prevent contamination or consumed within a time frame of 4 hours.	ST
		• Where separate storage is not feasible, sealed packaging/containers, physical barriers, or separate shelving should be used to minimise risk.	ST
3.4.14 Dry stores standards	R*	• Dry stores should be cool (preferably less than 25 °C (77 °F)), dry, and clean.	ST
		• Foodstuffs should be kept elevated off the decks.	ST
		• Dry food packages should be handled with care to prevent damage to the packing.	ST
		• Food from cans and jars that are damaged, swollen, or leaking should not be used or assessed by the establishment if deemed unsafe.	ST

* These assessments may be made checking compliance with supplier third party accreditation and approval by an internationally recognised body or standard — for example ISO 22000 regarding food safety.

† In this section 'dented' means in such a damaged condition that they may cause a food safety risk.

		• When packaging has been damaged after delivery then loose dry foodstuffs (flour, rice, etc.) should be decanted and stored in sealed labelled containers if deemed unsafe in its original packaging.	ST
		• Humidity should be controlled (for example through sufficient airflow or air changes) because moisture can affect the safety of food products.	ST
		• Cans and jars should be placed in dry stores but once opened some products (mustard, mayonnaise, etc.) require refrigeration where stated by the manufacturers.	ST

Referenced legislation

1. Regulation (EC) No 852/2004 on the hygiene of foodstuffs and Commission Regulation (EU) 2021/382 of 3 March 2021 amending the Annexes to Regulation (EC) No 852/2004 of the European Parliament and of the Council on the hygiene of foodstuffs as regards food allergen management, redistribution of food and food safety culture

4. Potable water safety

Item	RCSA	Details	LEG/ST
4.12 Water quality tests	R*	If the report mentioned in item 4.11 is not available, routine basic water quality tests of the supplied potable water (pH, free halogen) should be performed before bunkering.	ST
		Control measures — water production (potable water)	
4.13 until 4.17 are applicable only to river ships that produce water			

4.38 Separation of potable and non-potable water tanks	R*	Potable water storage tanks should not share any common wall with a tank holding non-potable water or other liquids.	ST
4.42 Disinfectant halogen residual	R*	The disinfectant halogen residual should be maintained at a minimum of 0.2 mg/L (ppm) and not more than 5.0 mg/L (ppm) of free chlorine in all sites of the distribution system (see also item 4.45). Alternative means of disinfection with a residual effect can be acceptable provided a scientific assessment is conducted to ensure its efficacy is established.	ST
4.43 Coating materials	R*	All materials in contact with potable water must comply with the requirements of Directive (EU) 2020/2184 (Article 11), ensuring that they do not pose a risk to human health, do not alter water quality, and are approved according to applicable European or national certification processes.	LEG[1]
4.65 Microbiological indicator parameters	R*	The microbiological quality of the water supplied for human consumption on passenger ships must be monitored according to Annex II of Directive (EU) 2020/2184 (**Annex 20**, page 334).	LEG[1]

Referenced legislation
1. Council Directive 2020/2184 on the quality of water intended for human consumption

5. Recreational water safety

Item	RCSA	Details	LEG/ST
5.9 Water source	R*	Only potable water should be used in the recreational water facilities.	ST
5.10 Potable water pools and sea water recirculating pools	R*	The water should be circulated through an appropriate treatment system that contains at least filtration coagulation (when necessary) and halogenation or alternative means of disinfection with residual effect and pH control.	ST

6. Pest management

Item	RCSA	Details	LEG/ST
6.16 Rat prevention	R*	Appropriate rodent prevention measures should be taken to prevent rats from entering the ships.	ST

7. Housekeeping and other ship facilities

Item	RCSA	Details	LEG/ST
7.1.10 Ventilation	R*	• All spaces on board where crew or passengers work, reside, or transit should be adequately ventilated to ensure air quality and comfort.	ST
		• There should be suitable and sufficient means of mechanical ventilation to all accommodation spaces.	ST
		• Ventilation systems should be constructed so that filters and other parts requiring cleaning or replacement are readily accessible.	ST
		• Drains in air handling units should be regularly inspected in order to ensure they are properly working and kept in good condition.	ST
		• Condensate trays and sumps should be kept clean and regularly disinfected.	ST
		• Filters of air handling unit, ducts and all parts of the ventilation system should be routinely cleaned.	ST
		• Potable water should be used to clean ventilation systems.	ST
		• Carbon dioxide sensors should be installed in different areas of the ship to monitor occupancy. Timely adjustments should be made to the ventilation system to ensure air quality is maintained in all areas of the ship.	ST
		• Ventilation systems should be adjusted to accommodate variations in real-time occupancy.	ST
		• Temperature and humidity should be optimised to ensure that all spaces, including lounges and public areas, are adequately ventilated while considering energy use.	ST
		• Ventilation systems, including ACH rates should be adjusted according to space size, occupancy, and expected thermal conditions.	ST
		• In dining rooms, bars, and spaces of high occupancy: – regular dehumidification should be performed to maintain relative humidity (RH) levels between 40 % and 60 %; and – enhanced ventilation or air filters should be used to ensure clean air.	ST

8. Hazardous chemical agents

No variations.

9. Waste management

In line with Directive 2016/1696 and ECE/TRANS/SC.3/179/Rev.1: "*Seagoing vessels navigating on inland waterways and river-sea vessels must satisfy the environmental and nature protection requirements of the International Convention for the Prevention of Pollution from Ships (MARPOL 73/78). The river basin authority may, however, introduce for inland waterways pollution control requirements more stringent than those applicable to seagoing vessels, in specific cases where this is justified from the point of view of water use, such as for the provision of drinking water*" (https://documents.un.org/doc/undoc/gen/g21/014/18/pdf/g2101418.pdf).

9.1 All types of wastes

Item	RCSA	Details	LEG/ST
		General requirements/recommended standards	
9.1.1 Written procedures	R*	Written procedures must be in place for the storage, handling, and discharge of domestic waste water, oily bilge, and for the disposal of garbage. Written procedures must include discharge locations and respective regulations and must be available for inspection.	LEG[1, 2, 3, 4]
9.1.2 Certificates and records	R*	The following records must be available during inspection: – written procedures for waste management; – delivery receipts; and – union inland navigation certificate or a Rhine vessel inspection certificate.	LEG[1, 2, 3, 4, 5]
9.1.6 Disposal of waste/notification procedures	R*	• Dumping or discharging waste generated on board or any part of the cargo from vessels into the waterways referred to in Annex 1 of CDNI Convention is prohibited.	LEG[1, 2 ,3, 4, 5]
		• Discharging of domestic wastewater to inland waterway vessels is prohibited.	
9.2.9 Garbage room location	R*	Garbage must be stored in a separate location of adequate size that is not accessible for passengers.	LEG[1, 2, 3, 4, 5]
9.2.11 Garbage room specification	R*	The garbage room should: – be constructed and maintained so as to be pest-proof; – be easily cleaned and disinfected; – be ventilated and illuminated; – have a constructed system which will prevent pooling of water;	ST

		– have a hand washing facility with potable hot and cold water and equipped as described in item 7.2.4, and a deck drain and signage stating "Wash your hands"; – be provided with suitable absorbent material for dealing with any spillages of oil-containing waste; and – have a first aid kit, which includes eye wash solution.	
9.3.1 Drainage system	R*	Separate, leak-proof, isolated drainage systems must exist for waste water.	LEG[1, 2, 3, 4, 5]
9.5.8 Sharps disposal	R*	Sharps (unused, contaminated or opened) must be disposed of in sharps containers ashore.	LEG[2, 3, 6]

Referenced legislation

1. Directive (EU) 2016/1629 laying down technical requirements for inland waterway vessels, amending Directive 2009/100/EC and repealing Directive 2006/87/EC entered into force on 6 October 2016 with the date of transposition and application of 7 October 2018
2. (CESNI). European Standard laying down Technical Requirements for Inland Navigation vessels (ES-TRIN). Edition 2025/1.
3. ECE/TRANS/SC.3/179/Rev.1 Prevention of pollution of inland waterways by vessels (https://unece.org/sites/default/files/2021-02/ece-trans-sc3-179-rev.1e.pdf)
4. Convention on the collection, deposit and reception of waste generated during navigation on the rhine and other inland waterways. 2018
5. Decision (EU) 2021/1055 of 21 June 2021 on the position to be taken on behalf of the European Union within the Conference of Contracting Parties to the Convention on the collection, deposit and reception of waste generated during navigation on the Rhine and other inland waterways (CDNI) on the adoption of the resolution aiming to extend the ban on the discharging of domestic wastewater to inland waterways vessels carrying between 12 and 50 passengers. 2021
6. Council Directive 2010/32/EU implementing the Framework Agreement on prevention from sharp injuries in the hospital and healthcare sector concluded by HOSPEEM and EPSU

Annex 2: Administrative issues

Inspection team — competency framework

Principles of inspections (according to ISO 19011:2018)

- **Integrity:** *the foundation of professionalism.* Auditors perform their work ethically, with honesty and responsibility; undertake the inspection activity only if they are competent to do so; perform their work in an impartial manner; and remain sensitive to any influences that may affect their judgement while carrying out an inspection.
- **Fair presentation:** *the obligation to report truthfully and accurately.* Inspection findings, conclusions, and inspection reports reflect truthfully and accurately the inspection activities. Significant obstacles encountered during the inspection, and unresolved diverging opinions between the inspection team and the ship representative are reported. Communication is truthful, accurate, objective, timely, clear, and complete.
- **Due professional care:** *the application of diligence and judgement in inspections.* Inspectors exercise care in accordance with the importance of the task they perform and the confidence placed in them. Inspectors have the ability to make reasoned judgements in all inspection situations.
- **Independence:** *the basis for the impartiality of the inspection and the objectivity of the inspection conclusions.* Inspectors are independent of the activity being inspected and are free from bias and conflict of interest. Inspectors maintain an objective state of mind throughout the inspection process to ensure that the inspection findings and conclusions are based only on the evidence found during inspection.
- **Evidence-based approach:** *the rational method for reaching reliable and reproducible inspection conclusions in a systematic inspection process.* Inspection evidence is verifiable. It is based on samples of the information available, since an inspection is conducted during a finite period of time and with finite resources. Appropriate use of sampling is closely related to the confidence that can be placed in the inspection conclusions.
- **Risk-based approach:** *an audit approach that considers risks and opportunities.* The risk-based approach substantively influences the planning, conducting, and reporting of audits to ensure that inspections focus on matters that are significant for public health and for achieving the inspection objectives.

Knowledge and skills

Inspectors participating at the inspections must be able to:

- apply inspection principles, procedures, and techniques on ships;
- have excellent written and oral communication skills in English;
- plan and organise the work effectively;
- conduct the inspection within a set time schedule;

- prioritise and focus on matters of significance;
- collect information through effective observation, interviews, and review of relevant records and documents;
- communicate effectively;
- prepare inspection reports;
- maintain the confidentiality and security of information;
- work well in an international and intercultural environment; and
- be familiar with relevant EU policies and activities related to the hygiene inspections.

Knowledge of additional official languages of the European Union would be advantageous.

Personal attributes

Inspectors conducting an inspection according to the manual are expected to be:

- observant (e.g., to pay attention to details and actively observing physical surroundings and activities);
- ethical (e.g., honest, fair, truthful);
- perceptive (e.g., able to understand situations);
- self-reliant (e.g., able to act and function independently while interacting effectively with others);
- diplomatic (e.g., discreet in dealing with people);
- open-minded (e.g., willing to consider alternative ideas);
- tenacious (e.g., focused on achieving objectives);
- decisive (e.g., able to reach timely conclusions based on logical reasoning);
- versatile (e.g., able to adjust readily to different situations);
- able to act with fortitude (e.g., able to act responsibly and ethically, even though these actions may not always be popular and may sometimes result in disagreement or confrontation);
- open to improvement (e.g., willing to learn from situations);
- culturally sensitive (e.g., observant of and respectful to the culture of the crew); and
- collaborative (e.g., able to interact effectively with others).

Conflict of interest

Inspectors participating should declare any personal or other interest in any service subject to inspection, which could involve a conflict of interest or could compromise, or appear to compromise, their professional judgement, objectivity, or independence.

Identification

Inspectors should carry identification, which clearly proves their identity during inspection.

Acceptance of gifts, hospitality or services

Inspectors should not accept personal gifts, hospitality, or services.

Judgements

Inspectors should:

- ensure that their judgements accurately and reliably reflect the hygiene conditions observed and the risks and/or hazards identified;
- demonstrate a clear link between the judgements reached and the evidence on which they are based; and
- be as open as possible about the judgements made and the basis for judgements, restricting information only when the interests of others clearly demand it.

Confidentiality

Inspectors should respect the confidentiality of information, with due regard to reporting obligations.

Maintaining professional standards

Inspectors should inform the director of the competent authority and the EU SHIPSAN Scientific Association when the conduct of a colleague may be unsafe, illegal, unethical, or in conflict with the provisions of this code of conduct.

Employing body

Inspectors should act in accordance with all codes of conduct, policies, and procedures of the competent authority.

Scheduling inspections

A common inspection schedule based on target factors is prepared by the EUMSs and the EU SHIPSAN Scientific Association annually, in order to avoid duplication of inspections. EUMS should cooperate for the preparation of the annual inspection schedule, which will remain confidential. Shipping companies will receive a 24-hour notice prior to the inspection.

Revision and amendments

The manual will be revised at regular intervals as the evidence base increases and/or to take into account any new relevant guidance and legislation. The review should be conducted every five years, and amended as proposed by participating competent authorities (e.g., port health), the cruise (seagoing and river) and ferry industry, and approved by the EU SHIPSAN partnership.

Publication of inspection results

Publication of inspection results will be in accordance with Regulations (EC) No 178/2002, 852/2004, and 2017/625. Inspection results will be recorded in a central database. For the protection of data confidentiality, please refer to paragraph iv (page 3).

Annex 3: Hygiene inspection guidelines

Before the inspection

Inspectors should carry out their work within the standards given in the *European manual for hygiene standards and communicable disease surveillance on passenger ships*.

Inspectors should:

- carry out their duties in a courteous and unbiased manner, with the minimum level of disruption necessary to the service and with respect to the dignity, privacy, and rights of service users;
- take into account the age, understanding, circumstances, and abilities of service users; and
- be as available as possible to any responsible crew, who might wish to speak with them.

Inspectors should agree on who is leading the inspection, what will be inspected (locations and systems), and by whom. The ship registry will be taken into consideration when planning the inspection. A short written note including the results of the previous inspection and ship characteristics should be prepared before the inspection. Non-compliances cited during the previous inspection and the corrective actions taken should be checked by the inspectors. The boarding time and time leaving the ship, should be considered to allow good time management. Adequate time needs to be allocated for the inspection, debriefing statement writing, and presentation and discussion of inspection results.

In the password protected area of the EU Common Ship Sanitation Database (https://sis.shipsan.eu), inspectors can have access to the inspection reports (and their respective Corrective Action Statements) recorded in the system. They can record the inspection results and download: the inspection outlines; the debriefing statement; and the Passenger Ship Registry Form (R1). At the end of this Annex, the Passenger Ship Registry Form (R1) is presented. This form should be completed during the inspection, and the results should be entered into the EU Common Ship Sanitation Database.

Inspectors should have the following documents and technical equipment with them:

1) Identification card
2) The European manual for hygiene standards and communicable disease surveillance on passenger ships
3) A printed version of the previous inspection report
4) Debriefing statement
5) Hard copy or electronic version of a blank inspection report
6) A print out of the existing Passenger Ship Registry (R1) form, or if not available, an empty R1 form
7) Seals and stamps
8) Pens, clipboard, and notepad
9) Flashlight (ideally explosion-proof)
10) Calibrated food probe thermometer
11) Maximum registering water-resistant thermometer for dishwashers
12) Laptop and memory stick (if available)
13) In case of water sampling, a kit containing:
– on-site water testing kit: pH-meter and chlorine testing kit,
– gas burner or ethanol spray (70 %),
– disposable paper towels,
– sterile glass bottles containing sodium thiosulphate, and
– swabs.

14) A digital camera (permission should be asked by designated ship officers for taking pictures) or a smartphone with camera
15) Freshly laundered or disposable over-clothing and disposable gloves
16) Ear protection
17) Hair covering
18) Safety shoes with non-slip and anti-spark soles
19) Light intensity sensor device
20) Disinfection tissues (suitable for food-contact surfaces) to disinfect the food probe thermometer
21) Printer to go with the laptop (if available)
22) Mobile telephone

During the inspection

Once on board, inspectors should inform the designated crew that a hygiene inspection will be conducted. An inspection should start with an introductory discussion with the designated crew on matters relating to hygiene systems and procedures applied on board.

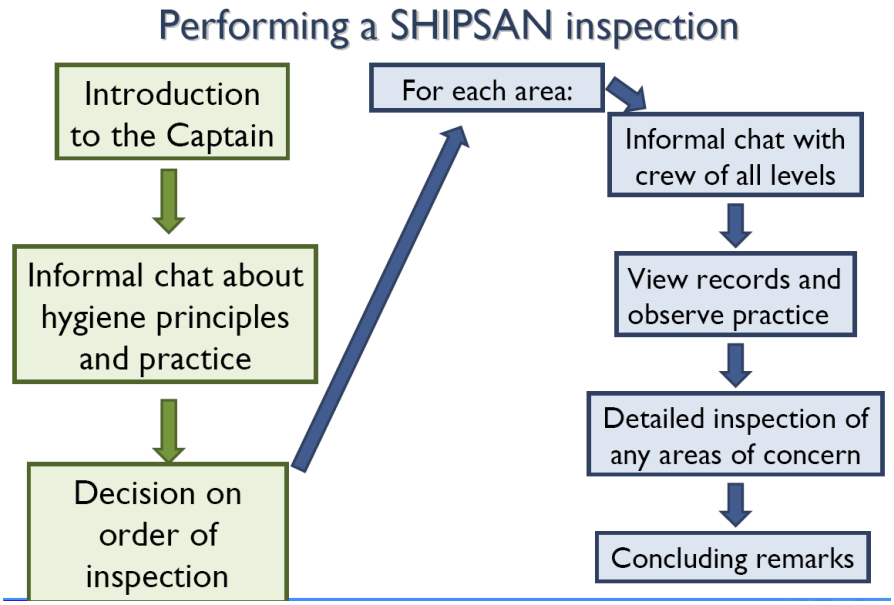
The lead inspector will introduce the team to the Captain and the officers and will compose the final inspection report after incorporating all other inspectors' findings. He/she will be the contact point for the inspection.

Inspectors should be flexible to avoid or minimise interruptions and operational conflicts during the inspection. Inspectors should ask when activities such as food preparation, receiving and service, water loading, and waste offloading are going to take place, and ensure that the inspection is scheduled so as to inspect these activities.

Inspectors must wear appropriate clothing and PPE while carrying out an inspection on board, such as ear noise protection, jacket and hair covering, when necessary.

The inspector(s) must inspect all areas (medical facilities, cabins, galleys, pantries and food stores, swimming pools, spas, recreation facilities, potable water supplies, waste, toilets and facilities near the engine room, sewage treatment plant, ballast water tanks, etc.), systems and services included in the manual, and verify the correct implementation of these systems and services and the hygiene conditions of areas inspected. If time is not enough to inspect all areas, then a risk-based approach will be followed. There may be a need to carry out a more detailed visual and physical inspection of the ship. The inspector(s) should typically look for risks arising from the activities on board the ship. Inspectors should explain the deficiencies identified and advise the crew on better practice as far as possible. Potential repeated deficiencies will be checked.

Inspection outlines should be used during the inspection. Inspectors should take contemporaneous notes on each deficiency identified, as well as good practices observed.



Certificates and other logs and documents that are already carried on board and required by IHR and IMO, including the records of the prerequisite programmes according to HACCP may be reviewed, based on the findings of the inspection.

Manual measurements to be conducted include free chlorine and pH in potable water and RWFs, temperatures of food, potable water, pool water, in food areas, water temperatures of dishwashing machines, etc. All equipment used for measurements should be accurate and calibrated.

Environmental samples, including food or water, should be collected if necessary. This will be decided by the inspectors.

If there is evidence of a serious threat to public health or a major deficiency concerning the safety of crew and passengers, this will be discussed with the captain of the ship immediately. In this situation, general rules of notification as given by the International Health Regulations do apply.

Inspectors should plan the inspection in such a way so as to have enough time to write the debriefing statement and to hold a closing meeting with the captain and other designated crew before disembarkation.

Once the inspection is completed, the captain or other designated crew should be informed of the inspection findings, which will include deficiencies and good practices observed. Discussion could include consideration of previous inspection reports, consideration of relevant current documentation, and identification of all food- and water-related issues identified on the ship. A debriefing statement will be prepared by the competent authority before leaving the ship and will be given to the captain while the inspectors are still on board. All deficiencies identified during the inspection should be reported. However, they should be prioritised according to their public health risk. A debriefing statement is shown below:

Debriefing Statement of the routine inspection on board of .....

During the closing meeting of the routine inspection on board of ..... on the ..... at the port of ....., ..., the crew members and the Captain of the ship have been verbally informed by the inspectors about the detailed findings of the inspection. The total number of the inspection findings is ....., and were divided in the following areas:

Area	Number of inspection findings	Brief description of inspection findings (e.g., ship areas, summary of each finding)
Medical facilities and capabilities		
Communicable disease surveillance		
Food safety		
Potable water safety		
Recreational water safety		
Pest management		
Housekeeping and other ship facilities		
Hazardous chemical agents		
Waste management		
Ballast water management		

The final inspection report will be sent to the ship maximum two weeks after the inspection.

For the Port Health Authority	**For the Ship**
Name:	Name:
Signature:	Signature:

After the inspection

After the inspection is completed, the inspection results should be entered into the EU Common Ship Sanitation Database. The following data are recorded in the database regarding inspection results:

- Ship name
- Port of inspection
- Number of passengers and crew on board at the time of inspection
- Areas inspected
- Inspectors participating
- Deficiencies found
- Recommendation / Corrective action
- Timeframe to complete the corrective action
- Grading options

Inspectors and other competent authority personnel, such as staff of the Ministries of Health, have access to the inspection results recorded in EU Common Ship Sanitation Database. The inspection report is shown below:

Final inspection report*

Ship name	Inspection date	Port of call	Time inspection started	Results presented to
Company	No. pax	No. crew	Time inspection completed	Inspectors
				Inspector in training

Areas inspected (please tick the checkboxes under the column "Inspected" for the areas inspected. If the area does not exist, please tick the checkboxes under the column "N/A" (Not Applicable). In the case the area exists but was not inspected, please leave both checkboxes blank.)

N/A	Inspected	
☐	☐	Medical facilities
☐	☐	Galley
☐	☐	Pantry
☐	☐	Service areas
☐	☐	Bars
☐	☐	Food stores
☐	☐	Filling line, chlorinator, hoses
☐	☐	Distribution chlorinator
☐	☐	Potable water tanks
☐	☐	Heaters
☐	☐	Potable water distribution system
☐	☐	Swimming pools
☐	☐	Hot tubs

N/A	Inspected	
☐	☐	Accommodation/public spaces
☐	☐	Toilets and hand washing facilities
☐	☐	Bulk chemical storage room
☐	☐	Garbage room
☐	☐	Medical waste storage
☐	☐	Garage
☐	☐	Nursery and play areas
☐	☐	Hairdressers
☐	☐	Beauty salons
☐	☐	Pet/animal housing areas
☐	☐	Laundry
☐	☐	Ventilation
☐	☐	Chemical mixing room

N/A	Inspected	
☐	☐	Gym
☐	☐	Engine room
☐	☐	Sewage treatment/discharge
☐	☐	Ballast water
☐	☐	Other (please specify):.....

Introductory paragraph: *(describe briefly the satisfactory findings of the inspection and give an overall characterisation of the inspection result)*

.....

.....

.....

