

Vessel Sanitation Program

2025 Environmental Public Health Standards



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Protecting Public Health on Cruise Ships for 50 Years

Significant changes from the *VSP 2018 Operations Manual* are noted in yellow highlight with a vertical rule.

Use of trade names is for identification only and does not imply endorsement by the Centers for Disease Control and Prevention, the Public Health Service, or the U.S. Department of Health and Human Services.

The *Vessel Sanitation Program 2025 Environmental Public Health Standards* are available at www.cdc.gov/vessel-sanitation/php/guidance/index.html.

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Foreword

The Centers for Disease Control and Prevention (CDC) established the Vessel Sanitation Program (VSP) in the 1970s as a cooperative activity with the cruise ship industry. The program assists the cruise industry in fulfilling its responsibility for developing and implementing comprehensive performance-based systems to protect the health of the traveling public. Every vessel that has an international voyage with a stop at a U.S. port and carries 13 or more passengers is subject to twice-yearly unannounced inspections and, when necessary, reinspection.

VSP operated continuously at all major U.S. ports from the early 1970s through 1986, when CDC terminated portions of the program. Industry and public pressures resulted in Congress directing CDC through specific language included in CDC appropriations to resume the program. CDC's National Center for Environmental Health (NCEH) became responsible for VSP in 1986.

NCEH held a series of public meetings to determine the needs and desires of the public and cruise industry and on March 1, 1987, a restructured program began. In 1988, the program was further modified by introducing user fees to reimburse the U.S. government for costs. A fee based on the vessel's size is charged for inspections and reinspections. A *VSP Operations Manual* based on the Food and Drug Administration (FDA) 1976 model code for food service and the World Health Organization's *Guide to Ship Sanitation* was published in 1989 to assist the cruise industry in educating shipboard personnel.

For previous manuals, VSP solicited comments from and conducted public meetings with representatives of the cruise industry, the public, FDA, and the international public health community to address current public health issues related to cruise ship sanitation.

A similar process was followed to update this version, now titled the *VSP Environmental Public Health Standards*. These updates clarify content or correct errors in the 2018 edition or address inconsistencies between the 2018 edition and the FDA 2022 Food Code. Compliance with these standards will help to ensure a healthy environment on cruise vessels.

The *VSP Environmental Public Health Standards* reflect comments and corrections submitted by cooperative partners in government and private industry as well as the public. We would like to thank all those who submitted comments and participated throughout this process.

As new information, technology, and input are received, we will continue to review and record that information and maintain a public process to keep the *VSP Environmental Public Health Standards* current.

The *VSP Environmental Public Health Standards* continues 50 years of government and industry working together to achieve a successful and cooperative program that benefits millions of travelers each year.

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Vessel Sanitation Program

Acknowledgments

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- Carnival Maritime (AIDA Cruises and Costa Cruises)
- Carnival Corporation & PLC
- Carnival Cruise Line
- Carnival UK (P&O Cruises and Cunard)
- Disney Cruise Line
- Holland America Group (Holland America Line and Princess Cruises)
- Lindblad Expeditions
- Margaritaville at Sea
- MSC Cruise Management
- Norwegian Cruises
- NYK Cruises
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- Saga Cruises
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Formatting Information

Organization

The *Vessel Sanitation Program Environmental Public Health Standards* is divided into chapters and subsections that focus on each operational area important to safeguarding public health on vessels.

Section Number

The international numbering system is used to organize the standards in this document.

Keywords

Each guideline is formatted with a title, keyword, or phrase after the section number.

Description

The public health compliance recommendation is provided in this statement.

Green Bold Text

Portions of some sections of these standards are written in **green bold**. These provisions are not requirements. They are provided to convey relevant information about specific exceptions and alternative means for compliance.

Inspection Report Number

The individual inspection report item number is shown in parentheses after the section number and keywords; for example, 7.1.4.2 Hair Restraints (14).

Critical Items

Critical compliance items are written in **bold red underlined text** in parentheses after the section number and keywords; for example, **7.4.5.1 Food-Contact Surfaces (24 C)**. The number in parentheses is the individual inspection report item number.

Noncritical Items

Noncritical compliance items are the other items in these standards.

Changes

Significant changes from the 2018 version of the *VSP Operations Manual* are noted in yellow highlight with a vertical rule.

Update Process

Revisions to the *VSP Environmental Public Health Standards* and *VSP Construction Standards* are made via a change request process. Change requests include information on the public health significance for the reason and benefit of the suggested change. They are also substantiated based on technical information, published scientific studies, evidence of experience, and other references.

To update these versions of the documents, VSP provided a change request form and instructions to industry partners in July 2024 for revisions. VSP and stakeholders held 1.5 days of in-person meetings and two virtual meetings between August and October 2024 to review the change requests. During these meetings, submitters presented their changes and discussed the reasons and evidence for requesting the changes. During group discussion, VSP accepted change requests as submitted, accepted them as amended, or did not act on them.

After the revision meetings ended, VSP staff updated the documents, sent drafts to industry for review, and announced availability of the documents for public review in the *Federal Register*.

1.0 Introduction

This section includes the following subsections:

- 1.1 Introduction and Background
- 1.2 Activities
- 1.3 Environmental Public Health Standards

1.1 Introduction and Background

1.1.1 Cooperative Activity

1.1.1.1 History

The Centers for Disease Control and Prevention (CDC) established the Vessel Sanitation Program (VSP) in 1975 as a cooperative activity with the cruise ship industry. This program assists the cruise industry in fulfilling its responsibility for developing and implementing comprehensive performance-based systems to protect the health of the traveling public.

1.1.1.2 Cooperation

The program fosters cooperation between the cruise industry and government to define and reduce health risks associated with vessels and to ensure a healthful and clean environment for vessels' passengers and crew. The industry's ongoing efforts to achieve and maintain high environmental public health standards are critical to the success of protecting public health.

1.2 Activities

1.2.1 Prevention

1.2.1.1 Inspections

VSP conducts comprehensive environmental public health inspections on vessels that have international voyage with a stop at a U.S. port, call on a U.S. port, and carry 13 or more passengers.

1.2.1.2 Surveillance

The program conducts ongoing surveillance of ACUTE GASTROENTERITIS (AGE) and coordinates/conducts OUTBREAK investigations on vessels.

1.2.2 Information

1.2.2.1 Training

VSP provides environmental public health training for vessel and shore operations management personnel.

1.2.2.2 Plan Review

The program provides consultative services for reviewing plans for renovations and new construction.

1.2.2.3 Construction Inspections

The program conducts construction inspections at shipyards or when vessels make their initial call at a U.S. port.

1.2.2.4 Information

The program disseminates information to the public.

1.3 Environmental Public Health Standards

1.3.1 Revisions

1.3.1.1 Modifications

The *VSP Environmental Public Health Standards* has been modified to address emerging public health issues, industry recommendations, introduction of new technologies within the industry, new guidance from sources used in the previous edition, and VSP's experience.

1.3.1.2 Program Guidance

Program operations and inspections are based on these standards.

1.3.1.3 Periodic Review

The *VSP Environmental Public Health Standards* will be reviewed at the annual meeting with written submissions for revision based on emerging public health issues and new technologies that may better address the public health issues on vessels.

1.3.1.3.1 Clarifications

VSP will circulate proposed clarifications to the *Environmental Public Health Standards* along with supporting information on their public health significance in advance of the annual meeting. These clarifications will be considered during the meeting.

Proposed clarifications VSP considers time critical can be circulated to the industry and others for review and coordination through other collaborative means (for example, email, web-based forum) for more timely dissemination and further review, as needed, during the annual meeting.

2.0 Authority

This section includes the following subsections:

- 2.1 Public Health Service Act
- 2.2 Jurisdiction

Refer to Annex 13.1 and 14.2 for more about authorities.

2.1 Public Health Service Act

2.1.1 Communicable Disease Prevention

2.1.1.1 Communicable Disease Prevention

Although cooperation by vessels with VSP is voluntary, the Public Health Service (PHS) is authorized by the Public Health Service Act (42 U.S.C. Section 264. QUARANTINE and Inspection - Regulations to control communicable diseases) to take measures necessary to prevent the introduction, TRANSMISSION, or spread of communicable diseases into the United States from a foreign country.

2.1.1.2 Regulation Promulgation

In addition, the Public Health Service Act (42 U.S.C. Section 269. QUARANTINE and Inspection - Bills of Health) authorizes the promulgation of regulations applicable to vessels for preventing the introduction into the United States of “any communicable disease by securing the best sanitary condition of such vessels, their cargoes, passengers, and crews.”

2.1.1.3 Inspections

Regulations promulgated to carry out these duties authorize PHS to conduct sanitary inspections on carriers traveling to a U.S. port from a foreign area (42 CFR Section 71.41. General Provisions, Foreign QUARANTINE - Requirements Upon Arrival at U.S. Ports: Sanitary Inspection). The purpose of the inspection is to determine the existence of vermin, contaminated FOOD or water, or other insanitary conditions that may contribute to the introduction, spread, or TRANSMISSION of communicable disease.

2.2 Jurisdiction

VSP’s mission is to prevent and control the introduction and spread of environmentally associated illnesses and hazards on cruise ships. Cruise lines should be aware that although ships sail outside of U.S. waters, there could be occasions when a ship violates the *VSP Environmental Public Health Standards* while sailing outside of the United States and this violation has a potential to impact a U.S. port. During an operational inspection, VSP must review both present and past practices to evaluate the ship’s compliance with the requirements set out in the *VSP Environmental Public Health Standards*.

These standards require several types of records to be maintained on ships for periods of 30 days to 1 year, including the following:

- Medical
- POTABLE WATER
- Recreational water

- FOOD safety
- Housekeeping

These records are reviewed during operational inspections. VSP has and will continue to cite violations identified in the record review, even if the ship was not sailing in U.S. waters when the violation occurred. If the record review reveals violations that could result in illness when the ship arrives in a U.S. port, points may be deducted according to the violations identified during the inspection. An example of these violations is ships producing water in ports, HARBORS, and polluted waterways.

3.0 Definitions

This section includes the following subsections:

- 3.1 Scope
- 3.2 Definitions

3.1 Scope

This section defines and clarifies commonly used terminology.

Terms defined in section 3.2 are identified in the text of these standards by CAPITAL LETTERS. For example, section 5.7.1.1.4 states “A CROSS-CONNECTION control program must include, at a minimum: ...” CROSS-CONNECTION is in CAPITAL LETTERS and is defined in section 3.2.

3.2 Definitions

Accessible: Exposed for cleaning and inspection with the use of simple tools including a screwdriver, pliers, or wrench.

Accredited program: A FOOD protection manager certification program that has been evaluated and listed by an accrediting agency as conforming to national standards for organizations that certify individuals.

- An accredited program refers to the certification process and is a designation based on an independent evaluation of factors such as the sponsor’s mission; organizational structure; staff resources; revenue sources; policies; public information regarding program scope, eligibility requirements, recertification, discipline and grievance procedures; and test development and administration.
- Accredited program does not refer to training functions or educational programs.

Activity pools: An indoor or outdoor RECREATIONAL WATER FACILITY that provides flowing water without any additional features. This includes wave pools, catch pools, open water slides, lazy rivers, action rivers, vortex pools, continuous surface pools, etc.

Acute gastroenteritis (AGE): Irritation and inflammation of the digestive tract characterized by sudden onset of symptoms of diarrhea and/or vomiting, as well as other constitutional symptoms such as fever, abdominal cramps, headache, or muscle aches.

AGE case: See REPORTABLE AGE CASE.

AGE outbreak: ACUTE GASTROENTERITIS rates of 3% or more of passengers or crew, or an unusual gastrointestinal illness pattern or characteristic, even if the illness rate is less than 3%.

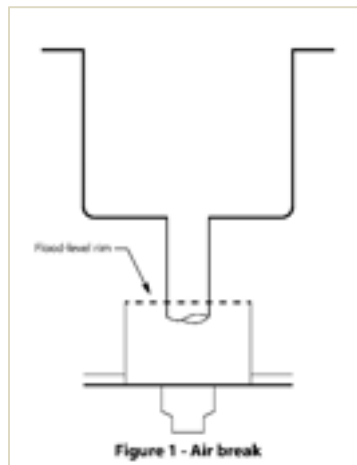
Additive

- **FOOD additive:** as stated in the Federal FOOD, Drug, and Cosmetic Act, §201(s) and 21 CFR 170.
- **Color additive:** as stated in the Federal FOOD, Drug, and Cosmetic Act, §201(t) and 21 CFR 70.

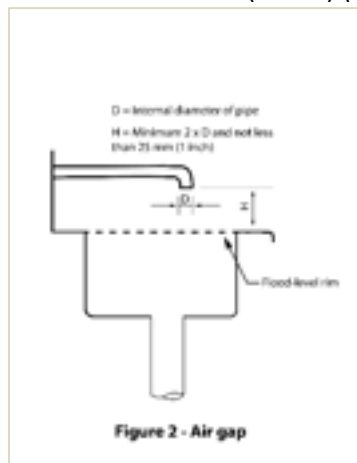
Adequate: Sufficient in number, features, or capacity to accomplish the purpose for which something is intended and to such a degree that there is no unreasonable risk to health or safety.

Adulterated: As stated in the Federal FOOD, Drug, and Cosmetic Act, §402.

Air break: A piping arrangement in which a drain from a fixture, appliance, or device discharges indirectly into another fixture, receptacle, or interceptor at a point below the flood-level rim (Figure 1).



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 must be at least twice the inside diameter of the supply pipe or faucet (i.e., delivery fixture opening) and not less than 25 millimeters (1 inch) (Figure 2).



Antientrapment cover: A cover for a drain/SUCTION FITTING designed to prevent any portion of the body or hair from becoming lodged or otherwise forced onto a drain cover or SUCTION FITTING in a RECREATIONAL WATER FACILITY.

Approved: Acceptable based on a determination of conformity with principles, practices, and generally recognized standards that protect public health, federal regulations, or equivalent international standards and regulations. Example of these standards include those from the American National Standards Institute (ANSI), NSF International, American Society of Mechanical Engineers (ASME), American Society of Safety Engineers (ASSE), and Underwriter's Laboratory (UL).

Attack rate: (1) The proportion of individuals exposed to an infectious agent who become clinically ill. (2) The cumulative incidence of infection in a group observed over a period during an epidemic.

Atmospheric vacuum breaker (AVB): A BACKFLOW PREVENTION DEVICE that consists of an air inlet valve, a check seat or float valve, and air inlet ports. The device is not APPROVED for use under continuous water pressure and must be installed downstream of the last valve.

Automatic pump shut-off (APS): System device that can sense a BLOCKABLE DRAIN blockage and shut off the pumps in a RECREATIONAL WATER FACILITY.

A_w (water activity): Measurement of the free moisture content in a FOOD.

Baby-only water facility: RECREATIONAL WATER FACILITY with zero water depth designed for use by children in diapers or who are not completely toilet trained. Control measures for this facility would be detailed in a VARIANCE.

Backflow: The reversal of flow of water or other liquids, mixtures, or substances into the distribution pipes of a potable supply of water from any sources other than the source of POTABLE WATER supply. BACKSIPHONAGE and BACKPRESSURE are forms of backflow.

Backflow prevention device: An APPROVED backflow prevention plumbing device 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. Devices are designed for specific applications, such as continuous and noncontinuous use, and installation orientation.

See also:

- ATMOSPHERIC VACUUM BREAKER (AVB)
- CONTINUOUS PRESSURE (CP) BACKFLOW PREVENTION DEVICE
- DUAL CHECK VALVE WITH INTERMEDIATE ATMOSPHERIC VENT (DCIV)
- HOSE BIBB CONNECTION VACUUM BREAKER
- PRESSURE VACUUM BREAKER ASSEMBLY
- REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION ASSEMBLY

(RP ASSEMBLY)

Backpressure: An elevation of pressure in the downstream piping system (by pump, elevation of piping, or steam and/or air pressure) above the supply pressure at the point of consideration that would cause a reversal of normal direction of water flow.

Backsiphonage: The reversal or flowing back of used, contaminated, or polluted water from a PLUMBING FIXTURE, vessel, or other source into a water supply pipe as a result of negative pressure in the pipe.

Barometric loop: A continuous section of supply piping that rises at least 10.7 meters (35 feet) above the supply point and returns back down to the supply. Typically, the loop will be in the shape of an upside-down “U.” A barometric loop only protects against BACKSIPHONAGE because it operates under the principle that a water column cannot rise above 10.3 meters (33.9 feet) at sea-level pressure.

Beverage: A liquid for drinking, including water.

Black water: Wastewater from toilets, urinals, medical sinks, and other similar facilities.

Blast chiller: A unit specifically designed for rapid cooling of FOOD products from 57°C (135°F) to 21°C (70°F) within 2 hours and 21°C (70°F) to 5°C (41°F) within an additional 4 hours.

Blockable drain/suction fitting: A drain or SUCTION FITTING in a RECREATIONAL WATER FACILITY that that can be completely covered or blocked by a 457-millimeter x 584-millimeter (18-inch x 23 inch) body-blocking element as set forth in ASME A112.19.8M.

Bulkhead: A dividing wall covering an area constructed from several panels, also known as the visible part of the lining.

Certified data security features: Features that ensure the values recorded by the data logger cannot be manipulated by the user.

CFR (Code of Federal Regulations): Compilation of the general and permanent rules published in the *Federal Register* by the executive departments and agencies of the federal government. The CFR is published annually by the U.S. Government Printing Office and contains FDA rules in 21 CFR, USDA rules in 7 CFR and 9 CFR, EPA rules in 40 CFR, and Wildlife and Fisheries rules in 50 CFR.

Child activity center: A facility for child-related activities where children under the age of 6 are placed to be cared for by vessel staff.

Children’s pool: A pool that has a depth of 1 meter (3.3 feet) or less and is intended for use by children who are toilet trained.