A. Non-compliance with requirements of the EU legislation

(The following items should describe any non-compliance with legal requirements [LEG] of the "European Manual for Hygiene Standards and Communicable Disease Surveillance on Passenger Ships". If the inspection results do not include any non-compliance with legal requirements, this should be noted "NO deficiency with legal requirements of the European Manual cited during the inspection")

Item:
Location:

* *This report describes the findings of the inspection which was based on the European Manual for Hygiene Standards and Communicable Diseases Surveillance on Passenger Ships (2025).*

Non-compliance with requirement of European Manual:
Recommendation/Corrective action:
Timeframe to complete the corrective action:

B. Non-followed recommended standards of the European Manual

(The following items should describe any non-followed recommended standards [ST] of the European Manual)

Item:
Location:
Non-followed recommended standard of the European Manual:
Recommendation/Corrective action:
Timeframe to complete the corrective action:

C. Notations

(The following items should describe any minor not significant observations or slight non-compliances with requirements of the EU legislation or non-followed recommended standards of the European Manual)

Item:
Location:
Non-compliance with requirement/non-followed recommended standard of the European Manual:
Recommendation/Corrective action:
Timeframe to complete the corrective action:

Signature:	**Stamp:**

Certificates, logs, records, or other documentation that can be reviewed during inspection depending on the inspection findings

- SSCEC/SSCC under the IHR 2005
- Other certificates
- Medical log
- Food suppliers and contact details (purchase/orders, delivery/receipt)
- HACCP plan
- Training certificates
- Internal/external audit reports
- Menus of passengers and crew
- Recipe specifications
- Food temperature records (e.g., delivery, storage, cooking, blast chilling, service)
- Free chlorine records for potable water
- Free chlorine records for swimming pool water
- Pest management records
- Microbiological water sample result records
- Cleaning schedules/plans (cleaning and sanitation plans for all passengers and crew areas, including worthy spaces)
- Disinfection records for potable water system
- Disinfection records for pools
- Equipment maintenance records
- Infection control plan
- Potable water cross-connection control plan
- Calibration records
- Previous inspection reports

Passenger Ship Registry Form

ID *(auto-generated)*:			
IMO:		**Registration:**	
Name*:			
Previous names of the ship:			
Port of registry*:			
Ship Type*:	*Passenger (for SHIPSAN inspections)*	**Gross tonnage:**	
Category:	*(Ship / Inland navigation vessel)*		
Home port*:			
Keel date*:		**Time spent in European waters per year (months):**	
Telephone:		**Telefax:**	
Telex:		**Email:**	
Receive emails:	*(Yes / No)*		
Notification emails:		**Website:**	
Receive SMS:	*(Yes / No)*		
Notification mobile for SMS receiving:			
Build year:			
INMSARSAT:		**MMSI:**	
Flag:			
Owner:		**Operating line:**	
Remarks:			

More details (Passenger ships only)

No. of Passengers:		**No. of Crew:**	
No. of Decks:		**No. of Galleys:**	
No. of Bars:		**No. of Pools:**	
Decks:		**No. of Whirlpools:**	
No. of Passenger cabins:		**No. of Crew cabins:**	
No. of Restaurants/Food outlets/including crew messes:		**No. of Food storage rooms - Cold rooms:**	
No. of Food storage rooms - Refrigeration compartments:		**No. of Food storage rooms - Cargo holds:**	
No. of Food storage rooms - Ballast tanks:		**Total number of Recreational water facilities:**	
Sea water swimming pool:	*(Yes / No)*	**No. Sea water swimming pool:**	
Fresh water swimming pool:	*(Yes / No)*	**No. Fresh water swimming pool:**	

Spa pool:	*(Yes / No)*	**No. Spa pool:**	
Water park:	*(Yes / No)*	**No. Water park:**	
No. Potable water tanks:			
Water production on board:	*(Yes / No)*	**Volume:**	
Water production type:	*(Reverse Osmosis / Evaporate / Other)*	**If other please specify:**	
Medical facilities:	*(Yes / No)*	**No. Medical facilities:**	
Dental services:	*(Yes / No)*	**No. Dental services:**	
Doctor on board:	*(Yes / No)*	**No. Doctor on board:**	
Nurse on board:	*(Yes / No)*	**No. Nurse on board:**	
Haemodialysis:	*(Yes / No)*	**No. Haemodialysis:**	
Hospital beds:	*(Yes / No)*	**No. Hospital beds:**	
Intensive Care Unit:	*(Yes / No)*	**No. Intensive Care Unit:**	
Nursery (child centre):	*(Yes / No)*	**No. of Nursery (child centre):**	
Laundries:	*(Yes / No)*	**No. Laundries:**	
Gyms:	*(Yes / No)*	**No. Gyms:**	
Hairdressers:	*(Yes / No)*	**No. Hairdressers:**	
Beauty salons:	*(Yes / No)*	**No. Beauty salons:**	
Decorative fountains:	*(Yes / No)*	**No. Decorative fountains:**	
Mortuary:	*(Yes / No)*	**No. Mortuary:**	
Kennels:	*(Yes / No)*	**No. Kennels:**	

Annex 4: Record keeping and training for crew included in the manual

Chapter	Subject	Details	Duration on board/ashore
2. Communicable disease surveillance	GI questionnaire		12 months
	Medical log		
	Ship communication form		
	Communicable Diseases Surveillance Routine Recording Form		
	Logs for anti-diarrhoeal medication		
	Training records	Date, name, subject	
	Vaccination records		
	GI or ILI recording form		
3. Food safety	HACCP records		12 months
	Training records		
	Medical permission for food handlers		
	Suppliers list		
	Deliveries records	Delivery details (date and time of delivery, officer in charge) and item details (expiry date and lot numbers or other details)	
	Calibration records		
	Temperature records	Equipment or process/type of food, location, date, time, temperature, signature	
	Records of cleaning	Area or item cleaned, type of materials and chemicals used, method, function and station of the crew member, signature of crew member, signature of supervisor	
	Records of suppliers of materials and articles		
4. Potable water safety	Parameters monitored on the ship	Free halogen, pH, temperatures, *E. coli*, etc.	12 months
	Training programmes	Date, subject of training, name of trainee, name of trainer	
	Potable water hoses disinfection	Date, disinfectant used, method used	
	Water quality reports from suppliers		
	Inspection cleaning and disinfection of potable water tanks	Date, responsible person, inspection findings, type of work	
	Piping system inspection log	Date, responsible person, inspection findings	
	Backflow prevention devices inspection and testing log	Exact position of the device, date, results of test or inspection	

	Monitoring of stagnant water		
	Calibration of equipment	Date and time, value of the analyser, value measured with test kit, actions taken	
5. Recreational water safety	Water quality parameters	Date, time, test value of parameters	12 months (24 months for records related to hot tubs/spas)
	Logs and charts		
	Backwash	Date, pressure indication before and after backwash time	
	Filter inspection	Date, time, status	
	Filter media change	Date, time	
	Shock treatment	Date, time	
	Draining of pools	Date, time	
	Maintenance work	Date, time, process, type of equipment	
	Repair work	Date, time, description of problem and repair job	
	Calibration of analysers	Date, time, results of manual and electronic measurements	
	Thorough cleaning	Date	
	Accidental faecal or vomit release	Date, time of closure, remedial actions taken, time of opening	
	Water quality parameters out of limits	Date, time, parameter values, remedial actions taken	
	Operation of flow-through mode	Date, time, operational mode	
	Training records	Date, time, name, position, trainer, training hours	
	Injuries/deaths	Date, time, description of event and its reasons	
6. Pest management	Active and passive surveillance plan	Locations inspected, dates, time and names of inspectors, the number, the species and the life stage of pests	12 months
	Records for active and passive surveillance inspection results, and corrective actions	Records for active surveillance, the inspection results, the corrective actions taken, the effectiveness of the corrective actions	
	Training records	Date, time, name, position, trainer, training hours	
	List of the pesticides carried on board		
7. Housekeeping and other ship facilities	Cleaning and disinfection logs	Date, method, signature	12 months
8. Hazardous chemical agents	Authorisation for each of the Biocidal Products used on board		12 months
	Training records	Names, date of training, course title	
9. Waste management	Records of hazardous waste disposal to approved contractors		
	Sewage discharge record book/log	Time, location, rate	

	Garbage Record Book	When garbage is discharged: (a) into the sea, (b) port reception facilities or other ships, (c) incinerated, (d) accidental or other exceptional discharge	Two years after the last entry is made on the record
	Oil record book		
	Training records	Date, name, subject of training taken	
	Waste Delivery Receipt (MEPC.1/Circ.645)	**(VOLUNTARY)** The designated representative of the reception facility provider should provide the waste delivery receipt form to the master of a ship that has just delivered waste	This form should be retained on board the ship along with the appropriate Oil Record Book, Cargo Record Book or Garbage RB for two years
	Waste Notification Receipt	Master of the ship should send in advance to the port reception facility specifying date, type, and quantity	
10. Ballast water management	Ballast Water Record Book	Date and time, volume of water transferred, whether it was according to the plan, signature	Two years after the last entry
	Ballast Water Reporting Form(s)	Date of the event, geographical location, ship's tank and cargo holds, temperature, salinity, amount of water loaded or discharged	
	Monitoring of microbiological parameters		

Training of crew

Food safety	HACCP Personal hygiene and hygiene practices Crew health Food pathogenic microorganisms Cross-contamination Cleaning, disinfection, and maintenance of food preparation areas, utensils, and equipment Time and temperature control of foods during purchasing, storage, handling, preparation, and service
Potable water safety	WSP: – Monitoring procedures – Control measures – Operational limits – Corrective actions
Recreational water safety	Management Plans for all RWFs: – Treatment Plan – Monitoring Plan – Cleaning Plan – Maintenance Plan – Emergency Plan
Pest management	IPM Plan Application methods of pesticides Knowledge of used pesticides
Housekeeping and other ship facilities	Body fluid spillage policy Uniform policy

	Cleaning and disinfection of all accommodation and public spaces Nursery and play areas (pathogenic microorganisms, cross-contamination, personal health and hygiene, hand washing, and communicable disease symptoms) Hairdresser, beauty salons, and gym (pathogenic microorganisms, cross-contamination, personal health and hygiene, hand washing, and communicable disease symptoms) Pet and animal housing areas (care of pets, infectious symptoms, and cleaning and disinfection of kennels)
Hazardous chemical agents	Health hazards Safe use of hazardous chemical agents Handling of chemical agents
Waste management/Ballast water management	Health risks involved in waste accumulation and spoilage Use of PPE Handling of medical wastes Ballast water management plan

Annex 5: Corrective action statement

Corrective Action Statement*

Ship name	IMO number	Port and date conducted the inspection

The following actions have been taken to correct each of the non-compliance noted during the inspection

A. Non-compliance with legal requirements of the EU legislation

(The following items should describe any non-compliance with legal requirements [LEG] of the "European Manual for Hygiene Standards and Communicable Disease Surveillance on Passenger Ships". If the inspection results do not include any non-compliance with legal requirements, this should be noted "NO deficiency with legal requirements of the European Manual cited during the inspection")

Number of Inspection Report item:
Non-compliance with requirement of European Manual:
Corrective action taken:

B. Non-followed recommended standards of the European Manual

(The following items should describe any non-followed recommended standards [ST] of the European Manual)

Number of Inspection Report item:
Non-followed recommended standard of the European Manual:
Corrective action taken:

C. Notations

(The following items should describe any minor not significant observations or slight non-compliances with requirements of the EU legislation or non-followed recommended standards of the European Manual)

Number of Inspection Report item:
Observation:
Corrective action taken:

Signature:

* To be sent to inspection@shipsan.eu or uploaded to the EU Common Ship Sanitation Database.

Annex 6: Recommendations for medical facilities, medication, and medical staff competency for passenger ships making international voyages

Medical staff competency

A. Medical staff (physicians and registered nurses) should have competency and the following qualifications:
   - A current and valid license to practice in a jurisdiction that is recognised by either the flag state or the operating company (this license may be issued by the professional's home country, country of training, or another recognised jurisdiction, provided it is accepted for medical service on board).
   - Fluency in the official language of the passenger ship line, as well as in the working language of the ship or the primary language spoken by most passengers. In addition, they should have at least basic fluency in English to ensure effective communication when telemedical advice is needed from international or non-national providers.
   - Familiarity with hazardous chemical agents used on board and the management of any medical condition linked to their use.

B. Medical staff (physicians and registered nurses) should have work experience or certification as follows:
   - Three years of post-graduate/post-registration clinical practice in general and emergency medicine; or
   - Board certification in emergency medicine or general medicine/family practice, or internal medicine, and competent skill level in advanced life support and cardiac care, and competent skill level in minor surgery (e.g., suturing).

Medication

Medical facilities should have emergency medications and supplies for management of common medical emergencies, such as:

- gastrointestinal system medications;
- cardiovascular system medications;
- respiratory system medications;
- infectious disease medications;
- eye medications;
- ear, nose, and oropharynx (throat) medications; and
- skin disease medications.

Vaccines, including hepatitis B vaccine, hepatitis B immunoglobulin, seasonal influenza vaccine, and tetanus toxoid vaccine, should be available on board.

Medical Plan

Large passenger ship medical facilities should include a contingency Medical Plan defining:

- one or more locations on the ship that could be used as a medical facility and should:
  - be in a different fire zone,
  - be easily accessible, and
  - have lighting and a power supply on the emergency system;
- crew members assigned to assist the medical team, as appropriate to the level of the contingency (1).

Reference list

1. American College of Emergency Physicians. (2023). Cruise ship health care guidelines. [Available from: https://www.acep.org/siteassets/new-pdfs/preps/acep-cruise-ship-health-care-guideliness-final-october-2023.pdf].

Annex 7: Surveillance of communicable diseases on board ships

Collection of surveillance data by competent authorities from passenger ships sailing in European waters can improve the evidence base for hygiene standards enforced to control and prevent communicable diseases and outbreaks on passenger ships. This can aid shipping companies in strategic planning for the prevention of communicable diseases on their ships. It can also be of benefit to port health authorities when assessing the risks from communicable diseases and public health events for each ship and in evaluating preventive actions. Finally, the surveillance data can help to assess the application of EU and international systems on early detection and response (EWRS, IHR) and to assist in contact tracing.

Surveillance based on the collection of data at the ship infirmary, using standard clinical syndrome definitions, is the most appropriate method to identify outbreaks on board ships, since it is difficult to obtain reliable and timely laboratory results to confirm a diagnosis.

Annex 8: Syndromic surveillance log for passengers (recommended log)

The log below may be used for conducting syndromic surveillance and for reporting purposes. This may be useful for passenger shipping companies or ships which have no designated recording and reporting formats. If so, all fields should be completed. If the information is 'Not Known', then 'NK' can be used.

Ship name:		**Voyage number:**		**Dates:**	From:	__/__/__	To:	__/__/__	**Page:**		of	
Total number of pax on board:		**Syndrome category**	**Number of ill pax**			**Total number of ill pax/ total number of pax on board %**	**Syndrome**			**Number of ill pax**		**Number of ill pax/ total number of pax on board %**
		Gastrointestinal Illness:					Acute gastroenteritis without blood in stools:					
							Acute gastroenteritis with blood in stools:					
		Acute Respiratory Illness (ARI):										
		Severe Acute Respiratory Infection (SARI):										
		Fever and rash:										
		Persistent fever not classified in other syndromes:										
		Haemorrhagic fever:										
		Fever and persistent cough or cough with bloody sputum:										
		Fever and decreased consciousness or confusion of recent onset:										
		Fever and persistent vomiting (other than sea sickness):										
		Fever and headache with a stiff neck:										
		Pneumonia:										
		Other:										

Reporting date and time	Name (Last, First)	Unique ID (UID) *	Sex	Age	Nationality	Sign and Symptoms‡																		Onset of symptoms date and time	Diagnosis	Laboratory confirmed Yes/No (if yes, laboratory method)	Treatment	Cabin number	Number of visits †	Doctor's name for each visit/reporting	Notes	Measures taken for the patient§	Measures taken in the environment of patient	Status/outcome of patient≈	Case linked with another case (Yes/No) (Yes if: stayed in the same cabin, working in the same area, close contact with another case)#
						Abdominal cramps	Bruising or bleeding or petechiae	Coryza	Cough	Cough with bloody sputum	Decreased level of consciousness	Diarrhoea without blood in stools	Diarrhoea with blood in stools	Fever	Feverishness	Headache	Headache with neck stiffness	Myalgia	Persistent cough	Persistent vomiting	Skin rash	Sore throat	Vomiting	Other											

* This number rather than the name may be reported to competent authority to protect patient confidentiality.

† During the first entry of a specific person the value will be "1". Number will increase by one after each revisit.

≈ Currently ill / Recovered / Discharged / Hospitalisation ashore / Hospitalised on board / Death

[Yes/No] + If yes: [Stayed in the same cabin / Part of the same travelling group / Close contact of another case]

‡ List of signs and symptoms used for the definition of syndromes

No	Signs and symptoms	Definition
1	Abdominal cramps	–
2	Bruising or bleeding or petechiae	Noticeable and unusual bruising or petechiae or bleeding from gums, ears, nose, or areas on the skin with no obvious explanation (such as injury), vomiting blood, or bloody stool or urine [EU SHIPSAN ACT joint action, 2016, CDC, 2017].
3	Coryza	Runny nose or congestion caused by inflammation of the mucous membranes of the nose [CDC, 2017].
4	Cough	–
5	Cough with bloody sputum	The person is coughing up blood [CDC, 2017].
6	Decreased level of consciousness	Condition of an ill person when he or she is not fully aware of the surroundings and may be confused about who he or she is, where he or she is going, or the time of day/week, does not respond normally to questions or painful sensations, or may appear to be sleepy, groggy, unresponsive or difficult to awaken [EU SHIPSAN ACT joint action, 2016, CDC, 2017].
7	Diarrhoea	Three or more loose or watery stools in 24 hours [EU SHIPSAN ACT joint action, 2016, CDC, 2017].
8	Fever	A measured temperature of 38 °C (100.4 °F) or above.
9	Feverishness	The sensation of a patient of having a fever, even if a high temperature is not confirmed by measurement.
10	Headache	The person has head pain of unusual severity [CDC, 2017].
11	Headache with neck stiffness	The person has difficulty moving the neck or severe pain during neck movement [CDC, 2017].
12	Myalgia	Muscle aches.
13	Persistent cough	A cough that is either frequent or severe enough to catch the attention of others on board the ship or a severe cough that lasts three weeks or more [EU SHIPSAN ACT joint action, 2016, CDC, 2017].
14	Persistent vomiting	The person has vomited two or more times (other than seasickness) and either expresses concern to the crew or it comes to the attention of others on board (crew or passengers) [CDC, 2017].
15	Sore throat	–
16	Skin rash	• Abnormal areas on the skin that may appear as discoloured bumps or flat spots or areas, or blisters or bumps containing fluid or pus that are intact or crusted over. • "Rash" includes insect bites or parasite lesions. • Colour: ranges from light-coloured to red or pink, purple, or black, but can also be the same colour as the person's skin tone. • Texture: can be flat, raised, blister-like, or crusted. In some diseases, such as chickenpox, areas with more than one of these characteristics can be found at the same time. • Select the most appropriate description of the rash's appearance: ○ Maculopapular: A red rash with both flat red areas (macules) and small bumps (papules) that may run together.

		○ Vesicular/Pustular: Small bumps filled with fluid that can be clear of cloudy (vesicles) or filled with a thick, opaque fluid (pustules). ○ Purpuric/Petechial: Red or purple discolourations caused by bleeding under the skin or mucous membranes; they do not blanch or fade with pressure. Petechial lesions appear as small, reddish freckles, while purpuric lesions cover larger areas. ○ Scabbed: Lesions that are crusted over. • Pattern: Can be disconnected (discrete) or run together (confluent). • Location: May include one area of the body, such as the face, or more than one area [EU SHIPSAN ACT joint action, 2016, CDC, 2017].
17	Vomiting	–

§ Measures taken for the patient

No	Measures
1	Pre-embarkation screening
	• review of travel history
	• review of proof of medical examination
	• review of laboratory analyses
	• review of proof of vaccination or other prophylaxis (preventive medication such as antimalarials or antibiotics given before exposure, and other treatments used to reduce the risk of infection or illness before it occurs)
	• questionnaire about exposure/symptoms
	• other
2	Treatment
3	Vaccination or other prophylaxis (preventive medication such as antimalarials or antibiotics given before exposure, and other treatments used to reduce the risk of infection or illness before it occurs)
4	Placing suspect person under public health observation
5	Isolation of affected person (on board or ashore, duration)
6	Quarantine of suspect persons (on board or ashore, duration)
7	Contact tracing
8	Implementing case finding/active surveillance (pax/crew/others)
9	Conducting diagnostic testing (pax/crew/others)
10	Reporting to competent authority
11	Risk communication to pax/crew/others
12	Education/training of pax/crew/others
13	Mask wearing
14	Physical distancing
15	Reducing face-to-face interactions
16	Disembarkation of cases and/or contacts
17	Medical evacuation and hospitalisation
18	Other

Annex 9: Syndromic surveillance log for crew members (recommended log)

The log below may be used for conducting syndromic surveillance and for reporting purposes. This may be useful for passenger shipping companies or ships which have no designated recording and reporting formats. If so, all fields should be completed. If the information is 'Not Known', then 'NK' can be used.

Ship name:		**Voyage number:**		**Dates:**	From:	__/__/__	To:	__/__/__	**Page:**		of	
Total number of crew members on board:		**Syndrome category**	**Number of ill crew members**			**Total number of ill crew/ total number of crew on board %**	**Syndrome**			**Number of ill crew**		**Number of ill crew/ total number of crew on board %**
		Gastrointestinal Illness:					Acute gastroenteritis without blood in stools:					
							Acute gastroenteritis with blood in stools:					
		Acute Respiratory Illness (ARI):										
		Severe Acute Respiratory Infection (SARI):										
		Fever and rash:										
		Persistent fever not classified in other syndromes:										
		Haemorrhagic fever:										
		Fever and persistent cough or cough with bloody sputum:										
		Fever and decreased consciousness or confusion of recent onset:										
		Fever and persistent vomiting (other than sea sickness):										
		Fever and headache with a stiff neck:										
		Pneumonia:										
		Other:										

Reporting date and time	Name (Last, First)	Unique ID (UID)*	Sex	Age	Nationality	Sign and Symptoms≠																		Onset of symptoms	Diagnosis	Laboratory confirmed Yes/No (if yes, laboratory method)	Treatment	Fit for duty (If no, Number of days + date of discharge)	Position	Cabin number	Number of visits†	Doctor's name for each visit/reporting	Notes	Measures taken for the patient (see relevant checklist)§	Measures taken in the environment of patient (see relevant checklist)§	Status/outcome of patient≈	Case linked with another case (Yes/No) (Yes if: stayed in the same cabin, working in the same area, close contact with another case)#
						Abdominal cramps	Bruising or bleeding or petechiae	Coryza	Cough	Cough with bloody sputum	Decreased level of consciousness	Diarrhoea without blood	Diarrhoea with blood	Fever	Feverishness	Headache	Headache with neck stiffness	Myalgia	Persistent cough	Persistent vomiting	Skin rash	Sore throat	Vomiting	Other														

* This number rather than the name may be reported to competent authority to protect patient confidentiality.

† During the first entry of a specific person the value will be "1". Number will increase by one after each revisit.

≈ Currently ill / Recovered / Discharged / Hospitalisation ashore / Hospitalised on board / Death

[Yes/No] + If yes: [Stayed in the same cabin / Part of the same travelling group / Close contact of another case]

ǂ List of signs and symptoms used for the definition of syndromes

No	Signs and symptoms	Definition
1	Abdominal cramps	–
2	Bruising or bleeding or petechiae	Noticeable and unusual bruising or petechiae or bleeding from gums, ears, nose, or areas on the skin with no obvious explanation (such as injury), vomiting blood, or bloody stool or urine [EU SHIPSAN ACT joint action, 2016, CDC, 2017].
3	Coryza	Runny nose or congestion caused by inflammation of the mucous membranes of the nose [CDC, 2017].
4	Cough	–
5	Cough with bloody sputum	The person is coughing up blood [CDC, 2017].
6	Decreased level of consciousness	Condition of an ill person when he or she is not fully aware of the surroundings and may be confused about who he or she is, where he or she is going, or the time of day/week, does not respond normally to questions or painful sensations, or may appear to be sleepy, groggy, unresponsive or difficult to awaken [EU SHIPSAN ACT joint action, 2016, CDC, 2017].
7	Diarrhoea	Three or more loose or watery stools in 24 hours [EU SHIPSAN ACT joint action, 2016, CDC, 2017].
8	Fever	A measured temperature of 38 °C (100.4 °F) or above.
9	Feverishness	The sensation of a patient of having a fever, even if a high temperature is not confirmed by measurement.
10	Headache	The person has head pain of unusual severity [CDC, 2017].
11	Headache with neck stiffness	The person has difficulty moving the neck or severe pain during neck movement [CDC, 2017].
12	Myalgia	Muscle aches.
13	Persistent cough	A cough that is either frequent or severe enough to catch the attention of others on board the ship or a severe cough that lasts three weeks or more [EU SHIPSAN ACT joint action, 2016, CDC, 2017].
14	Persistent vomiting	The person has vomited two or more times (other than seasickness) and either expresses concern to the crew or it comes to the attention of others on board (crew or passengers) [CDC, 2017].
15	Sore throat	–

16	Skin rash	• Abnormal areas on the skin that may appear as discoloured bumps or flat spots or areas, or blisters or bumps containing fluid or pus that are intact or crusted over.
		• "Rash" includes insect bites or parasite lesions.
		• Colour: ranges from light-coloured to red or pink, purple, or black, but can also be the same colour as the person's skin tone.
		• Texture: can be flat, raised, blister-like, or crusted. In some diseases, such as chickenpox, areas with more than one of these characteristics can be found at the same time.
		• Select the most appropriate description of the rash's appearance:
		  ○ Maculopapular: A red rash with both flat red areas (macules) and small bumps (papules) that may run together.
		  ○ Vesicular/Pustular: Small bumps filled with fluid that can be clear of cloudy (vesicles) or filled with a thick, opaque fluid (pustules).

		○ Purpuric/Petechial: Red or purple discolourations caused by bleeding under the skin or mucous membranes; they do not blanch or fade with pressure. Petechial lesions appear as small, reddish freckles, while purpuric lesions cover larger areas. ○ Scabbed: Lesions that are crusted over. • Pattern: Can be disconnected (discrete) or run together (confluent). • Location: May include one area of the body, such as the face, or more than one area [EU SHIPSAN ACT joint action, 2016, CDC, 2017].
17	Vomiting	–

§ Measures taken for the patient and in the environment

Category	Sub-options/Examples	Checkbox (Yes/No)	Comments/Notes	Date applied
1. Pre-embarkation screening	Review travel history	☐		
	Review proof of medical examination	☐		
	Review laboratory analyses	☐		
	Verify vaccination/prophylaxis records	☐		
	Exposure/symptoms questionnaire	☐		
	Other	☐		
2. Treatment	Provide medical care	☐		
3. Vaccination/ prophylaxis	Administer vaccination	☐		
	Administer other prophylaxis	☐		
4. Public health separation measures	Observation of suspect persons	☐		
	Isolation of affected persons (on board/ashore, duration)	☐		
	Quarantine of suspect persons (on board/ashore, duration)	☐		
5. Case detection	Contact tracing	☐		
	Active case finding/surveillance (passengers, crew, others)	☐		
6. Diagnostic testing	Conduct laboratory testing (passengers, crew, others)	☐		
7. Reporting/ notification	Report to competent authority	☐		
	Notification via Ship Declaration of Health (SDH)	☐		
8. Risk communication, education & awareness	Risk communication to passengers/crew/others	☐		
	Education/training sessions	☐		
	Health advice/awareness raising (e.g., hand hygiene)	☐		
	Mask wearing guidance	☐		

9. Physical distancing measures	Maintain physical distancing	☐		
	Reduce face-to-face interactions	☐		
10. Disembarkation/ evacuation	Disembarkation of cases and/or contacts	☐		
	Medical evacuation and hospitalisation	☐		
11. Outbreak management	Activate outbreak management plan	☐		
	Convene outbreak management team	☐		
	Review and analyse medical log data	☐		
	Investigate and control suspected source	☐		

No	Measure	Checkbox (Yes/No)	Comments/Notes	Date applied
1	Disinfection	☐		
2	Decontamination	☐		
3	Disinsection	☐		
4	Deratting	☐		
5	Environmental sampling	☐		
6	Treatment of baggage, cargo, containers, conveyances, goods, postal parcels, or human remains to remove infection if needed	☐		
7	Seizure/destruction of infected or contaminated objects that cannot be treated	☐		
8	Safe handling and transport of human remains	☐		
9	Isolation or quarantine of the ship	☐		
10	Closure of specific onboard areas	☐		
11	Discontinuation of activities	☐		
12	Changes to ventilation mode operation	☐		
13	Ending voyage	☐		
14	Inspection of areas, baggage, ships, facilities, including relevant data and documentation, to determine if a public health risk exists	☐		
15	Supervision of and safe disposal of contaminated matter from ship	☐		

16	Measures for the control of imported live animals and pets carried aboard ships	☐		
17	Assessment of potential affected animals and provision of care if needed	☐		
18	Isolation of animals	☐		
19	Quarantine of animals	☐		
20	Examination or issuance of documents and certificates for animals	☐		
21	Communication	☐		
22	Other, please specify:	☐		

Annex 10: Example of gastrointestinal illness questionnaire

Ship name:		Voyage No.:		Date:
Passenger or Crew:				
Last name:		First name:		
Date of Birth:	Date joined the voyage:	Age (in years):		Sex M/F
Cabin number:		Total number of people in cabin:		
Dining seating:	Dining table number:	Crew position:		
Symptoms started date:		Time (hh:mm):		AM/PM
Do you know other people ill with the same symptoms?				Yes/No
If yes, please list their names:				
Did you stay overnight or longer in a boarding city before you joined the ship?				Yes/No
If yes, where?	City:	State:	Country:	
Was the overnight stay in a hotel/motel/commercial residence?				Yes/No
If yes, what was the name and address of the hotel, motel/commercial residence: Name: Address: Town: Country:				
How did you travel to the city where you boarded the ship for this cruise? Select all that apply.				
[ ] Airplane	Airlines:		Flight No.:	
[ ] Automobile				
[ ] Bus/Motorcoach				
[ ] Train				
[ ] Other	Please specify:			
Are you a member of a tour group?				Yes/No
Prior to boarding the ship, did you participate in a pre-embarkation tour/package?				Yes/No
If yes, which tour(s)/package(s) did you participate in? (list all)				
Prior you got your illness did you go ashore at any of the ports of call?				Yes/No
If yes, please list the ports of call where you went ashore:				
Did you participate in any shore excursions at any port of call?				Yes/No
If yes, which shore excursions did you participate in? (list all)				
Did you eat anything while you were ashore at any port of call?				Yes/No
If yes, please give details of the place and list all foods consumed ashore:				

Did you drink anything (including drinks with ice) while ashore at any port of call?	Yes/No
If yes, please give details of the place and list all beverages consumed ashore:	
What did you think is the cause of your illness?	
Last name:	First name:

Meals and activities on board vessel prior to illness

Please list the specific vessel locations of the meals you consumed and the vessel activities you participated in before you became ill.

Day of illness onset Give date: .../.../...		**Day before illness onset**		**Two days before illness onset**		**Three days before illness onset**	
Breakfast		**Breakfast**		**Breakfast**		**Breakfast**	
Place:		Place:		Place:		Place:	
Time:		Time:		Time:		Time:	
Items eaten/ drunk		Items eaten/ drunk		Items eaten/ drunk		Items eaten/ drunk	
.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....
Lunch		**Lunch**		**Lunch**		**Lunch**	
Place:		Place:		Place:		Place:	
Time:		Time:		Time:		Time:	
Items eaten/ drunk		Items eaten/ drunk		Items eaten/ drunk		Items eaten/ drunk	
.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....
Dinner		**Dinner**		**Dinner**		**Dinner**	
Place:		Place:		Place:		Place:	
Time:		Time:		Time:		Time:	
Items eaten/ drunk		Items eaten/ drunk		Items eaten/ drunk		Items eaten/ drunk	
.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....
Snack		**Snack**		**Snack**		**Snack**	
Place:		Place:		Place:		Place:	
Time:		Time:		Time:		Time:	
Items eaten/ drunk		Items eaten/ drunk		Items eaten/ drunk		Items eaten/ drunk	
.....	.....	.....	.....	.....	.....	.....	.....

.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....
Activities		**Activities**		**Activities**		**Activities**	
AM	**PM**	**AM**	**PM**	**AM**	**PM**	**AM**	**PM**
.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....

Annex 11: Model Ship Declaration of Health (SDH)

MODEL OF SHIP DECLARATION OF HEALTH

To be completed and submitted to the competent authorities by the masters of ships arriving from foreign ports.

Submitted at the port of ..... Date .....

Name of ship or inland navigation vessel ..... Registration/IMO No ..... arriving from ..... sailing to .....

(Nationality) (Flag of vessel) ..... Master's name.....

Gross tonnage (ship) .....

Tonnage (inland navigation vessel) .....

Valid Sanitation Control Exemption/Control Certificate carried on board? Yes ... No ... Issued at ..... date .....

Re-inspection required? Yes ..... No .....

Has ship/vessel visited an affected area identified by the World Health Organization? Yes ..... No .....

Port and date of visit .....

List ports of call from commencement of voyage with dates of departure, or within past thirty days, whichever is shorter:

.....

Upon request of the competent authority at the port of arrival, list crew members, passengers or other persons who have joined ship/vessel since international voyage began or within past thirty days, whichever is shorter, including all ports/countries visited in this period (add additional names to the attached schedule):

(1) Name ..... joined from: (1) ..... (2) ..... (3) .....

(2) Name ..... joined from: (1) ..... (2) ..... (3) .....

(3) Name ..... joined from: (1) ..... (2) ..... (3) .....

Number of crew members on board .....

Number of passengers on board .....

Health questions

(1) Has any person died on board during the voyage otherwise than as a result of accident?
Yes ..... No ..... If yes, state particulars in attached schedule. Total no. of deaths .....

(2) Is there on board or has there been during the international voyage any case of disease which you suspect to be of an infectious nature?

Yes ..... No ..... If yes, state particulars in attached schedule.

(3) Has the total number of ill passengers during the voyage been greater than normal/expected?

Yes ..... No ..... How many ill persons? .....

(4) Is there any ill person on board now?

Yes ..... No ..... If yes, state particulars in attached schedule.

(5) Was a medical practitioner consulted?

Yes ..... No ..... If yes, state particulars of medical treatment or advice provided in attached schedule.

(6) Are you aware of any condition on board which may lead to infection or spread of disease?

Yes ..... No ..... If yes, state particulars in attached schedule.

(7) Has any sanitary measure (e.g., quarantine, isolation, disinfection or decontamination) been applied on board?

Yes ..... No ..... If yes, specify type, place, and date: .....

(8) Have any stowaways been found on board?

Yes …… No …… If yes, where did they join the ship (if known)? ……

(9) Is there a sick animal or pet on board? Yes …… No ……

Note: In the absence of a surgeon, the master should regard the following symptoms as grounds for suspecting the existence of a disease of an infectious nature:

(a) fever, persisting for several days or accompanied by (i) prostration; (ii) decreased consciousness; (iii) glandular swelling; (iv) jaundice; (v) cough or shortness of breath; (vi) unusual bleeding; or (vii) paralysis.

(b) with or without fever: (i) any acute skin rash or eruption; (ii) severe vomiting (other than sea sickness); (iii) severe diarrhoea; or (iv) recurrent convulsions.

I hereby declare that the particulars and answers to the questions given in this Declaration of Health (including the schedule) are true and correct to the best of my knowledge and belief.

Signed……

Master

Countersigned ……

Ship's Surgeon (if carried)

Date ……

ATTACHMENT TO MODEL OF SHIP DECLARATION OF HEALTH

Name	Class or rating	Age	Sex	Nationality	Port, date joined ship/vessel	Nature of illness	Date of onset of symptoms	Reported to a port medical officer?	Disposal of case*	Drugs, medicines or other treatment given to patient	Comments

* State: (1) whether the person recovered, is still ill or died; and (2) whether the person is still on board, was evacuated (including the name of the port or airport), or was buried at sea.

Annex 12: Ship communication form

This form should be completed by the designated member of crew of the ship. It should be used for any events, including outbreaks, clusters, any single case listed in **Annex A**, or any case that meets a syndrome definition as part of routine surveillance and reporting. This form does not replace the Ship Declaration of Health (SDH); rather, it supplements the information needed to support the risk assessment carried out by the competent authority. The completed form may be transmitted to the next port of call either voluntarily or upon request from the competent authority at the port of call, or if required under the national legal framework of the port of call. The completed form may be sent via the SHIPSAN online platform or by other means. To access the EU Common Ship Sanitation Database online platform and complete the Ship Communication Form, please follow the instructions provided in the link: https://sis.shipsan.eu/.

General Information
ID *(autogenerated)*:
Type (*Case/Outbreak***):**

Status (*Initial/Update/Final***):**

Date time:

Ship:

Voyage identification code:

Cruise/travel/voyage length (*days***):**

Embarkation port (*port of call from commencement of voyage***):**

Embarkation date:

End of cruise/voyage port:

End of cruise/voyage date:

Next port of call:

Next port of call arrival date:

Number of passengers aboard, at the time of reporting:

Number of crew members aboard, at the time of reporting:

Ports of call:
Dissemination – Recipient Public Health Authorities:

What do you report?

☐ **A.** Routine surveillance data
☐ **B.** Outbreak report
☐ **C.** Confirmed case(s) of an infectious disease

A/B: Routine surveillance data/Outbreak report

Ship name:		**Voyage number:**		**Dates:**	From:	__/__/__	To:	__/__/__	**Page:**		of	
Total number of crew members on board:		**Syndrome category**		**Number of ill crew members**		**Total number of ill crew/ total number of crew on board %**	**Syndrome**		**Number of ill crew**	**Number of ill crew/ total number of crew on board %**		**Outbreak (Y/N)**
		Gastrointestinal Illness:					Acute gastroenteritis without blood in stools:					
							Acute gastroenteritis with blood in stools:					
		Acute Respiratory Illness (ARI):										
		Severe Acute Respiratory Infection (SARI):										
		Fever and rash:										
		Persistent fever not classified in other syndromes:										
		Haemorrhagic fever:										
		Fever and persistent cough or cough with bloody sputum:										
		Fever and decreased consciousness or confusion of recent onset:										
		Fever and persistent vomiting (other than sea sickness):										
		Fever and headache with a stiff neck:										
		Pneumonia:										
		Other:										

Reporting date and time	Name (Last, First)	Unique ID (UID)*	Sex	Age	Nationality	Sign and Symptoms‡																		Onset of symptoms	Diagnosis	Laboratory confirmed Yes/No (if yes, laboratory method)	Treatment	Fit for duty (If no, Number of days + date of discharge)	Position	Cabin number	Number of visits†	Doctor's name for each visit/reporting	Notes	Measures taken for the patient (see relevant checklist)§	Measures taken in the environment of patient (see relevant checklist)§	Status/outcome of patient≈	Case linked with another case (Yes/No) (Yes if: stayed in the same cabin,
						Abdominal cramps	Bruising or bleeding or petechiae	Coryza	Cough	Cough with bloody sputum	Decreased level of consciousness	Diarrhoea without blood	Diarrhoea with blood	Fever	Feverishness	Headache	Headache with neck stiffness	Myalgia	Persistent cough	Persistent vomiting	Skin rash	Sore throat	Vomiting	Other														

* This number rather than the name may be reported to competent authority to protect patient confidentiality.

† During the first entry of a specific person the value will be "1". Number will increase by one after each revisit.

≈ Currently ill / Recovered / Discharged / Hospitalisation ashore / Hospitalised on board / Death

[Yes/No] + If yes: [Stayed in the same cabin / Part of the same travelling group / Close contact of another case]

Ship name:		**Voyage number:**		**Dates:**	From:	__/__/__	To:	__/__/__	**Page:**		of	
Total number of pax on board:		**Syndrome category**		**Number of ill pax**		**Total number of ill pax/ total number of pax on board %**	**Syndrome**		**Number of ill pax**		**Number of ill pax/ total number of pax on board %**	**Outbreak (Y/N)**
		Gastrointestinal Illness:					Acute gastroenteritis without blood in stools:					
							Acute gastroenteritis with blood in stools:					
		Acute Respiratory Illness (ARI):										
		Severe Acute Respiratory Infection (SARI):										
		Fever and rash:										
		Persistent fever not classified in other syndromes:										
		Haemorrhagic fever:										
		Fever and persistent cough or cough with bloody sputum:										
		Fever and decreased consciousness or confusion of recent onset:										
		Fever and persistent vomiting (other than sea sickness):										
		Fever and headache with a stiff neck:										
		Pneumonia:										
		Other:										

Reporting date and time	Name (Last, First)	Unique ID (UID) *	Sex	Age	Nationality	Sign and Symptoms*																		Onset of symptoms date and time	Diagnosis	Laboratory confirmed Yes/No (if yes, laboratory method)	Treatment	Cabin number	Number of visits †	Doctor's name for each visit/reporting	Notes	Measures taken for the patient§	Measures taken in the environment of patient	Status/outcome of patient≈	Case linked with another case (Yes/No) (Yes if: stayed in the same
						Abdominal cramps	Bruising or bleeding or petechiae	Coryza	Cough	Cough with bloody sputum	Decreased level of consciousness	Diarrhoea without blood in stools	Diarrhoea with blood in stools	Fever	Feverishness	Headache	Headache with neck stiffness	Myalgia	Persistent cough	Persistent vomiting	Skin rash	Sore throat	Vomiting	Other												

* This number rather than the name may be reported to competent authority to protect patient confidentiality.

† During the first entry of a specific person the value will be "1". Number will increase by one after each revisit.

≈ Currently ill / Recovered / Discharged / Hospitalisation ashore / Hospitalised on board / Death

[Yes/No] + If yes: [Stayed in the same cabin / Part of the same travelling group / Close contact of another case]

‡ List of signs and symptoms used for the definition of syndromes

No	Signs and symptoms	Definition
1	Abdominal cramps	–
2	Bruising or bleeding or petechiae	Noticeable and unusual bruising or petechiae or bleeding from gums, ears, nose, or areas on the skin with no obvious explanation (such as injury), vomiting blood, or bloody stool or urine [EU SHIPSAN ACT joint action, 2016, CDC, 2017].
3	Coryza	Runny nose or congestion caused by inflammation of the mucous membranes of the nose [CDC, 2017].
4	Cough	–
5	Cough with bloody sputum	The person is coughing up blood [CDC, 2017].
6	Decreased level of consciousness	Condition of an ill person when he or she is not fully aware of the surroundings and may be confused about who he or she is, where he or she is going, or the time of day/week, does not respond normally to questions or painful sensations, or may appear to be sleepy, groggy, unresponsive or difficult to awaken [EU SHIPSAN ACT joint action, 2016, CDC, 2017].
7	Diarrhoea	Three or more loose or watery stools in 24 hours [EU SHIPSAN ACT joint action, 2016, CDC, 2017].
8	Fever	A measured temperature of 38 °C (100.4 °F) or above.
9	Feverishness	The sensation of a patient of having a fever, even if a high temperature is not confirmed by measurement.
10	Headache	The person has head pain of unusual severity [CDC, 2017].
11	Headache with neck stiffness	The person has difficulty moving the neck or severe pain during neck movement [CDC, 2017].
12	Myalgia	Muscle aches.
13	Persistent cough	A cough that is either frequent or severe enough to catch the attention of others on board the ship or a severe cough that lasts three weeks or more [EU SHIPSAN ACT joint action, 2016, CDC, 2017].
14	Persistent vomiting	The person has vomited two or more times (other than seasickness) and either expresses concern to the crew or it comes to the attention of others on board (crew or passengers) [CDC, 2017].
15	Sore throat	–
16	Skin rash	• Abnormal areas on the skin that may appear as discoloured bumps or flat spots or areas, or blisters or bumps containing fluid or pus that are intact or crusted over. • "Rash" includes insect bites or parasite lesions.

		• Colour: ranges from light-coloured to red or pink, purple, or black, but can also be the same colour as the person's skin tone.
		• Texture: can be flat, raised, blister-like, or crusted. In some diseases, such as chickenpox, areas with more than one of these characteristics can be found at the same time.
		• Select the most appropriate description of the rash's appearance:
		  ○ Maculopapular: A red rash with both flat red areas (macules) and small bumps (papules) that may run together.
		  ○ Vesicular/Pustular: Small bumps filled with fluid that can be clear of cloudy (vesicles) or filled with a thick, opaque fluid (pustules).
		  ○ Purpuric/Petechial: Red or purple discolourations caused by bleeding under the skin or mucous membranes; they do not blanch or fade with pressure. Petechial lesions appear as small, reddish freckles, while purpuric lesions cover larger areas.
		  ○ Scabbed: Lesions that are crusted over.
		• Pattern: Can be disconnected (discrete) or run together (confluent).
		• Location: May include one area of the body, such as the face, or more than one area [EU SHIPSAN ACT joint action, 2016, CDC, 2017].

17	Vomiting	–

B. If outbreak:

Outbreak details:

Date of the beginning of the outbreak:

Possible diagnosis:

Number of hospitalised passengers on board:

Number of hospitalised crew members on board:

Number of passengers admitted to hospital ashore:

– Country of residence:

- Port of disembarking:
- Age:
- Sex [Male/Female/Other]:

Number of crew members admitted to hospital ashore:

- Country of residence:
- Port of disembarking:
- Age:
- Sex [Male/Female/Other]:

Number of deaths since the beginning of the outbreak:

C. Reporting of confirmed case(s) of an infectious disease

What is the diagnosis?

Hospitalised ashore (Y/N):

What is the laboratory confirmation?

Date of onset of symptoms:

Country of residence:

Port of embarkation:

Still on board?

If still on board, port where disembarkation will take place:

If disembarked, place of disembarkation:

Age:

Sex:

Type of traveller (Passenger or Crew member):

B/C: Management of Case/Outbreak

What is the possible source of the case(s) or the outbreak (*Person to Person, Water, Food, Vectors or infestations, Other environmental, Unknown*)**?**

Source details (potential or confirmed)**:**

What control measures have been taken aboard or are planned (e.g., isolation, advice, contact tracing, medication given):

Category	Sub-options/Examples	Checkbox (Yes/No)	Comments/Notes	Date applied
1. Pre-embarkation screening	Review travel history	☐		
	Review proof of medical examination	☐		
	Review laboratory analyses	☐		
	Verify vaccination/prophylaxis records	☐		
	Exposure/symptoms questionnaire	☐		
	Other	☐		

2. Treatment	Provide medical care	☐		
3. Vaccination/ prophylaxis	Administer vaccination	☐		
	Administer other prophylaxis	☐		
4. Public health separation measures	Observation of suspect persons	☐		
	Isolation of affected persons (on board/ashore, duration)	☐		
	Quarantine of suspect persons (on board/ashore, duration)	☐		
5. Case detection	Contact tracing	☐		
	Active case finding/surveillance (passengers, crew, others)	☐		
6. Diagnostic testing	Conduct laboratory testing (passengers, crew, others)	☐		
7. Reporting/ notification	Report to competent authority	☐		
	Notification via Ship Declaration of Health (SDH)	☐		
8. Risk communication, education & awareness	Risk communication to passengers/crew/others	☐		
	Education/training sessions	☐		
	Health advice/awareness raising (e.g., hand hygiene)	☐		
	Mask wearing guidance	☐		
9. Physical distancing measures	Maintain physical distancing	☐		
	Reduce face-to-face interactions	☐		
10. Disembarkation/ evacuation	Disembarkation of cases and/or contacts	☐		
	Medical evacuation and hospitalisation	☐		
11. Outbreak management	Activate outbreak management plan	☐		
	Convene outbreak management team	☐		
	Review and analyse medical log data	☐		
	Investigate and control suspected source	☐		

No	Measure	Checkbox (Yes/No)	Comments/Notes	Date applied
1	Disinfection	☐		
2	Decontamination	☐		
3	Disinsection	☐		
4	Deratting	☐		
5	Environmental sampling	☐		
6	Treatment of baggage, cargo, containers, conveyances, goods, postal parcels, or human remains to remove infection if needed	☐		
7	Seizure/destruction of infected or contaminated objects that cannot be treated	☐		
8	Safe handling and transport of human remains	☐		
9	Isolation or quarantine of the ship	☐		
10	Closure of specific onboard areas	☐		
11	Discontinuation of activities	☐		
12	Changes to ventilation mode operation	☐		
13	Ending voyage	☐		
14	Inspection of areas, baggage, ships, facilities, including relevant data and documentation, to determine if a public health risk exists	☐		
15	Supervision of and safe disposal of contaminated matter from ship	☐		
16	Measures for the control of imported live animals and pets carried aboard ships	☐		
17	Assessment of potential affected animals and provision of care if needed	☐		
18	Isolation of animals	☐		
19	Quarantine of animals	☐		
20	Examination or issuance of documents and certificates for animals	☐		
21	Communication	☐		
22	Other, please specify:	☐		

Samples taken (Y/N):
If yes, type of samples:
- *Human*
- *Water*
- *Waste*
- *Food*

- *Environmental surface*
- *Other*

Sample details:

- Pending on board laboratory results?
- On board laboratory results:
- Pending ashore laboratory results?
- Ashore laboratory results:

Ship's duty officer's contact details, including telephone number:

ANNEX A (list of communicable diseases that should be reported when laboratory confirmed using the Ship Communication Form part C)

- Anthrax
- Avian influenza in humans
- Botulism
- Brucellosis
- Campylobacteriosis
- Chikungunya virus disease
- Chlamydia infections
- Cholera
- COVID-19
- Creutzfeldt-Jakob disease, variant (vCJD)
- Cryptosporidiosis
- Dengue
- Diphtheria
- Echinococcosis
- Giardiasis
- Gonorrhoea
- Hepatitis A
- Hepatitis B
- Hepatitis C
- HIV infection and AIDS
- Infections with haemophilus influenza group B
- Influenza including Influenza A(H1N1)
- Invasive meningococcal disease
- Invasive pneumococcal disease
- Legionnaires' disease
- Leptospirosis
- Listeriosis
- Lyme neuroborreliosis
- Malaria
- Measles
- Meningococcal disease, invasive
- Mpox
- Mumps
- Pertussis
- Plague
- Pneumoccocal invasive diseases

- Poliomyelitis
- Q fever
- Rabies
- Rubella
- Rubella, congenital
- Salmonellosis
- Severe Acute Respiratory Syndrome (SARS)
- Shiga toxin /verocytotoxin -producing Escherichia coli (STEC/VTEC)
- Shigellosis
- Smallpox
- Syphilis
- Syphilis, congenital
- Tetanus
- Tick-borne encephalitis
- Toxoplasmosis, congenital
- Trichinellosis
- Tuberculosis
- Tularaemia
- Typhoid and paratyphoid fevers
- Viral haemorrhagic fevers
- West Nile virus infection
- Yellow fever
- Yersinosis
- Zika virus disease

The case definitions of the above diseases can be found in the following link: https://www.ecdc.europa.eu/en/all-topics/eu-case-definitions

The case definitions are also included in the Commission Implementing Decisions 2018/945 of 22 June 2018 on the communicable diseases and related special health issues to be covered by epidemiological surveillance, as well as relevant case definitions (http://eur-lex.europa.eu/legal-content/en/txt/pdf/?uri=celex:32018d0945).

Reference list

1. Centers for Disease Control and Prevention. (2017). Definitions of Signs, Symptoms, and Conditions of Ill Travelers.
2. EU SHIPSAN ACT joint action. (2016). European Manual for Hygiene Standards and Communicable Disease Surveillance on Passenger Ships.
3. European Centre for Disease Prevention and Control. (2024). Proposed case definitions for RSV infection under EU epidemiological surveillance.
4. European Centre for Disease Prevention and Control. (2024). Factsheet for health professionals on COVID-19.
5. European Commission. (2018). Commission Implementing Decision (EU) 2018/945 of 22 June 2018 on the communicable diseases and related special health issues to be covered by epidemiological surveillance as well as relevant case definitions.
6. World Health Organization. (2014). WHO global epidemiological surveillance standards for influenza.

Annex 13: Implementing risk communication

Risk communication means sharing information and opinions about dangers or risks among all parties involved — such as scientists who assess the risks, decision-makers, businesses, consumers, and others. This exchange happens during the entire process of understanding and managing the risk. It includes discussing about what the risks are, what factors affect them, and how people see or feel about those risks.

Objectives of risk communication

- **Raise awareness:** Ensure that all stakeholders are informed about potential food safety hazards and associated risks.
- **Promote understanding:** Facilitate a clear understanding of risk assessments and the rationale behind risk management decisions.
- **Build trust:** Establish and maintain trust among stakeholders through transparency and openness.
- **Encourage informed decision-making:** Enable stakeholders to make informed choices regarding food safety practices and consumption.

Implementing risk communication on ships

1. **Identify stakeholders:**
    - Internal: Food handlers, managers and supervisors, public health officers on board and ashore, other crew members.
    - External: Passengers, suppliers, port health authorities.
2. **Develop communication channels:**
    - Internal channels: Regular meetings, training sessions, internal bulletins.
    - External channels: Announcements, informational brochures, digital platforms.
3. **Establish clear protocols:**
    - Reporting: Implement procedures for reporting food safety concerns or incidents.
    - Feedback: Create mechanisms for receiving and addressing feedback from passengers and crew.
4. **Training and education:**
    - Crew training: Conduct regular training sessions on food safety risks and communication strategies.

- Passenger information: Provide passengers with information on food safety practices and encourage them to report any concerns.

5. Transparency in operations:

- Information sharing: Share relevant food safety information openly with stakeholders, including any identified risks and measures taken to mitigate them.
- Documentation: Maintain accurate records of risk assessments, decisions, and communication activities.

Examples of risk communication practices

- **Allergen information:** Clearly communicate the presence of potential allergens in menu items to passengers.
- **Health advisories:** Inform passengers and crew (where appropriate) about any outbreaks of foodborne illnesses and the precautions being taken.
- **Feedback mechanisms:** Provide opportunities for passengers to express concerns or positive feedback about food safety, such as through comment cards or digital questionnaires and surveys.

Annex 14: Identification of physical, chemical, microbiological, and allergenic hazards for food

The food business operator should evaluate the hazards to identify which ones are essential to prevent, eliminate, or reduce to acceptable levels for the production of safe food. A hazard analysis must be conducted by collecting and evaluating information on potential hazards in raw materials and other ingredients, the environment, during food processing, or in the food itself, and by evaluating the conditions that may lead to their presence to decide whether or not these hazards are significant. All significant potential biological, chemical (including allergenic), or physical hazards that may reasonably be expected to occur in a product must be identified and listed.