Child-sized toilet: Toilets whose toilet seat height is no more than 305 millimeters (12 inches), and the toilet seat opening is no greater than 203 millimeters (8 inches).

Cleaned in place (CIP): Use of a detergent solution, water rinse, and sanitizing solution by circulating or flowing mechanically through a piping system onto or over EQUIPMENT surfaces that require cleaning (for example, the method used—in part—to clean and sanitize a frozen dessert machine). CIP does not include the cleaning of EQUIPMENT such as band saws, slicers, or mixers subjected to in-place manual cleaning without the use of a CIP system.

Cleaning locker: A room or cabinet specifically designed or modified for storage of cleaning equipment such as mops, brooms, floor-scrubbing machines, and cleaning chemicals.

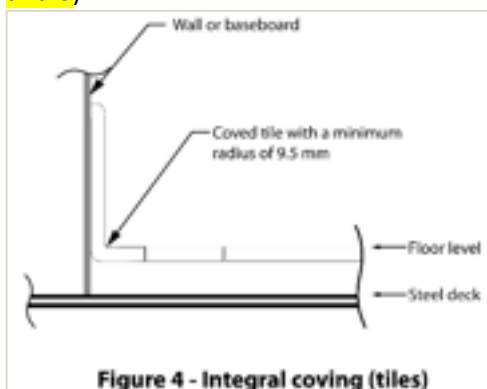
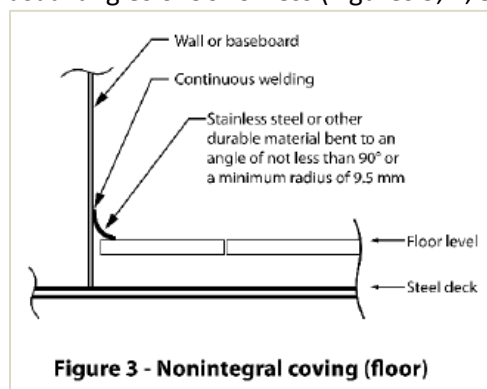
Comminuted: Reduced in size by chopping, flaking, grinding, or mincing. Examples include FISH or MEAT products reduced in size and restructured or reformulated (for example, gefilte FISH, gyros, ground beef, and sausage) and mixtures of two or more types of MEAT that have been reduced in size and combined (for example, sausages made from two or more MEATS).

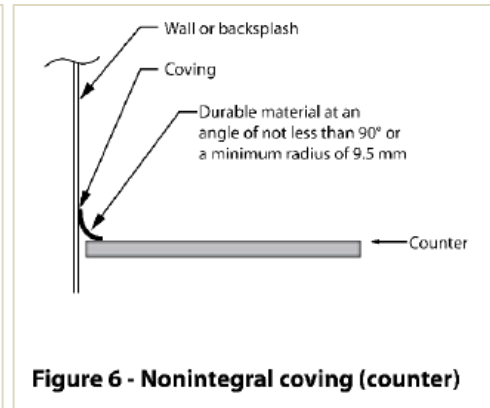
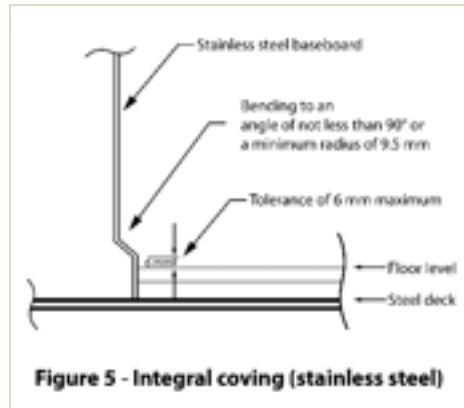
Consumer: A person who takes possession of FOOD, is not functioning as an operator of a FOOD establishment.

Contamination: The presence of environmental, chemical, biological, or physical HAZARDS in FOOD, in water, or on other inanimate objects (for example, eating utensils, linens, surgical instruments) that can lead to potential health risks.

Continuous pressure backflow prevention device: A device generally consisting of two check valves and an intermediate atmospheric vent that has been specifically designed to be used under conditions of continuous pressure (greater than 12 hours out of a 24-hour period).

Coving (also coved): A concave surface, molding, or other design that eliminates the usual angles of 90° or less (Figures 3, 4, 5, and 6).





Critical item: A provision of these standards that, if in noncompliance, is more likely than other deficiencies to contribute to FOOD or water CONTAMINATION, illness, or environmental HEALTH HAZARD. These are denoted in these standards in **bold red underlined text** in parentheses after the section number and keywords; for example, **7.4.5.1 Food-Contact Surfaces (24 C)**. The number indicates the individual inspection report item number.

Critical control point: A point or procedure in a specific system where loss of control may result in an unacceptable health risk.

Cross-connection: An actual or potential connection or structural arrangement between a POTABLE WATER system and any other source or system through which it is possible to introduce into any part of the POTABLE WATER system any used water, industrial fluid, gas, or substance other than the intended POTABLE WATER with which the system is supplied.

CT value: Numerical value used for identifying level at which pathogen destruction or inactivation occurs. For the purposes of these standards, CT values will be based on free chlorine levels in MG/L (ppm) and time in minutes (CT value=MG/L x minutes).

Cut leafy greens: Fresh leafy greens whose leaves have been cut, shredded, sliced, chopped, or torn. Leafy greens include iceberg lettuce, romaine lettuce, leaf lettuce, butter lettuce, baby leaf lettuce (that is, immature lettuce or leafy greens), escarole, endive, spring mix, spinach, cabbage, kale, arugula, and chard. Herbs such as cilantro or parsley are not considered leafy greens.

Deck drain: The physical connection between decks, SCUPPERS, or DECK SINKS and the GRAY WATER or BLACK WATER systems.

Deckhead: The deck overhead covering the ceiling area constructed from several panels, also known as the visible part of the ceiling.

Deck sink: A sink recessed into the deck and sized to contain waste liquids from tilting kettles and pans.

Disinfectant: A substance or mixture of substances (for example, chemicals), that destroys or irreversibly inactivates bacteria, fungi, and viruses in the inanimate environment (for example, bathroom surfaces, elevator buttons, stair railings). This substance or mixture of substances does not necessarily destroy or inactivate bacterial spores.

Disinfection: The application of cumulative heat, substance, or mixture of substances (for example, chemicals) to destroy or irreversibly inactivate bacteria, fungi and viruses in the inanimate environment (for example, bathroom surfaces, elevator buttons, stair railings, and RWF equipment and water). Application does not necessarily destroy or inactivate bacterial spores.

Distillate water: Water condensed from vapor during the evaporation process.

Distillate water lines: Pipes carrying water condensed from the evaporators and that may be directed to the POTABLE WATER system. This is the VSP definition for pipe stripping purposes.

Dual check valve with an intermediate atmospheric vent (DCIV): A BACKFLOW PREVENTION DEVICE with dual check valves and an intermediate atmospheric vent located between the two check valves.

Drinking water: See POTABLE WATER.

Drip tray: readily REMOVABLE tray to collect dripping fluids or FOOD from FOOD dispensing EQUIPMENT.

Dry storage area: A room or area designated for the storage of PACKAGED or containerized bulk FOOD that is not a TIME/TEMPERATURE CONTROL FOR SAFETY FOOD and dry goods such as SINGLE-SERVICE ARTICLES or SINGLE-USE ARTICLES.

Easily cleanable: A characteristic of a surface that

- Allows effective removal of soil by normal cleaning methods;
- Is dependent on the material, design, construction, and installation of the surface; and
- Varies with the likelihood of the surface's role in introducing pathogenic or toxigenic agents or other contaminants into FOOD based on the surface's acceptable placement, purpose, and use.

Easily movable: EQUIPMENT that

- Is PORTABLE or has a mechanical means to safely tilt it for cleaning; and
- Has no utility connection, a utility connection that disconnects quickly, or a flexible utility connection line of sufficient length that allows it to be moved for cleaning of the EQUIPMENT and adjacent area.

Equipment: An article used in the operation of a FOOD establishment, 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

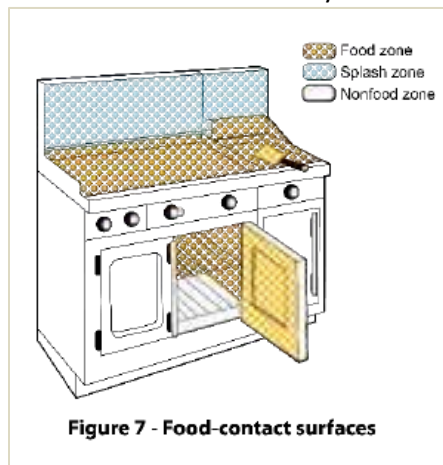
machine, or WAREWASHING machine. Equipment does not include items used for handling or storing large quantities of PACKAGED FOOD received from a supplier in a cased or overwrapped lot, such as hand trucks, forklifts, dollies, pallets, racks, and skids.

Fish: Freshwater or saltwater finfish, crustaceans, and other forms of aquatic life (including alligator, frog, aquatic turtle, jellyfish, sea cucumber, sea urchin, and the roe of such animals) other than birds or mammals, and all mollusks, if such animal life is intended for human consumption. Fish includes an edible human FOOD product derived in whole or in part from fish, including fish processed in any manner.

Food: Raw, cooked, or processed edible substance; ice; BEVERAGE; or ingredient used or intended for use or for sale in whole or in part for human consumption. Chewing gum is classified as FOOD.

Food area: Includes FOOD and BEVERAGE display, handling, preparation, service, and storage areas; WAREWASHING areas; clean EQUIPMENT storage areas; and LINEN storage and handling areas.

Food-contact surface: Surfaces (FOOD zone, splash zone) of EQUIPMENT and UTENSILS with which FOOD normally comes in contact and surfaces from which FOOD may drain, drip, or splash back into a FOOD or surfaces normally in contact with FOOD (Figure 7).



Food employee: A person working with unpackaged FOOD, FOOD EQUIPMENT or UTENSILS, LINENS, or FOOD-CONTACT SURFACES.

Food-handling areas: Any area where FOOD is stored, processed, prepared, or served.

Food preparation areas: 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 making pizza, salad, sandwiches, and sushi) and the FOOD is prepared and cooked (such as fryers, griddles, grills, ovens, skillets, and waffle makers).

Food-processing plant: A commercial operation that manufactures, packages, labels, or stores FOOD for human consumption and does not provide FOOD directly to

a CONSUMER.

Food service areas: Any area where FOOD is displayed or presented to passengers or crew members (excluding individual cabin service). This also applies to CONSUMER self-service areas.

Food storage areas: Any area where FOOD or FOOD products are stored.

Food transportation corridors: Areas primarily intended to move FOOD during FOOD preparation, storage, and service operations (for example, service lift [elevator] vestibules to FOOD PREPARATION AREAS, FOOD SERVICE AREAS, and FOOD STORAGE AREAS, provision corridors, and corridors connecting preparation areas and service areas). Corridors primarily intended to move only closed BEVERAGES and packaged FOOD (for example, bottled or canned BEVERAGES, crackers, chips, etc.) are not considered FOOD transportation corridors. Excluded:

- Passenger and crew cabin corridors, public areas, individual cabin service, and dining rooms connected to galleys.
- FOOD loading areas used solely for delivery of FOOD to the vessel.

Food waste system: A system used to collect, transport, and process FOOD waste from FOOD AREAS to a waste disposal system (for example, pulper, vacuum system).

Game animal: An animal, the products of which are FOOD, that is not classified as

- Cattle, sheep, swine, goat, horse, mule, or other equine in 9 CFR Subchapter A - Mandatory MEAT Inspection, Part 301,
- POULTRY in 9 CFR Subchapter C - Mandatory POULTRY Products Inspection, Part 381, or
- FISH as defined under Subparagraph 1-201.10(B)(25).

Game animal includes mammals such as reindeer, elk, deer, antelope, water buffalo, bison, rabbit, squirrel, opossum, raccoon, nutria, or muskrat, and nonaquatic reptiles such as land snakes.

Game animal does not include RATITES such as ostrich, emu, and rhea.

Gap: An open juncture greater than or equal to 3 millimeters (1/8 inch).

Grade A standards: Requirements of the FDA Grade A Pasteurized Milk Ordinance and Grade A Condensed and Dry Milk Ordinance with which certain fluid and dry milk and milk products comply.

Gravity drain: A drain fitting used to drain the body of water in a RECREATIONAL WATER FACILITY by gravity and with no pump downstream of the fitting.

Gravity drainage system (GDS): A water collection system whereby a collection tank is located between the RECREATIONAL WATER FACILITY and the suction pumps.

Gray water: Wastewater from galley EQUIPMENT and DECK DRAINS, dishwashers, showers and baths, laundries, washbasins, DECK DRAINS, and recirculated RECREATIONAL WATER FACILITIES. Gray water does not include BLACK WATER or bilge water from the machinery spaces.

Gutterway: See SCUPPER.

HACCP (Hazard Analysis Critical Control Point) plan: A written document that delineates the formal procedures for following the Hazard Analysis CRITICAL CONTROL POINT principles developed by the National Advisory Committee on Microbiological Criteria for FOOD.

Halogen: The group of elements including chlorine, bromine, and iodine used for DISINFECTION of water.

Hand antiseptic: Antiseptic products applied to human skin.

Harbor: The portion of a port area set aside for vessel anchorage or for ports including wharves; piers; quays; and service areas, the boundaries are the high- water shoreline; and others as determined by legal definition, citation of coordinates, or other means.

Hazard: A biological, chemical, or physical property that may cause an unacceptable CONSUMER health risk.

Health hazard: An impairment that creates an actual hazard to the public health through poisoning or through the spread of disease. For example, water quality that creates an actual hazard to the public health through the spread of disease by SEWAGE, industrial fluids, waste, etc. (for example, sluice machine connection).

Heated jetted tub: A freshwater or seawater tub equipped with either water or air jets. This type of tub has a heating element designed to maintain a consistent water temperature between 25°–40°C (77°–104°F). This type of tub is not defined by volume or person capacity. HEATED JETTED TUBS can only be accessed by entering a cabin (or nonpublic space like the tubs). HEATED JETTED TUBS are not designed to be operated as WHIRLPOOL SPAS.

Hermetically sealed container: A container designed to be secure against the entry of microorganisms and, in the case of low-acid canned FOOD, to maintain the commercial sterility of its contents after processing.

Hose bibb connection vacuum breaker (HVB): A BACKFLOW PREVENTION DEVICE that attaches directly to a hose bibb by way of a threaded head. This device uses a single check valve and vacuum breaker vent. It is a form of an AVB specifically designed for a hose connection. A hose bibb connection vacuum breaker is not APPROVED for use under continuous pressure (for example, when a shut-off valve is located downstream from the device).

Illness onset: Date and time on which the first symptom appeared.

Immediate contact: Someone sharing a cabin either full-time or part-time or sharing a cabin's bathroom facilities. This includes boyfriends, girlfriends, spouses, and significant others.

Imminent health hazard: A significant threat or danger to health that is considered to exist when evidence is sufficient to show that a product, practice, circumstance, or event creates a situation that requires immediate correction or cessation of operation to prevent injury.

Injected meats: Manipulating MEAT so that infectious or toxigenic microorganisms may be introduced from its surface to its interior through tenderizing with deep penetration or injecting the MEAT such as with juices, which may be referred to as injecting, pinning, or stitch pumping. This does not include routine temperature monitoring.

Integrated pest management (IPM): A documented, organized system of controlling pests through a combination of methods including inspections, baits, traps, effective sanitation and maintenance, and judicious use of chemical compounds.

Interactive recreational water facility: An indoor or outdoor recreational water facility that includes misting, jetting, waterfalls, or sprinkling features that involve water recirculation systems that come in contact with bathers. Additional features or facilities, such as decorations or fountains, will designate the facility as an interactive RWF if there is any piping connected through the recirculation system. These facilities may be zero depth. Fully or partially enclosed water slides are considered interactive recreational water facilities.

Isolation: The separation of persons who have a specific infectious illness from those who are healthy and the restriction of ill persons' movement to stop the spread of that illness.

Jetted tub: A freshwater or seawater tub equipped with either water or air jets. This type of tub has no heating element. JETTED TUBS can only be accessed by entering a cabin (or a nonpublic area like the spa). JETTED TUBS are not designed to be operated as WHIRLPOOL SPAS. This type of tub is not defined by its volume or person capacity. See variance exception in section 6.6.1.

Kitchenware: FOOD preparation and storage UTENSILS.

Law: Applicable local, state, federal, or other equivalent international statutes, regulations, and ordinances.

Linens: Fabric items for FOOD operations, such as cloth napkins, tablecloths, wiping cloths, and work garments including cloth gloves.

Making way: Progressing through the water by mechanical or wind power.

Meat: The flesh of animals used as FOOD including the dressed flesh of cattle, swine, sheep, or goats and other edible animals, except FISH, POULTRY, and wild GAME ANIMALS.

Mechanically tenderized: Manipulating MEAT with deep penetration by processes that may be referred to as blade tenderizing; pinning; needling; or using blades, pins, needles, or any mechanical device. This does not include processes by which solutions are injected into MEAT.

mg/L: Milligrams per liter, the metric equivalent of parts per million (ppm).

Molluscan shellfish: Any edible species of fresh or frozen oysters, clams, mussels, and scallops or edible portions thereof, except when the scallop product consists only of the shucked adductor muscle.

Noncorroding: Material that maintains its original surface characteristics through prolonged influence by the use environment, FOOD contact, and normal use of cleaning compounds and sanitizing solutions.

Nonfood-contact surfaces (nonfood zone): All exposed surfaces, other than FOOD-CONTACT SURFACES, of EQUIPMENT located in FOOD AREAS (Figure 7).

Outbreak: See AGE OUTBREAK.

Packaged: Bottled, canned, boxed, securely bagged, or securely wrapped, whether packaged in a FOOD establishment or a FOOD-PROCESSING PLANT. Packaged does not include a wrapper, carry-out box, or other nondurable container used to facilitate FOOD protection during service and receipt of FOOD by the CONSUMER.