Type of hazard	Description of hazards
Physical hazards	• This category includes foreign bodies and material which may contaminate food. • Examples of physical hazards include glass, plastic, wood, metal, insects, and hair.
Chemical hazards	• This category includes a wide variety of chemical residues. Chemical hazards may occur following use of chemicals in food production and processing, or cleaning, disinfection, and pest control. • These chemical residues can be manmade or naturally occurring substances. • Examples include food additives, pesticides, and cleaning products.
Microbiological hazards	• Biological hazards can be bacterial (*Escherichia coli* O157:H7, *Listeria monocytogenes*, *Staphylococcus aureus*, *Salmonella* spp., *Clostridium botulinum*, *Vibrio parahaemolyticus*, etc.), fungal (*Penicillium* spp., *Aspergillus* spp., *Fusarium* spp., aflatoxins, etc.), viral (norovirus, hepatitis A, other enteric viruses, etc.) or parasites (*Giardia* spp., *Cryptosporidium* spp., *Taenia* spp., *Trichinella* spp., etc.). • These microorganisms may be present in food when it arrives on board, or food may be contaminated once on board the ship and given the right conditions, may multiply to harmful levels.
Allergenic hazards	• Food allergens are proteins that can trigger severe allergic reactions in sensitive individuals. • Common allergenic hazards include peanuts, tree nuts, milk, eggs, fish, shellfish, soy, wheat (gluten), sesame, mustard, celery, lupin, sulphites, and molluscs. • Allergen contamination can occur through shared equipment, utensils, or food preparation surfaces, if cleaning and segregation practices fail to prevent cross-contact.

Annex 15: Suggestions on selecting microbiological criteria for verification and validation testing (referring to Commission Regulation (EC) No 2073/2005 (as amended))

Food category/example	Microorganism or toxin	Testing limit / Compliance criteria	Corrective action if limit exceeded*
Ready-to-eat (RTE) foods able to support the growth of *Listeria monocytogenes* (e.g., cold cuts, soft cheeses, sandwiches, mixed salads)	*Listeria monocytogenes*	Absent in 25 g before the product leaves the manufacturer and ≤ 100 cfu/g throughout shelf life	- Hold and isolate affected batch. - Conduct root cause investigation (e.g., sanitation, cold-chain failure). - Intensify environmental testing for *Listeria* spp. - Re-test product before release.
RTE foods not supporting *Listeria* growth (e.g., hard cheeses, dry cured meats, acidic or low-aw foods)	*Listeria monocytogenes*	≤ 100 cfu/g throughout shelf life	- Notify supplier. - Verify shelf-life validation data. - Correct temperature control or reformulate product.
RTE fruits and vegetables (e.g., fresh-cut fruit, leafy salads)	*Salmonella* spp.	Absent in 25 g	- Hold affected lots. - Trace back to supplier/source water. - Review washing/disinfection procedure. - Retest before distribution.
Dairy, egg, meat, fish products, and sandwiches	Staphylococcal enterotoxins	Absent in 25 g	- Remove implicated batches. - Investigate temperature abuse or handling. - Verify personal hygiene practices. - Retrain staff.
Salads and seafood (risk-based verification)	*Escherichia coli* (pathogenic strains)†	Must be absent; testing via ISO 13136 for *stx1/stx2* ± *eae* and relevant serogroups (*O157, O26, O103, O111, O145*)	- Withdraw affected lots. - Investigate raw material source. - Review water and cross-contamination controls. - Resample and confirm absence before use.

Implementation notes:

- All testing should be performed by ISO/IEC 17025-accredited laboratories using validated ISO methods (e.g., ISO 11290 for *Listeria*, ISO 6579 for *Salmonella*, ISO 13136 for STEC).
- Sampling and transport must follow ISO 6887 and ISO 7218 to avoid cross-contamination or temperature deviation.
- Test frequency may be adjusted based on risk assessment, product history, and supplier performance.
- All non-conforming results must trigger corrective actions per the ship's HACCP plan and supplier recall procedures.

* Corrective actions and results are documented within the HACCP system, and trend analysis is part of the verification process.

† *Escherichia coli* STEC / VTEC internal verification criterion, not specified in Regulation 2073/2005.

Annex 16: Model training plan

Category A: Refers to "low-risk food handlers". Crew working in support of the food operation, or whose activities do not directly involve preparation and handling of high-risk or open unwrapped foods.
Category B: Refers to "high-risk food handlers". Crew directly involved with the preparation and cooking of foods, particularly those of a high-risk nature.
Category C: Refers to supervisors and managers. Officers and supervisors directly involved with preparation and cooking of food or those in a catering management position.

Training stages

This training should be divided into three stages (1, 2 and 3) as summarised below.

All food handlers:

Frequency of training

- before starting work for the first time, should receive written, verbal, or electronic instruction in the essentials of food hygiene (stage 1);

Awareness instructions

- thereafter, should receive appropriate hygiene awareness instruction:
  - before starting work for training stage 1, within four weeks of employment, or eight weeks for part-time crew, for training stage 2, and within three months for training stage 3 (Level 1),
  - training stage 3 (Levels 2 and/or 3), if required according to responsibilities, should be received in a timely manner; and
- should be able to demonstrate their food hygiene knowledge.

The training of food handlers should be updated according to needs.

Food handlers category	Stage 1 *Essentials of food hygiene*	Stage 2 *Hygiene awareness instruction*	Stage 3 *Level 1*	Stage 3 *Levels 2 and/or 3*
Category A	Before starting work for the first time	Within four weeks of employment or eight weeks for part-time crew	–	–
Category B	Before starting work for the first time	Within four weeks of employment or eight weeks for part-time crew	Within three months	–
Category C	Before starting work for the first time	Within four weeks of employment or eight weeks for part-time crew	Within three months	Good Practice according to responsibilities

Category A food handlers

Food handler category A

- This category includes handlers of "low-risk food" or "wrapped food".

- These food handlers must complete **stage 1** and **stage 2**.

Training content stage 1

Training stage 1

(This stage is for "low-risk food handlers")

- Essentials of food hygiene.

Food handlers must:

- ensure that they are clean and wear clean clothing;
- ensure their hair and long facial hair (moustaches and beards) are fully covered;
- always wash their hands thoroughly before starting work, before handling food, after using the lavatory, after handling raw foods (which requires cooking or other process) or waste, after every break, after blowing their nose, eating, drinking, or smoking;
- inform their supervisor, before commencing work, of any skin, nose, throat, stomach or bowel trouble, fever, or infected wound;
- ensure cuts and sores are covered with a waterproof, high visibility dressing;
- avoid unnecessary handling of food items;
- not smoke, eat, or drink in a food room, and never cough or sneeze over food or food preparation surfaces and equipment;
- inform their supervisor if they see something wrong, which could affect food safety;
- not prepare food too far in advance of service;
- keep perishable food either refrigerated or hot;
- make sure that they keep the preparation of raw (which requires cooking or other process) and ready-to-eat food strictly separate;
- ensure that all equipment and surfaces are kept clean at all times;
- when reheating food, ensure it gets sufficiently hot throughout (reheating can be carried out only once); and
- follow all food safety instructions in the ship's operational manuals, on food packaging, and from their supervisor.

Training content stage 2

Training stage 2

(This stage is for "low-risk food handlers")

- The food operators'/business's policy — priority given to food hygiene and safety.
- Personal health and hygiene — the need for high standards, reporting of illness, rules on smoking.
- Food contaminants — physical, chemical, and microbiological.
- Pathogenic microorganisms.
- Cross-contamination — causes and prevention.
- Food storage — protection and temperature control.
- Waste disposal.
- Cleaning and disinfection — materials, methods, and storage.
- Awareness of pests, actions to prevent and control pests.
- Reporting to supervisor of signs or actual presence of pests identified.

Food handler category B

Category B food handlers

- This category includes handlers of "high-risk food" or "unwrapped food".
- These food handlers should be trained according to **stage 3 (Level 1)**.

Training content stage 3 (Level 1)

Training stage 3 (Level 1)

(This stage is for "high-risk food handlers")

- Content of training **stage 1** and **stage 2**.

&

Stage 3 (Level 1)

- Foodborne diseases, symptoms, and causes.
- Food poisoning microorganisms' types and sources.
- Basic microbiology, toxins, spores, growth, and destruction.
- Premises and equipment.
- Relevant legal obligations.
- Effective temperature control of food (storage, thawing, cooking, cooling, hot and cold holding, and reheating).
- Preventing food contamination and spoilage.
- Cleaning, disinfection, and sterilisation.

Food handler category C

Category C food handlers

- This category includes managers or supervisors who handle any type of food, or who have control of food handlers.
- The supervisors and managers should be trained according to stage 3 (Level 2 and/or 3).

Training content Stage 3 (Levels 2 and 3)

Training stage 3 (Level 2 and/or 3)

(This stage is for "supervisors" and "managers")

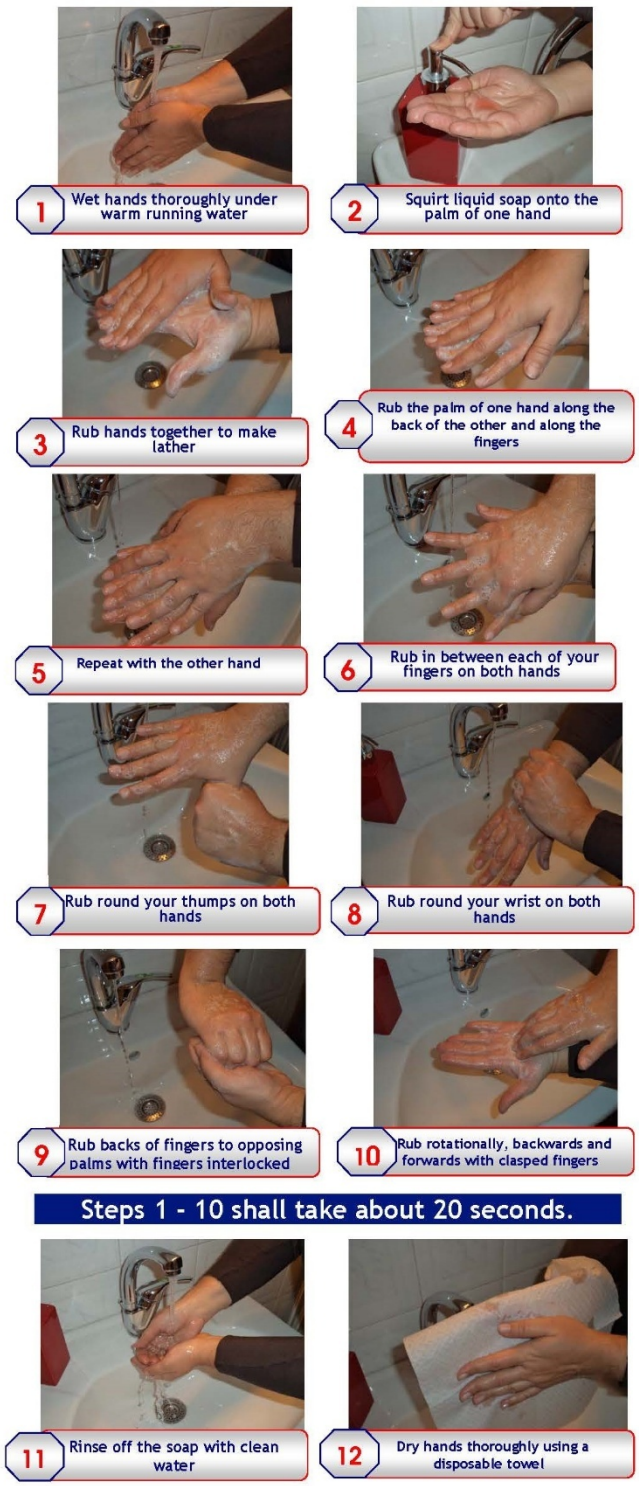
- Content of training stage 1, stage 2 and stage 3 (Level 1) **& Levels 2 and/or 3**.
- Implementation of HACCP principles.
- Effective supervision of food handlers with regard to all hygiene and food safety issues.
- Carrying out food hygiene inspections and audits.
- Assisting in the development, application, and review of hazard analysis, and HACCP principles implementation.
- Providing guidance and advice on the management of food hygiene in the passenger ship food operations.
- Technical knowledge necessary for management of complex food production processes.
- Designing an improvement plan based on process quality management principles.

Duration of Level 2 and Level 3

- The duration of training Level 2 should be from 12 to 24 hours.
- The duration of training Level 3 should be from 24 to 40 hours.
- Training may be delivered through classroom sessions, e-learning, on-the-job instruction, departmental briefings, or a combination of these methods, provided that the learning outcomes and competency requirements are achieved.

Annex 17: Hand washing method

To download the hand washing method click on the following link: https://shipsanassociation.shipsan.eu/wp-content/uploads/2025/12/handwashing_guide.pdf.



Annex 18: Guidance on development and use of WSPs

Introduction to WSP

The management of potable water on ships should cover design, construction, commissioning, operation, monitoring, and maintenance, in order to ensure that there are hygienic safeguards for the entire water supply process. The WHO has developed a HACCP-like system for potable water called a WSP and EU SHIPSAN ACT has adopted this approach for managing potable water quality on passenger ships.

Definition

A WSP is a comprehensive risk assessment and risk management approach that encompasses all steps in water supply from source to consumer in order to ensure the safety of potable water (1).

Purpose

The WSP approach has been developed to organise and systematise practices applied to potable water and ensure the applicability of these practices to the management of potable water quality. All ships should have a WSP in order to ensure the quality of potable water that reaches consumers.

Although many water suppliers provide potable water of adequate quality without using a WSP, the adoption and implementation of its procedures have the following benefits:

- it provides a systematic, detailed, and prioritised assessment of potential hazards;
- it ensures operational monitoring of control measures;
- it provides an organised and structured system to minimise the likelihood of failures;
- it is a dynamic approach that can lead to future improvements in the water supply management; and
- it assists competent authorities in conducting inspections.

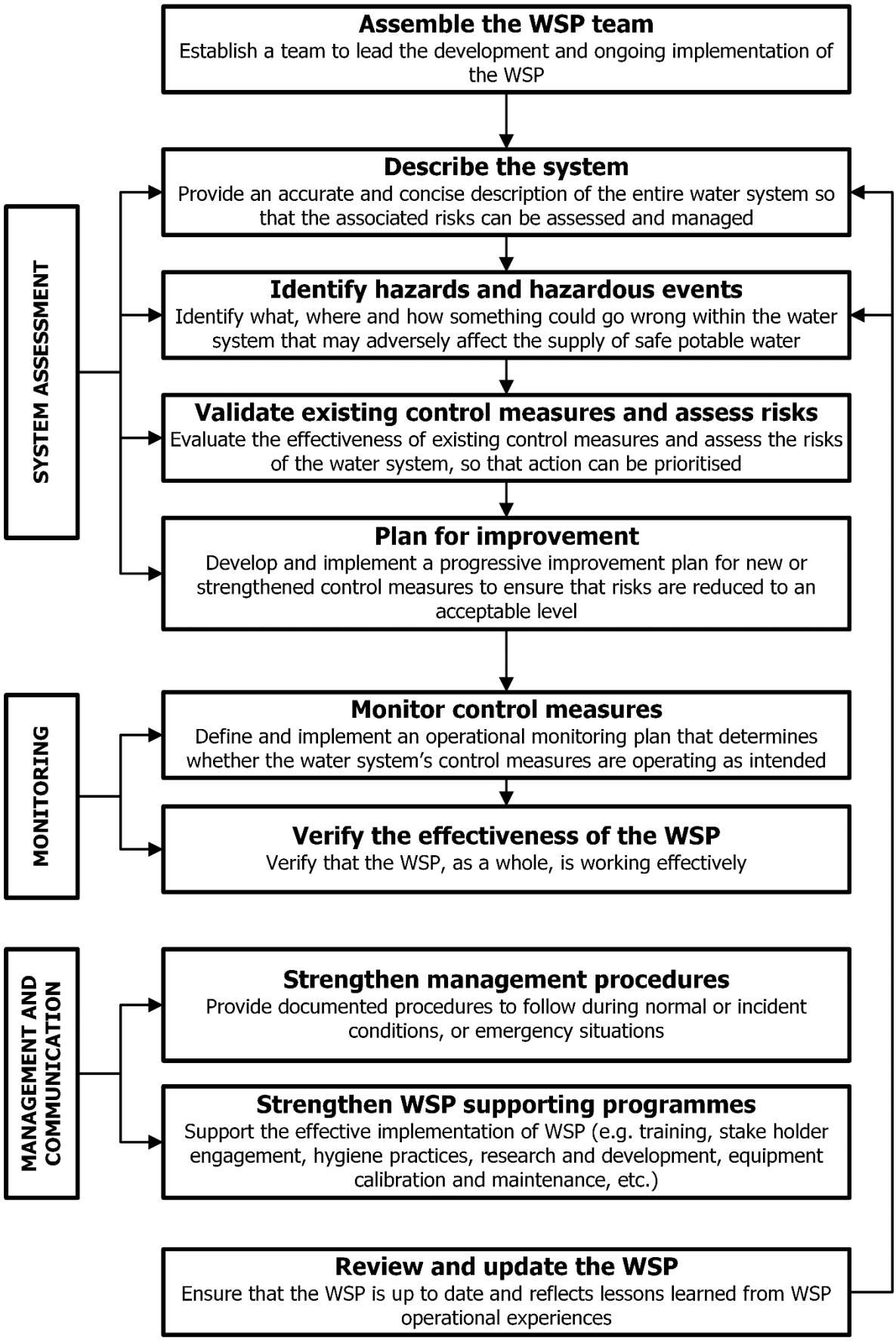


Figure 5: Overview of key steps of the WSP approach

WSP components (principles)

The WSP approach adopts many of the principles of other risk assessment approaches, such as HACCP and the multi-barrier approach. The basic elements of a WSP are outlined below and in **Figure 5**: **Overview of key steps of the WSP approach**.

System assessment: This fully describes the water supply process, identifies the possible hazards and hazardous events, prioritises control of risks, and records the control measures applied for the prevention of consequences. The scope of the system assessment is wide enough to ensure that sufficient control measures are put in place to ensure all water safety health-based targets are met. **Table 27** includes an example of the system assessment of a ship's water system.

Monitoring: This helps evaluate the performance of each control measure identified and also involves reporting any deviations from the operational limits.

Management and communication: This sets out the corrective actions to be taken when operational monitoring indicates deviations from operational limits. It also includes the measures taken for record keeping, verification monitoring, and incident investigation.

Risk assessment:

All identified hazardous events must then be considered and prioritised bearing in mind two criteria, the probability that it will occur (likelihood) and the likely severity (consequences) (**Table 26**).

Table 26: Typical risk assessment matrix

	Severity		
Likelihood	Minor 1	Moderate 2	Major 3
A (likely)	M	H	H
B (moderate)	L	M	H
C (unlikely)	L	L	M

H: High risk, M: Moderate risk, L: Low risk

Table 27: Examples of the system assessment procedure for the ship's potable water system

This is not a complete system assessment procedure, but is for illustration only and should not be used. Each ship should do its own assessment.

PROCEDURE	Possible hazardous event	Likelihood	Severity	Control measures	Operational limits	Operational monitoring	Corrective actions	Record keeping
SOURCE WATER	Source contaminated with microbiological hazards	C Unlikely	3 Major	• Check the water quality reports and certifications from the supplier before loading • Continuous chlorination at the time of bunkering	• Absence of microbiological hazards in the collected reports • Chlorine residual no less than 2 mg/L	Measurement of disinfectant residual	Filtration and disinfection or use of an alternative source	• All water quality reports should be kept on the ships records for 12 months. • Free chlorine measurement records should be kept on the ships records for 12 months.
BUNKERING	Filling hose contamination	B Moderate	2 Moderate	• Routine cleaning and disinfection • Proper storage and labelling • Handlers training	No defections detected during inspection	Routine inspections	• Cleaning and disinfection • Repair or replace	• Inspection records • Repair records • Cleaning and disinfection records
STORAGE	Corrosion of storage tanks	A Likely	1 Minor	Routine cleaning and maintenance	No corrosion detected during inspections	Routine inspections	• Cleaning and disinfection • Coating	• Inspection records • Cleaning and disinfection records
DISTRIBUTION	Cross-connection between potable water and non-potable water	C Unlikely	3 Major	Cross-connection control programme (identification of cross-connection, installation of the proper backflow prevention assemblies)	No defections on the backflow prevention devices	Routine inspection and annual testing of backflow prevention assemblies	Repair or replace backflow prevention assemblies	Inspection and testing records

Definition of control measures

Suitable control measures must be identified to ensure the prevention of potable water contamination incidents. All control measures for significant hazards or hazardous events must be assessed and recorded. The measures should be indicated on the flow diagram/table corresponding to the possible hazardous events.

Control measures include water treatment procedures, routine monitoring and inspections, maintenance, repair or replacement of equipment, cross-connection control, labelling of pipes and hoses, and training of the crew, temperature controls, and flushing of infrequently used equipment.

Definition of validation

Validation is an investigative activity to obtain evidence that the control measure can effectively control the corresponding hazardous event.

Water production

Potable water produced at sea using low-pressure evaporators or reverse osmosis plants is considered a private water source and should be controlled as such, with appropriate monitoring and risk assessment.

Planning for improvement

Based on the outcomes of the risk assessment, the WSP team should determine which hazardous events require an improvement plan. Priority should be given to the hazardous events with the highest risk. For those hazardous events that require an improvement plan, the WSP team should introduce new control measures or strengthen the existing ones. The plan should include information such as the actions needed to be taken, the responsible parties, estimated cost, source of funding, due date, etc.

Operational monitoring

These control measures must be monitored in order to spot any deviations from the operational limits. Operational monitoring should include measurement of selected water parameters, and the equipment and construction inspection procedures. Operational monitoring must provide early warning of failure of halogenation or any other operational limit violations to enable effective water system management. In most cases, operational monitoring involves basic water quality tests (pH, halogen residuals) and routine hygienic inspections.

An operational monitoring plan should be put in place and include the following basic elements:

- define the sampling points and frequency of sampling;
- list the equipment required for monitoring water systems;
- establish the monitoring equipment standards (calibration, certification);
- ensure compliance with standard methods of water examination;

- define the locations to be inspected and frequency of inspections; and
- define the required qualifications of crew carrying out the monitoring.

Critical limits

Auditing the performance of control measures requires the setting of critical limits for each one. A critical limit is a criterion that indicates whether the control measure is functioning as designed. Critical limits might be either the upper or lower limits of the parameter values (such as pH, halogen residual, temperature) or observable factors.

Corrective actions

Corrective actions are to be taken when the results of monitoring at a control point indicate a loss of control and may include repair or replacement of equipment, superhalogenation/shock dosing, flushing and dumping and then re-bunkering or reloading, etc. Corrective actions should include the following steps:

1. ensure water safety until correction;
2. correct the problem;
3. identify the cause of the problem;
4. take steps to ensure that the problem will not re-occur; and
5. evaluate if the lessons learned should be communicated to other ships.

Record keeping

The required documents include the following:

- requirements for general system documentation (water manual, periodical maintenance system, routines for handling of deviations/corrective actions, emergency preparedness, etc.),
- details on HACCP;
- requirements for auditing and revising the general system documentation and the Water Safety Plan;
- system assessment and supporting information, including a description of the system and a flow diagram;
- WSP team formation;
- the operational monitoring programme and results;
- the parameters measured and critical limits;
- water treatment methods used;
- outcomes of inspections;
- outcomes of audits; and
- outcomes of adverse incidents.

Supporting programmes

Supporting programmes may include the following:

- standard operating procedures for hygienic working practices;
- quality assurance/quality control programme for chemicals and materials;
- calibration and preventive maintenance programme for equipment used for monitoring the main control measures;
- crew members training to ensure they are skilled to do their jobs and understand the risks associated with water quality; and
- regulatory issues related to water quality.

Audit

Regular audit of record keeping activities, etc., should take place, including data analysis of test results.

Auditing includes: a) checking the records of corrective actions taken in response to main non-conformances at the main control measures, and b) auditing practices to verify that they are being followed, including taking corrective actions in cases of non-conformance. The person responsible for regular audits is normally the team leader.

Periodic audit should be conducted:

- at intervals (e.g., once every week);
- following substantial changes to the source, the distribution or storage system, or the treatment process; and
- following significant incidents.

Periodic audit should include the following, in addition to review of the WSP:

- examination of records to ensure that system management is being carried out as described in the WSP;
- verification that critical limits are kept within specification and that compliance is being maintained;
- ensuring that verification programmes are operated (check logs for water sampling results — ensure that corrective actions have been taken after positive microbiological test results);
- assessment of implementation programmes and development of strategies for improvement and updating the WSP;
- sanitary inspection, when appropriate, which may cover the entire water-supply system, including sources, production plans, treatment stations, storage tanks, and distribution systems;
- regular monitoring for blind lines;
- regular monitoring for infrequently used cabins, washrooms, etc.;
- weekly review of stagnant lines and updating of the list of taps requiring regular flushing; and
- identification of new chemicals added to the water.

Non-conformities should be recorded by the persons responsible for the operational monitoring. Non-conformities should be reported to the team leaders on board the ship.

Verification monitoring

To provide a final assurance that the water supply system is operating safely, verification monitoring should be established. This includes:

- water quality monitoring (regular analysis of chemical and microbiological quality, e.g., faecal bacteria, *Legionella*, turbidity, heavy metals);
- audit of operational activities;
- consumer satisfaction; and
- validation of system capacity.

Review and Updating of the Water Safety Plan (WSP)

To ensure ongoing effectiveness, the Water Safety Plan (WSP) should be regularly reviewed and updated. This review process helps incorporate lessons learned, adapt to operational changes, and respond to new risks.

The WSP should be reviewed and updated:

- at least every two years;
- following any significant system changes, such as modifications to the water supply infrastructure, new equipment installation, or changes in water treatment methods;
- after significant events or incidents, such as significant microbial test results (e.g., *Legionella*, *E. coli*), equipment failure, or breaches in water safety;
- when new regulatory requirements or standards are introduced that affect the potable water system; and
- if audits or inspections reveal non-conformities or control measures that are no longer effective.

All WSP reviews should be documented, and any updates should be communicated clearly to the relevant crew and stakeholders. The updated plan should be approved by the WSP team leader and incorporated into routine training and audit cycles.

Reference list

1. World Health Organization. (2023). Water safety plan manual: step-by-step risk management for drinking-water suppliers, second edition.
2. World Health Organization. (2022). Guidelines for drinking-water quality: fourth edition incorporating the first and second addenda.

Annex 19: Suggested training competences for crew responsible for the WSP implementation

The persons responsible for conducting the risk assessment should have the knowledge:

- to understand the source of hazards (physical, microbiological, chemical) and the reason for their presence;
- to recognise hazardous events on ship water systems;
- to characterise risks;
- to decide about control measures and corrective actions;
- to collect all the information needed to conduct the risk assessment; and
- to interpret information collected to conduct the risk assessment.

The team leader/manager responsible for the WSP should:

- be a senior officer working on the ship;
- have the knowledge to ensure that the WSP is implemented effectively;
- understand the hazards and hazardous events;
- have knowledge of the structure and policy of the company;
- recognise non-conformities of the critical limits as set out in the WSP;
- be able to supervise and make sure that control measures and corrective actions are correctly implemented;
- recognise when revisions of the WSP are needed; and
- communicate effectively with all crew involved in the water system operation.

The persons responsible for the every-day operation of the water systems should be able to:

- carry out the monitoring procedures, control measures, and corrective actions;
- implement correctly the procedures described in the WSP;
- recognise non-conformities and the need to report them; and
- maintain the records and documents.

Annex 20: Parameters for water quality monitoring (Directive (EU) 2020/2184 and Council Directive 2013/51/EURATOM)

Water intended for human consumption shall be wholesome and clean if it meets the minimum requirements set out in the following table regarding microbiological parameters.

Microbiological parameters		
Parameter	**Parametric value**	**Unit**
Intestinal enterococci	0	number/100 mL
Escherichia coli (*E. coli*)	0	number/100 mL

Water intended for human consumption shall be wholesome and clean if it meets the minimum requirements set out in the following table regarding chemical parameters.

Chemical parameters			
Parameter	**Parametric value**	**Unit**	**Notes**
Acrylamide	0.10	µg/L	The parametric value of 0.10 µg/L refers to the residual monomer concentration in the water as calculated according to specifications of the maximum release from the corresponding polymer in contact with the water.
Antinomy	10	µg/L	–
Arsenic	10	µg/L	–
Benzene	1.0	µg/L	–
Benzo(a)pyrene	0.010	µg/L	–
Bisphenol A	2.5	µg/L	–
Boron	1.5	mg/L	A parametric value of 2.4 mg/L shall be applied when desalinated water is the predominant water source of the supply system concerned or in regions where geological conditions could lead to high levels of boron in groundwater.
Bromate	10	µg/L	
Cadmium	5.0	µg/L	–
Chlorate	0.25	mg/L	A parametric value of 0.70 mg/L shall be applied where a disinfection method that generates chlorate, in particular chlorine dioxide, is used for disinfection of water intended for human consumption. Where possible, without compromising disinfection, Member States shall strive for a lower value. This parameter shall be measured only if such disinfection methods are used.
Chlorite	0.25	mg/L	A parametric value of 0.70 mg/L shall be applied where a disinfection method that generates chlorite, in particular chlorine dioxide, is used for disinfection of water intended for human consumption. Where possible, without compromising disinfection, Member States shall strive for a lower value. This parameter shall be measured only if such disinfection methods are used.
Chromium	25	µg/L	The parametric value of 25 µg/L shall be met, at the latest, by 12 January 2036. The parametric value for chromium until that date shall be 50 µg/L.
Copper	2.0	mg/L	–
Cyanide	50	µg/L	–
1,2-dichloroethane	3.0	µg/L	–
Epichlorohydrin	0.10	µg/L	The parametric value of 0,10 µg/L refers to the residual monomer concentration in the water as calculated according to specifications of the maximum release from the corresponding polymer in contact with the water.
Fluoride	1.5	mg/L	–
Haloacetic acids (HAAs)	60	µg/L	This parameter shall be measured only when disinfection methods that can generate HAAs are used for the disinfection of water intended for human consumption. It is the sum of the following five representative substances: monochloro-, dichloro-, and trichloro-acetic acid, and mono- and dibromo-acetic acid.
Lead	10	µg/L	The parametric value of 5 µg/L shall be met, at the latest, by 12 January 2036. The parametric value for lead until that date shall be 10 µg/L.
Mercury	1.0	µg/L	–
Microcystin-LR	1.0	µg/l	This parameter shall be measured only in the event of potential blooms in source water (increasing cyanobacterial cell density or bloom forming potential).
Nickel	20	µg/L	–
Nitrate	50	mg/L	Member States shall ensure that the condition [nitrate]/50 + [nitrite]/3 ≤ 1, where the square brackets signify the concentrations in mg/l for nitrate (NO_3) and nitrite (NO_2), is complied with and that the parametric value of 0.10 mg/L for nitrites is complied with ex water treatment works.

Nitrite	0.50	mg/L	Member States shall ensure that the condition [nitrate]/50 + [nitrite]/3 ≤ 1, where the square brackets signify the concentrations in mg/l for nitrate (NO_3) and nitrite (NO_2), is complied with and that the parametric value of 0.10 mg/L for nitrites is complied with ex water treatment works.
Pesticides	0.10	µg/L	'Pesticides' means: • organic insecticides, • organic herbicides, • organic fungicides, • organic nematocides, • organic acaricides, • organic algicides, • organic rodenticides • organic slimicides, • related products (inter alia, growth regulators), and their metabolites as defined in point (32) of Article 3 of Regulation (EC) No 1107/2009 of the European Parliament and of the Council (1), that are considered relevant for water intended for human consumption. A pesticide metabolite shall be deemed relevant for water intended for human consumption if there is reason to consider that it has intrinsic properties comparable to those of the parent substance in terms of its pesticide target activity or that either itself or its transformation products generate a health risk for consumers. The parametric value of 0.10 µg/L shall apply to each individual pesticide. In the case of aldrin, dieldrin, heptachlor and heptachlor epoxide, the parametric value shall be 0.030 µg/L. Member States shall define a guidance value to manage the presence of non-relevant metabolites of pesticides in water intended for human consumption. Only pesticides which are likely to be present in a given supply need to be monitored. Based on the data reported by Member States, the Commission may establish a database of pesticides and their relevant metabolites, taking into account their possible presence in water intended for human consumption.
Pesticides - Total	0.50	µg/L	'Pesticides Total' means the sum of all individual pesticides, as defined in the previous row, detected and quantified in the monitoring procedure.
PFAS Total	0.5	µg/L	'PFAS Total' means the totality of per- and polyfluoroalkyl substances. This parametric value shall only apply once technical guidelines for monitoring this parameter are developed in accordance with Article 13(7). Member States may then decide to use either one or both of the parameters 'PFAS Total' or 'Sum of PFAS'.
Sum of PFAS	0.10	µg/L	'Sum of PFAS' means the sum of per- and polyfluoroalkyl substances considered a concern as regards water intended for human consumption listed in point 3 of Part B of Annex III. This is a subset of 'PFAS Total' substances that contain a perfluoroalkyl moiety with three or more carbons (i.e., –CnF2n–, n ≥ 3) or a perfluoroalkylether moiety with two or more carbons (i.e., –CnF2nOCmF2m–, n and m ≥ 1).
Polycyclic aromatic hydrocarbons	0.10	µg/L	Sum of concentrations of the following specified compounds: benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(ghi)perylene, and indeno(1,2,3-cd)pyrene.
Selenium	20	µg/L	A parametric value of 30 µg/L shall be applied for regions where geological conditions could lead to high levels of selenium in groundwater.
Tetrachloroethene and trichloroethene	10	µg/L	The sum of concentrations of these two parameters.
Trihalomethanes Total	100	µg/L	Where possible, without compromising disinfection, Member States shall strive for a lower parametric value. It is the sum of concentrations of the following specified compounds: chloroform, bromoform, dibromochloromethane and bromodichloromethane.
Uranium	30	µg/L	–
Vinyl chloride	0.50	µg/L	The parametric value of 0.50 µg/L refers to the residual monomer concentration in the water as calculated according to specifications of the maximum release from the corresponding polymer in contact with the water.

In the event of non-compliance with the parametric values or with the specifications set out in the following table, ships in collaboration with competent authorities should consider whether that non-

compliance poses any risk to human health. They should take remedial action to restore the quality of the water where that is necessary to protect human health.

Indicator parameters			
Parameter	**Parametric value**	**Unit**	**Notes**
Aluminium	200	µg/L	–
Ammonium	0.50	mg/L	–
Chloride	250	mg/L	The water should not be corrosive.
Clostridium perfringens (including spores)	0	number/100 mL	This parameter shall be measured if the risk assessment indicates that it is appropriate to do so.
Colour	Acceptable to consumers and no abnormal change	–	–
Conductivity	2500	µS/cm at 20 °C	The water should not be aggressive.
Hydrogen ion concentration	≥ 6.5 and ≤ 9.5	pH units	The water should not be aggressive. For still water put into bottles or containers, the minimum value may be reduced to 4,5 pH units. For water put into bottles or containers which is naturally rich in or artificially enriched with carbon dioxide, the minimum value may be lower.
Iron	200	µg/L	–
Manganese	50	µg/L	–
Odour	Acceptable to consumers and no abnormal change	–	–
Oxidisability	5.0	mg/L O_2	This parameter need not be measured if the parameter TOC is analysed.
Sulphate	250	mg/L	The water should not be corrosive.
Sodium	200	mg/L	–
Taste	Acceptable to consumers and no abnormal change	–	–
Colony count 22 °C	No abnormal change	–	–
Coliform bacteria	0	number/100 mL	For water put into bottles or containers, the unit is number/250 mL.
Total organic carbon (TOC)	No abnormal change	µg/L	This parameter need not be measured for supplies of less than 10,000 m^3 a day.
Turbidity	Acceptable to consumers and no abnormal change	–	–
Water should not be aggressive or corrosive. This applies particularly to water undergoing treatment (demineralisation, softening, membrane treatment, reverse osmosis, etc.).			
Where water intended for human consumption is derived from treatment that significantly demineralises or softens water, calcium and magnesium salts could be added to condition the water in order to reduce any possible negative health impact, as well as to reduce the corrosiveness or aggressivity of water and to improve taste. Minimum concentrations of calcium and magnesium or total dissolved solids in softened or demineralised water could be established taking into account the characteristics of water that enters those processes.			

The below parameters should be monitored as part of the risk assessment of the potable water system. Where these parametric values are not met, Member States shall ensure that appropriate measures are taken to eliminate or reduce the risk of non-compliance with these parametric values.

Parameters relevant for the risk assessment of domestic distribution systems			
Parameter	**Parametric value**	**Unit**	**Notes**
Legionella	<1000	CFU/L	This parametric value is set for the purposes of Articles 10 and 14. Actions provided for in those Articles could be considered even when the value is below the parametric value, e.g. in cases of infections and outbreaks. In such cases, the source of infection should be confirmed and the species of *Legionella* should be identified.
Lead	10	µg/L	This parametric value is set for the purposes of Articles 10 and 14. Member States should use their best endeavours to achieve the lower value of 5 µg/L by 12 January 2036.

Parametric values for radon, tritium and ID of water intended for human consumption			
Parameter	**Parametric value**	**Unit**	**Notes**
Radon	100	Bq/L	Note 1
Tritium	100	Bq/L	Note 2
ID (Indicative Dose)	0.10	mSv	–

Note 1: a) MS may set a level for radon which is judged inappropriate to be exceeded and below which optimisation of protection should be continued, without compromising water supply on a national or regional scale. The level set by a MS may be higher than 100 Bq/L but lower than 1000 Bq/L. In order to simplify national legislation, MS may choose to adjust the parametric value to this level. b) Remedial action is deemed to be justified on radiological protection grounds, without further consideration, where radon concentrations exceed 1000 Bq/L.

Note 2: Elevated levels of tritium may indicate the presence of other artificial radionuclides. If the tritium concentration exceeds its parametric value, an analysis of the presence of other artificial radionuclides shall be required.

Annex 21: Selection of backflow prevention assemblies

Every cross-connection with the potable water systems of the ship should be protected with an appropriate backflow prevention assembly. To determine the type of protection that is needed for each cross-connection, the type of the fluid connected (or potentially connected) to the potable water system should be determined, as well as the characteristics of the installation. The following steps should be followed to determine the type of protection needed:

1. **Determine the type of fluid category that can potentially come into contact with the potable water and the level of hazards associated with this fluid.**

   USC (1993) characterizes hazards in 3 categories:

   1. non-health hazard (pollutant);
   2. health hazard (contaminant); and
   3. sewage (black water).

   The EN 1717:2000 standard defines five categories:

   1. water to be used for human consumption coming directly from a potable water distribution system (e.g., potable water);
   2. fluid presenting no human health hazard (e.g., chilled potable water, hot potable water, etc.);
   3. fluid representing some human health hazards due to the presence of one or more harmful substances;
   4. fluid presenting a human health hazard due to the presence of one or more toxic substances or one or more radioactive, mutagenic, or carcinogenic substances; and
   5. fluid presenting a human health hazard due to the presence of microbiological or viral elements (e.g., laundry water, RWF water, black water, etc.).

2. **Determine whether cross-connection is subject to backshiphonage or backpressure.**

   To determine whether the backflow may occur by backshiphonage or backpressure, the maximum operational level of the hydraulic circuit to be protected should be determined. The maximum operational level is either the maximum level of the liquid in open systems or the maximum piezometric height in pressurised systems. If the protection point is located above the maximum operational level (p = atm), then only backshiphonage may occur. In any other case (p > atm), both backshiphonage and backpressure may occur. In other words, backshiphonage may occur when there is a reduction in the system pressure that with will cause a sub-atmospheric pressure to exist in the water system, and backpressure can occur when the pressure of the downstream piping system rises above the supply pressure (by a pump or due to elevation of piping) at the point of connection.

3. **Determine if the component is subject to continuous or noncontinuous pressure.**

   These are devices that are designed to be used under conditions of continuous pressure (greater than 12 hours out of a 24-hour period).

Annex 22: Recommendations for flushing outlets

In order to avoid stagnation of water in the system, the ship should establish a flushing programme to prevent stagnation at any place of the ship for more than seven days. The procedure to be followed when flushing is described below.

Determining the duration of the flushing required

The flushing duration depends on the maximum flow rate at the outlet and the volume of water stored in the stagnant part of the system (volume of the pipe from the outlet to the loop or to the closest connection with a line that is neither blind nor stagnant). Twice the quantity of the stagnant volume should be discharged. The volume of the stagnant water can be determined by either engineering calculations or as a general rule by waiting for the temperature of the hot water to reach a maximum. This means that the tap should run for twice this duration at the maximum flow rate. Theoretically, the cold water from the same tap should be flushed for the same duration and flow rate as the hot one. If the above are not followed, then each tap should be flushed for several minutes (e.g., 3-4 minutes).

Flushing of outlets

Open the tap at the maximum flow rate and wait for the required time. If it is a mixer type tap, first flush the hot water then the cold water.

Flushing of lines connected to the devices

Disconnect the device (and drain if possible) and then flush the line (procedures as per flushing of outlets).

Flushing of cabins

First flush the hot water lines, and then flush the cold water lines. If all the taps of the cabin are opened simultaneously, then make sure sufficient quantity of water flows from the taps. If the pressure drops, then flush the taps in turns. The toilet should also be flushed.

Note 1: In cases where there is no sufficient drainage, it may be necessary to have large containers to collect the flush water or additional piping to direct the flow to a drain. The content of the container can then be discharged to a drain.

Note 2: If water is contaminated or there is suspicion of water contamination, aerosolisation should be avoided. When aerosol formation is inevitable, PPE should be provided to the responsible persons.

Annex 23: Recommended Faecal and Vomit Accident Release Plan for RWF

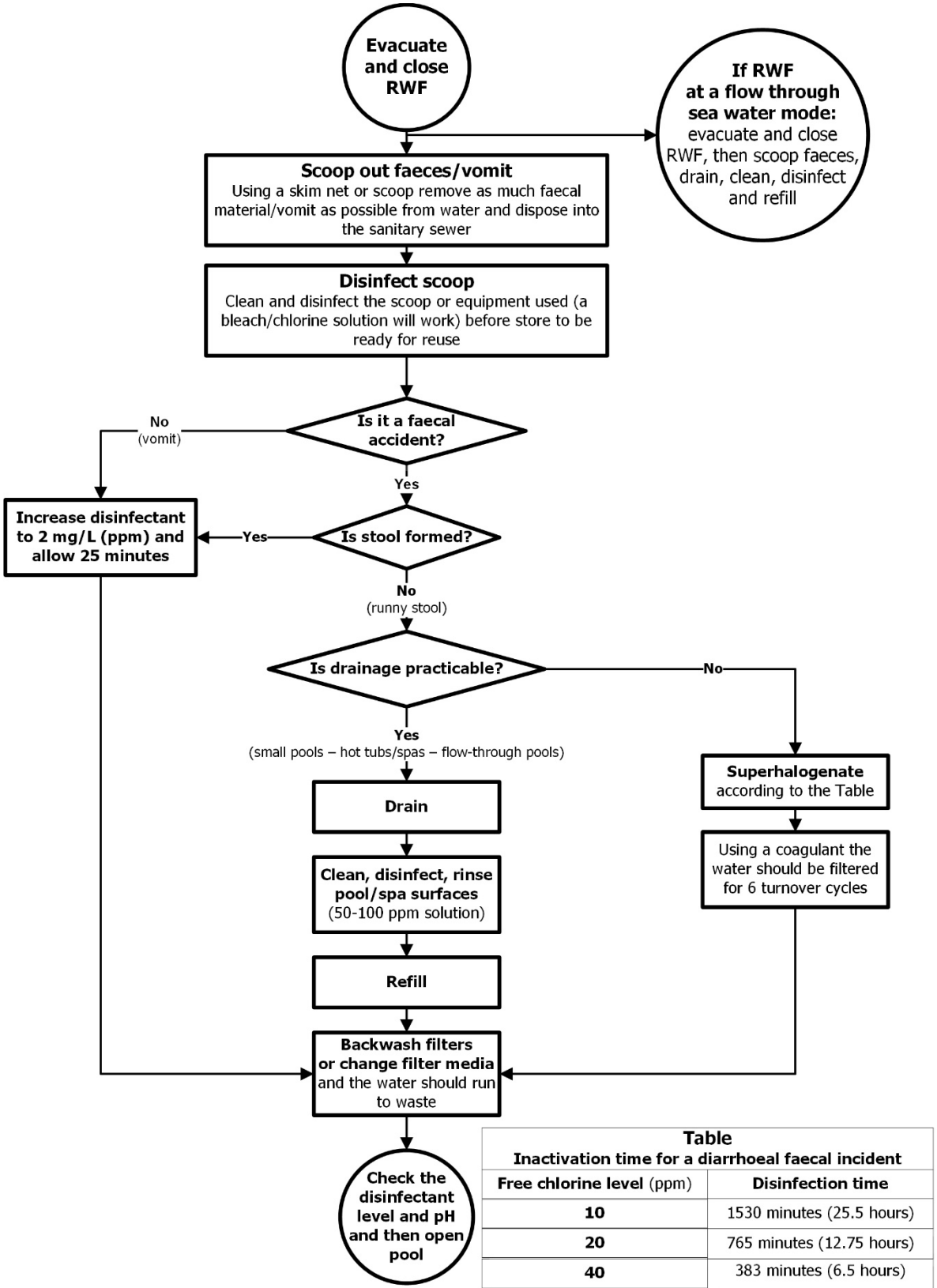


Table
Inactivation time for a diarrhoeal faecal incident

Free chlorine level (ppm)	**Disinfection time**
10	1530 minutes (25.5 hours)
20	765 minutes (12.75 hours)
40	383 minutes (6.5 hours)

Superhalogenation should be that the product between halogen residual and recirculation time is as follows:
_____ mg/L (ppm) x _____ minutes = 15300

Maintain pH of 7.2-7.5 during contact time

Annex 24: Guidance for sampling and testing of water from recreational water facilities

General rules for collecting manual samples	
1	Handle the testing equipment and reagents with clean hands. Rinse off any reagents that get on your skin.
2	Collect the sample from a location that contains well-mixed pool water (between water inlets and at water depth of between 91.4 centimetres to 1.2 meters (3 to 4 feet) when available) from at least 45.7 cm (18 inches) below the surface of the water.
3	Carry out the tests immediately after samples are taken.
4	Carefully follow instructions for test kits (time and temperature are important parameters of testing).
5	Store the equipment, properly boxed or cased, in a cool, clean, dry place. Do not interchange parts such as sample cells, caps, or droppers.
Additional rules for microbiological testing	
1	Sampling bottles should be clean and sterilised.
2	For disinfected waters prior to sampling and sterilisation in the oven a dechlorinating agent (e.g., sodium thiosulphate: $Na_2S_2O_3 \cdot 5H_2O$) should be placed in the bottle: a quantity of 20-50 mg for a litre of water sample.
3	The sampling process should be according to the following: Remove the bottle cap with caution and place it in clean and sterile spot. Hold the bottle from the bottom and immerse it at a depth of 20 cm (7.9 in), move it horizontally to fill with water. A free space should be left on the top in order to allow space for an ease mixing. Cap the bottle and cover the cap with aluminium foil. Place it inside the heat insulating container and transfer it to the lab.
4	Testing should be done as soon as possible after sample collection. It should be done the same day. Heat insulating containers should be used for the transfer of samples to the lab in order to keep the temperature constant. If the time between sampling and testing exceeds six hours, then the samples should be kept at a temperature of 5 °C (41 °F) utilising ice cubes.

Annex 25: Suggestions for corrective actions to be taken in case of water quality parameters out of limits in recreational water facilities

Corrective actions

- The technical systems of RWFs should be checked and, where necessary, tested to confirm they are operating correctly.
- Filter media should be checked.
- Chemical or microbiological tests should be repeated.
- Backwash the filter (where applicable).
- Change filters media if they are damaged, cracked, or where appropriate.
- Change the water (if practicable, depending on the size of the RWF, etc.).
- Adjust water chemistry where necessary (if adding chemicals manually, the RWF should remain closed until they are diluted and water chemistry/quality is within the required standards).
- Apply shock halogenation if there is microbiological contamination. Increase the disinfectant dosage to 20 or 50 mg/L (ppm) for few hours while the pool is not in use by bathers.
- For faecal or vomit accidents in the RWF, an emergency plan should be implemented in accordance with the example provided in **Annex 23** (page 340).
- If actions taken are not effective, then an RWF consultant/expert may be used to further investigate the problem.

Annex 26: Examples of health advisory signs for recreational water facilities

SWIMMING POOL SIGNS — suggestions for content

Annex 27: Indicators for cleaning and disinfection

This annex outlines key indicators to support the monitoring, evaluation, and continuous improvement of cleaning and disinfection procedures on board. Indicators should be included in the cleaning and disinfection plan and may include:

- time spent on cleaning and disinfection per area;
- number of cloths or mops used per cleaning zone (to prevent cross-contamination);
- quantities and concentrations of cleaning and disinfectant products used;
- epidemiological context, such as ongoing outbreaks or heightened disease transmission risk;
- cleaning frequency and schedule, based on area classification and risk level; and
- health status of cleaning staff — including any reported illness, absenteeism, or signs of communicable disease, which may affect both cleaning quality and infection risk.

Annex 28: Model training plan for housekeeping related practices

Model of Training Plan Matrix for Housekeeping and Hygiene on Passenger Ships

This model training plan is designed to ensure that all shipboard personnel involved in housekeeping, hygiene, and infection control are adequately trained according to their roles and responsibilities. The model training plan is divided into different levels based on job function.

Training sessions should be conducted periodically, and refresher courses should be scheduled to help maintain staff competence and awareness.

- Supervisors should conduct random inspections and retraining where necessary.
- Body fluid spill response training should include hands-on simulations and scenario-based exercises.
- Housekeeping managers and supervisors should discuss outbreak procedures and practices with medical and public health personnel

Level 1 training topics for all housekeeping crew

Target audience: Crew members with responsibilities related to cleaning areas, equipment, surfaces, furniture, laundry, and other housekeeping activities.