Permeate water: Water produced by a reverse osmosis unit.

Permeate water lines: Pipes carrying PERMEATE WATER from the reverse osmosis unit that may be directed to the POTABLE WATER SYSTEM. This is the VSP definition for pipe stripping purposes.

Person in charge: The individual present on a vessel who is responsible for the FOOD operation at the time of inspection such as the FOOD and BEVERAGE Manager, FOOD Manager, or Chef.

Personal care items: Items or substances that may be poisonous, toxic, or a source of CONTAMINATION and are used to maintain or enhance a person's health, hygiene, or appearance. PERSONAL CARE ITEMS include items such as medicines, first-aid supplies, and cosmetics and toiletries (for example, toothpaste, mouthwash).

Pesticide: Any substance or mixture of substances intended to prevent, destroy, repel, or mitigate any pest. For the purposes of these standards, pesticides are considered either general use or restricted use.

pH: Potential of hydrogen. The symbol for the negative logarithm of the hydrogen ion concentration, which is a measure of the degree of acidity or alkalinity of a solution. Values between 0 and 7 indicate acidity and values between 7 and 14 indicate alkalinity. The value for pure distilled water is 7, which is neutral.

Plumbing fixture: A receptacle or device that

- Is permanently or temporarily connected to the water-distribution system of the vessel and demands a supply of water from the system; or
- Discharges used water, waste materials, or SEWAGE directly or indirectly to the drainage system of the vessel.

Plumbing system: The water supply and distribution pipes; PLUMBING FIXTURES and traps; soil, waste, and vent pipes; sanitary sewer drains, and vessel drains, including their respective connections, devices, and appurtenances within the vessel; and water-treating EQUIPMENT.

Poisonous or toxic materials: Substances not intended for ingestion. These substances are in four categories:

- Cleaners and SANITIZERS, which include cleaning and sanitizing agents and agents such as caustics, acids, drying agents, polishes, and other chemicals.
- PESTICIDES [except SANITIZERS] that include substances such as insecticides and rodenticides.
- Substances necessary for the operation and maintenance of the establishment such as nonfood-grade lubricants and PERSONAL CARE ITEMS that may be deleterious to health.
- Substances not necessary for the operation and maintenance of the vessel and are on the vessel, such as petroleum products and paints.

Portable: A description of EQUIPMENT that is readily REMOVABLE or mounted on casters, gliders, or rollers; provided with a mechanical means so that it can be tilted safely for cleaning; or readily movable by one person.

Potable water: Water that is halogenated and PH controlled and is intended for

- Drinking, washing, bathing, or showering;
- Using in freshwater SWIMMING POOLS and WHIRLPOOL SPAS;
- Using in the vessel's hospital;
- Handling, preparing, or cooking FOOD; and
- Cleaning FOOD STORAGE and FOOD PREPARATION AREAS, UTENSILS, and EQUIPMENT.

Potable water is free from impurities in amounts sufficient to cause disease or harmful physiological effects. The water quality must conform to requirements of the World Health Organization DRINKING WATER standards.

Potable water tanks: All tanks in which POTABLE WATER is stored.

Potentially hazardous food (PHF): See **TIME/TEMPERATURE CONTROL FOR SAFETY FOOD (TCS)**.

Poultry:

- Any domesticated bird such as chicken, turkey, duck, goose, or guinea, whether live or dead, as defined in 9 CFR 381 Poultry Products Inspection Regulations.
- Any migratory waterfowl, game bird, or squab such as pheasant, partridge, quail, grouse, or guinea, whether live or dead, as defined in 9 CFR 362 Voluntary Poultry Inspection Program.

Poultry does not include RATITE.

Pressure vacuum breaker assembly (PVB): A device consisting of an independently loaded internal check valve and a spring-loaded air inlet valve. This device is also equipped with two resilient seated gate valves and test cocks.

Primal cut: A basic major cut into which carcasses and sides of MEAT are separated, such as a beef round, pork loin, lamb flank, or veal breast.

Quarantine: The limitation of movement of apparently well persons who have been exposed to a case of communicable (infectious) disease during its period of communicability to prevent disease TRANSMISSION during the incubation period if infection should occur.

Ratite: A flightless bird such as an emu, ostrich, or rhea.

Ready-to-eat (food): FOOD in a form that is edible without washing, cooking, or additional preparation by the FOOD establishment or the CONSUMER and is reasonably expected to be consumed in that form.

READY TO EAT FOOD includes

- Time/temperature Control for Safety Food (TCS) that is unpackaged and cooked to the temperature and time required for the specific FOOD.
- Raw, washed, cut fruits and vegetables.
- Whole, raw fruits and vegetables presented for consumption without the need for further washing, such as at a buffet.
- Other FOOD presented for consumption for which further washing or cooking is not required and from which rinds, peels, husks, or shells are removed.
- Fruits and vegetables cooked for hot holding, as specified under section 7.2.4.1.3.
- Substances derived from plants such as spices, seasonings, and sugar.
- A bakery item such as bread, cakes, pies, fillings, or icing for which further cooking is not required for FOOD safety.
- Products produced in accordance with USDA guidelines and that have received a lethality treatment for pathogens: dry, fermented sausages, such as dry salami or pepperoni; salt-cured MEAT and POULTRY products, such as prosciutto ham, country cured ham, and Parma ham; and dried MEAT and POULTRY products,

such as jerky or beef sticks.

- FOOD manufactured as specified in 21 CFR Part 113, Thermally Processed Low-Acid FOOD PACKAGED in HERMETICALLY SEALED CONTAINERS.

Recreational water facility (RWF): A water facility that has been modified, improved, constructed, or installed for the purpose of public swimming or recreational bathing. RWFs include, but are not limited to,

- ACTIVITY POOLS.
- BABY-ONLY WATER FACILITIES.
- CHILDREN'S POOLS.
- Diving pools.
- Hydrotherapy pools.
- INTERACTIVE RECREATIONAL WATER FACILITIES.
- Slides.
- SPA POOLS.
- SWIMMING POOLS.
- Therapeutic pools.
- WADING POOLS.
- WHIRLPOOLS SPAS.

Recreational water facility (RWF) equipment room or area: A space intended for the operation of pool pumps, filters, heaters, controllers, and chemicals needed for operation.

Recreational seawater: Seawater taken on while MAKING WAY at a position at least 12 miles at sea and routed directly to the RWFs for either sea-to-sea exchange or recirculation.

Reduced pressure principle backflow prevention assembly (RP assembly): An assembly containing two independently acting internally loaded check valves together with a hydraulically operating, mechanically independent pressure differential relief valve located between the check valves and at the same time below the first check valve. The unit must include properly located resilient seated test cocks and tightly closing resilient seated shutoff valves at each end of the assembly.

Refuse: Solid waste not carried by water through the SEWAGE system.

Registered design professional: An individual registered or licensed to practice his or her respective design profession as defined by the statutory requirements of the professional registration LAWS of the state or jurisdiction in which the project is to be constructed (per ASME A112.19.8-2007).

Regulatory authority: Local, state, or federal or equivalent international enforcement body or authorized representative having jurisdiction over FOOD processing, transportation, or warehousing or other FOOD establishment.

Removable: Capable of being detached from the main unit with the use of simple tools such as a screwdriver, pliers, or an open-end wrench.

Reportable AGE case (VSP definition): A case of AGE with one of the following characteristics:

- Diarrhea (three or more episodes of loose stools in a 24-hour period or what is above normal for the individual, for example, individuals with underlying medical conditions) **OR**
- Vomiting and one additional symptom including one or more episodes of loose stools in a 24-hour period, or abdominal cramps, or headache, or muscle aches, or fever (temperature of $\geq 38^{\circ}\text{C}$ [100.4°F]); **AND**
- Reported to the master of the vessel, the medical staff, or other designated staff by a passenger or a crew member.

Restricted-use pesticide: A PESTICIDE product that contains the active ingredients specified in 40 CFR 152.175 PESTICIDES classified for restricted use and is limited to use by or under the direct supervision of a certified applicator.

Safety vacuum release system (SVRS): A system capable of releasing a vacuum at a suction outlet caused by a high vacuum due to a blockage in the outlet flow. These systems shall be designed and certified in accordance with ASTM F2387-04 or ANSI/ASME A112.19.17-2010.

Sanitizer: A substance or mixture of substances (for example, chemicals), that reduce the microbial population in the inanimate environmental surfaces (for example, FOOD-CONTACT, NONFOOD-CONTACT) by significant numbers but does not destroy or eliminate all microorganisms.

Sanitization: The application of cumulative heat or chemicals on cleaned FOOD-CONTACT and NONFOOD-CONTACT SURFACES that yields a sufficient reduction of harmful microorganisms which could lead to foodborne illness.

Scupper: A conduit or collection basin that channels liquid runoff to a DECK DRAIN.

Sealant: Material used to fill SEAMS.

Seam: An open juncture greater than 0.8 millimeters (1/32 inch) but less than 3 millimeters (1/8 inch).

Sewage: Liquid waste containing animal or vegetable matter in suspension or solution and may include liquids containing chemicals in solution.

Shellstock: Raw, in-shell MOLLUSCAN SHELLFISH.

Shucked shellfish: MOLLUSCAN SHELLFISH with one or both shells removed.

Single-service articles: TABLEWARE; carry-out UTENSILS; and other items such as bags, containers, placemats, stirrers, straws, toothpicks, and wrappers designed and

constructed for one-time, one-person use.

Single-use articles: UTENSILS and bulk FOOD containers designed and constructed to be used once and discarded. Single-use articles include items such as wax paper, butcher paper, plastic wrap, formed aluminum FOOD containers, jars, plastic tubs or buckets, bread wrappers, pickle barrels, ketchup bottles, and number 10 cans that do not meet materials, durability, strength, and cleanability specifications.

Slacking: Process of moderating the temperature of a FOOD such as allowing a FOOD to gradually increase from a temperature of -23°C (-10°F) to -4°C (25°F) in preparation for deep-fat frying or to facilitate even heat penetration during the cooking of previously block-frozen FOOD such as spinach.

Smooth:

- A FOOD-CONTACT SURFACE having a surface free of pits and inclusions with a cleanability equal to or exceeding that of (100-grit) number 3 stainless steel.
- A NONFOOD-CONTACT SURFACE of EQUIPMENT having a surface equal to that of commercial grade hot-rolled steel free of visible scale.
- Deck, BULKHEAD, or DECKHEAD that has an even or level surface with no roughness or projections to make it difficult to clean.

Spa pool: A POTABLE WATER or saltwater-supplied pool with temperatures and turbulence comparable to a WHIRLPOOL SPA and a tub volume of more than 6 tons of water.

Spray pad: Play and water contact area designed to have no standing water.

Suction fitting: A fitting in a RECREATIONAL WATER FACILITY under direct suction through which water is drawn by a pump.

Swimming pool: A RECREATIONAL WATER FACILITY greater than or equal to 1 meter (3.3 feet) in depth. This does not include SPA POOLS that meet this depth.

Table-mounted equipment: EQUIPMENT that is not PORTABLE and is designed to be mounted off the floor on a table, counter, or shelf.

Tableware: Eating, drinking, and serving UTENSILS for table use such as flatware including forks, knives, and spoons; hollowware including bowls, cups, serving dishes, and tumblers; and plates.

Technical water: Water that has not been chlorinated or PH controlled on 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.

Temperature-measuring device (TMD): A thermometer, thermocouple, thermistor, or other device that indicates the temperature of FOOD, air, or water and is numerically scaled in Celsius and/or Fahrenheit.

Time/temperature control for safety food or TCS, also known as POTENTIALLY HAZARDOUS FOOD or PHF (TCS/PHF): Natural or synthetic FOOD that requires time/temperature control because it is in a form capable of supporting one of the following:

- Rapid and progressive growth of infectious or toxigenic microorganisms.
- Growth and toxin production of *Clostridium botulinum*.
- Growth of *Salmonella enteritidis* [in raw shell eggs].

TCS/PHF includes an animal FOOD (a FOOD of animal origin) that is raw or heat-treated; a FOOD of plant origin that is heat-treated or consists of raw seed sprouts; cut melons; CUT LEAFY GREENS; cut tomatoes or mixtures of cut tomatoes; and garlic and oil mixtures that are not acidified or otherwise modified at a FOOD-PROCESSING PLANT in a way that results in mixtures that do not support growth as specified under subparagraph (a) of this definition or any FOOD classified by the FDA as a TCS/PHF.

TCS/PHF does not include the following:

- a. An air-cooled hard-boiled egg with shell intact, or a shell egg that is not hard-boiled, but has been treated to destroy all viable *Salmonella* spp..
- b. A FOOD with an A_w value of 0.85 or less.
- c. A FOOD with a PH level of 4.6 or below when measured at 24°C (75°F).
- d. A FOOD in an unopened HERMETICALLY SEALED CONTAINER that is commercially processed to achieve and maintain commercial sterility under conditions of nonrefrigerated storage and distribution.
- e. A FOOD for which laboratory evidence demonstrates that the rapid and progressive growth of infectious or toxigenic microorganisms or the growth of *S. enteritidis* in eggs or *C. botulinum* cannot occur, such as a FOOD that has an A_w and a PH above the levels specified under subparagraphs (b) and (c) of this definition and that may contain a preservative, other barrier to the growth of microorganisms, or a combination of barriers that inhibit the growth of microorganisms.
- f. A FOOD that may contain an infectious or toxigenic microorganism or chemical or physical contaminant at a level sufficient to cause illness, but that does not support the growth of microorganisms as specified under subparagraph (a) of this definition.

Transmission (of infection): Any mechanism by which an infectious agent is spread from a source or reservoir to another person. These mechanisms are defined as follows:

- Direct transmission (includes person-to-person transmission): Direct and essentially immediate transfer of infectious agents to a receptive portal of entry through which human or animal infection may take place.
- Indirect transmission: When an infectious agent is transferred or carried by some intermediate item, organism, means, or process to a susceptible host, resulting in disease. This includes airborne, foodborne, waterborne, vehicle-borne (for example, fomites), and vector-borne modes of transmission.

Turnover: The circulation, through the recirculation system, of a quantity of water equal to the pool volume.

Unblockable drain/suction fitting: A drain or SUCTION FITTING in a RECREATIONAL WATER FACILITY that cannot be completely covered or blocked by a 457-millimeter x 584-millimeter (18-inch x 23-inch) body-blocking element and that is rated by the test procedures or by the appropriate calculation in accordance with ASME A112.19.8M.

Utensil: A FOOD-contact implement or container used in storing, preparing, transporting, dispensing, selling, or serving FOOD. Examples: multiuse, SINGLE-SERVICE ARTICLES, or single-use KITCHENWARE or TABLEWARE; gloves used in contact with FOOD; FOOD TEMPERATURE-MEASURING DEVICES; and probe-type price or identification tags used in contact with FOOD.

Utility sink: Any sink located in FOOD SERVICE AREAS not intended for handwashing and/or WAREWASHING.

Variance: A written document issued by VSP that authorizes a modification or waiver of one or more requirements of these standards if, in the opinion of VSP, a HEALTH HAZARD or nuisance will not result from the modification or waiver.

Wading pool: RECREATIONAL WATER FACILITY with a maximum depth of less than 1 meter (3.3 feet).

Warewashing: The cleaning and sanitizing of TABLEWARE, UTENSILS, and FOOD-CONTACT SURFACES of EQUIPMENT.

Whirlpool spa: A freshwater or seawater pool equipped with either water or air jets and designed to operate at a minimum temperature of 32°C (90°F) and a maximum temperature of 40°C (104°F).

Whole-muscle, intact beef: Whole-muscle beef that is not injected, MECHANICALLY TENDERIZED, reconstructed, or scored and marinated; and from which beef steaks may be cut.

4.0 Acute Gastroenteritis (AGE) Surveillance

This section includes the following subsections:

- 4.1 Data Collection
- 4.2 Notification
- 4.3 Clinical Specimens
- 4.4 Requirements for Isolating AGE Cases and Their Immediate Contacts
- 4.5 Medications Sold or Dispensed
- 4.6 Acute Gastroenteritis Surveillance Knowledge

Applicable annexes can be found in Annexes 13.2 and 13.3. References for 4.0 Acute Gastroenteritis (AGE) Surveillance can be found in Annex 14.4.

4.1 Data Collection

4.1.1 Reportable Cases

4.1.1.1 Reportable Case Definition (02)

Passengers and crew with AGE symptoms must be evaluated using the REPORTABLE AGE CASE definition. A REPORTABLE case of AGE is a case reported to the master of the vessel, the medical staff, or other designated staff by a passenger or a crew member and meets the definition below.

A case is defined as

- Diarrhea (three or more episodes of loose stools in a 24-hour period or what is above normal for the individual) **OR**
- Vomiting and one additional symptom including one or more episodes of loose stools in a 24-hour period, or abdominal cramps, or headache, or muscle aches, or fever (temperature of $\geq 38^{\circ}\text{C}$ [100.4°F]).

Nausea, although a common symptom of AGE, is specifically excluded from this definition to avoid misclassifying seasickness (nausea and vomiting) as AGE.

Use these case definitions for identifying and classifying cases for reporting purposes. These case definitions should not be used as criteria for clinical intervention or public health action. For many conditions of public health importance, action to contain disease should be initiated as soon as a problem is identified; in many circumstances, appropriate public health action should be undertaken even though insufficient information is available to determine whether cases meet the case definition.

4.1.1.2 Illness Onset Time (02)

REPORTABLE AGE CASES must include crew members with an ILLNESS ONSET time of up to 3 days before boarding the vessel.

4.1.1.3 Foreign Quarantine Regulations

U.S. foreign QUARANTINE regulations (42 CFR Part 71) require ships to immediately report onboard deaths and certain communicable illnesses to CDC's Division of Global Migration Health (DGMH). These reports should be made to the CDC Port Health Station with jurisdiction over the ship's next port of entry (www.cdc.gov/port-health/stations/index.html).