- **General housekeeping principles**
  - Importance of housekeeping in public health
  - Pathogens of concern
  - Impact of poor hygiene on shipboard infections
- **Cross-contamination prevention**
  - Safe handling of cleaning and disinfection materials
  - Avoiding cross-contamination during routine cleaning and disinfection
  - Proper sequence (clean to dirty) and handling of cleaning materials
- **Cleaning and disinfection basics**
  - Difference between cleaning, sanitising, and disinfecting
  - Understanding what products to use for cleaning and disinfection
  - Use of PPE (gloves, masks, aprons) during routine cleaning
- **Detailed cleaning and disinfection procedures**
  - Step-by-step procedures for cleaning cabins, public toilets, and public spaces, with a focus on avoiding cross-contamination
  - Handling of linen and laundry according to contamination levels

- Cleaning and disinfection
- Handling waste bins

- **Preparation, application, and storage of cleaning chemicals, disinfectants, and PPE**
  - Preparation of chemicals and disinfectants:
    - Correct dilution and verification of concentrations
    - Use of automated chemical dispensing equipment
    - Manual mixing instructions
    - SDS and company's SOPs
  - Application of cleaning chemicals and disinfectants:
    - Importance of contact time of disinfectants
    - Directions for use, frequency of application, and dose rate
    - Selection of appropriate PPE, and donning and doffing of PPE
  - Storage practices of cleaning chemicals and disinfectants
  - Storage requirements for biocides (working containers and original containers)

- **Outbreak cleaning and disinfection protocols**
  - Enhanced cleaning procedures for GI, ARI, and other outbreaks
  - Use of approved disinfectants
  - Protocols for isolation cabins and quarantine areas

- **Hand hygiene and personal hygiene**
  - Proper hand washing techniques
  - When to wash hands
  - Personal hygiene standards on board

- **Waste management and disposal**
  - Safe disposal of general waste and cleaning materials
  - Proper handling of used PPE

- **Handling of infectious waste**
  - Proper containment and removal of bodily fluids
  - Cleaning and disinfection of high-risk areas

- Safe disposal of hazardous wastes

- **PPE and safety measures**
  - Advanced PPE usage (face shields, N95 masks, full-body suits)
  - Fit testing of respiratory protection
  - Proper disposal of PPE after use

- **Incident reporting and documentation**
  - How to report hygiene-related incidents
  - Symptom identification and reporting of common diseases on board
  - Documentation of cleaning schedules and checklists

- **Body fluid spillage response**
  - Initial response to biohazard spills (vomit, faeces, blood)
  - Use of appropriate and approved disinfectants
  - Disposal of contaminated materials

Specific Housekeeping Tasks and Practices

- **Public toilets and hand washing facilities**
  - Regular cleaning and disinfection procedures
  - Restocking of soap, towels, and toilet paper
  - Handling waste bins

- **Laundry and linen handling**
  - Separation of soiled and clean linen
  - Use of designated carts for contaminated linen
  - Correct washing temperatures
  - Procedures for high-grade contaminated linen and clothes

- **Ventilation and air quality maintenance**
  - Preventing dust accumulation
  - Cleaning of ventilation filters and ducts
  - Impact of ventilation on disease transmission

- **Cabin and toilet cleaning**
- **Ice machine cleaning and disinfecting**
- **Ice handling**
- **Cleaning and sanitising of pantries and other food areas**
- **Showerhead disinfection**
- **Private whirlpool cleaning**

Level 2 training topics for housekeeping supervisors and managers

- **Monitoring and verification of cleaning effectiveness**
  - Inspection protocols for accommodations and public spaces
  - Use of cleaning verification tools
  - Compliance checks against housekeeping SOPs
- **Housekeeping policy and compliance**
  - International maritime and hygiene regulations (IHR, ILO MLC, EC regulations)
  - Housekeeping documentation and reporting requirements
- **Emergency cleaning and disinfection protocols**
  - Outbreak response planning
  - Enhanced cleaning protocols during illness outbreaks (e.g., Norovirus)
- **Inventory and safe storage of cleaning chemicals and disinfectants**
  - Ensuring approved biocide usage
  - Inventory management for cleaning agents and disinfectants
  - Storage requirements for biocides (working containers and original containers)
  - Verification procedures for automated chemical dispensers
- **Awareness of the importance of ventilation and air quality maintenance**

Ventilation conditions and associated airborne disease transmission risk

Annex 29: Requirements for the determination and assessment of risk of hazardous chemical agents [Council Directive 98/24/EC]

The employer must determine whether any hazardous chemical agents are present in the workplace and assess any risk to health and safety arising from their presence, taking into consideration:

- their hazardous properties;
- information on safety and health provided by the supplier, including the relevant SDS in accordance with Regulation (EC) No 1907/2006;
- the level, type, and duration of exposure;
- the circumstances of work involving such agents, including their quantity;
- any national occupational exposure or biological limit values;
- the effect of preventive measures taken or to be taken; and
- the conclusions to be drawn from any health surveillance already undertaken.

Risks to the health and safety of workers in work involving hazardous chemical agents shall be eliminated or reduced to a minimum by:

- the design and organisation of work systems at the workplace;
- the provision of suitable equipment for work with chemical agents and maintenance procedures which ensure the health and safety of workers at work;
- reducing to a minimum the number of workers exposed or likely to be exposed;
- reducing to a minimum the duration and intensity of exposure;
- appropriate hygiene measures;
- reducing to the minimum required the quantity of chemical agents present in the workplace for the type of work concerned; and
- suitable working procedures, including arrangements for the safe handling, storage, and transport within the workplace of hazardous chemical agents and waste containing such chemical agents.

Where the nature of the activity does not permit risk to be eliminated by substitution, the following protection and prevention measures must be taken, listed in order of priority:

- design of appropriate work processes and engineering controls, and use of adequate equipment and materials, so as to avoid or minimise the release of hazardous chemical agents;
- application of collective protection measures at the source of the risk, such as adequate ventilation and appropriate organisational measures; and
- where exposure cannot be prevented by other means, application of individual protection measures, including personal protective equipment.

The employer must ensure that workers and/or their representatives are provided with:

- the results of the risk assessment;
- full information on the hazardous chemical agents present in the workplace;
- training and information on the appropriate precautions and on the personal and collective protection measures that are to be taken; and
- access to any SDS provided by the supplier.

The information must be properly provided and updated to take into account any changes occurring in the meantime.

Annex 30: Background information for influenza, COVID-19, and RSV

Acute respiratory illnesses, including the common cold, influenza, and COVID-19, are some of the most common infections (1). COVID-19 can cause both asymptomatic and symptomatic infections, ranging from mild disease to severe illness, particularly among older adults and those with underlying conditions (2). Influenza is transmitted via close and prolonged person-to-person exposure to respiratory droplets, and may cause seasonal increases and outbreaks. Respiratory Syncytial Virus (RSV) and other respiratory pathogens can potentially cause outbreaks on passenger ships. Respiratory tract infections, including outbreaks of influenza and COVID-19, have been reported on ships (3-9).

Background information related to influenza

The influenza virus can be spread from person to person, or via indirect transmission from the environment to an individual. When an infected person coughs or sneezes, they release droplets containing virus particles. Transmission to a susceptible host may occur when a droplet makes contact with the conjunctiva or mucous membranes through a direct cough or sneeze, through inhaling air containing droplet nuclei, or from physical touch with an infected individual. The virus can also be transferred from surfaces contaminated by droplets to mucous membranes of the eyes, nose, and mouth (10). Recent publications highlighted the importance of airborne transmission in indoor environments (10-14).

In the event of ILI on board a passenger ship, the main threat is related to those passengers and crew who are at higher risk of developing complications from influenza and for whom the disease might be life-threatening. Elderly people are at risk for developing complications when infected with seasonal flu and therefore, prompt diagnosis is important among elderly passengers (15). On one cruise ship where there was an outbreak of influenza, an investigation revealed that 77.4 % of the 1,448 passengers were 65 years of age or older and 26.2 % had existing chronic medical problems (16).

Outbreaks of seasonal influenza have occurred on board passenger ships, as well as cases of pandemic (H1N1) 2009 influenza (17). On passenger ships, large numbers of people gather together and this can provide favourable environment for the spread of influenza from person to person or by indirect transmission (e.g., contaminated surfaces) (18, 19). Passengers and crew are from many different locations and countries, spend much of their time indoors, and can intermingle. Indoor shipboard activities and events such as dining, gaming, and going to the movies naturally increase the chance of flu transmission between passengers and also among crew (20). If a large number of crew members fall ill and are unable to perform their duties, the ability of the ship to operate might be affected.

Epidemics of influenza affect Europe and the rest of the northern hemisphere during the winter season. The southern hemisphere has a similar epidemic period in its winter months (June to October). In the tropics, influenza transmission may be all year round, with no seasonal pattern. As there is usually only a small variation between one year's epidemic strain and that of the following year, it is possible to produce a vaccine for the coming influenza season with a good chance that it

will be protective for seasonal influenza caused by influenza A or B strains which are the same as previous years or have only minor variations. Many people may have some immune protection from exposure in previous years. Pandemics occur when a strain of influenza appears which is very different to proceeding years and for which most of the population have little or no immunity. This allows the virus to spread around the world. At the beginning of a pandemic, the severity of symptoms and the at-risk groups will be unknown, and there will be no available vaccine.

Influenza virus characteristics – Environmental persistence

- RNA virus, family Orthomyxoviridae
- Enveloped virus
- Droplet particles (10 µm) settling from a height of 1.5 m (5 ft) in about eight minutes (10).
- Influenza A virus can survive:
  - on hard, nonporous surfaces (e.g., stainless steel, hard plastic) for 24-48 hours (21),
  - on porous materials (e.g., cloth, paper) for < 8-12 hours in ambient temperatures (21).
- Virus persistence on surfaces increases up to 72 hours when those surfaces are moist or wet (22).
- Dried influenza virus can remain stable on the hands for < 5 minutes (21).
- Infectious virus can be transferred to hands from nonporous surfaces for at least 2-8 hours during periods of heavy viral shedding in respiratory secretions (21).
- Transfer of viable influenza A virus from paper tissue to hands was only possible for 15 minutes, but transfer from stainless steel to hands for 24 hours (21).
- It is probably inactivated in water with free residual chlorine (0.52 – 1.08 mg/L) (experiments performed used avian influenza virus) (23).

Background information related to COVID-19

High risk groups	• Older adults (especially those over 65 years of age); • Individuals with underlying medical conditions such as cancer, chronic kidney disease, chronic liver disease; and • Individuals who are unable to access health care due to social factors (24, 25).
Complications	Some individuals who have been infected with SARS-CoV-2 can experience long-term effects from their infection, known as Long COVID or Post-COVID Conditions, including cardiac impairment, myocardial inflammation, and others (26, 27).
Modes of transmission	Transmission occurs from person to person via airborne particles and respiratory droplets carrying infectious virus, which may be inhaled or come into contact with mucous membranes (eyes, nose, mouth) (28).
Incubation period	**Ranges from 2 to 14 days**, depending on the virus variants and individual immunity (29).
Infectivity period – Serial interval – Latent period	**Infectivity period**: up to 2 days before symptoms onset (28-31). **Serial interval**: 2 days for BA.1, 3 days for BA.2, 4 days for Delta, 5.2 days for the Alpha variant, and 5.2 for the Wild-type variant (32, 33). **Latent period**: depends on the virus variants (e.g., one day for the Omicron variant) (28).
Diagnostic testing in the commonly recognised list of European Commission	See laboratory criteria in **Figure 2** (page 199). Rapid antigen tests must meet 80 % sensitivity and 97 % specificity. The EU Health Security Committee has a recognised list of such tests, with standardised result certificate data.
Infectivity – Minimum infective dose	The minimum infective dose is calculated as $1.26–7\times10^{6.25}$ PFU (34).
Survival of SARS-CoV-2 on surfaces	SARS-CoV-2 is seldom on surfaces in amounts that would lead to infection through fomites (35). Risk of fomite transmission in an indoor space where a COVID-19 case has been is minor after 72 hours, regardless of when the space was cleaned (36). On porous surfaces, studies report an inability to detect viable SARS-CoV-2 virus in the minutes to hours post-exposure (35, 36). On non-porous surfaces, viable SARS-CoV-2 can be detected for a period of several days (35, 36). On surfaces such as copper and cardboard, SARS-CoV-2 can survive for a few hours, while on surfaces like plastic or stainless steel, the virus can survive for a number of days (37).

Background information related to RSV

High risk groups	Infants and older adults who are at increased risk of acute lower respiratory tract infection (38). Adults at highest risk: aged 75 and older; with chronic heart or lung disease; with weakened immune systems; with certain other underlying medical conditions; and living in nursing homes (39). Children with any of the following underlying conditions: premature infants; children with suppressed or weakened immune systems; children who have neuromuscular disorders or a congenital anomaly, including those who have difficulty swallowing or clearing mucus secretions; and children with severe cystic fibrosis. RSV can cause severe illness and death in infants < 6 months of age, people over 65, and people with a compromised immune system (40). High risk groups for severe influenza (41): • the elderly; • people of any age with chronic medical conditions (such as metabolic diseases, chronic lung conditions, heart disease, liver disease, blood conditions, morbid obesity, genetic conditions, chronic kidney diseases, or treatments that suppress the immune function); • pregnant women; and • children under five years.
Complications	RSV can cause long term-effects (42). Paediatric RSV infection may be associated with acute complications including apnoea, hypoxaemia, cardiovascular abnormalities, and secondary bacterial infections.
Modes of transmission	**RSV is transmitted** from person to person via particles and droplets released into the air when an infected person breathes, speaks, coughs, or sneezes; through close contact, such as kisses from parents to children; or through contact with contaminated surfaces or objects (picking the virus up on hands and become infected when touch nose, mouth, or eyes) (38, 40).
Incubation period	**Ranges from 2 to 8 days** (38).
Infectivity period – Serial interval – Latent period	**Infectivity period**: 3-8 days, maybe 1-2 days before symptoms. **Serial interval**: Mean serial interval is 7.5 days (43). **Latent period**: 2-4 days after exposure (44).
Symptoms	Runny nose; congestion; decrease in appetite; coughing; shortness of breath; sneezing; fever; wheezing; sore throat; headache; fatigue; and lethargy (38, 40, 45). Approximately 10 % of RSV infections are asymptomatic in children under 1 year of age (46).

Diagnostic testing	Detection of RSV nucleic acid in a clinical specimen, or identification of RSV antigen in a clinical specimen, or isolation of RSV from a clinical specimen (47).
Infectivity – Minimum infective dose (if known)	The infectious dose for RSV is > 160-640 viral units, as listed by the National Institutes of Health.
Transmissibility and basic reproductive rate on passenger ships	RSV is readily transmissible, with mean estimates of the basic reproduction number around 4.5 (38).
Survival of RSV on surfaces	RSV is sensitive to high and low temperatures and to drying (i.e., low humidity levels) (42). It loses up to 90 % infectivity at room temperature after 48 hours and up to 99 % at 1 °C after 7 days. The optimal pH is 7.5. It may survive for about 3 to 30 hours on nonporous surfaces at room temperature. RSV can be recovered from countertops for up to 7 hours, from rubber gloves for 5 hours, from cloth material for 2 hours, and from skin for up to 20 minutes. Survival times decrease slightly in higher temperature environments (42). RSV typically lives on soft surfaces, such as tissues and hands, for shorter amounts of time (fewer hours compared to hard surfaces, such as tables and crib rails) (44).

Reference list

1. Eccles R. Understanding the symptoms of the common cold and influenza. The Lancet infectious diseases. 2005;5(11):718-25.
2. European Centre for Disease Prevention and Control. (updated 21 May 2023). Transmission of COVID-19.
3. Schlaich CC, Oldenburg M, Lamshoft MM. Estimating the risk of communicable diseases aboard cargo ships. JTravelMed. 2009;16(6):402-6.
4. Dahl E. Anatomy of a world cruise. JTravelMed. 1999;6(3):168-71.
5. Peake DE, Gray CL, Ludwig MR, Hill CD. Descriptive epidemiology of injury and illness among cruise ship passengers. Ann Emerg Med. 1999;33(1):67-72.
6. Fernandes EG, de Souza PB, de Oliveira ME, Lima GD, Pellini AC, Ribeiro MC, et al. Influenza B outbreak on a cruise ship off the São Paulo Coast, Brazil. J Travel Med. 2014;21(5):298-303.
7. Gravningen K, Henriksen S, Hungnes O, Svendsen K, MacDonald E, Schirmer H, et al. Risk factors, immune response and whole-genome sequencing of SARS-CoV-2 in a cruise ship outbreak in Norway. International Journal of Infectious Diseases. 2022;118:10-20.
8. Hatzianastasiou S, Mouchtouri VA, Pavli A, Tseroni M, Sapounas S, Vasileiou C, et al. COVID-19 Outbreak on a Passenger Ship and Assessment of Response Measures, Greece, 2020. Emerg Infect Dis. 2021;27(7):1927-30.
9. Mouchtouri et al. HEALTHY SAILING Procedures for syndromic surveillance. (2024). [Available from: https://healthysailing.eu/].

10. Weber TP, Stilianakis NI. Inactivation of influenza A viruses in the environment and modes of transmission: a critical review. JInfect. 2008;57(5):361-73.

11. Chen S, Chio C, Jou L, Liao C. Viral kinetics and exhaled droplet size affect indoor transmission dynamics of influenza infection. Indoor Air. 2009;19(5).

12. Chen S-C, Liao C-M. Modelling control measures to reduce the impact of pandemic influenza among schoolchildren. Epidemiology & Infection. 2008;136(8):1035-45.

13. Chen S-C, Liao C-M. Probabilistic indoor transmission modeling for influenza (sub) type viruses. Journal of Infection. 2010;60(1):26-35.

14. Shaman J, Kohn M. Absolute humidity modulates influenza survival, transmission, and seasonality. ProcNatlAcadSciUSA. 2009;106(9):3243-8.

15. World Health O. Interim WHO Technical advice for case management of pandemic (H1N1) 2009 on ships - Draft 2009.

16. Centers for Disease Control and Prevention. Update: influenza activity -- United States, 1997-98 season. MMWR MorbMortalWklyRep. 1997;46(46):1094-8.

17. Russell A. Border health on the Pacific Dawn. AustNursJ. 2009;17(2):29.

18. Kak V. Infections in confined spaces: cruise ships, military barracks, and college dormitories. InfectDisClinNorth Am. 2007;21(3):773-77x.

19. Wilson ME. The traveller and emerging infections: sentinel, courier, transmitter. JApplMicrobiol. 2003;94 Suppl:1S-11S.

20. Miller JM, Tam TW, Maloney S, Fukuda K, Cox N, Hockin J, et al. Cruise ships: high-risk passengers and the global spread of new influenza viruses. ClinInfectDis. 2000;31(2):433-8.

21. Bean B, Moore BM, Sterner B, Peterson LR, Gerding DN, Balfour HH, Jr. Survival of influenza viruses on environmental surfaces. JInfectDis. 1982;146(1):47-51.

22. Barker J, Stevens D, Bloomfield SF. Spread and prevention of some common viral infections in community facilities and domestic homes. JApplMicrobiol. 2001;91(1):7-21.

23. Rice EW, Adcock NJ, Sivaganesan M, Brown JD, Stallknecht DE, Swayne DE. Chlorine inactivation of highly pathogenic avian influenza virus (H5N1). EmergInfectDis. 2007;13(10):1568-70.

24. Centers for Disease Control and Prevention. (updated 11 May 2023). People with Certain Medical Conditions.

25. European Centre for Disease Prevention and Control. Questions and answers on COVID-19: Medical information. [Available from: https://www.ecdc.europa.eu/en/covid-19/questions-answers/questions-answers-medical-info].

26. Centers for Disease Control and Prevention. (updated 20 July 2023). Long COVID or Post-COVID Conditions.

27. Davis HE, McCorkell L, Vogel JM, Topol EJ. Long COVID: major findings, mechanisms and recommendations. Nature Reviews Microbiology. 2023;21(3):133-46.

28. Centers for Disease Control and Prevention. Yellow Book COVID-19. (2024). [Available from: https://www.cdc.gov/yellow-book/hcp/travel-associated-infections-diseases/covid-19.html].

29. Kissler SM, Fauver JR, Mack C, Olesen SW, Tai C, Shiue KY, et al. Viral dynamics of acute SARS-CoV-2 infection and applications to diagnostic and public health strategies. PLoS biology. 2021;19(7):e3001333.

30. Takahashi K, Ishikane M, Ujiie M, Iwamoto N, Okumura N, Sato T, et al. Duration of infectious virus shedding by SARS-CoV-2 Omicron variant–infected vaccinees. Emerging infectious diseases. 2022;28(5):998.

31. Van Kampen JJ, van de Vijver DA, Fraaij PL, Haagmans BL, Lamers MM, Okba N, et al. Duration and key determinants of infectious virus shedding in hospitalized patients with coronavirus disease-2019 (COVID-19). Nature communications. 2021;12(1):267.

32. Madewell ZJ, Yang Y, Longini Jr IM, Halloran ME, Vespignani A, Dean NE. Rapid review and meta-analysis of serial intervals for SARS-CoV-2 Delta and Omicron variants. BMC Infectious Diseases. 2023;23(1):429.

33. Zeng K, Santhya S, Soong A, Malhotra N, Pushparajah D, Thoon KC, et al. Serial intervals and incubation periods of SARS-CoV-2 Omicron and Delta variants, Singapore. Emerging infectious diseases. 2023;29(4):814.

34. SeyedAlinaghi S, Karimi A, Mojdeganlou H, Pashaei Z, Mirzapour P, Shamsabadi A, et al. Minimum infective dose of severe acute respiratory syndrome coronavirus 2 based on the current evidence: a systematic review. SAGE open medicine. 2022;10:20503121221115053.

35. European Centre for Disease Prevention and Control. Considerations for infection prevention and control practices in relation to respiratory viral infections in healthcare settings. (updated 6 February 2023).

36. National Center for Immunization. Science Brief: SARS-CoV-2 and Surface (Fomite) Transmission for Indoor Community Environments. CDC COVID-19 Science Briefs [Internet]: Centers for Disease Control and Prevention (US); 2021.

37. European Centre for Disease Prevention and Control. Questions and answers on COVID-19: Basic facts. (updated 12 June 2023). [Available from: https://www.ecdc.europa.eu/en/covid-19/questions-answers/questions-answers-basic-facts].

38. UK Health Security Agency. Respiratory syncytial virus: the green book, chapter 27a. (Accessed 25 February 2025). [Available from: https://www.gov.uk/government/publications/respiratory-syncytial-virus-the-green-book-chapter-27a].

39. Centers for Disease Control and Prevention. RSV in Adults. (2025). [Available from: https://www.cdc.gov/rsv/adults/index.html].

40. European Centre for Disease Prevention and Control. Respiratory syncytial virus (RSV). (Accessed 4 December 2025). [Available from: https://www.ecdc.europa.eu/en/respiratory-syncytial-virus-rsv].

41. European Centre for Disease Prevention and Control. Seasonal influenza - Risk for people. (Accessed 4 December 2025). [Available from: https://www.ecdc.europa.eu/en/seasonal-influenza?etrans=hu&type_op=or&type%5b3040%5d=3040&tid_op=or&tid%5b0%5d%5btarget_id%5d=278&items_per_page=4&sort_by=published_at&sort_order=desc&block_config_key=standard%3asr4dfzc7q-9pvpig-ubnxwcrbpl9sfhe6bcdflr4lvy&page=6].

42. Public Health Agency of Canada. Respiratory syncytial virus: Infectious substances pathogen safety data sheet. (2023). [Available from: https://www.canada.ca/en/public-health/services/laboratory-biosafety-biosecurity/pathogen-safety-data-sheets-risk-assessment/respiratory-syncytial-virus.html].

43. Vink MA, Bootsma MCJ, Wallinga J. Serial intervals of respiratory infectious diseases: a systematic review and analysis. American journal of epidemiology. 2014;180(9):865-75.

44. Centers for Disease Control and Prevention. How RSV Spreads. (Accessed 30 August 2024). [Available from: https://www.cdc.gov/rsv/causes/index.html].

45. Centers for Disease Control and Prevention. Symptoms and Care of RSV. (Accessed 30 August 2024). [Available from: https://www.cdc.gov/rsv/symptoms/index.html].

46. Munywoki PK, Koech DC, Agoti CN, Bett A, Cane PA, Medley GF, et al. Frequent asymptomatic respiratory syncytial virus infections during an epidemic in a rural Kenyan household cohort. The Journal of infectious diseases. 2015;212(11):1711-8.

47. European Centre for Disease Prevention and Control. (2024). Proposed case definitions for RSV infection under EU epidemiological surveillance: European Centre for Disease Prevention and Control 2024.

Annex 31: Template for pre-embarkation screening questionnaire

Demographics

- Full name
- Date
- Ship
- Port
- Date of birth

Question for visiting areas that have been characterised as "affected" by WHO

- Have you stayed in or travelled to any of the countries in the list published on www.who.int (WHO list of affected areas)?

Question about acute respiratory illness

- In the last … days before boarding, have you had any of the following symptoms?
  - ☐ fever
  - ☐ cough
  - ☐ sore throat
  - ☐ runny nose
  - ☐ general weakness, fatigue, and muscle pain

- In the last … days before boarding, have you been in contact with a person who had the above-mentioned symptoms?

- What is your vaccination status for …?

Annex 32: Examples of informative leaflets for the respiratory infections

(source: ECDC & US CDC)

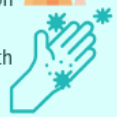
Stay Healthy

Essential information on common respiratory infections on board

Outbreaks of COVID-19, seasonal influenza, respiratory syncytial virus (RSV) infection, and other viral respiratory infections can occur at any time of the year among cruise ship passengers and crew members.

- COVID-19 is an illness caused by SARS-CoV-2 that emerged in late 2019 and quickly spread. The virus continues to circulate in communities and remains a potentially serious risk to health.
- Influenza (flu) is a contagious disease with mostly respiratory symptoms caused by infection with an influenza virus.
- RSV is a common respiratory virus that usually causes mild, cold-like symptoms.

HOW ARE THOSE VIRUSES TRANSMITTED?



Respiratory viruses are primarily spread by inhalation of the air that contains droplets from infected people who cough or sneeze or talk or by direct deposition of the virus directly to the mucous membranes of the eyes, nose and mouth. Respiratory viruses can also spread indirectly by touching a surface or object with the virus on it and then touching the mouth, the nose, or possibly the eyes.

HOW WILL I KNOW I HAVE IT?

Symptoms of respiratory infections include:

- Fever or feeling severish
- Respiratory symptoms such as cough or runny nose or nasal congestion
- Sore throat
- Shortness of breath
- Difficulty breathing
- Chills
- Body aches (particularly muscle pain)
- Headache
- Chills
- General weakness or fatigue
- A change in or loss of taste or smell
- Vomiting
- Diarrhoea

In some cases, severe complications could occur even in normally healthy persons who become infected with the virus.

WHAT SHOULD I DO IF I GET SICK?

- **Report** immediately.
- **Self-isolate**: Stay at your cabin.
- **Seek Medical advice** at your cabin.
- Immediately **dispose of your used tissue** in a waste bin.

HOW DO I PREVENT THE SPREAD?

Before travel

- Be up to date with all routine vaccines including vaccines for COVID-19, influenza, and RSV.
- Check travel health requirements with cruise line.
- Do not travel if experiencing symptoms.

During travel

- Keep physical distancing!
- Aoid close contact with sick people!
- Practice hand hygiene - Wash or clean your hands frequently!
- Washing or disinfecting your hands thoroughly will help protect you from viruses.
- Practice respiratory etiquette
- Wear face mask
- Avoid touching your eyes, nose or mouth!

After travel

If you experience a fever (38°C, 100°F or higher) or other symptoms within seven days of returning from travel, promptly call for medical help and inform them of your recent trip.

Avoid contact with others while unwell.

HIGHER RISK GROUPS

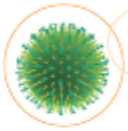
Some individuals face greater risks from respiratory infections. This group includes

- the **elderly**
- **people of any age with chronic medical conditions** (such as metabolic diseases, chronic lung conditions, heart disease, liver disease, blood conditions, morbid obesity, genetic conditions, chronic kidney diseases or treatments that suppress the immune function),
- **pregnant women**, and
- **children under five years.**

ecdc
EUROPEAN CENTRE FOR DISEASE PREVENTION AND CONTROL

Prototype Product
Produced for demonstration purpose only. Messages and design may need to be adapted for different national contexts.

What you need to know about Influenza



What is Influenza?