Reporting requirements for ill passengers or crew are posted at www.cdc.gov/port-health/php/maritime-guidance/reporting-death-or-illness-on-ships.html.

The preferred method of reporting illnesses and deaths to DGMH is electronically via the Maritime Illness and Death Reporting PDF Form. If there are issues with the PDF form, ships can email or call the CDC Port Health Station with jurisdiction over the ship's next U.S. port of entry (www.cdc.gov/port-health/stations/index.html).

For significant events or emergencies, ships should notify the appropriate CDC Port Health Station by telephone. If the port health station cannot be contacted immediately, please call the CDC Emergency Operations Center at 770-488-7100.

General inquiries and information about QUARANTINE regulations:
Centers for Disease Control and Prevention
Division of Global Migration Health
Website: www.cdc.gov/port-health/php/maritime-guidance/index.html
Email: MaritimeAdmin@cdc.gov

4.1.2 AGE Surveillance Log

4.1.2.1 Responsibility (02)

A standardized AGE surveillance log for each cruise must be maintained daily by the master of the vessel, the medical staff, or other designated staff.

4.1.2.2 Required Information (02)

The AGE surveillance log must list

- The name of the vessel, cruise dates, and cruise number.
- All REPORTABLE AGE CASES.
- All passengers and crew members who are dispensed antidiarrheal medication from the master of the vessel, medical staff, or other designated staff.

4.1.2.3 AGE Surveillance Log Details (02)

The AGE surveillance log template can be found at www.cdc.gov/vessel-sanitation/php/communication-resources/index.html.

The AGE surveillance log must include a header containing the following information about the voyage:

- Vessel name.
- Voyage number.
- Date from.
- Date to.
- Total number of passengers.*
- Total numbers of REPORTABLE AGE CASES among passengers.
- Total number of crew. *
- Total numbers of REPORTABLE AGE CASES among crew.

*Total number of passengers and total number of crew must be the totals at the beginning of the voyage (i.e., totals on “date from”).

The AGE surveillance log entry for each passenger or crew member must contain the following information in separate columns:

- Patient I.D.
- Date of the first medical visit or report to staff of illness.
- Time of the first medical visit or report to staff of illness.
- Person’s last name.
- Person’s first name.
- Person’s age.
- Person’s sex.
- Designation as passenger or crew member.
- Cabin number.
- Crew member position or job on the vessel.
- Date of ILLNESS ONSET.
- Time of ILLNESS ONSET.
- Illness symptoms, including the presence or absence of the following selected signs and symptoms, with a separate column for each of the following:
 - Number of episodes of diarrhea in a 24-hour period.
 - Bloody stools (yes/no).
 - Number of episodes of vomiting in a 24-hour period.
 - Fever (yes/no).
 - Recorded temperature.
 - Abdominal cramps (yes/no).
 - Headaches (yes/no).
 - Myalgia (yes/no).
- Date of last symptom.
- Time of last symptom.
- Entry (yes/no) for whether a specimen was requested.
- Entry (yes/no) for whether a specimen was received.
- Entry (yes/no) for antidiarrheal medications sold or dispensed by designated medical staff.
- Entry (yes/no) for whether this was a REPORTABLE AGE CASE.
- Presence of underlying medical conditions that may affect

interpretation of AGE; for example, diabetic diarrhea, inflammatory bowel disease, gastrectomy, antibiotic-induced diarrhea, vomiting from chemotherapy, ear infections in children or others. If none, write “none,” “not applicable,” “N/A,” or similar wording.

The AGE surveillance log must contain the above information in this exact order. All fields of the AGE surveillance log must be completed, even if entry is zero or nonapplicable. If a field is not completed, document the reason in the notes column (for example, a virtual consultation).

The log data must be exported in an analyzable format (such as Microsoft Excel or Microsoft Access) in the exact order noted above. Any additional data fields in the surveillance log must be entered only outside of the form margins when exported.

4.1.3 Food and Beverage Questionnaire (02)

Questionnaires detailing activities and meal locations for the 72 hours before ILLNESS ONSET must be distributed to all passengers and crew members who are identified as REPORTABLE AGE CASES.

The food and beverage questionnaire template can be found at www.cdc.gov/vessel-sanitation/php/communication-resources/index.html.

4.1.4 Retention and Review (02)

The following records must be maintained on the vessel for 12 months and available for review by VSP during inspections and OUTBREAK investigations:

- Medical log/record.
- AGE surveillance log.
- 72-hour self-administered questionnaires.
- Interviews with cabin mates and IMMEDIATE CONTACTS of crew members with AGE (initial, 24-, and 48-hour).
- Documentation of follow-up actions for public vomit or diarrhea incidents. Proper follow-up of identified individuals should include determining whether they meet the definition of a REPORTABLE AGE CASE and assessing the need for ISOLATION.
- Documentation of the 3-day assessment of crew members for symptoms of AGE before joining the vessel.
- Documentation of the date and time of last symptom and clearance to return to work for FOOD and nonfood EMPLOYEES.
- Assessment of FOOD prepared or served by the FOOD EMPLOYEE while symptomatic and corrective actions.
- Documentation of the date and time of verbal interviews with asymptomatic cabin mates and IMMEDIATE CONTACTS of symptomatic crew.

Electronic records of these documents are acceptable IF the data are complete and can be retrieved during inspections and OUTBREAK investigations.

4.1.5 Confidentiality

All personal medical information received by CDC personnel must be protected in accordance with applicable federal LAW, including

- 5 U.S.C. Section 552a. Privacy Act - Records maintained on individuals
- Freedom of Information Act 5 U.S.C. Section 552. Administrative Procedure - Public information; agency rules, opinions, orders, records, and proceedings.

4.2 Notification**4.2.1 Routine Report Timing****4.2.1.1 24-Hour Report (01 C)**

The master, medical staff, or other designated staff of a vessel destined for a U.S. port from an international port must submit at least one standardized AGE report based on the number of REPORTABLE AGE CASES in the AGE surveillance log to VSP no less than 24 hours—but not more than 36 hours—before the vessel's expected arrival at the U.S. port.

4.2.1.2 4-Hour Update Report (01 C)

If the number of cases changes after submission of the initial report, an updated report must be submitted no less than 4 hours before the vessel's arrival at the U.S. port. The 4-hour update report must be a cumulative total count of the reported crew and passengers during the entire cruise, including the additional cases.

If there is an update to the AGE surveillance log after the 4-hour report is submitted, an additional 4-hour report must be submitted only if the vessel is still more than 4 hours from arrival in the U.S. port.

If the vessel is less than 4 hours from arrival in the U.S. port, no additional 4-hour report is needed.

4.2.1.3 Report Submission (02)

Submit routine 24-hour and 4-hour update reports electronically. The vessel must maintain proof that the report was successfully received by VSP.

Do not submit duplicate reports or reports when not required.

4.2.2 Report Contents**4.2.2.1 Contents (01 C)**

The AGE report must contain the following:

- Name of the vessel.
- Port of embarkation.
- Date of embarkation.
- Port of disembarkation.
- Date of disembarkation.
- Total number of REPORTABLE AGE CASES among passengers, including

those who have disembarked because of illness—even if the number is 0 (zero reporting).

- Total number of REPORTABLE AGE CASES among crew members, including those who have disembarked because of illness—even if the number is 0 (zero reporting).
- Total number of passengers and crew members on the cruise.

4.2.2.2 Cruise Length

For cruises lasting longer than 15 days, the AGE report can include only REPORTABLE AGE CASES and total numbers of passengers and crew members for the 15 days before the expected arrival at a U.S. port.

4.2.3 Special Report

4.2.3.1 2% and 3% Illness Report (01 C)

The master or designated corporate representative of a vessel with an international itinerary destined for a U.S. port must submit a special report at any time during a cruise, including between two U.S. ports,

- When the cumulative percentage of REPORTABLE AGE CASES for the entire voyage entered in the AGE surveillance log reaches 2% among passengers or 2% among crew **AND**
- The vessel is within 15 days of expected arrival at a U.S. port.

For segmented voyages where those segments are 8 days or less, a special AGE report must be made to VSP

- When a cumulative percentage of REPORTABLE AGE CASES of either 2% or 3% is reached among passengers or crew within one segment or two consecutive segments **AND**
- The vessel is within 15 days of expected arrival at a U.S. port.

The AGE surveillance log must include all segments from the start of the voyage, unless 67% (two-thirds) or more of the passengers are disembarked in any one segment.

For cruises lasting longer than 15 days before entering a U.S. port, the 2% or 3% special AGE report must include all cases for the entire voyage.

A telephone notification to VSP (1-800-323-2132) must accompany the special 2% report.

A second special report must be submitted when the cumulative percentage of REPORTABLE AGE CASES entered in the AGE surveillance log reaches 3% among passengers or 3% among crew and the vessel is within 15 days of expected arrival at a U.S. port.

4.2.3.2 Daily Updates (01)

Daily updates of illness status must be submitted as requested by VSP after the initial submission of a special report. **Daily updates may be submitted by email, or as requested by VSP.**

4.2.3.3 Routine Reporting Continues (01)

Routine reports (24-hour and 4-hour) must continue to be submitted by the master or designated corporate representative of a vessel that has submitted a special report.

4.2.4 Report Retention and Review (02)

The 24-hour, 4-hour, and special reports must be maintained on the vessel for 12 months. The reports must be available for review by VSP during inspections and OUTBREAK investigations.

4.3 Clinical Specimens

Refer to Annex 13.3.5 for a list of recommended specimen collection supplies.

4.3.1 Specimen Supplies and Shipping (02)

The medical staff will be responsible for maintaining a supply of at least 10 clinical specimen collection containers for both viral and bacterial agents (10 for each), as well as a shipping container that meets the latest shipping requirements of the International Air Transport Association (IATA) and U.S. Department of Transportation for Biological Substances, Category B designated shipments (or higher).

The vessel must maintain the appropriate labels and markings required for shipping Biological Substances, Category B shipments. The vessel must maintain appropriate refrigerant materials to keep clinical specimens cool. For guidance, refer to Annex 13.3.5.

4.3.2 When to Collect (02)

When a vessel reaches 2% REPORTABLE AGE CASES in either passengers or crew members, the medical staff will begin collecting clinical specimens (stool or vomitus specimens) for bacterial or viral analysis. If the etiologic agent is suspected to be parasitic, the medical staff must consult with VSP epidemiology staff for clinical specimen collection requirements.

Specimens should be requested before issuing antibiotic medications, but this patient treatment should not be contingent on specimen collection.

Specimens collected after administration of antibiotic medications must not be submitted for CDC analysis unless directed by VSP.

4.3.3 Proper Packing (02)

Before the specimens are packaged and shipped for laboratory testing, VSP will give instructions to vessel/cruise line medical staff about the specific container (i.e., bacterial or viral) for transport to a laboratory.

All clinical specimens must be packed and shipped in accordance with the standards outlined in Annex 13.3.5. The specimen packaging must include the proper documentation as required by the receiving laboratory.

4.4 Requirements for Isolating AGE Cases and Their Immediate Contacts

4.4.1 Isolate Ill Crew

It is important for symptomatic crew members to report to medical as soon as possible.

4.4.1.1 Symptomatic and Meeting the Case Definition for Acute Gastroenteritis (AGE) (11 C)

FOOD EMPLOYEES:

- Isolate in cabin or designated restricted area until symptom-free for a minimum of 48 hours.
- Follow-up with and receive approval by designated medical personnel before returning crew to work.
- Document date and time of last symptom and clearance to return to work.
- Review [when possible] any REPORTABLE AGE CASES among passengers or crew reported after the FOOD EMPLOYEE's ILLNESS ONSET for epidemiologic link/connection.

The FOOD EMPLOYEE's supervisor or PERSON IN CHARGE must conduct an assessment of FOOD prepared or served by the FOOD EMPLOYEE while symptomatic and take appropriate corrective actions. Corrective actions taken as a result of the assessment must be documented.

Appropriate corrective actions could include discarding READY TO EAT FOOD, thoroughly cooking raw FOOD, and disinfecting the FOOD AREA and EQUIPMENT.

Nonfood employees:

- Isolate in cabin or designated restricted area until symptom-free for a minimum of 24 hours.
- Follow-up with and receive approval by designated medical personnel before returning crew to work.
- Document the date and time of last symptom and clearance to return to work.

4.4.1.2 Hygiene and Handwashing Facts (02)

Advise symptomatic crew of hygiene and handwashing facts and provide written handwashing and hygiene fact sheets.

4.4.1.3 Asymptomatic Immediate Contacts of Crew Cases (02)

FOOD and nonfood employees:

- Restrict exposure to symptomatic crew member(s).
- Undergo a verbal interview with medical or supervisory staff, who will confirm their condition, provide facts and a written fact sheet about hygiene and handwashing, and instruct them to report immediately to medical if they develop symptoms.

- Complete a verbal interview daily with medical or supervisory staff until 48 hours after the crew members' ILLNESS ONSET.
 - The first verbal interview must be conducted within 8 hours from the time the ill crew member initially reported to the medical staff.
 - If the asymptomatic IMMEDIATE CONTACT or cabin mate is at work, he or she must be contacted by medical or supervisory staff as soon as possible.
 - The date and time of verbal interviews must be documented.

If the symptomatic crew member has no cabin mate or other IMMEDIATE CONTACT, this must be documented.

4.4.2 Passengers

4.4.2.1 Isolate Ill Passengers (11 C)

Advise symptomatic passengers and those meeting the case definition to remain isolated in their cabins for a minimum of 24 hours after their symptoms resolve.

Follow-up by infirmity personnel is advised.

4.4.2.2 Hygiene and Handwashing Facts (02)

Advise symptomatic passengers of hygiene and handwashing facts and provide written handwashing and hygiene fact sheets.

4.5 Medications Sold or Dispensed (02)

Antidiarrheal medications must not be sold or dispensed to passengers or crew except by designated medical staff.

4.6 AGE Surveillance Knowledge

4.6.1 Demonstration of Knowledge (44)

The supervisor or person responsible for medical operations related to AGE on the vessel must demonstrate to VSP—on request during inspections—knowledge of medical operations related to AGE.

The person must demonstrate this knowledge by compliance with this section of these standards or by responding correctly to the inspector's questions as they relate to the specific operation. In addition, the supervisor or person responsible for medical operations related to AGE on the vessel must ensure that employees are properly trained to comply with this section of the standards as it relates to their assigned duties.

5.0 Potable Water

This section includes the following subsections:

- 5.1 Source
- 5.2 Bunker and Production Halogenation and pH Control
- 5.3 POTABLE WATER System
- 5.4 POTABLE WATER System Chemical Treatment
- 5.5 POTABLE WATER System HALOGEN Monitoring
- 5.6 Microbiologic Monitoring
- 5.7 Water Distribution System Protection
- 5.8 Potable Water Knowledge

References for 5.0 Potable Water can be found in Annex 14.5. Standards for Section 5.0 and Section 6.0 are part of a comprehensive water safety plan.

5.1 Source

5.1.1 Bunkering

5.1.1.1 Safe Source (03 C)

DRINKING WATER bunkered from shore supplies must be from a potable source that meets World Health Organization standards for POTABLE WATER.

5.1.1.2 Microbiologic Sample Reports

5.1.1.2.1 Water Report (06)

Where available, the vessel must have a copy of the most recent microbiologic report from each port before bunkering POTABLE WATER to verify that the water meets potable standards. The date of the analysis report must be 30 days or less from the date of POTABLE WATER bunkering and must include an analysis for *Escherichia coli* at a minimum.

5.1.1.2.2 Onboard Test (06)

Water samples collected and analyzed by the vessel for the presence of *E. coli* may be substituted for the microbiologic report from each port water system. Samples must be analyzed using a method accepted in Standard Methods for the Examination of Water and Wastewater or international Environmental Protection Agency (EPA) APPROVED equivalent. Test kits, incubators, and associated equipment must be operated and maintained in accordance with the manufacturers' specifications. If a vessel bunkers POTABLE WATER from the same port more than once per month, only one test per month is required.

5.1.1.2.3 Review (06)

These records must be maintained on the vessel for 12 months and must be available for review during inspections.

5.1.2 Water Production

5.1.2.1 Location

5.1.2.1.1 *Polluted Harbors (03 C)*

A reverse osmosis unit, distillation plant, or other process that supplies water to the vessel's POTABLE WATER system must only operate while the vessel is MAKING WAY. These processes must not operate in polluted areas, HARBORS, or at anchor.

A reverse osmosis unit or evaporator with a completely separate plant/process, piping system, and connections from the POTABLE WATER system may be used to produce TECHNICAL WATER while in polluted areas, HARBORS, at anchor, or while not MAKING WAY.

5.1.2.1.2 *Onboard Water Sources (03 C)*

Onboard water sources such as TECHNICAL WATER, air conditioning condensate, or wastewater of any kind (treated or untreated) are not allowed for POTABLE WATER production.

5.2 Bunkering and Production Halogenation and pH Control

5.2.1 Procedures

5.2.1.1 Residual Halogen and pH

5.2.1.1.1 *Halogen and pH Level (03 C)*

POTABLE WATER must be continuously halogenated to at least 2.0 MG/L (ppm) free HALOGEN residual at the time of bunkering or production with an automatic halogenation device. Adjust the PH so it does not exceed 7.8.

The amount of HALOGEN injected during bunkering or production must be controlled by a flow meter or a free HALOGEN analyzer.

5.2.1.1.2 *Within 30 Minutes (08)*

The free HALOGEN residual level must be adjusted to 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.

5.2.1.2 Monitoring

5.2.1.2.1 *Bunkering Pretest (08)*

A free HALOGEN residual and PH test must be conducted on the shore-side water supply before starting the POTABLE WATER bunkering process to establish the correct HALOGEN dosage.

The results of the pretest must be recorded and available for review during inspections.

5.2.1.2.2 *Bunkering/Production Test (08)*

After the free HALOGEN residual level of at least 2.0 MG/L (ppm) and PH level not exceeding 7.8 have been reached, the free HALOGEN residual and PH monitoring must be performed at least hourly during the bunkering of POTABLE WATER.

After the free HALOGEN residual level of at least 2.0 MG/L (ppm) and PH level not exceeding 7.8 have been reached, the free HALOGEN residual and PH monitoring must be performed at least once every 4 hours during the production of POTABLE WATER.

A test kit must be available for measuring free HALOGEN residual levels and PH.

Test kits must be accurate to within 0.2 MG/L (ppm) for HALOGEN and must have a testing range of free HALOGEN residual normally maintained in the POTABLE WATER system. Test kits for PH must be accurate to within 0.2.

5.2.1.2.3 *Records (08)*

Accurate records of this monitoring must be maintained on the vessel for 12 months and must be available for review during inspections.

5.2.1.2.4 *Calibration of Analyzer-Chart Recorders or Data Loggers (06)*

HALOGEN and PH analyzer-chart recorders or data loggers used instead of manual tests and logs must be calibrated at the beginning of bunkering or production and each time bunkering or production is restarted. Calibration must be recorded on a chart or in a logbook. Calibration done, checked, verified, or similar language is acceptable.

The free HALOGEN residual and PH measured by the HALOGEN/PH analyzer must be accurate to within 0.2 MG/L (ppm) of the free HALOGEN residual and 0.2 of the PH as measured by the manual test.

5.2.1.2.5 *Construction (06)*

HALOGEN and PH analyzer-chart recorders used on bunker water systems must be constructed and installed according to the manufacturer's guidelines.

5.2.1.2.6 *Data Logger (06)*

Electronic data loggers with CERTIFIED DATA SECURITY FEATURES may be used instead of chart recorders.

If electronic data loggers are used, written documentation from the data logger manufacturer, such as a letter or instruction manual, must be provided to verify that the features are secure.

5.2.1.2.7 *Halogen Injection (08)*

Water samples for HALOGEN and PH testing must be obtained from a sample cock and/or a HALOGEN analyzer probe located on the bunker

or production water line at least 3 meters (10 feet) after the HALOGEN injection point and before the storage tank.

A static mixer may be used to reduce the distance between the HALOGEN injection point and the sample cock or HALOGEN analyzer sample point. If used, the mixer must be installed per the manufacturer's recommendations. A copy of all manufacturers' literature for installation, operation, and maintenance must be maintained.

5.2.1.2.8 Tank Sample

In the event of EQUIPMENT failure, bunker or production water HALOGEN samples may also be taken from previously empty POTABLE WATER TANKS.

5.3 Potable Water System

5.3.1 Fixtures That Require Potable Water (08)

Supply only POTABLE WATER to the following areas and plumbing connections, regardless of the locations of these fixtures on the vessel:

- All showers and sinks (not just in cabins).
- Chemical feed tanks for the POTABLE WATER system or RWF systems.
- Drinking fountains.
- Emergency showers.
- Eye wash stations.
- FOOD AREAS.
- Handwashing sinks.
- HVAC fan rooms. *Applies to vessels built or renovated in accordance with the 2011 VSP Construction Guidelines or later.
- Medical facilities.
- Deck and window cleaning facilities. *Applies to vessels built or renovated in accordance with the 2018 VSP Construction Guidelines or later.

UTILITY SINKS for engine/mechanical spaces are excluded.

5.3.2 Potable Water Tanks

5.3.2.1 Protection

5.3.2.1.1 Potable Water Tank Walls (07 C)

POTABLE WATER TANKS must not share a common wall with the hull of the vessel or with tanks or piping containing nonpotable water or other liquids.

5.3.2.1.2 Nonpotable Piping (08)

Piping systems carrying SEWAGE or other nonpotable liquids must not pass through POTABLE WATER TANKS. Minimize the use of nonpotable lines above POTABLE WATER TANKS. Nonpotable lines above POTABLE WATER TANKS must not have any mechanical couplings.

For SCUPPER lines, factory assembled transition fittings for steel to plastic pipes are allowed when manufactured per American Society for Testing and Materials (ASTM) F1973 or equivalent standard.

5.3.2.1.3 Coatings (08)

Interior coatings on POTABLE WATER TANKS must be APPROVED for POTABLE WATER contact by a certification organization. Follow all manufacturers' recommendations for application, drying, and curing.

The following must be maintained on the vessel for the tank coatings used:

- Written documentation of approval from the certification organization (independent of the coating manufacturer).
- Manufacturers' recommendations for application, drying, and curing.
- Written documentation that the manufacturers' recommendations have been followed for application, drying, and curing.

5.3.2.2 Tank Construction

5.3.2.2.1 Identification (08)

POTABLE WATER TANKS must be identified with a number and the words "POTABLE WATER" in letters at least 13 millimeters (1/2 inch) high.

5.3.2.2.2 Sample Cocks (08)

Sample cocks must be pointed down, identified, and numbered with the appropriate tank number.

5.3.2.2.3 Vent/Overflow (08)

The POTABLE WATER TANKS, vents, and overflows must be protected from CONTAMINATION.

5.3.2.2.4 Level Measurement (08)

Any device for determining the depth of water in the POTABLE WATER TANKS must be constructed and maintained to prevent contaminated substances or liquids from entering the tanks.

5.3.2.2.5 Manual Sounding (08)

Manual sounding of POTABLE WATER TANKS must be performed only in emergencies and must be performed in a sanitary manner.

5.3.3 Potable Water Piping

5.3.3.1 Protection

5.3.3.1.1 Identification (08)

POTABLE WATER lines must be striped or painted either in accordance with ISO 14726 (blue/green/blue) or blue only.

DISTILLATE and PERMEATE WATER LINES directed to the POTABLE WATER system must be striped or painted in accordance with ISO 14726 (blue/gray/blue).

Other lines must not have the above color designations.

These lines must be striped or painted at 5-meter (16.4-foot) intervals and on each side of partitions, decks, and BULKHEADS except where decor would be marred by such markings. This includes POTABLE WATER supply lines in technical lockers.

POTABLE WATER lines after REDUCED PRESSURE ASSEMBLIES must not be striped or painted as POTABLE WATER.

Striping is not required in FOOD AREAS of the vessel because only POTABLE WATER is permitted in these areas.

All refrigerant brine lines and nonpotable chilled water lines in all FOOD AREAS, such as on ice machines, ice cream machines, etc., must be identified with either ISO 14726 (blue/white/blue) or by another uniquely identifiable method to prevent CROSS-CONNECTIONS.

5.3.3.1.2

Protection (07 C)

POTABLE WATER piping must not pass under or through tanks holding nonpotable liquids.

5.3.3.1.3

Bunker Connection (08)

The POTABLE WATER bunker filling line must begin either horizontally or pointing downward and at a point at least 460 millimeters (18 inches) above the bunker station deck.

5.3.3.1.4

Cap/Keeper Chain (08)

The POTABLE WATER filling line must have a screw cap fastened by a NONCORRODING cable or chain to an adjacent BULKHEAD or surface in such a manner that the cap cannot touch the deck when hanging free.

The hose connections must be unique and fit only the POTABLE WATER hoses.

5.3.3.1.5

Identification (08)

Each bunker station POTABLE WATER filling line must be striped or painted blue or in accordance with the color designation in ISO 14726 (blue/green/blue) and clearly labeled “**POTABLE WATER FILLING**” in letters at least 13 millimeters (1/2 inch) high, stamped on a noncorrosive label plate or the equivalent, and located at or near the point of the hose connection.

5.3.3.1.6

Technical Water (08)

If used on the vessel, TECHNICAL WATER must be bunkered through separate piping using fittings incompatible for POTABLE WATER

bunkering.

This does not apply to water bunkered from shoreside municipal water supply.

5.3.3.1.7 *Different Piping (08)*

TECHNICAL WATER must flow through a completely different piping system.

5.3.4 Potable Water Hoses

5.3.4.1 Construction

5.3.4.1.1 *Fittings (08)*

POTABLE WATER hoses must have unique fittings from all other hose fittings on the vessel.

5.3.4.1.2 *Identification (08)*

POTABLE WATER hoses must be labeled for use with the words “POTABLE WATER ONLY” in letters at least 13 millimeters (1/2 inch) high at each connecting end.

5.3.4.1.3 *Construction (08)*

All hoses, fittings, and water filters used in the bunkering of POTABLE WATER must be constructed of safe, easy-to-clean materials APPROVED for POTABLE WATER use and must be maintained in good repair.

5.3.4.1.4 *Other Equipment (08)*

Other equipment and tools used in the bunkering of POTABLE WATER must be constructed of safe, EASILY CLEANABLE materials, dedicated solely for POTABLE WATER use, and maintained in good repair.

5.3.4.1.5 *Locker Construction (08)*

POTABLE WATER hose lockers must be constructed of smooth, nontoxic, corrosion resistant, easy-to-clean material and must be maintained in good repair.

5.3.4.1.6 *Locker Identification (08)*

POTABLE WATER hose lockers must be labeled “POTABLE WATER HOSE AND FITTING STORAGE” in letters at least 13 millimeters (1/2 inch) high.

5.3.4.1.7 *Locker Height (08)*

POTABLE WATER hose lockers must be mounted at least 460 millimeters (18 inches) above the deck and must be self-draining.

5.3.4.1.8 *Locker Closed (08)*

Locker doors must be closed when not in use.

5.3.4.1.9 *Locker Restriction (08)*

The locker must not be used for any other purpose than storing POTABLE WATER equipment such as hoses, fittings, sanitizing buckets, SANITIZER solution, etc.

5.3.4.2 Handling**5.3.4.2.1 Limit Use (08)**

POTABLE WATER hoses must not be used for any other purpose.

5.3.4.2.2 Handling (08)

All hoses, fittings, water filters, buckets, equipment, and tools used for connection with the bunkering of POTABLE WATER must be handled and stored in a sanitary manner.

5.3.4.2.3 Contamination Prevention (08)

POTABLE WATER hoses must be handled with care to prevent CONTAMINATION from dragging their ends on the ground, pier, or deck surfaces, or from dropping the hose into contaminated water, such as on the pier or in the HARBOR.

5.3.4.2.4 Flush/Drain (08)

POTABLE WATER hoses must be flushed with POTABLE WATER before being used and must be drained after each use.

5.3.4.2.5 Storage (08)

POTABLE WATER hoses must be rolled tight with the ends capped, on reels or on racks or with ends coupled together and stowed in POTABLE WATER hose lockers.

5.3.5 Potable Water System Cleaning and Disinfection**5.3.5.1 Disinfecting (07 C)**

POTABLE WATER TANKS and all affected parts of the POTABLE WATER distribution system must be cleaned, disinfected, and flushed with POTABLE WATER

- Before being placed in service.
- Before returning to operation after repair or replacement.
- After being subjected to any CONTAMINATION, including entry into a POTABLE WATER tank.

Backflow prevention devices that are part of the potable water piping must be disinfected before installation.

During dry docks and wet docks, if any work is done to the POTABLE WATER distribution system and piping system that affects a POTABLE WATER TANK(s), the affected POTABLE WATER TANK(s) must be cleaned and disinfected.

5.3.5.2 Inspection (08)

POTABLE WATER TANKS must be inspected, cleaned, and disinfected at least every 2 years.

5.3.5.3 Disinfection Residual (07 C)

DISINFECTION after potential CONTAMINATION must be accomplished by increasing the free HALOGEN residual to at least 50 MG/L (ppm) throughout the affected area and maintaining this concentration for 4 hours or by way of

another procedure submitted to and accepted by VSP.

In an emergency, this contact time may be shortened to 1 hour by increasing free HALOGEN residual to at least 200 MG/L (ppm) throughout the affected area.

Refer to Annex 13.4 for DISINFECTION calculations for water and equipment. Refer to Annex 13.5 for examples of DISINFECTION methods.

5.3.5.4 Flush (08)

The disinfected parts of the system must be flushed with POTABLE WATER or otherwise dechlorinated until the free HALOGEN residual is less than or equal to 5.0 MG/L (ppm). **The free HALOGEN test result must be documented with a specific value measured.**

5.3.5.5 Record Retention (08)

Documentation of all inspections, maintenance, cleaning, and DISINFECTION must be maintained for 12 months and must be available for review during inspections.

Records must include method of DISINFECTION, concentration and contact time of the DISINFECTANT, and the **measured free HALOGEN residual after flushing.**

5.3.6 Potable Water Tank Disinfection Methods

5.3.6.1 Method for Disinfecting Filled Tanks (08)

DISINFECTION must be accomplished by increasing the free HALOGEN residual to at least 50 MG/L (ppm) throughout the tank and maintaining it for 4 hours. Maintain a PH value of 7.8 or less. The DISINFECTION concentration and contact time must be documented.

Verify that the free HALOGEN residual level is less than or equal to 5.0 MG/L (ppm) and document the measured level before placing the tank back into service.

5.3.6.2 Method for Disinfecting Empty Tanks (08)

The empty tank cleaning and DISINFECTION procedure is **only** APPROVED for routine cleaning and DISINFECTION. It is **not** APPROVED for known or suspected contaminated tanks.

1. Remove (strip) all water from the tank.
2. Clean all tank surfaces, including filling lines, with an appropriate detergent.
3. Rinse all surfaces of the tank thoroughly with POTABLE WATER.
4. Remove (strip) the rinse water from the tank.
5. Wet all surfaces of the tank with at least a 200-MG/L (ppm) solution of chlorine (this can be done using new, clean mops, rollers, sprayers, etc.). Ensure the tank surfaces remain wet with the chlorine solution for at least 2 hours. Check, monitor, and document the DISINFECTION

concentration and contact time.

6. Refill the tank and verify the free HALOGEN residual is less than or equal to 5.0 MG/L (ppm) before placing the tank back into service. Document the free HALOGEN residual level.

5.4 Potable Water System Chemical Treatment

5.4.1 Chemical Injection Equipment

5.4.1.1 Recommended Engineering Practices (06)

All distribution water system chemical injection EQUIPMENT must be constructed and installed in accordance with recommended engineering practices.

5.4.1.2 Operation

5.4.1.2.1 Halogen Residual (04 C)

The halogenation injection EQUIPMENT must provide continuous halogenation of the POTABLE WATER distribution system and must maintain a free HALOGEN residual of greater than or equal to 0.2 MG/L (ppm) and less than or equal to 5.0 MG/L (ppm) throughout the distribution system.

5.4.1.2.2 Controlled (08)

The amount of chemicals injected into the POTABLE WATER system must be controlled by an analyzer.

5.4.1.2.3 Halogen Backup Pump (06)

At least one backup HALOGEN pump must be installed with an active, automatic switchover feature to maintain the free HALOGEN residual if the primary pump fails, an increase in demand occurs, or the low chlorine alarm sounds.

5.4.1.2.4 Chemical Injection Dosing Point (06)

A check valve or nonreturn valve must be installed between the distribution halogen and PH pumps and the injection points. In addition,

- The potable water distribution halogenation and PH chemical injection dosing points must be located on the delivery line downstream of the potable water pumps **OR**
- If the injection dosing point is before the potable water pumps, it must be located above the chemical dosing tanks.

5.5 Potable Water System Halogen Monitoring

5.5.1 Halogen Analyzer-Chart Recorder

5.5.1.1 Installation

5.5.1.1.1 Distant Point (06)

A HALOGEN analyzer-chart recorder must be installed at a distant point in the POTABLE WATER distribution system where a significant water

flow exists and represents the entire distribution system. In cases where multiple distribution loops exist and no pipes connect the loops, there must be an analyzer and chart recorder for each loop.

5.5.1.1.2 Data Logger (06)

Electronic data loggers with CERTIFIED DATA SECURITY FEATURES may be used instead of chart recorders.

If used, written documentation from the data logger manufacturer, such as a letter or instruction manual, must be provided to verify that the features are secure.

5.5.1.2 Operation

5.5.1.2.1 Maintenance (06)

The HALOGEN analyzer-chart recorder must be properly maintained and must be operated in accordance with the manufacturer's instructions.

A manual comparison test must be conducted daily to verify calibration. Calibration must be made whenever the manual test value is greater than 0.2 MG/L (ppm) higher or lower than the analyzer reading.

5.5.1.2.2 Calibration (06)

The daily manual comparison test or calibration must be recorded either on the recorder chart or in a log.

5.5.1.2.3 Accuracy (05)

The free HALOGEN residual measured by the HALOGEN analyzer must be ± 0.2 MG/L (ppm) of the free HALOGEN residual measured by the manual test.

5.5.1.2.4 Test Kit (06)

The HALOGEN test kit used to calibrate the HALOGEN analyzer must be accurate to within 0.2 MG/L (ppm) for HALOGEN and graduated in increments no greater than 0.2 MG/L (ppm) in the range of free HALOGEN residual normally maintained in the POTABLE WATER system.

Ensure all reagents used with the test kit are not expired.

Where available, ensure appropriate secondary standards for electronic test kits are available on the vessel to verify test kit operation.

5.5.2 Halogen Analyzer Charts

5.5.2.1 Chart Design

5.5.2.1.1 Range (06)

HALOGEN analyzer-chart recorder charts must have a range of 0.0 to 5.0 MG/L (ppm) and have a recording period of—and limited to—24 hours.

5.5.2.1.2 Data Logger (06)

Electronic data loggers with CERTIFIED DATA SECURITY FEATURES used instead of chart recorders must produce records that conform to the principles of operation and data display required of the analog charts, including printing the records.

5.5.2.1.3 Increments (06)

Electronic data logging must be in increments of less than or equal to 15 minutes.

5.5.2.2 Operation**5.5.2.2.1 Charts (06)**

HALOGEN analyzer-chart recorder charts must be changed, initialed, and dated daily. Charts must contain notations of any unusual events in the POTABLE WATER system.