Seasonal influenza – or 'flu' – is caused by a virus which infects the respiratory system (nose, throat, bronchi and sometimes lungs). It is a communicable infection spread from person to person via large droplets from the coughs and sneezes of an infected person (direct) or by indirect contact.

How do you catch influenza?

Influenza (the flu) spreads from person to person in the following ways: in droplets from an infected person coughing and sneezing and indirect contact when droplets or secretions from the nose and throat settle on objects (including hands) which then are touched by other people who touch their own mouth or nose. Occasionally influenza is spread through finer droplets called aerosols, though this is uncommon.

How do you know you have influenza?

Individuals are most infectious soon after they develop symptoms and, although they can continue to excrete viruses for up to five days after the onset of symptoms (7 days in children), the amount of virus and hence the infection risk drops steadily. The disease can be anything from mild to very severe: someone suffering from the flu can experience anything from only few symptoms to becoming seriously ill.

Symptoms

Common symptoms include:

runny or stuffy nose	headache	tiredness
fever	cough	diarrhoea *
body aches	sore throat	vomiting *

* more common among children than adults

It is most important to stay home and away from others when you begin to develop symptoms.

To avoid getting influenza:

Wash your hands regularly [and especially before eating]

Cover your mouth and nose with a tissue when you sneeze

Dispose of tissues properly

If you do not have a tissue available, cover your mouth and nose

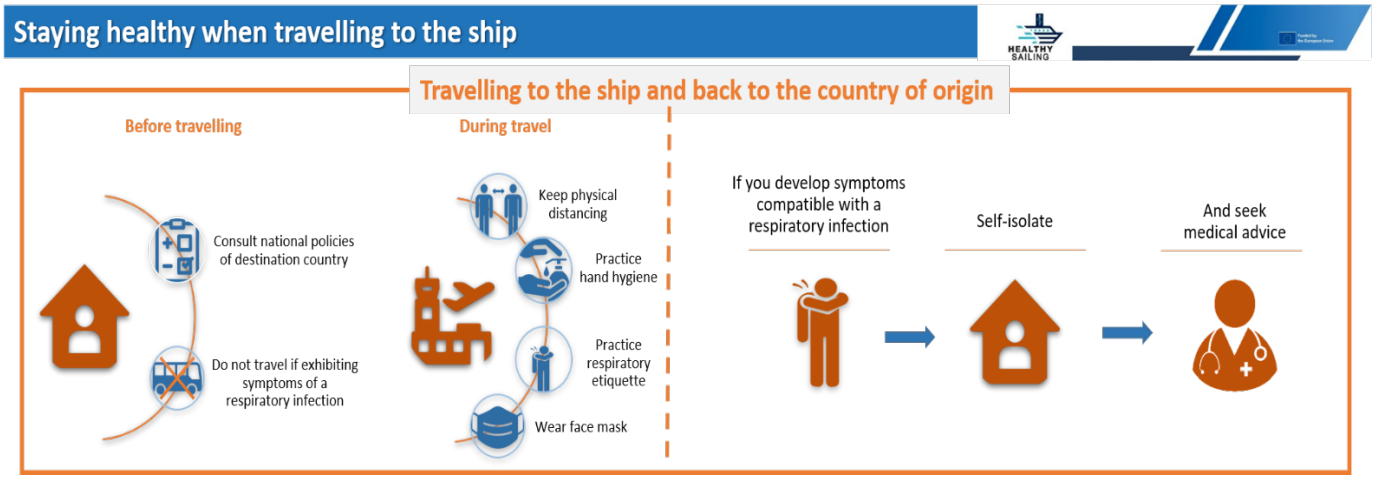
Stay at home when you are ill

What is an influenza epidemic?

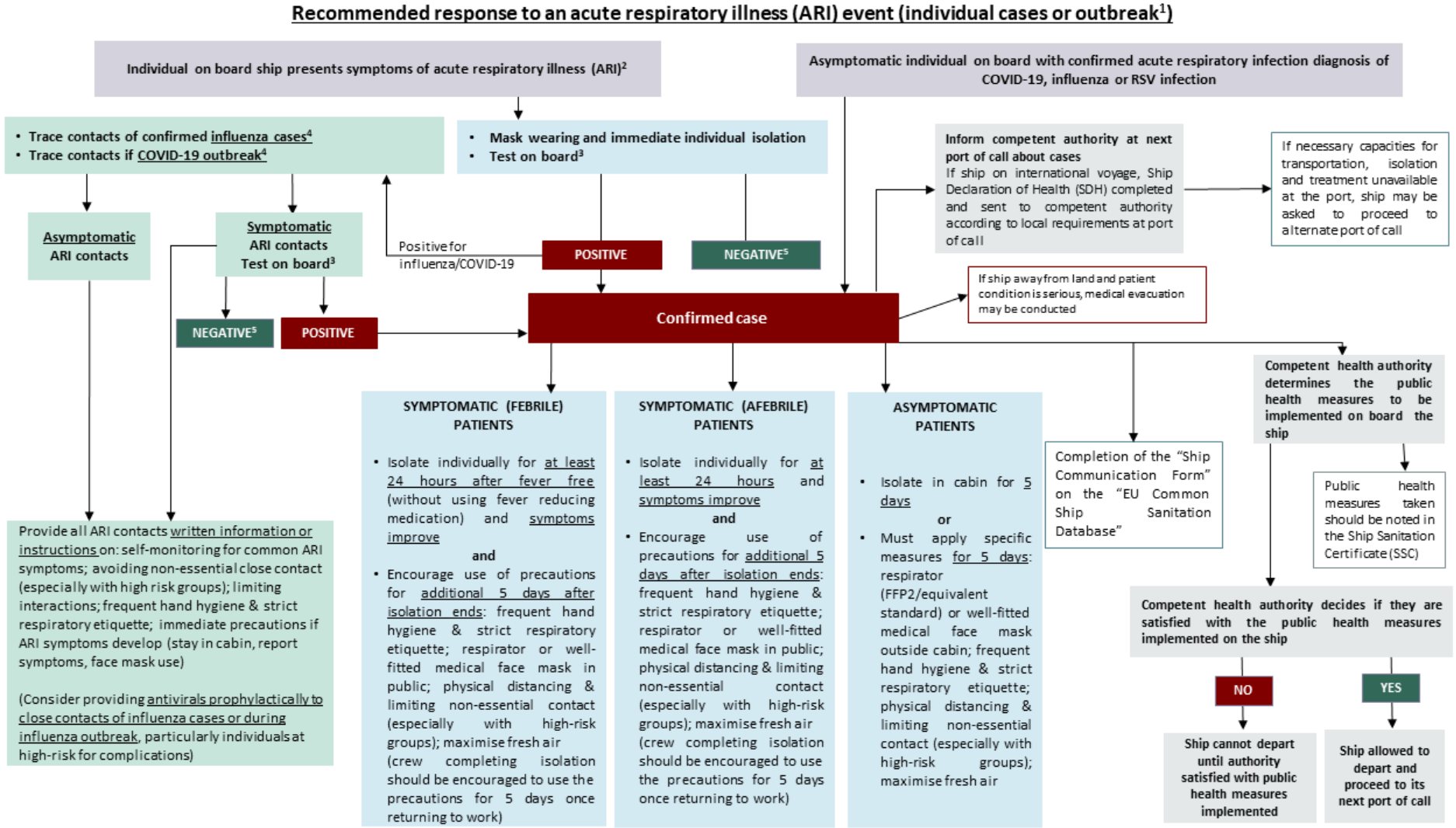
Influenza rapidly spreads around the world in seasonal epidemics. Due to its high contagiousness, it is commonly thought that seasonal influenza affects 5-15% of the global population every year. Influenza imposes a considerable burden in the form of health-care costs and lost productivity.

Who deals with influenza in Europe?

In addition to national authorities, the European Union has a specialised agency dealing with the prevention of communicable diseases such as influenza, the European Centre for Disease Prevention and Control (ECDC). ECDC's mission is to identify, assess and communicate current and emerging threats to human health posed by infectious diseases.


Staying healthy when travelling to the ship
Travelling to the ship and back to the country of origin
Before travelling
Consult national policies of destination country
Do not travel if exhibiting symptoms of a respiratory infection
During travel
Keep physical distancing
Practice hand hygiene
Practice respiratory etiquette
Wear face mask
If you develop symptoms compatible with a respiratory infection
Self-isolate
And seek medical advice

Annex 33: Recommended response to an acute respiratory illness event



[1] During significant ARI outbreaks: targeted indoor use of face masks by crew should be considered; passengers may be advised to wear face mask indoors

[2] ARI: Acute onset of at least two of the following four respiratory symptoms of presumed viral aetiology:

a) fever/ feverishness; b) cough; c) coryza (nasal congestion or runny nose); d) sore throat;

and/or

a) confirmed acute respiratory infection diagnoses of COVID-19; b) influenza; and c) RSV infection.

This excludes: Streptococcal pharyngitis, Epstein-Barr virus infection, diagnoses of bacterial pneumonia: either clinical or test-positive (e.g., by urine Legionella antigen, urine Streptococcus pneumoniae antigen), and non-infectious conditions as determined by the ship's medical doctor (e.g., allergies).

[3] Diagnostic testing capabilities should be available for respiratory infections (e.g., influenza A and B, COVID-19) and other infections presenting with similar symptoms (e.g., Group A Streptococcus, Streptococcus pneumoniae, and Legionella). Ships could consider carrying point-of-care diagnostic tests (RT-PCR panel kits, RADTs) and specimen collection equipment for shore-based or onboard testing.

[4] Contact tracing recommended for confirmed influenza cases. Contact tracing may be considered if COVID-19 outbreak, to inform targeted testing strategy.

[5] "A negative rapid antigen diagnostic test result in a symptomatic patient does not exclude the possibility of infection with influenza, SARS−CoV−2, or RSV. Clinical diagnosis should be considered, or confirmation of results using molecular test and consideration of differential diagnosis". Based on a risk assessment, consider the need for isolation, contact tracing, use of face masks, and the implementation of additional measures, as appropriate.

Annex 34: Examples of preventive measures for gastroenteritis infections, including norovirus

Passenger ship companies	• Perform pre-embarkation screening through the use of a health questionnaire and/or the provision of health advice to all incoming passengers and crew. If an outbreak occurred during the previous voyage, the same screening should also be applied to crew and passengers remaining on board for the next voyage. • Isolate ill passengers in their cabins. • Isolate ill crew. • Close off potentially contaminated areas until cleaned and disinfected. • Educate passengers on preventing transmission. • Restrict the activities of exposed food handlers who have had contact with cases. • Restrict health care personnel who have been in contact with infected persons. • Provide PPE (aprons, gloves) for health care personnel caring for and others in contact with affected persons. • Protect self-service areas (and all open food) and self-service utensils. • Use dissolvable or designated laundry bags and designated machines for laundry from affected persons. • Provide sanitary diaper/nappy changing in child care areas. • Ensure the safety of potable water sources and production/distribution. • Ensure safe sewage disposal and deal quickly with any blockages or backflow issues.
Passengers	• Wash hands after using the toilet. • Wash hands before eating or entering a food service area. • Wash hands after changing nappies/diapers. • Wash hands before giving yourself or someone else medicine. • Shower before using a recreational water facility. • Postpone travelling if ill.
Crew	• Wash hands after using the toilet. • Wash hands before eating or entering a food service area. • Wash hands after changing nappies/diapers. • Wash hands before giving yourself or someone else medicine. • Cabin crew to report incidents involving body fluid spillages. • Cleaning teams to be trained and supervised. • Wear PPE such as gloves and gowns when cleaning. • Clean and disinfect all surfaces in repeated contact with human hands on a routine basis. • Clean and disinfect all surfaces and objects soiled by vomit or faeces immediately. • Exclude ill crew (with relevant symptoms) from working. • Exclude exposed food handlers from contact with food. • Minimise or eliminate bare hand contact with food. • Cook all foods to the recommended core temperatures and times. • Thoroughly wash all vegetables and fruit before preparation. • Decontaminate and wash leafy vegetables and berries.

Annex 35: Disinfectants

Disinfectants used routinely and during outbreaks need to be effective against a range of bacteria and viruses. This annex focuses on disinfectants used to inactivate norovirus. At present, disinfectants cannot be routinely tested directly against human norovirus; therefore, surrogates for norovirus are normally used to test the efficacy of disinfectants. Guidance on disinfectants and disinfection procedures is based on extrapolation from test results conducted using these surrogates. Feline Calicivirus (FCV), Murine Norovirus (MNV), and coliphage MS2 have been used as surrogates for norovirus in laboratory studies. Recent studies suggest the use of more than one surrogate virus to test the efficacy of disinfectants, as FCV is significantly less resistant to disinfection than the other surrogates and, additionally, has different physicochemical properties than human norovirus. Nevertheless, disinfectants are considered effective when they achieve at least a 4-log reduction in viral titre (99.99 %).

Chlorine bleach

High concentrations of sodium hypochlorite (1,000 to 5,000 mg/L) are effective against a wide range of bacteria and viruses, and have been shown to be effective against MNV, FCV, and coliphage MS2. A concentration of 5,000 mg/L sodium hypochlorite solution with approximately four minutes wet contact time is considered necessary to inactivate the virus. If 1,000 mg/L sodium hypochlorite solutions are used on clean surfaces, then the wet contact time must be at least 5 to 10 minutes. Hypochlorite solutions lose effectiveness on standing; therefore, freshly made solutions (used within 24 hours after preparation) are essential during outbreaks.

Disinfection procedures with chlorine bleach

Before disinfection with chlorine bleach, cleaning with detergent and warm water to remove all organic matter is necessary. Moreover, it should be noted that chlorine gas could be released when chlorine disinfectants are applied directly to urine. The process for cleaning surfaces contaminated by body fluid spillages is given in item 7.1.8 in part A of the manual. Products combining detergent and disinfection (sodium hypochlorite solution) properties used as a "one-step" process have not been proved to be as effective as the two-step process of cleaning followed by disinfection.

Other chemical disinfectants

Biocidal products used on board ships sailing in EUMS must comply with the terms and conditions of the authorisation stipulated in accordance with Article 22(1), as well as the labelling and packaging requirements laid down in Article 69 of Regulation (EU) No 528/2012. Disinfectants must be used in compliance with the following terms and conditions, as specified on the label and in the manufacturer's instructions:

- the uses for which the biocidal product is authorised;
- directions for use, frequency of application, and dose rate;
- the expiry date relevant to normal storage conditions;
- the period of time needed for the biocidal effect; and

- the interval to be observed between applications of the biocidal product, or between application and the next use of the treated product, or the next access by humans or animals to the area where the biocidal product has been used.

The list of products approved in the US for use against norovirus can be found on the website of the US Environmental Protection Agency (EPA), List G: EPA's Registered Antimicrobial Products Effective Against Norovirus (feline calicivirus): https://www.epa.gov/pesticide-registration/epas-registered-antimicrobial-products-effective-against-norovirus-feline.

Physical disinfection

Chlorine bleach can damage textiles. As an alternative means for norovirus inactivation, thermal disinfection can be used for clothes and linen, as described in paragraph 7.6 in part A of the manual. Carpets and furnishings that cannot be laundered can be cleaned with detergent and warm water, and then with steam.

Other virucidal disinfectants

The efficacy of quaternary ammonium compounds (QUAT) and triclosan against non-enveloped viruses has not been demonstrated. Alcohol-based disinfectants may be used to control bacteria but are generally not very effective against viruses such as norovirus/FCV; therefore, their use as surface disinfectants is not recommended. Hydrogen peroxide, iodine-based disinfectants, glutaraldehyde-based disinfectants, and chlorine dioxide have been reported to be effective disinfectants. However, some of these products may be of limited practical use due to toxicity, discolouring properties, or practical difficulties in their use.

Reference list

1. Centers for Disease Control and Prevention. Updated norovirus outbreak management and disease prevention guidelines. MMWR Recomm.Rep. 2011;60(RR-3):1-18.
2. European Centre for Disease Prevention and Control. Prevention of norovirus infection in schools and childcare facilities. Stockholm: ECDC; 2013.
3. Hoelzer K., Fanaselle W., Pouillot R., Van Doren J.M., Dennis S. (2013). Virus inactivation on hard surfaces or in suspension by chemical disinfectants: systematic review and meta-analysis of norovirus surrogates. J Food Prot. 2013 Jun;76(6):1006-16.
4. Park G.W., Sobsey M.D. (2011). Simultaneous comparison of murine norovirus, feline calicivirus, coliphage MS2, and GII.4 norovirus to evaluate the efficacy of sodium hypochlorite against human norovirus on a fecally soiled stainless steel surface. Foodborne Pathog Dis. 2011 Sep;8(9):1005-10.

Annex 36: Cleaning and disinfection procedures for dealing with potentially contaminated surfaces

Training and supervision of cleaning staff

Isolation of contaminated areas: On passenger ships, any public area in which a body fluid spillage has occurred (contamination by vomit or faeces) should be closed or cordoned off immediately, and access should be prevented until it has been cleaned and decontaminated with an appropriate virucidal disinfectant (**Annex 35**, page 366). The residuals should be covered as quickly as possible after the incident. Once cleaned and disinfected, the area should be ventilated and, where possible, not opened for public access for at least 1-2 hours after cleaning.

Glove use: Proper usage of gloves is needed when cleaning up vomit or faeces. Care should be taken when removing them, with thorough hand washing carried out afterwards, preferably followed by using an alcohol-based hand sanitiser. If gloves are contaminated and used for multiple tasks, contamination will spread easily. Glove use by food service workers helps to prevent any faecal transmission to ready-to-eat foods, but it is not a substitute for good hand hygiene.

Removing norovirus: The most effective way of removing norovirus from surfaces is to clean with detergent before applying disinfectant. Washing alone cannot sufficiently reduce the number of viral particles to a safe level. The surface should then be disinfected with a product effective against viruses.

Types of disinfectants: A list of disinfectants said to kill norovirus and the disinfection procedure is shown in (**Annex 35**, page 366).

Water quality: On board ships, water used for chemical dilution and cleaning must be of the same quality as the potable water. Problems arise when using quaternary ammonia compounds in water with calcium or magnesium hardness above 500 mg/L. Poor quality water with contaminants, such as iron, hydrogen sulphides, and dissolved solids, limit the action of disinfectants and cleaners. It is critical that the water used is as free from organic solids as possible.

Cloths and wastewater: The contaminated area should be cleaned and disinfected using separate cloths and buckets for cleaning and disinfection. Cloths that have been used for cleaning or disinfection of contaminated areas should be disposed of. Wastewater from cleaning must be disposed of as sewage.

Toilets: Fixtures and fittings in toilet areas should be cleaned and disinfected with 1,000 mg/L sodium hypochlorite solution, or a suitable equivalent virucidal disinfectant. Floors and other hard horizontal surfaces within an 8-metre radius of a contamination incidence should be cleaned and disinfected. Mop heads, if reused, should be laundered in hot water and heat-dried on the hottest setting, or discarded, as described in paragraph 7.6 in part A of the manual.

Frequency of cleaning: During an outbreak, it is recommended that public toilets are cleaned at least once an hour when in use.

Steam cleaning: Steam cleaning is claimed to be an effective method of cleaning soft surfaces, such as carpets and curtains, during outbreaks. However, steam cleaning is questionable as a

disinfection method alone, as it is difficult to reach high enough temperatures within soft furnishings. It may be that it has a role combined with other measures. If detergents are used, application must be done with a clean disposable cloth.

Soft furnishings: Chairs and sofas, as well as wall coverings and window treatments, should be thoroughly disinfected with suitable virucidal disinfectant after all visible contaminants have been removed. Allowing them to air dry in the sun is beneficial, if possible. Soiled mattresses should be steam cleaned or discarded. Contaminated carpets should be steam cleaned and treated with a suitable virucidal disinfectant. Furnishings and other soft surfaces within an 8-metre radius of known contamination points should be cleaned and disinfected as above.

Laundry: Laundry coming from known cases, or any soiled laundry during an outbreak, should be considered infectious. Laundry workers should use universal precautions when handling laundry during an outbreak. Laundry should be transported to the laundry area in separate trolleys/carts, in sealed bags designated as bio-waste. Ideally, dissolvable alginate laundry bags should be used for all items from the cabins of affected people, as they can be placed into washing machines without opening. Once in the laundry, they must be laundered and handled separately from other items. The hottest water and the highest machine dryer setting should be used, as described in paragraph 7.6 in part A of the manual. Soiled laundry suspected of being contaminated must not be sorted or come in contact with any surfaces in the laundry. Any (non-alginate) bags labelled as bio-waste should be emptied directly into the washers. A suitable detergent should be used in the washing machine, e.g., accelerated potassium peroxymonosulfate.

Food service areas: Using the principles above, carefully remove all vomit residuals and clean the area. Disinfect food preparation areas with a designated virucidal disinfectant. Destroy all exposed foods and any foods that were prepared by an infected food handler.

Leisure facilities: Facilities such as deckchairs and sun loungers should not be overlooked.

Recreational water facilities: If contaminated by a loose stool faecal incident, recreational water facilities should be drained, cleaned with detergent, and then disinfected with a suitable virucidal disinfectant before refilling. Follow health authority guidance on the appropriate actions for dealing with vomit and formed stool faecal incidents in RWFs.

Annex 37: Suggested content of an Outbreak Management Plan (OMP)

1. *Basic epidemiological information*
2. *Purpose and scope of the OMP*
3. *Establishment of on board incident team*
   - 3.1. Compositions
   - 3.2. Duties and responsibilities
4. *Outbreak management procedures*
   - 4.1. Response phases
     - 4.1.1. Definitions of response phases (e.g., green, amber red)
     - 4.1.2. Criteria for defining an outbreak
     - 4.1.3. Criteria for defining a case
       - 4.1.3.1. Clinical support for diagnosis
     - 4.1.4. Criteria for defining an outbreak is over
   - 4.2. Monitoring
   - 4.3. Communication and education of crew and passengers
     - 4.3.1. Non-outbreak situation
     - 4.3.2. Outbreak situation
   - 4.4. Hygiene procedures (cleaning, disinfection, response to accidental faecal, vomit, or blood releases, use of PPE, etc.)
   - 4.5. Notification procedures within the company and with competent authorities
   - 4.6. Documentation and record keeping
     - 4.6.1. GI log
       - 4.6.1.1. GI questionnaire
     - 4.6.2. Recording forms
     - 4.6.3. SDH
   - 4.7. Instructions on OMP per crew member post: Instructions per crew member position for both non-outbreak situation and during an outbreak situation.

     Example of a list of instructions to be included in the OMP for each crew member post:

Crew Position \ Tasks	Education	Documentation	Communication	Monitoring	Reporting	Embarkation	Dissembarkation	Isolation	Medical Facility
Master	x		x						
Group Coordinator/ Event Coordinator	x	x							
F&B Director	x	x			x				
Chief Engineer	x	x		x					
HR Manager	x								
Hotel Manager	x	x	x		x				
Doctor	x		x	x	x			x	x
Staff Captain	x	x	x	x					

5. *Update and modification of OMP*

Annex 38: Epidemiology of gastrointestinal illness on board passenger ships

A metanalysis conducted by the EU HEALTHY SAILING project and EU SHIPSAN analysed data from 45 outbreaks on 26 cruise ships from 1990 to 2020 and identified a weighted average of prevalence (attack rate) for passengers of 7 % (95 % confidence interval (CI): 5.00-9.00) and for crew of 2 % (95 % CI: 0.00-3.00). Person-to-person transmission was the most frequent mode, reported in 35 of the 45 outbreaks (in 14 the only mode and in 21 as part of multiple transmission routes). Having an ill cabin mate (OR = 38.70; 95 % CI: 13.51-110.86) was the most common risk factor. Six outbreak investigations reported poor hygiene, while four reported satisfactory hygiene in the cruise setting. Behavioural risk factors among travellers were investigated in three of the 13 studies. The findings indicated a need for behavioural interventions to improve personal hygiene, symptom reporting, and compliance with isolation measures, and for reconsidering current isolation policies where symptomatic and healthy individuals are isolated in the same cabin (1). A review of medical centre data from four cruise ships has shown that gastrointestinal illnesses account for less than 10 % of all visits by passengers to ships' infirmaries (2).

The likelihood of contracting gastroenteritis on an average seven-day cruise at sea is less than 1 % (3).

The majority of the reported outbreaks to the VSP were attributed to norovirus infection, according to the website database (https://www.cdc.gov/vessel-sanitation/cruise-ship-outbreaks/earlier-outbreaks.html); however, foodborne disease outbreaks also occur. In a review of outbreaks of foodborne diseases associated with passenger ships from 1975 to 2003, 41 out of a total of 50 outbreaks (82 %) were due to bacterial pathogens (4). The principal pathogen was *Salmonella*, which caused more than one-quarter of the outbreaks. Other agents were enterotoxigenic *E. coli*, *Shigella*, *Vibrio cholera*, *Staphylococcus aureus*, *Clostridium perfringens*, *Trichinella*, and *Cyclospora*. Factors associated with the outbreaks included inadequate temperature control, infected food handlers, contaminated raw ingredients, cross-contamination, inadequate heat treatment, and onshore excursions. Seafood was the most common food vehicle implicated in outbreaks (4).

Waterborne outbreaks also occur on passenger ships. A review reported that from 1970 to 2003 there were 21 reported outbreaks of gastroenteritis associated with ships of all types in which the probable or possible cause was waterborne. Of these, 12 were positively identified as having water or ice as the source. The majority of outbreaks were associated with passenger ships (18/21, 86 %) (5). Enterotoxigenic *E. coli* was the principal pathogen and was involved in one-third of the outbreaks. Other pathogenic agents were *Salmonella*, *Shigella*, *Cryptosporidium*, and *Giardia lamblia* (5).

Reference list

1. Mouchtouri VA, Simou E, Soteriades S, Rousou X, Kontouli KM, Kafetsouli D, et al. Systematic literature review and meta-analysis on preventing and controlling norovirus outbreaks on cruise ships, 1990 to 2020: calling for behaviour change strategies of travellers. Eurosurveillance. 2024;29(10):2300345.
2. Peake D.E., Gray C.L., Ludwig M.R. and Hill C.D. (1999). Descriptive epidemiology of injury and illness among cruise ship passengers. Ann Emerg Med 33(1): 67-72.
3. Cramer E.H., Blanton C.J., Blanton L.H., Vaughan G.H. Jr., Bopp C.A. and Forney D.L. (2006). Epidemiology of gastroenteritis on cruise ships, 2001-2004. Am J Prev Med 30(3): 252-257.