If electronic data loggers are used instead of chart recorders, notations of any unusual events in the POTABLE WATER system must be recorded in a log.

5.5.2.2.2 Retention (06)

HALOGEN analyzer-chart recorder charts must be retained for at least 12 months and must be available for review during inspections.

5.5.2.2.3 Chart Review (06)

Records from the HALOGEN analyzer-chart recorders or data loggers must verify the free HALOGEN residual of greater than or equal to 0.2 MG/L (ppm) and less than or equal to 5.0 MG/L (ppm) in the water distribution system for at least 16 hours in each 24-hour period since the last inspection of the vessel.

5.5.3 Manual Halogen Monitoring**5.5.3.1 Equipment Failure****5.5.3.1.1 Every 4 hours (06)**

Free HALOGEN residual must be measured by a manual test kit at the HALOGEN analyzer at least every 4 hours in the event of EQUIPMENT failure.

5.5.3.1.2 Recording (06)

Manual readings must be recorded on a chart or log, retained for at least 12 months, and available for review during inspections.

5.5.3.1.3 Limit (06)

Repairs on malfunctioning HALOGEN analyzer-chart recorders must be completed within 10 days of EQUIPMENT failure.

5.5.3.1.4 Alarm (06)

Provide an audible alarm in a continuously occupied watch station (for example, the engine control room) to indicate low and high free

HALOGEN residual at the distant point analyzer.

5.6 Microbiologic Monitoring

5.6.1 Sampling and Analysis

5.6.1.1 Samples

5.6.1.1.1 *E. coli*—**POTABLE Water (06)**

A minimum of four POTABLE WATER samples per month must be collected and analyzed for the presence of *E. coli*. Samples must be collected from the forward, aft, upper, and lower decks of the vessel.

Sample sites for *E. coli* must be changed monthly to ensure effective monitoring of the entire POTABLE WATER distribution system.

Follow-up sampling must be conducted for each positive test result.

Microbiological samples from ice machines and POTABLE WATER storage tanks do not count toward the monthly routine distribution system monitoring.

5.6.1.1.2 *Legionella*—**POTABLE and Nonpotable Water (06)**

The POTABLE WATER system must be sampled for *Legionella*. This microbiological examination must be conducted at least every 6 months. Sample sites for *Legionella* must be representative of the POTABLE WATER and RWF systems to ensure effective monitoring. The number of samples depends on the size and complexity of the vessel.

Follow-up actions must be taken when *Legionella* is detected and should be based on the type of *Legionella* found, the concentration (for example in CFU/ml), and the extent of colonization.

Actions can include

- Review of the water management program.
- Root cause analysis to understand possible reasons for *Legionella* growth.
- Updates to the water management program if needed.

Consider retesting fixtures or devices where *Legionella* was detected to confirm the effectiveness of the response and to determine if remediation is needed. For additional guidance, see ASHRAE Guideline 12, Appendix C5.

The *Legionella* sampling plan must include a selection of the following locations:

- POTABLE WATER storage tanks.
- Water heaters and hot water storage.
- Hot water return lines.

- Representative points of use in cabins, galleys, and recreational areas.
 - Include a mix of fixture types (showers, sink faucets, tubs).
 - Include potable water samples when temperatures are in the range favorable for *Legionella* growth (25°–45°C, 77°–113°F).
- Decorative water features.
- Misting systems.
- Salon and pedicure devices.
- Technical water sources with a risk of exposure via aerosolization to crew or passengers, such as deck washing.

5.6.1.1.3 *Legionella—Recreational Water Facilities and Heated Jetted Tubs (06)*

All SPA POOLS, WHIRLPOOL SPAS, and HEATED JETTED TUBS must be sampled for *Legionella* at least every 3 months. If *Legionella* is found, follow-up sampling must be conducted. Samples must be collected at least 48 hours after the facility has been restored to normal operating conditions after remediation.

Note: Ships may test for *Legionella* every 6 months if the following criteria are met for the 24 previous months:

- Negative *Legionella* test results for the SPA POOLS, WHIRLPOOL SPAS, and HEATED JETTED TUBS.
- No legionellosis cases associated with travel on the ship (including after-cruise travel-associated cases identified by public health authorities).

If *Legionella* is detected, the following steps must be taken:

- Close the RWF.
- Add disinfectant and maintain at least 10 ppm of free chlorine for 1 hour.
- Drain the water.
- Scrub, clean, and rinse all RWF surfaces with fresh potable water and drain as needed.
- Clean and service filters according to manufacturer recommendations.
- Refill.
- Return the RWF to at least the minimum free HALOGEN residual.
- Reopen.
- Collect follow-up samples.

5.6.1.1.4 *Analysis (06)*

Onboard *Legionella* testing is acceptable. Operate and maintain test kits, incubators, and associated equipment following the manufacturers' specifications.

Cruise lines must use a test method validated to a national or international standard. Additional information on routine testing can be found at www.cdc.gov/control-legionella/php/toolkit/routine-testing-module.html.

For cluster investigations, CDC will request additional testing.

5.6.1.2 Records (06)

Sample results must be maintained on the vessel for at least 12 months and must be available for review during inspections.

5.7 Water Distribution System Protection

5.7.1 Cross-connection Control

5.7.1.1 Program

5.7.1.1.1 Cross-Connections (07 C)

The POTABLE WATER distribution system must be maintained free of CROSS-CONNECTIONS.

5.7.1.1.2 Protection (07 C)

The POTABLE WATER system must be protected against BACKFLOW or other CONTAMINATION by BACKFLOW PREVENTION DEVICES or AIR GAPS. The PERMEATE WATER LINES and DISTILLATE WATER LINES directed toward the POTABLE WATER system must also be protected.

5.7.1.1.3 Control/Program (08)

The vessel must provide a comprehensive CROSS-CONNECTION control program (refer to Annex 13.6).

The following connections to the POTABLE WATER system must be protected against BACKFLOW (BACKSIPHONAGE or BACKPRESSURE) with AIR GAPS or mechanical BACKFLOW PREVENTION DEVICES:

- RWFs such as SWIMMING POOLS, CHILDREN'S/WADING POOLS, WHIRLPOOL SPAS, and similar facilities.
- Decorative water features/fountains.
- Cabin shower hoses, toilets, JETTED TUBS, and similar facilities.
- Photographic laboratory developing machines and UTILITY SINKS.
- Beauty and barber shop spray-rinse hoses.
- Spa steam generators where essential oils can be added.
- Hose bibb connections.
- Garbage grinders and FOOD WASTE SYSTEMS.
- Automatic galley hood washing systems.
- FOOD service EQUIPMENT such as coffee machines, ice machines, juice dispensers, combination ovens, and similar EQUIPMENT.
- Mechanical WAREWASHING machines.

- Detergent dispensers.
- Hospital and laundry EQUIPMENT.
- Air conditioning expansion tanks.
- Boiler feed water tanks.
- Fire system.
- Public toilets, urinals, and shower hoses.
- POTABLE WATER, bilge, and pumps that require priming.
- Freshwater or saltwater ballast systems.
- International fire and fire sprinkler water connections. An RP ASSEMBLY is the only allowable device for this connection.
- POTABLE WATER supply to automatic window washing systems that can be used with chemicals or chemical mix tanks.
- Water softeners for nonpotable fresh water.
- Water softener and mineralizer drain lines including backwash drain lines. The only allowable protections for these lines are an AIR GAP or an RP ASSEMBLY.
- High saline discharge line from evaporators. The only allowable protections for these lines are an AIR GAP or an RP ASSEMBLY.
- Chemical tanks.
- Other connections between the POTABLE WATER system and a nonpotable water system such as the GRAY WATER system, laundry system, or TECHNICAL WATER system. The only allowable forms of protection for these connections are an AIR GAP or an RP ASSEMBLY.
- BLACK WATER or combined GRAY WATER/BLACK WATER systems. An AIR GAP is the only allowable protection for these connections.
- Any other connection to the POTABLE WATER system where CONTAMINATION or BACKFLOW can occur.
- Hi-Fog or similar suppression systems connected to POTABLE WATER TANKS.

5.7.1.1.4 Log (08)

A CROSS-CONNECTION control program must include, at a minimum, a complete listing of CROSS-CONNECTIONS and the BACKFLOW prevention method or device for each so there is a match to the PLUMBING SYSTEM component and location. AIR GAPS must be included in the listing. The required information can be found in Annex 13.6.5.

AIR GAPS on faucet taps do not need to be included on the CROSS-CONNECTION control program listing.

The program must set a schedule for inspection frequency. **Repeat devices such as toilets may be grouped under a single device type.**

A log documenting the inspection and maintenance in written or electronic form must be maintained and be available for review during inspections.

5.7.1.2 Device Installation

5.7.1.2.1 *Air Gaps and Backflow Prevention Devices (08)*

AIR GAPS should be used where feasible and where water under pressure is not required.

BACKFLOW PREVENTION DEVICES must be installed when AIR GAPS are impractical or when water under pressure is required. Provide an AIR GAP for the atmospheric vent of all BACKFLOW PREVENTION DEVICES.

A mechanical BACKFLOW PREVENTION DEVICE must have an atmospheric vent.

5.7.1.2.2 *2X Diameter (08)*

AIR GAPS must be at least twice the diameter of the delivery fixture opening and a minimum of 25 millimeters (1 inch).

5.7.1.2.3 *Flood-Level Rim (08)*

An ATMOSPHERIC VACUUM BREAKER must be installed at least 150 millimeters (6 inches) above the flood-level rim of the fixtures.

5.7.1.2.4 *After Valve (08)*

An ATMOSPHERIC VACUUM BREAKER must be installed only in the supply line on the discharge side of the last control valve.

5.7.1.2.5 *Continuous Pressure (08)*

A CONTINUOUS PRESSURE BACKFLOW PREVENTION DEVICE must be installed when a valve is located downstream from the BACKFLOW PREVENTION DEVICE.

5.7.1.2.6 *Backflow Prevention Devices (08)*

BACKFLOW PREVENTION DEVICES must be provided on all fixtures using POTABLE WATER and that have submerged inlets.

5.7.1.2.7 *Vacuum Toilets (08)*

An ATMOSPHERIC VACUUM BREAKER must be installed on a POTABLE WATER supply connected to a vacuum toilet system. An ATMOSPHERIC VACUUM BREAKER must be located on the discharge side of the last control valve (flushing device).

5.7.1.2.8 *Diversions Valves (08)*

Lines to divert POTABLE WATER to other systems by valves or interchangeable pipe fittings must have an AIR GAP after the valve.

5.7.1.2.9 *Location (08)*

BACKFLOW PREVENTION DEVICES and AIR GAPS must be ACCESSIBLE for inspection, testing, service, and maintenance. If access panels are required, provide panels large enough for testing, service, and

maintenance.

5.7.1.3 Air Supply Connections

5.7.1.3.1 Air Supply (08)

A compressed air system that supplies pressurized air to both nonpotable and POTABLE WATER pneumatic tanks must be connected through a press-on (manual) air valve or hose.

5.7.1.3.2 Separate Compressor

A fixed connection may be used when the air supply is from a separate compressor used exclusively for POTABLE WATER pneumatic tanks.

5.7.2 Backflow Prevention Device Inspection and Testing

5.7.2.1 Maintenance

5.7.2.1.1 Maintained (08)

BACKFLOW PREVENTION DEVICES must be maintained in good repair.

5.7.2.2 Inspection and Service

5.7.2.2.1 Schedule (08)

BACKFLOW PREVENTION DEVICES must be periodically inspected, and any failed units must be replaced.

A visual check must be completed for all nontestable BACKFLOW PREVENTION DEVICES and AIR GAPS at least annually.

5.7.2.2.2 Test Annually (08)

BACKFLOW PREVENTION DEVICES requiring testing (for example, reduced pressure BACKFLOW PREVENTION DEVICES and PRESSURE VACUUM BREAKERS) must be inspected and tested with a test kit after installation and at least annually. Test results showing the pressure differences on both sides of the valves must be maintained for each device.

5.7.2.2.3 Records (08)

The visual inspection and/or test results for BACKFLOW PREVENTION DEVICES and AIR GAPS must be retained for at least 12 months and must be available for review during inspections.

5.8 Potable Water Knowledge

5.8.1 Demonstration of Knowledge (44)

The supervisor or person responsible for POTABLE WATER operations on the vessel must demonstrate to VSP—on request during inspections—knowledge of POTABLE WATER operations.

The person must demonstrate this knowledge by compliance with this section of these standards or by responding correctly to the inspector's questions as they relate to the specific operation. In addition, the supervisor or person responsible for

POTABLE WATER operations on the vessel must ensure that employees are properly trained to comply with this section of these standards as it relates to their assigned duties.

6.0 Recreational Water Facilities (RWFs)

This section includes the following subsections:

- 6.1 RWFs
- 6.2 Flow-Through Seawater RWFs
- 6.3 Recirculating RWFs
- 6.4 WHIRLPOOL SPAS and SPA POOLS
- 6.5 Maintenance and Operating Standards for Combined Facilities
- 6.6 Jetted Tub Operations
- 6.7 Individual Hydrotherapy Pools
- 6.8 Safety
- 6.9 RWF Showers and Toilet Facilities
- 6.10 Restrictions
- 6.10 Recreational Water Facilities Knowledge

Refer to Annex 13.4 for DISINFECTION calculations for pools and spas. References for 6.0 RWFs can be found in Annex 14.6. Standards for Section 5.0 and Section 6.0 are part of a comprehensive water safety plan.

6.1 RWFs

6.1.1 Potable Water or Seawater **(09 C)**

The water source for all RWFs must be POTABLE WATER or RECREATIONAL SEAWATER.

6.1.2 Kept Clean **(10)**

RWFs must be kept clean of debris, organic materials, and slime/biofilm in the water and on surfaces.

Periodic biofilm management is recommended for WHIRLPOOL SPAS, SPA POOLS, and interactive RWFs.

6.2 Flow-Through Seawater RWFs

6.2.1 Operation

6.2.1.1 At Sea

6.2.1.1.1 **12 miles (10)**

Flow-through seawater supply systems for RWFs must be used only while the vessel is MAKING WAY and at sea beyond 20 kilometers (12 miles) from nearest land.

6.2.1.2 In Port

6.2.1.2.1 **Drained or Switched to Recirculation (10)**

Before arriving to a port or HARBOR, the RWF must be drained before the vessel reaches the 20-kilometer (12-mile) mark or any point of land-based discharge as detailed in section 6.2.1.1.1, and it must remain empty while in port or at anchor.

OR

The RECREATIONAL SEAWATER filling system must be shut off 20 kilometers (12 miles) before reaching the nearest land or land-based discharge point, and a recirculation system must be used with appropriate filtration and halogenation systems.

6.2.1.2.2 Halogen and pH (09 C)

When switching from flow-through operations to recirculation operations, the RWF must be closed until the free HALOGEN residual and PH levels are within the acceptable limits of these standards. The sample must be taken from the body of the RWF, not only from the RWF EQUIPMENT ROOM or AREA.

While the RWF is closed, batch HALOGEN and PH control chemicals may be used to obtain ADEQUATE free HALOGEN residuals and PH levels faster. Sufficient time should be allowed before opening the RWF for use to ensure proper mixing of batch chemicals.

6.3 Recirculating RWFs

(See individual sections for additional requirements for whirlpools and SPA POOLS. Refer to Annex 13.7 for requirements for BABY-ONLY WATER FACILITIES.)

6.3.1 Operation**6.3.1.1 Fill Level and Turnover Rates (10)**

For RWFs with skim gutters, the water level must at least reach the skim gutter or overflow level for a portion of the pool perimeter to remove floating debris and the top portion of the pool water for treatment.

Recirculation systems and EQUIPMENT, including chemical control EQUIPMENT, ultraviolet (UV) DISINFECTION systems, filters, and pumps, must be designed to maintain ADEQUATE water chemistry control while operating at the following TURNOVER rates:

RECREATIONAL WATER FACILITY	TURNOVER Rate
SWIMMING POOL (<i>VSP 2005 Construction Guidelines</i> or earlier)	6 hours
SWIMMING POOL (<i>VSP 2011 Construction Guidelines</i> or later)	4 hours
CHILDREN'S POOL	0.5 hours
WADING POOL	1 hour
WHIRLPOOL SPA	0.5 hours
SPA POOL	2 hours
INTERACTIVE RWF or ACTIVITY POOL (less than 600 millimeters [24 inches] deep)	1 hour

RECREATIONAL WATER FACILITY	TURNOVER Rate
INTERACTIVE RWF or ACTIVITY POOL (greater than 600 millimeters [24 inches] deep)	2 hours
BABY-ONLY WATER FACILITY	0.5 hours

SPA POOLS constructed before June 1, 2005, and originally considered SWIMMING POOLS may have a TURNOVER rate not to exceed 6 hours in a 24-hour period. This does not apply to SWIMMING POOLS that have been converted to SPA POOLS.

Install flow meters to monitor flow rates. Use flow rates from flow meters to calculate TURNOVER rates. Do not use the manufacturer's pump rate to calculate TURNOVER rates.

For facilities that meet the definition of more than one type of RWF, the most protective TURNOVER rate applies. For example, if a CHILDREN'S POOL also has features of an interactive RWF or ACTIVITY POOL, the TURNOVER rate must be 0.5 hours.

- If an RWF slide is combined with a pool, then the TURNOVER rate must match the rate for the pool.
 - The pool can be either a WADING or SWIMMING POOL but not a CHILDREN'S POOL.
 - Water for the slide must come directly from the basin of the pool and return directly to the basin of the pool.
- If a pool and slide combination is also combined with another RWF, then the most protective TURNOVER rate applies.
- If an RWF is modified, then the most protective TURNOVER rate applies.

6.3.1.2 Filtration Systems

6.3.1.2.1 *Filtered (10)*

Recirculated RWF water must be filtered.

6.3.1.2.2 *Filter Backwash and Cleaning (10)*

Filter pressure differentials must be monitored. Granular filter media must be backwashed until the water viewed through a sight glass runs clear and at the following frequency:

- WHIRLPOOL SPA and SPA POOL: every 72 hours, or sooner if the WHIRLPOOL SPA is drained.
- BABY-ONLY WATER FACILITY: daily.
- All other RWFs: at a frequency recommended by the manufacturer.

For automatic backwashing systems, an individual must be present in the filter room to ensure that backwashing is repeated as necessary until the water runs clear.

Cartridge filters must be cleaned according to the manufacturer's recommendations.

A written or electronic record of the filter backwashing and cleaning must be available for review during inspections.

**6.3.1.2.3
(10)**

Granular Filter Inspection, Core Sample Test, and Filter Change

Granular filter media must be examined for channels, mounds, or holes. A core sample of the filter media must be inspected for excessive organic material accumulation using a recommended sedimentation method.

Inspections and sedimentation tests must be conducted quarterly for all RWFs.

Inspection method:

Drain the water from the filter housing and inspect the granular filter for channels, mounds, or holes.

Core sample method:

- 1. After inspection, take a sand sample from the filter core and place it in a clear container. A core sample can be taken by inserting a rigid hollow tube or pipe into the filter media.**
- 2. Add clean water to the container, cover, and shake.**
- 3. Allow the container to rest undisturbed for 30 minutes.**
- 4. Consider media replacement if after 30 minutes of settling, a measurable layer of sediment is within or on top of the filter media or fine, colored particles are suspended in the water. This condition can mean the organic loading may be excessive.**

Granular filter media for WHIRLPOOL SPAS and SPA POOLS must be changed based on the inspection and sedimentation test results or every 12 months, whichever is more frequent. For all other RWFs, granular filter media must be changed based on the inspection and sedimentation test results or per the manufacturer's recommendations, whichever is more frequent.

Results of both the filter inspection and sedimentation test must be recorded.

6.3.1.2.4

Cartridge Filter Inspection and Filter Change (10)

Cartridge or canister-type filters must be inspected weekly for WHIRLPOOL SPAS and SPA POOLS. For all other RWFs, cartridge filters must be inspected every 2 weeks, or in accordance with the manufacturer's recommendation, whichever is more frequent.

The filters must be inspected for cracks, breaks, damaged components, and excessive organic accumulation. Cartridge or canister-type filters

must be changed based on the inspection results, or as recommended by the manufacturer, whichever is more frequent.

At least one replacement cartridge or canister-type filter must be available.

6.3.1.2.5 Other Filter Media (10)

Inspect and change filters based on the manufacturer's recommendations.

6.3.1.2.6 Filter Housing Cleaning and Disinfection (10)

The filter housing must be cleaned, rinsed, and disinfected before the new filter media is placed in it. Cartridge Filter Cleaning Procedures can be found in Annex 13.9.

DISINFECTION must be accomplished with an appropriate HALOGEN-based DISINFECTANT. At a minimum, a 50-MG/L (ppm) solution for 1 minute, or equivalent CT VALUE, must be used. Records must be maintained on all inspection and cleaning procedures.

The filter housing must be cleaned, rinsed, and disinfected each time the filter media—including cartridge filter—is changed.

6.3.1.2.7 Hair and Lint Strainer (10)

The hair and lint strainer and hair and lint strainer housing on all RWFs must be cleaned, rinsed, and disinfected weekly.

DISINFECTION must be accomplished with an appropriate HALOGEN-based DISINFECTANT. At a minimum, a 50-MG/L (ppm) solution for 1 minute, or equivalent CT VALUE, must be used. Records must be maintained on all inspection and cleaning procedures.

If there is not a hair and lint strainer but there is a filter before the pump, this filter must be cleaned, rinsed, and disinfected weekly.

6.3.1.2.8 All Filters (10)

The manufacturer's maintenance procedures and recommendations for all filters must be maintained on the vessel.

6.3.1.3 Gauges (10)

RWF filter pressure gauges, flow meters, and valves must be replaced when they are defective.

6.3.1.4 Manuals (10)

The operating manuals for all RWF components such as filters, pumps, halogenation and PH control systems, and ultraviolet (UV) DISINFECTION systems must be maintained in a location available to crew members responsible for the technical operation and maintenance of these facilities.

6.3.1.5 Bather Loads (10)

Documentation must be maintained on the maximum bather load for each RWF. The maximum bather load must be based on the following factor: One person per 19 liters (5 gallons) per minute of recirculation flow.

Use flow rates from flow meters to calculate bather loads. Do not use the manufacturer's pump rate to calculate bather loads.

6.3.1.6 Water Quality**6.3.1.6.1 Water Chemistry (10)**

RWF flow rates, free and combined HALOGEN levels, PH, total alkalinity, and clarity must be monitored and adjusted as recommended by the manufacturer to maintain optimum public health protection and water chemistry. To ensure clarity, drain covers must be clearly visible when the water is still.

Evaluate bather load and adjust water parameters to maintain optimum water quality.

Only combined chlorine must be monitored. Combined bromine does not need to be monitored.

“Manufacturer” refers to the RWF manufacturer and to manufacturers of the pumps, filters, flow meters, and any other associated EQUIPMENT.

6.3.1.6.2 Fecal and Vomit Accident (10)

A fecal and vomit accident response procedure that meets or exceeds the procedure provided in Annex 13.8 must be available for review during inspections.

6.3.1.6.3 Record of Fecal and Vomit Accidents (10)

A written or electronic record must be made of all accidents involving fecal material or vomit. The record must include the name of the RWF, date and time of the accident, type of accident, response steps taken, and free HALOGEN residual level, PH level, contact time, and temperature during DISINFECTION. For a fecal accident, the record must also include whether the fecal material was formed or loose.

6.3.2 Halogenation, PH, and Secondary Disinfection**6.3.2.1 Residual Halogen: Halogen and pH Dosing Systems (10)**

Automated systems must be installed for HALOGEN-based DISINFECTION and PH control dosing. The amounts injected must be controlled by flow meters or free HALOGEN and PH analyzers.

When conducting manual tests, consider the HALOGEN and PH levels in the RWF over the HALOGEN and PH readings from the RWF EQUIPMENT ROOM or AREA.

Initial chemistry balance can be achieved by manual dosing methods following events such as fecal or vomit accidents and when changing from flow-through seawater to recirculation mode.

6.3.2.1.1 **Residual (09 C)**

A free HALOGEN residual in the range detailed in the table below must be maintained in recirculated RWFs. RWFs not maintained within these HALOGEN ranges must be immediately closed.

RECREATIONAL WATER FACILITY	Free HALOGEN Residual, MG/L (ppm)
SWIMMING POOL	≥ 1.0 and ≤ 5.0
CHILDREN'S POOL	≥ 1.0 and ≤ 5.0
WADING POOL	≥ 1.0 and ≤ 5.0
INTERACTIVE RWF (ACTIVITY POOL)	≥ 2.0 and ≤ 5.0
BABY-ONLY WATER FACILITY	≥ 3.0 and ≤ 10.0 free chlorine ≥ 4.0 and ≤ 10.0 bromine
WHIRLPOOL SPA and SPA POOL	≥ 3.0 and ≤ 10.0 free chlorine ≥ 4.0 and ≤ 10.0 bromine

For RWFs that meet the definition of more than one type of RWF, the more protective HALOGEN residual applies. For example, if a CHILDREN'S POOL also has features of an interactive RWF or ACTIVITY POOL, the HALOGEN range must be 2.0 to 5.0 MG/L (ppm). Finally, if an RWF is modified, the most protective HALOGEN residual applies.

6.3.2.1.2 **pH (09 C)**

The PH level in all RWFs must be maintained between 7.0 and 7.8. Facilities not maintained within these PH ranges must be immediately closed.

6.3.2.1.3 **Maintenance (10)**

Halogenation and PH control systems must be maintained in good repair and operated in accordance with the manufacturer's recommendations.

6.3.2.1.4 **Secondary Ultraviolet (UV) Disinfection (10)**

Install a secondary ultraviolet (UV) DISINFECTION system capable of inactivating Cryptosporidium for each CHILDREN'S POOL, INTERACTIVE RECREATIONAL WATER FACILITY, and BABY-ONLY WATER FACILITY. Ensure these systems are installed in accordance with the manufacturer's specifications. Secondary ultraviolet (UV) DISINFECTION systems must be designed to operate in accordance with the parameters set forth in a related NSF International or equivalent standard.

If an ACTIVITY POOL has INTERACTIVE RWF features, such as flowing, misting, sprinkling, jetting, and waterfalls, a secondary ultraviolet (UV)

DISINFECTION system must be installed. The lamp must be ACCESSIBLE without having to disassemble the entire unit. For example, it is acceptable if the lamp is accessed for cleaning by removing fasteners or a cover.

A spare ultraviolet (UV) lamp and any accessories required by the manufacturer to change the lamp need to be available and must be operated in accordance with the manufacturer's recommendation.

This section applies to vessels built or renovated in accordance with the *2011 VSP Construction Guidelines* or later.

6.3.2.1.5 Procedures for Water Sampling (10)

Manual samples from the RWF tub must be compared to the analyzer samples in the RWF EQUIPMENT ROOM OR AREA to assess potential water quality differences in the RWF.

Recommended manual sampling procedures—All samples should be obtained from a location with the following qualities:

- At least 457 millimeters (18 inches) below the surface of the water **AND**
- At water depth of 914 millimeters to 1.2 meters (3 to 4 feet) when available **AND**
- Between water inlets.

6.3.2.2 Residual Halogen and pH Monitoring

6.3.2.2.1 Test Kit (10)

A test kit must be available for measuring water quality parameters including free and total HALOGEN levels (chlorine and bromine, where applicable), PH, and total alkalinity.

Test kits must be accurate to within 0.2 MG/L (ppm) for HALOGEN and must have a testing range of free HALOGEN residual normally maintained in the RWF. Test kits for PH must be accurate to within 0.2.

Reagents must not be expired.

6.3.2.2.2 Test Kit Maintenance and Verification (10)

Where available, appropriate secondary standards for test kits are available on the vessel to verify test kit operation.

6.3.2.2.3 Automated Free Halogen Residual and pH Testing (10)

Install chart recorders or electronic data loggers with CERTIFIED DATA SECURITY FEATURES that record PH and HALOGEN measurements for each individual RWF. The sample line for the analyzer probe (monitoring) must be either directly from the RWF or on the return line from each RWF and before the compensation tank. Install appropriate sample taps for analyzer calibration.

In the event of EQUIPMENT failure, free HALOGEN residual and PH must be measured by a manual test kit at the RWF or return line at least hourly for WHIRLPOOL SPAS, SPA POOLS, CHILDREN'S POOLS, and WADING POOLS and every 4 hours for all other RWFs. Manual readings must be recorded on a chart or log, retained for at least 12 months, and available for review during inspections.

If two RWFs are combined and the water for one RWF comes from and returns to the basin of the other RWF (not the compensation tank), separate monitoring systems are not required. Monitoring is then only required on the main RWF (for example, a slide and SWIMMING POOL). Note: During operational inspections, VSP will take manual samples of both RWFs.

Manual samples from the RWF tub should be compared to the analyzer samples in the RWF EQUIPMENT ROOM or AREA to assess potential water quality differences in the RWF.

Repairs on malfunctioning HALOGEN analyzer-chart recorders must be completed within 30 days of EQUIPMENT failure.

Provide an audible alarm in a continuously occupied watch station (for example, the engine control room) to indicate low and high free HALOGEN and PH readings in each RWF.

6.3.2.2.4 *Whirlpool and Spa Pool Probes (10)*

For WHIRLPOOL SPAS and SPA POOLS, the analyzer probes for dosing and recording systems must be capable of measuring and recording levels up to 10 MG/L (10 ppm).

6.3.2.2.5 *Analyzer-Chart Recorder (10)*

The HALOGEN and PH analyzer-chart recorder must be properly maintained and operated in accordance with the manufacturer's instructions.

A manual comparison test must be conducted before opening the RWF to verify calibration for free HALOGEN residual and PH. The analyzer reading must be within 0.2 MG/L (ppm) for free HALOGEN and 0.2 for PH.

For RWFs open longer than 24 hours, a manual comparison test must be conducted every 24 hours.

6.3.2.2.6 *Data Logger (10)*

If an electronic data logger is used instead of a chart recorder, it must have CERTIFIED DATA SECURITY FEATURES.

Manual comparison tests for free HALOGEN residual and PH must be conducted before opening the RWF to verify calibration. The analyzer

reading must be within 0.2 MG/L (ppm) for free HALOGEN and 0.2 for PH.

For RWFs open longer than 24 hours, a manual comparison test must be conducted every 24 hours.

Electronic data logging must be in increments of less than or equal to 15 minutes.

6.3.2.2.7 *Charts (10)*

HALOGEN analyzer-chart recorder charts must be initialed, dated, and changed daily.

Strip recorder charts must be initialed and dated daily and 24-hour increments must be indicated.

Dual-scale HALOGEN analyzer-chart recorder charts used in RWFs must be able to measure the full range of HALOGEN and PH of the facility type to which the chart is installed; for example, chlorine or bromine to 10.0 MG/L (ppm) and PH 0–14 for WHIRLPOOL SPAS.

6.3.2.2.8 *Logs (10)*

Logs and charts must contain notations outlining actions taken when the free HALOGEN residual or PH levels are outside of the acceptable ranges in these standards.

Additionally, records must include any major maintenance work on the filtration and halogenation systems and UV DISINFECTION systems.

6.3.2.2.9 *Retention (10)*

A written or electronic log of RWF filter inspection results, granular filter sedimentation test results, backwashing frequency and length of backwashing, and date and time of water dumping must be available for review during inspections. Logs and charts must be retained for 12 months.

6.4 Whirlpool Spas and Spa Pools

6.4.1 Public Operations

6.4.1.1 Filter Replacement (10)

At least one replacement cartridge or canister-type filter must be available.

6.4.1.2 Water Quality (10)

The WHIRLPOOL SPA water, including compensation tank, filter housing, and associated piping, must be changed every 72 hours, provided that the system is operated continuously and that the correct water chemistry levels are maintained during that period, including daily shock halogenation.

SPA POOL water must be changed as often as necessary to maintain proper water chemistry. The water must be changed at least every 30 days.

The date and time of WHIRLPOOL SPA and SPA POOL water changes must be recorded in the log.

6.4.2 Halogenation

6.4.2.1 Residual Halogen

6.4.2.1.1 *Prolonged Maintenance (10)*

For facilities undergoing maintenance for longer than 72 hours, the free HALOGEN residual and PH levels must be maintained, or the entire system must be drained completely of all water. This includes the WHIRLPOOL SPA and SPA POOL tubs, compensation tanks, filter housings, and all associated piping and blowers.

Records must be maintained for the free HALOGEN and PH levels or the complete draining of the system.

6.4.2.1.2 *Shock Halogenation (10)*

The free HALOGEN residual must be increased to at least 10.0 MG/L (ppm) and circulated for at least 1 hour every 24 hours.

The free HALOGEN residual must be tested at both the start and completion of shock halogenation.

The water in the entire RWF system must be superhalogenated to 10 ppm to include the WHIRLPOOL SPA/SPA POOL tub, compensation tank, filter housing, and all associated piping before starting the 1-hour timing.

HEATED ACTIVITY POOLS, including interactive RWFs, that have features that break the water surface of the RWF or create a mist must be shock halogenated as described. This includes ACTIVITY POOLS and INTERACTIVE RWFs that are HEATED by the sun and/or exterior temperature **to a water temperature exceeding 32°C (90°F).**

Batch halogenation of the tub and compensation tank may help in reaching the minimum 10 ppm residual quickly.

RWFs filled only with seawater are exempt from this requirement.

6.4.2.1.3 *Records (10)*

A written or electronic record of the date and time of water dumping and shock halogenation (concentration in MG/L [ppm] at the start and completion and time) must be available for review during inspections.

6.4.2.1.4 *Retention (10)*

Records must be retained on the vessel for 12 months.

6.5. Maintenance and Operating Standards for Combined RWFs

6.5.1 Pool with Attached Whirlpool Spa (10)

For any pool with an attached WHIRLPOOL SPA where the water, recirculation system EQUIPMENT, or filters are shared with the spa, all elements of the WHIRLPOOL SPA standards must apply to the pool.

6.5.1.2 Fecal Accidents (10)

For combined RWFs subject to fecal accidents, fecal accident procedures must include all features of these combined RWFs.

6.6 Jetted Tub Operations

JETTED TUBS and HEATED JETTED TUBS can only be accessed by entering a cabin (or nonpublic space like the spa). JETTED TUBS and HEATED JETTED TUBS are not designed to be operated as WHIRLPOOL SPAS (Section 6.4).

6.6.1 Draining, Cleaning, and Disinfection (10)

JETTED TUBS must be drained once per day. They must be cleaned and disinfected every 7 days or between occupancies, whatever is more frequent. DISINFECTION must be accomplished with an appropriate HALOGEN-based DISINFECTANT at 10 ppm for 60 minutes, or an equivalent CT VALUE.

HEATED JETTED TUBS

Option 1: HEATED JETTED TUBS must be drained, cleaned, and disinfected once per day. This option requires a safety sign at the tub entrance advising users that using HEATED JETTED TUBS without the use of automated halogen and PH control may increase the risk of respiratory infections. **Pictograms may replace words, as appropriate or available.**

Option 2 (approved variance required): HEATED JETTED TUBS must be drained every 3 days. Tubs must be cleaned and disinfected twice a week or between occupancies, whatever is more frequent. No signage is required.

Variance requirement for option 2: HEATED JETTED TUBS that are drained every 3 days require an approved variance for operation that includes the use of automated halogen and PH injection with recorded free halogen residuals and PH levels at least every 4 hours. Acceptable halogen levels are (3.0 to 10.0 free chlorine or 4.0 to 10.0 bromine). Acceptable PH levels are 7.0 to 7.8. The variance template can be found at www.cdc.gov/vessel-sanitation/php/communication-resources/index.html.