4. Rooney R.M., Cramer E.H., Mantha S., Nichols G., Bartram J.K., Farber J.M. and Benembarek P.K. (2004b). A review of outbreaks of foodborne disease associated with passenger ships: evidence for risk management. Public Health Rep 119(4): 427-434.
5. Rooney R.M., Bartram J.K., Cramer E.H., Mantha S., Nichols G., Suraj R. and Todd E.C. (2004a). A review of outbreaks of waterborne disease associated with ships: evidence for risk management. Public Health Rep 119(4): 435-442.

Annex 39: Background information on Legionnaires' disease and *Legionella* spp.

How water systems on ships can be colonised by *Legionella* spp.

Legionella species can be found as free-living organisms, associated with biofilms or they can live and multiply inside protozoa such as amoebae. Aquatic environments, such as ponds, ground waters, wells, rivers, and wet soil, are natural sources of legionellae and they are also found in artificial environments such as hot and cold domestic water systems. Water containing legionellae may be bunkered by ships. Legionellae can colonise internal surfaces of water systems and at appropriate warm temperatures (20-45 °C, 68-113 °F) they can proliferate, creating colonies with high numbers of bacteria. A biofilm is the accumulation of microorganisms, covered by a protective layer and attached to the water system surface. The presence of a biofilm within the internal surfaces of a water system provides nutrients and shelter to the *Legionella* bacteria, encouraging growth and colonisation. Additionally, parts of the biofilm may be released, contaminating the water and creating additional colonies in other parts of the system.

Outbreaks on passenger ships

Recognised risk factors for Legionnaires' disease include being in an older age group (> 50 years). A review conducted in 2015 found that 8 ships were linked to nine events of Legionnaires' diseases and involved 83 cases (1). Most cases (71%) were linked with the use of 'hot tubs'. The number of outbreaks and cases reported is an underestimate of the true incidence of the disease. As on land, cases associated with ships are difficult to identify because the incubation period of 2-10 days or more means that some passengers may have dispersed widely, including to different countries, before developing symptoms.

To detect Legionnaires' disease outbreaks, surveillance on board the ship is important, together with wider international surveillance schemes (such as by the European Legionnaires' Disease Surveillance Network (ELDSNet)) are necessary.

Characteristics of the microorganism

Studies have shown that:

- Naturally occurring *L. pneumophila* survived and multiplied in water at temperatures between 25 °C (77 °F) and 45 °C (113 °F), with an optimal temperature range of 32-42 °C (90-108 °F) (2).
- At temperatures above 70 °C (158 °F), *Legionella* are destroyed almost instantly (3, 4).
- *Legionella* have been isolated from environmental sources ranging from a pH of 2.7 to 8.3 (5).
- 0.1 mg/L of free chlorine kills 99 % of *L. pneumophila* within 40 minutes (at 21 °C (70 °F), pH 7.6) in laboratory conditions (6).
- *Legionella* survived inside amoebal cysts treated with 50 mg/L free chlorine (7).
- A specific clone of *Legionella pneumophila* sg1 was able to survive for 17 years in a hospital water distribution system, despite several hyperchlorination applications (8).
- *Legionella* have been found in saline water; therefore, there is a risk for contamination of water systems operating with sea water (9).

Reference list

1. Mouchtouri V.A., Rudge J.W. (2015). Legionnaires' disease in hotels and passenger ships: a systematic review of evidence, sources, and contributing factors. Journal of Travel Medicine 22(5):325-37.
2. Yee R.B. and Wadowsky R.M. (1982). Multiplication of Legionella pneumophila in unsterilized tap water. Appl Environ Microbiol 43(6): 1330-1334.
3. Dennis P.J., Green D. and Jones B.P. (1984). A note on the temperature tolerance of Legionella. J Appl Bacteriol 56(2): 349-350.
4. Dennis P.J. and Lee J.V. (1988). Differences in aerosol survival between pathogenic and non-pathogenic strains of Legionella pneumophila serogroup 1. J Appl Bacteriol 65(2): 135-141.
5. Sheehan K.B., Henson J.M. and Ferris M.J. (2005). Legionella species diversity in an acidic biofilm community in Yellowstone National Park. Appl Environ Microbiol 71(1): 507-511.
6. Kuchta J.M., States S., McNamara A., Wadowsky R., Yee R. (1983). Susceptibility of Legionella pneumophila to chlorine in tap water. Applied and Environmental Microbiology 46(5):1134-9.
7. Kilvington S. and Price J. (1990). Survival of Legionella pneumophila within cysts of Acanthamoeba polyphaga following chlorine exposure. J Appl Bacteriol 68(5): 519-525.
8. Garcia M.T., Baladron B., Gil V., Tarancon M.L., Vilasau A., Ibanez A., Elola C. and Pelaz C. (2008). Persistence of chlorine-sensitive Legionella pneumophila in hyperchlorinated installations. J Appl Microbiol 105(3): 837-847.
9. Heller R., Holler C., Sussmuth R. and Gundermann K.O. (1998). Effect of salt concentration and temperature on survival of Legionella pneumophila. Lett Appl Microbiol 26(1): 64-68.

Annex 40: Chlorine disinfection procedures of water tanks and distribution system (1)

Chlorine is used for the treatment of hot and cold water systems. As the bactericidal action of chlorine is pH sensitive and decreases rapidly at values above 7, the pH of the water should be monitored and may need adjustment. In systems that are colonised with bacteria, the chlorine residual will be used up quickly; it is, therefore, essential that monitoring of distal points in all parts of the system is carried out to ensure that an effective concentration of free chlorine is available.

Shock superchlorination

This should be carried out with water temperatures below 30 °C (86 °F), with a single addition of chlorine to the water to achieve a free residual chlorine concentration of 20-50 mg/L (ppm) throughout system. For calculating the sodium or calcium hypochlorite dose required to obtain specific residual chlorine, **Table 28** can be used. After a contact period of at least two hours with 20 mg/L (ppm) of chlorine or at least one hour with 50 mg/L (ppm) of chlorine, the water can be drained. Before discharging to drain it may be necessary to neutralise the chlorine. The system should be flushed and refilled with fresh (potable) water until the level of free chlorine reaches between 0.2 mg/L (ppm) and 5.0 mg/L (ppm).

Table 28: Dose of sodium hypochlorite required to achieve a target residual chlorine concentration for each litre of water

Target residual chlorine concentration (mg/L)	Dose (in mL) of sodium hypochlorite with active chlorine concentration 12.5 % / 14 % / 15 % to be added per each litre of water to be disinfected		
	12.5 %	14 %	15 %
1	0.008	0.007	0.001
2	0.016	0.014	0.003
3	0.024	0.021	0.007
4	0.032	0.029	0.013
5	0.040	0.036	0.020
10	0.080	0.071	0.027
20	0.160	0.143	0.033
50	0.400	0.357	0.067

Reference list

1. ESCMID Study Group for Legionella Infections. (2017). European Technical Guidelines for the Prevention, Control and Investigation of Infections Caused by Legionella species.

Annex 41: Thermal disinfection procedures of hot water distribution system (1)

Thermal shock

Thermal shock treatment at 70-80 °C (158-176 °F) for relatively short periods has been used both for emergency disinfection and as part of long-term control programmes. However, recolonisation can frequently occur rapidly, even within a couple of weeks. This method carries an increased risk of scalding and must be carefully managed to avoid the risk. It is no longer recommended as part of a long-term control programme.

Thermal disinfection is carried out by raising the temperature of the hot water heating system (including any storage) to 70-80 °C (158-176 °F) and then circulating this water throughout the system for up to three days. To be effective, the temperature at the hot water heater should be high enough to ensure that the temperatures at the taps and appliances do not fall below 65 °C (149 °F).

Each tap and appliance should be run sequentially for at least five minutes at the full temperature (taking appropriate precautions to minimise any risk of scalding), and this should be measured. For effective thermal disinfection, the water system needs to be well insulated.

It is essential to check that during the procedure, the temperature of the water in distal points reaches or exceeds 65 °C (149 °F).

At the end of the procedure, samples of water and sediment should be collected at distal points of the installation and tested for *Legionella*. If the result is unsatisfactory, the procedure must be repeated until decontamination is achieved. Following decontamination, microbiological checks should be repeated periodically.

Thermal treatment has the advantage that no special equipment is required so that the procedure can be carried out immediately, provided there is sufficient heat capacity in the system. However, the procedure requires considerable energy and manpower and is not normally practical for large systems. It will not disinfect downstream of any thermostatic mixer valves unless the valves can be overridden, and so is of limited value where such valves are installed. There is a severe risk of scalding at these temperatures. Although the numbers of *Legionella* may be reduced, recolonisation of the water system can occur within a few weeks after treatment, particularly if it has not been accompanied by other remedial control measures. Additionally, where pipework and components do not have sufficient insulation, heat transfer can occur and compromise cold water temperatures in adjacent parts of the system (1).

Maintenance of the temperature between 55-60 °C (131-140 °F)

At 60 °C (140 °F) it takes approximately two minutes to inactivate 90 % of a population of *L. pneumophila*. Hot water installations maintained at temperatures above 55 °C (131 °F) are less frequently colonised by *Legionella*.

Circulating water at 60 °C (140 °F), such that the temperature at each outlet reaches at least 50 °C (122 °F) and preferably 55 °C (131 °F) within one minute of opening the outlet, is the method most commonly used to control *Legionella* in hot water distribution systems.

Although raising the temperature to a constant 60 °C (140 °F) has consistently been shown to control outbreaks it does not necessarily eliminate *Legionella* from the system but reduces them to a level that prevents further cases. Provided there is sufficient heating capacity, it is relatively easy to implement and is easy to monitor continuously. It is important that the temperature of the return on each loop of the system is monitored, as well as the tap and flow temperatures. It has the possible disadvantage of increasing energy consumption, and there is an increased risk of scalding. Where thermostatic mixer valves are installed to reduce the scalding risk, they must be subjected to a planned programme of monitoring and maintenance.

Reference list

1. ESCMID Study Group for Legionella Infections. (2017). European Technical Guidelines for the Prevention, Control and Investigation of Infections Caused by Legionella species.

Annex 42: Personal Protective Equipment

Persons involved in water sampling, cleaning, or other procedure, and who may be potentially be exposed to pathogenic bacteria (e.g., *Legionella*) should wear respiratory protective equipment suitable for particle exclusion to European Standard EN 143 (1). This can be a powered filter and hood or a power-assisted filter and close-fitting full-face mask. It should be borne in mind that the filter on these systems is liable to get wet, and, consequently, resistance to air can increase with consequent discomfort to the operator (2).

Alternatively, a hood or full-face mask fed with breathing quality compressed air may be used. The preferred equipment is a full-face close-fitting airline mask with a positive pressure demand valve, under a hood or helmet protecting the rest of the head. The air supply should come from an oil-free compressor drawing air through a filter from a location well upwind of any jetting operation, or through cylinder supplies of compressed air. Further information on respiratory protective equipment can be obtained from Respiratory Protective Equipment at Work – a Practical Guide (HSG53) (3).

Reference list

1. European Committee for Standardization. (2000). European Standard EN 143.
2. ESCMID Study Group for Legionella Infections. (2017). European Technical Guidelines for the Prevention, Control and Investigation of Infections Caused by Legionella species.
3. Health and Safety Executive. (2013). Respiratory protective equipment at work. A practical guide. HSG53 (Fourth edition, published 2013). HSE Books ISBN 978 0 7176 6454.

Annex 43: Legionnaires' disease case investigation questionnaire

Name of person completing the form
Date reported
Ship name
Cabin number
Date on ship

Possible diagnosis
Legionnaires' disease
Pontiac fever

Personal details
Sex Male ❒ Female ❒
Surname
Forename
Date of birth
Home address
Post code/zip code
Phone number
Occupation
Nationality

Clinical history of case

Date of onset of symptoms: ……..

(malaise, fever, respiratory symptoms, diarrhoea)

Did this patient have pneumonia? Yes ❒ No ❒ Unknown ❒

What were the other main clinical features? ……

……

Has the patient had a recent organ transplant? Yes ❒ No ❒ Unknown ❒

Was the patient immunosuppressed for other reasons? Yes ❒ No ❒ Unknown ❒

If "yes", please give details: ……

Please give details of any other underlying condition: ……

Possible points of exposure to *Legionella* on the ship

In the 2 weeks before the onset of symptoms (please include dates where possible),

did the patient visit a whirlpool spa/spa pool on board? Yes ❒ No ❒ Unknown ❒

If "yes", please give details (did you use the spa or spend time near it?).

If there were multiple spas, which one was used? ……

……

Use a whirlpool spa anywhere else? Yes ❒ No ❒ Unknown ❒

If "yes", please give details: ……

……

Use a shower? Yes ❒ No ❒ Unknown ❒

If "yes", was it: at cabin? ❒ communal? ❒ elsewhere? ❒

Attend a dentist unit? Yes ❒ No ❒ Unknown ❒

If "yes", please give details: .....

.....

Use a nebuliser? Yes ❒ No ❒ Unknown ❒

If "yes", please give details: .....

.....

Spend any time near building works when ashore? Yes ❒ No ❒ Unknown ❒

If "yes", please give details: .....

.....

Spend any time near fountains on board the ship or when ashore? Yes ❒ No ❒ Unknown ❒

If "yes", please give details: .....

.....

Visit a public building when ashore? Yes ❒ No ❒ Unknown ❒

If "yes", please give details: .....

.....

Suspected travel associated infection other than the ship

If the patient has been away from home (other than on this ship) in the 2 weeks before the onset of symptoms of legionellosis, please give details:

Country	Town or resort	Other ferries/ cruise ships/ hotels*	Date of stay	
			From	To

* including number of cabin/room

Company's details (including name of company/hotel/ship): .....

.....

Suspected Hospital acquired infection

Was the patient in hospital or did they visit someone in hospital for any time in the two weeks before the date of onset of symptoms?

Admitted to hospital ❒ Visited hospital ❒ Date of admission/visit ❒

Diagnosis on admission: .....

Type of ward or unit in which patient was resident/ a visitor (including number if known):

.....

If the patient was transferred from another hospital, please give details:

Name of hospital before transfer: .....

Date of stay: from ..... to .....

Suspected employment associated infection

These questions apply to any work carried out in the two weeks before the onset of symptoms.

Has the patient worked with water/water storage systems? Yes ❒ No ❒

If "yes", please give details: .....

.....

Has work involved/been located near cooling towers*? Yes ❒ No ❒ Unknown ❒

If "yes", please give details: .....

.....

(* cooling towers include commercial water cooling systems used in air conditioning plants)

Did the patient had the feel of exposure to a spray of water droplets on his/her face from fountains/cooling towers/water from water storage systems? Yes ❒ No ❒

If "yes", please give details: .....

.....

Legionella microbiology results

Did specimens collected from patient and tested for *Legionella*? Yes ❒ No ❒

If "yes", please specify method of examination and results: .....

Annex 44: Sampling guidelines (1)

Safety measures

PPE should be provided as described in **Annex 42** (page 378).

Sampling the ship's water systems

Sample sites should be chosen to be representative of all the water systems. The water storage and piping plans should be consulted prior to selecting the sample points.

Distribution of sites to be sampled:

1. **Systemic**
   - Incoming cold water to the ship including any water tank.
   - Hot water leaving the water heater.
   - Circulating hot water returning to the heater.

2. **Basic**
   - The outlet nearest to the entry of the hot water into the facility.
   - The most distal sites within the hot and cold distribution systems.
   - The cabin(s) where the infected guest(s) was/were accommodated.
   - The sample points in recreational water facilities.

3. **Risk-based**
   - Cabins on different decks to be representative of the different loops of the distribution systems.
   - Temperature monitoring is an important factor in the risk assessment process to determine appropriate sampling points. For example, samples collected from the warmest point in a cold water system, or the coolest part of a hot water system, are likely to pose the greatest risk of legionellae growth, and survival of legionellae.
   - Areas where there has been stagnation; for example, a closed deck of cabins.

How to sample

Collect one-litre samples in sterile containers containing sufficient sodium thiosulphate pentahydrate to neutralise any chlorine or other oxidising biocide. Measure the temperatures using a calibrated thermometer, placed in the middle of the water stream after the sample has been collected.

Systemic points

If possible, samples should be collected from the water softener, if fitted, from the discharge valves of the hot water flowing from the heater to the other parts of the ship, return water and cold water feed to the heater. If hot water storage heaters/buffer vessels are installed, samples from the sludge drain valves should also be collected. If there are no suitably representative sample points of the water in the heater, i.e., the water flowing from the heater and the flow returning to the heater, this fact should be recorded. If expansion vessels are incorporated, these should be sampled if possible.

Basic and risk-based points

Hot water

- Turn the tap on gently to minimise aerosol production. Immediately after it has been turned on, collect the water discharging from the tap into a sterile sample bottle containing sufficient sodium thiosulphate to neutralise any residual biocide. This "immediate" sample will be representative of the colonisation of the outlet and most representative of the risk to the user.
- Continue to run the tap until 60 seconds has passed and then measure the temperature.
- If you wish to determine if the water feeding the outlet from the main cold water feed or circulating hot water system is colonised, it is necessary to collect a sample from a tap after it has been flushed and disinfected.
- Run the water and measure the temperature (by placing the thermometer in the water flow) for the time necessary for it to reach a constant value (note this time and temperature); continue to let the water run for at least one minute and note the temperature after one minute.
- Close the tap and disinfect with 1 % sodium hypochlorite or 70 % ethanol; leave it for at least one minute and then flush the outlet to remove any residual disinfectant from inside the outlet.
- Collect the post-flush sample.

Swabs — Samples can be collected, for example, from the inner walls of showerheads and their handles and spa pool jets, etc., with a damp sterile cotton swab using a rotating motion.

- If the area to be swabbed is dry, moisten the swab in the residual water, sterile Ringers solution or 1/40 Ringers.
- Sample shower hoses at the point where they are attached to the fitting. Swabs can also be collected from biofilms on surfaces at the air-water interface in tanks, toilet cisterns, etc. Sterile templates, such as those used in food premises (e.g., 10 cm by 10 cm) can be used on flat surfaces to give a semi-quantitative count.
- Swabs should be transported in 0.5–1.0 mL of the same residual water, sterile water, 1/40 sterile Ringers solution, or sterile Page's saline solution.

Sieves/filters on mixer valves — Remove these and swab and culture any deposits within them.

Cold water

Collect the sample as per the method for hot water (pre-flush (immediate) sample and post-flush sample). When the water temperature in the system is ≤ 20 °C (68 °F), the number of samples can be reduced.

Toilet (water closet) cisterns

These should not be overlooked as potential sources of infection as they can become heavily colonised if the ambient temperature is high or the water closet is used infrequently, e.g., disabled toilets often have restricted use. Collect water samples directly from the cistern using a clean sterile container. Swabs from the cistern at the waterline are also useful.

Whirlpool spa/Spa pools

- One litre samples of water should be collected from the pool and, where fitted, the balance tank.
- In some investigations, water from the pool has yielded few *Legionella* at the time of sampling, although filter material and biofilm from inside the pipes contained large quantities of *Legionella*. This probably reflected the type and positioning of the biocide treatment and zones within the piping where the biocidal effect did not penetrate adequately. Therefore, it is also important to inspect the air and water circulation pipes and hoses for the presence of biofilm containing *Legionella*.
- Biofilm samples should be collected with swabs from the inside of some sections of these pipes. It is sometimes possible to do this by removing a jet but quite often sections of pipe will have to be cut out to gain adequate access.

Air washers and humidifiers

Collect samples of at least 200 mL directly from the source.

Decorative fountains, water features and irrigation systems

Collect samples of at least one litre, if possible from the warmest part of the system.

Sample transport and laboratory processing

- Water and swabs should be processed within 48 hours (ideally within 24 hours) of collection (ISO 11731). If the direct membrane filtration method is to be used for the analysis, then the samples (including hot water samples) should be transported at a temperature of 2 to 8 °C (35.6 to 46.4 °F).
- Do not freeze samples and protect them from sunlight.
- Warm and cold samples must be transported separately.
- For samples transported for periods of more than eight hours, the temperature should be monitored and recorded.
- During the sampling, all details that may help the implementation of possible remedial measures should be recorded; photographs can be a useful aide-memoire. For example, the appearance of the water, obvious pressure and temperature drops or rises in the water circuits, the presence of

iron sediment or sludge, the condition of aerator and taps, the occurrence of scale, and the presence of various rubber and plastic attachments.

- The presence of biocide (time and date dosed) and type of biocide and other control factors dependent on the system (e.g., pH levels, appearance of the water, etc.) should be recorded.
- Also note any significant control failures including equipment (e.g., heater/boiler breakdowns, dosing system blockages, pump failures, unusual chemical use or running out of chemicals).

WARNING: It is important to follow the sampling procedure. Incorrectly collected or labelled samples may invalidate the analysis, make interpretation of the results difficult, and may result in a failure to identify the source of infection.

Example of a sampling schedule for ships

Equipment/Facility	Sampling frequency
Representative water outlets of every water distribution loop of hot and cold water system (cabins, staterooms, pantries, washrooms, window, and deck washing taps, etc.)	Every six months (or every three months if water temperature is not maintained within the acceptable operational limits)
Reverse osmosis plants	Every year (one per unit)
Evaporators	Every year (one per unit)
Bunkering	Every year (one per unit)
Softeners	Every year (one per unit)
Mineralisers	Every six months (one per unit)
Potable water tanks	Every year (one per unit)
High pressure washing tanks	Every year (one per unit)
Cartridge filters (potable water system)	Every six months (one per unit)
Sand filters (potable water system)	Every six months (one per unit)
Pumps	Every year (one per unit)
Heaters	Every six months two per unit (one leaving and one returning to the heater)
Technical water tank	Every year
Laundry water tank	Every year
Public swimming pools (if water temperature is > 25 °C and fitted with water features creating aerosols)	Every six months (one per unit)
Public hot tubs/spas	Every three months (one per unit) (see **Table 14**)
Jetted tubs (whirlpool baths) in staterooms	Every year (one per unit)
Decorative water features	Every six months (one per unit)

Reference list

1. ESCMID Study Group for Legionella Infections. (2017). European Technical Guidelines for the Prevention, Control and Investigation of Infections Caused by Legionella species.

Annex 45: Contact tracing form

Ship name: IMO number: Voyage number: Dates From: To: Pages …… of ……

Case's first name and ID number	**Contact name**	**Age** (yrs)	**Sex**	**Pax/ Crew**	**Type of contact** (family, friend, cabin, social, work, etc.)	**Last exposure date** (dd/mm/yy)	**Prophylaxis given** (vaccination, immunoglobulin)	**Remarks***

* Remarks could include any relevant information to the current outbreak such as lab specimen taken.

Annex 46: Case definitions for measles, rubella, and varicella

Commission Implementing Decision (EU) 2018/945 of 22 June 2018 include the following case definitions:

MEASLES (Measles virus)

Clinical criteria:

Any person with fever

AND

- Maculopapular rash

AND at least one of the following three:

- Cough
- Coryza
- Conjunctivitis

Laboratory criteria:

At least one of the following four:

- Isolation of measles virus from a clinical specimen
- Detection of measles virus nucleic acid in a clinical specimen
- Measles virus specific antibody response characteristic for acute infection in serum or saliva
- Detection of measles virus antigen by DFA in a clinical specimen using measles-specific monoclonal antibodies

Laboratory results need to be interpreted according to the vaccination status. If recently vaccinated, investigate for wild virus.

Epidemiological criteria:

An epidemiological link by human to human transmission

Case classification:

A. Possible case

Any person meeting the clinical criteria

B. Probable case

Any person meeting the clinical criteria and with an epidemiological link

C. Confirmed case

Any person not recently vaccinated and meeting the clinical and the laboratory criteria

RUBELLA (Rubella virus)

Clinical criteria:

Any person with sudden onset of generalised maculopapular rash
AND
At least one of the following five:

- Cervical adenopathy
- Sub-occipital adenopathy
- Post-auricular adenopathy
- Arthralgia
- Arthritis

Laboratory criteria:

At least one of the following four:

- Isolation of rubella virus from a clinical specimen
- Detection of rubella virus nucleic acid in a clinical specimen
- Rubella IgM antibody detection (*)
- Rubella IgG seroconversion or significant rise in rubella IgG antibody titre in paired specimens tested in parallel

Laboratory results need to be interpreted according to the vaccination status (possible persistence of IgM antibodies upon vaccination).

Epidemiological criteria:

An epidemiological link to a confirmed case

Case classification:

A. Possible case
Any person meeting the clinical criteria

B. Probable case
Any person meeting the clinical criteria with an epidemiological link

C. Confirmed case
Any person meeting the clinical and the laboratory criteria who has not been recently vaccinated

In case of recent vaccination, a person meeting the clinical criteria with detection of wild-type rubella virus strain is considered as a confirmed case.

Note: When rubella in pregnancy is suspected, further confirmation of a positive rubella IgM results is required for case management (for example, a rubella specific IgG avidity test, rubella IgM, and comparison of rubella IgG levels on paired sera conducted in a reference laboratory).

* In elimination settings, additional testing may be considered in certain situations to exclude false-positive IgM results (1).

The EUVAC.NET proposal (2) for a case definition and classification for the surveillance of varicella at EU level is given in the box below:

VARICELLA (Varicella virus; Chicken pox)

Clinical criteria:

Any person with sudden onset of generalised maculopapular rash

Laboratory criteria:

At least one of the following three:

- Isolation of varicella virus from a clinical specimen
- Detection of varicella virus nucleic acid in a clinical specimen
- Detection of specific varicella virus IgM antibody by specific IgM antibody response

Laboratory results need to be interpreted according to the vaccination status.

Epidemiological criteria:

An epidemiological link by human to human transmission

Case classification:

A. Possible case

N/A

B. Probable case

Any person meeting the clinical criteria

C. Confirmed case

Any person not vaccinated and meeting the clinical and the laboratory criteria or with an epidemiological linked to a confirmed or probable case of varicella or herpes zoster

In case of recent vaccination: Any person with identification of wild-type varicella zoster virus

Reference list

1. World Health Organization. (2018). Manual for the Laboratory-based Surveillance of Measles, Rubella, and Congenital Rubella Syndrome. 3rd edition.
2. EUVAC.NET. (2010). Surveillance of Varicella and Herpes Zoster in Europe. Copenhagen, Statens Serum Institut.

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