6.6.2 Records (10)

Manufacturer's operation and maintenance instructions must be available to personnel who service these JETTED TUBS and HEATED JETTED TUBS. Retain maintenance records on the vessel for 12 months. Records must include

- Cleaning and DISINFECTION frequency.
- DISINFECTANT type, concentration, and contact time.
- Draining frequency (only for HEATED JETTED TUBS).

6.7 Individual Hydrotherapy Pools

6.7.1 Cleaning (10)

Individual hydrotherapy pools must be cleaned and disinfected, including associated recirculation systems, between customers. DISINFECTION must be accomplished with an appropriate HALOGEN-based DISINFECTANT at 10 ppm for 60 minutes, or an equivalent CT VALUE.

6.7.2 Maintenance (10)

Manufacturer's operation and maintenance instructions must be available to personnel who service the units.

6.7.3 Records (10)

A record must be maintained outlining the frequency of cleaning and DISINFECTION. The record must include the type, concentration, and contact time of the DISINFECTANT.

Records must be retained on the vessel for 12 months.

6.8 Safety

6.8.1 Signs and Markings

6.8.1.1 RWF Safety Signs (10)

Must be provided for all RWFs. Signs must be in a prominent and unobstructed location for all users of the RWF.

The signs at a minimum must include the following words:

- Do not use these facilities if you are experiencing diarrhea, vomiting, or fever.
- No children in diapers or who are not toilet trained.
- Shower before entering the facility.
- Bather load #.

Pictograms may replace words, as appropriate or available.

For children's RWF safety signs, include the exact wording "TAKE CHILDREN ON FREQUENT BATHROOM BREAKS" or "TAKE CHILDREN ON FREQUENT TOILET BREAKS."

For BABY-ONLY WATER FACILITY signs, refer to section 13.7.8.

It is advisable to post additional cautions and concerns on signs.

Refer to section 6.3.1.5 for bather load calculations.

6.8.1.2 Depth Markers (10)

The depth of each RWF deeper than 1 meter (3.3 feet) must be displayed prominently so it can be seen from the deck and in the pool. Depth markers

must be labeled in both feet and meters. Additionally, depth markers must be installed for every 1-meter (3.3-feet) change in depth. For vessels constructed to the VSP 2025 Construction Standards or later, depth markers must have letters and numbers with a minimum height of 100 millimeters (4 inches) of a color contrasting with background.

6.8.1.3 Spas (10)

In addition to the safety sign requirements in section 6.8.1.2, install a sign at each WHIRLPOOL SPA and SPA POOL entrance listing precautions and risks associated with use of these facilities. At a minimum, include cautions against use by the following:

- Individuals who are immunocompromised.
- Individuals on medication or who have underlying medical conditions such as cardiovascular disease, diabetes, or high or low blood pressure.
- Children, pregnant women, and elderly persons.

Additionally, caution against exceeding 15 minutes of use.

Vessels can submit existing signs for review by VSP.

Posting additional cautions and concerns on signs is advisable.

Those under 16 years of age are considered children for the purpose of whirlpool safety sign requirements.

6.8.2 Equipment

6.8.2.1 Life Saving (10)

A rescue or shepherd's hook and an APPROVED flotation device must be provided at a prominent location (visible from the full perimeter of the pool) at each RWF that has a depth of 1 meter (3.3 feet) or greater. These devices must be mounted in a manner that allows for easy access during an emergency.

- The pole of the rescue or shepherd's hook must be long enough to reach the center of the deepest portion of the pool from the side plus 0.6 meters (2 feet). It must be a light, strong, nontelelescoping material with rounded, nonsharp ends.
- The APPROVED flotation device must include an attached rope that is at least two-thirds of the maximum pool width.

The rescue or shepherd's hook must be long enough to touch the bottom center of the deepest portion of the RWF plus 0.6 meters (2 feet) as measured from the closest edge without an obstruction. This edge can only be used for measurement if someone could freely walk down both sides without an obstruction such as a waterfall, fountain, statue, etc.

For a rectangular pool, the shorter distance would be from the long side of the rectangle as long as there are no obstructions (Figure 6-1). The 0.6 meters (2 feet) is measured from where the shepherd's hook crosses the fill line

of the RWF.

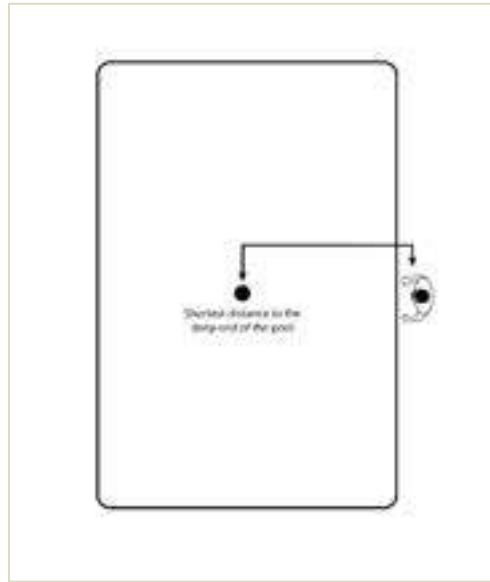


Figure 6-1 - Shortest distance in a rectangular pool

**This is an example. The deepest portion of the RWF on your ship may be located elsewhere.*

For RWFs with a beach level, the measurement can be from the edge of the tub (Figure 6-2).

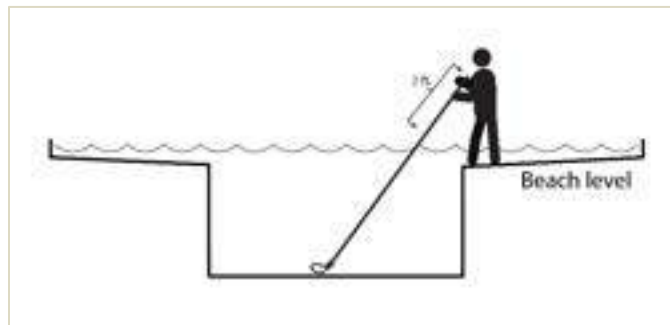


Figure 6-2 - Measurement in RWFs with a beach level

6.8.2.2 Antientrapment Covers (10)

Requirements for ANTIENTRAPMENT COVERS, ANTIENTANGLEMENT COVERS, and SUCTION FITTINGS in RWFs are shown in Table 6.8.2.2. **This does not apply to RWFs with zero depth where the drains are not under direct suction.**

Testing of manufactured drain covers must be done by a nationally or internationally recognized testing laboratory.

Each manufactured ANTIENTRAPMENT 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 liters per minute) [or according to current Virginia Graeme Baker Act].
- Type of fitting (suction outlet).
- Life expectancy of cover.
- Mounting orientation (wall, floor, or both).
- Manufacturer's name or trademark.
- Model designation.

VSP is aware that the requirements shown in Table 6.8.1.2.2 for existing vessels may not fully meet the letter of the Virginia Graeme Baker Act, but we also recognize the life-safety concerns for rapid dumping of RWFs in conditions of instability at sea.

The design of field fabricated ASME compliant drain covers, and SUCTION FITTINGS must be fully specified by a REGISTERED DESIGN PROFESSIONAL in accordance with ASME A112.19.8-2007. The specifications must 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 must accompany each field fabricated ASME compliant drain and suction cover fitting. At a minimum the letter must specify the shipyard, name of the vessel, 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 must be on the letter.

Table 6.8.2.2 Antientrapment Requirements for RWFs

Option*	Type	Drainage/Recirculation System	Cover Design	Secondary Antientrapment Requirement**
1	GRAVITY only	Multiple drains (two or more drains greater than 1 meter [3.3 feet] apart)	Not ASME compliant - manufactured or field fabricated	Alarm
2	GRAVITY only	Multiple drains (two or more drains greater than 1 meter [3.3 feet] apart)	ASME compliant - manufactured or field fabricated	None
3	GRAVITY only	Single UNBLOCKABLE drain (per ASME A112.19.8)	Not ASME compliant - manufactured or field fabricated	Alarm
4	GRAVITY only	Single UNBLOCKABLE drain (per ASME A112.19.8)	ASME compliant - manufactured or field fabricated	None
5	GRAVITY only	Single BLOCKABLE drain or multiple drains (less than 1 meter [3.3 feet] apart)	ASME compliant - manufactured or field fabricated	GDS

Option*	Type	Drainage/Recirculation System	Cover Design	Secondary Antientrapment Requirement**
6	SUCTION FITTING	Multiple drains (two or more drains per pump with drains greater than 1 meter [3.3 feet] apart)	ASME compliant - manufactured or field fabricated	None
7	SUCTION FITTING	Single UNBLOCKABLE drain (per ASME A112.19.8)	ASME compliant - manufactured or field fabricated	SVRS or APS
8	SUCTION FITTING	Single BLOCKABLE drain or multiple drains (less than 1 meter [3.3 feet] apart)	ASME compliant - manufactured or field fabricated	SVRS or APS

*Options 1 through 5 are for fittings 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 under direct suction. These include fittings to drain the RWF and fittings used to recirculate the water.

**Notes:

- 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.
- APS (automatic pump shut-off system): A manual shut-off near the RWF does not qualify as an APS.
- GDS (GRAVITY DRAINAGE SYSTEM): There is no direct suction at the RWF.
- SVRS (safety vacuum release system): System must be tested by an independent third party and found to conform with ASTM standard F2387 or ANSI/ASME A112.19.17.

6.8.2.3 Temperature (10)

A temperature-control mechanism to prevent the temperature from exceeding 40°C (104°F) must be provided on WHIRLPOOL SPAS and SPA POOLS. The water temperature must be measured within the WHIRLPOOL SPA or SPA POOL tub itself.

6.9 RWF Showers and Toilet Facilities

Facilities constructed or renovated to the *2018 Construction Guidelines* or later must have toilets and showers installed.

6.9.1 Temperature and Location (10)

Showers must provide POTABLE WATER at a temperature not to exceed 43°C (110°F) during normal operations. Showers must be installed within 10 meters (33 feet) of every entry point to each RWF. For beach entry RWFs, a minimum of one showerhead must be installed per 10 meter (33 feet) of perimeter within 10 meters (33 feet) of the beach perimeter. A minimum of one shower must be installed at each water slide staircase entrance.

6.9.2 Showers for Children (10)

RWFs designed for use by children under 6 years of age must have appropriately sized shower facilities. Standard height is acceptable, but the mechanism to operate the flow of water must not be more than 1 meter (3.3 feet) above the deck.

6.9.3 Toilet Facilities (10)

Toilet facilities must be located within **no more than 60 meters (197 feet) walking distance** of each RWF and on the same deck or adjacent decks if there is no obstruction between RWF area and entrances to the toilets. If toilets are not located on the same deck, then they must be easily visible and nearby the RWF area. A minimum of two separate toilet rooms (either two unisex or one male and one female) must be installed. Each toilet facility must include a toilet and a handwashing station. Urinals may be installed in addition to the required toilet but may not replace the toilet.

6.10 Restrictions

6.10.1 Diapers (10)

Children in diapers or who are not toilet trained must be prohibited from using any RWF not specifically designed and APPROVED for use by children in diapers.

Specifications and requirements for BABY-ONLY WATER FACILITIES can be found in Annex 13.7.

6.11 RWF Knowledge

6.11.1 Demonstration of Knowledge (44)

The supervisor or person responsible for RWFs operations on the vessel must demonstrate to VSP—on request during inspections—knowledge of RWF operations.

The person must demonstrate this knowledge by compliance with this section of these standards or by responding correctly to the inspector's questions as they relate to the specific operation. In addition, the supervisor or person responsible for RWF operations on the vessel must ensure that employees are properly trained to comply with this section of these standards as it relates to their assigned duties.

7.0 Food Safety

This section includes the following subsections:

- 7.1 Personnel
- 7.2. FOOD
- 7.3 EQUIPMENT and UTENSILS
- 7.4 WAREWASHING
- 7.5 Poisonous and Toxic Materials
- 7.6 Facilities
- 7.7 Water Filling Stations and Drinking Fountains in Nonfood Areas

References for 7.0 Food Safety can be found in Annex 14.7.

7.1 Personnel

7.1.1 Food Safety Management

7.1.1.1 Food Safety Knowledge (13 C)

Because of the risks for foodborne illness inherent to the FOOD operation, the supervisor or PERSON IN CHARGE of FOOD operations on the vessel must demonstrate to VSP—on request during inspections—knowledge of foodborne disease prevention, application of the HAZARD ANALYSIS CRITICAL CONTROL POINT (HACCP) principles, and FOOD safety standards. The supervisor or PERSON IN CHARGE must demonstrate this knowledge

- By compliance with these standards,
- By being a domestically or foreign certified FOOD protection manager who has shown proficiency of required information through passing a test that is part of an ACCREDITED PROGRAM, or
- By responding correctly to the inspector's questions as they relate to the specific FOOD operation.

The areas of knowledge must include

- Describing the relation between prevention of foodborne disease and personal hygiene of a FOOD EMPLOYEE.
- Explaining the responsibility of the supervisor or PERSON IN CHARGE to prevent TRANSMISSION of foodborne disease by a FOOD EMPLOYEE who has a disease or medical condition that may cause foodborne disease.
- Describing the symptoms associated with diseases transmissible through FOOD.
- Explaining the significance of the relation between maintaining the time and temperature of TCS/PHF and the prevention of foodborne illness.
- Explaining the HAZARDS involved in the consumption of raw or undercooked MEAT, POULTRY, eggs, and FISH.
- Stating the required FOOD temperatures and times for safe cooking of TCS/PHF, including MEAT, POULTRY, eggs, and FISH.

- Stating the required temperatures and times for the safe refrigerated storage, hot holding, cooling, and reheating of TCS/PHF.
- Describing the relation between prevention of foodborne illness and management and control of the following: CROSS-CONTAMINATION, hand contact with READY-TO-EAT FOOD, handwashing, and maintaining FOOD operations in a clean condition and in good repair.
- Explaining the relation between FOOD safety and providing EQUIPMENT that is sufficient in number and capacity as well as properly designed, constructed, located, installed, operated, maintained, and cleaned.
- Explaining correct procedures for cleaning and sanitizing UTENSILS and FOOD-CONTACT SURFACES of EQUIPMENT.
- Identifying POISONOUS OR TOXIC MATERIALS on the vessel and the procedures necessary to ensure they are safely stored, dispensed, used, and disposed of according to LAW.
- Identifying critical-control points in the operation from purchasing through service that when not controlled may contribute to the TRANSMISSION of foodborne illness and explaining steps taken to ensure the points are controlled in accordance with these standards.

7.1.1.2 Food Safety Monitoring Duties (13 C)

The supervisor or PERSON IN CHARGE of FOOD operations on the vessel must ensure that

- FOOD operations are not conducted in a room used as living or sleeping quarters.
- Persons unnecessary to the FOOD operation are not allowed in the FOOD PREPARATION, FOOD STORAGE, or WAREWASHING areas.
However, brief visits and tours may be authorized if steps are taken to ensure that exposed FOOD; clean EQUIPMENT, UTENSILS, and LINENS; and unwrapped SINGLE-SERVICE ARTICLES and SINGLE-USE ARTICLES are protected from CONTAMINATION.
- Employees and other persons such as delivery and maintenance persons and PESTICIDE applicators entering the FOOD PREPARATION, FOOD STORAGE, and WAREWASHING areas comply with these standards.
- FOOD EMPLOYEES are effectively cleaning their hands (by routinely monitoring the employees' handwashing).
- Employees are observing FOOD as they are received to determine that they are from APPROVED sources, delivered at the required temperatures, protected from CONTAMINATION, unadulterated, and accurately presented (by routinely monitoring the employees' observations and periodically evaluating FOOD as they are received).
- Employees are properly cooking TCS/PHF, being particularly careful in cooking FOOD known to cause severe foodborne illness and death, such as eggs and COMMINUTED MEATS (through daily oversight of the employees' routine monitoring of the cooking temperatures using appropriate properly scaled and calibrated temperature measuring devices [TMDs]).
- Employees are using proper methods to rapidly cool TCS/PHF that is not held hot or are not for consumption within 4 hours (through daily

oversight of the employees' routine monitoring of FOOD temperatures during cooling).

- CONSUMERS who order raw or partially cooked READY-TO-EAT FOOD of animal origin are informed that the FOOD is not cooked sufficiently to ensure its safety.
- Employees are properly sanitizing cleaned multiuse EQUIPMENT and UTENSILS before they are reused (through routine monitoring of solution temperature and exposure time for hot water sanitizing, and chemical concentration, PH, temperature, and exposure time for chemical sanitizing).
- CONSUMERS are notified that clean TABLEWARE is to be used when they return to self-service areas such as salad bars and buffets.
- Employees are preventing CROSS-CONTAMINATION of READY-TO-EAT FOOD with bare hands by properly using suitable UTENSILS such as deli tissue, spatulas, tongs, SINGLE-USE gloves, or dispensing EQUIPMENT.
- Employees are properly trained in FOOD safety, including FOOD allergy awareness, as it relates to their assigned duties.
- FOOD EMPLOYEES are informed of their responsibility to report to the supervisor or PERSON IN CHARGE information about their health and activities as they relate to diseases transmissible through FOOD.

7.1.2 Employee Health

7.1.2.1 Communicable Diseases and Symptoms

7.1.2.1.1 *Communicable Diseases (11 C)*

FOOD EMPLOYEES suspected of, diagnosed with, or exposed to any communicable disease caused by *Salmonella typhi*, *Shigella* spp., *E. coli* O157:H7, hepatitis A virus, norovirus, or other communicable diseases that can be transmitted by FOOD, must be excluded from working in any FOOD or FOOD-related areas or operations, including working with exposed FOOD, WAREWASHING, EQUIPMENT, UTENSILS, LINENS, SINGLE-SERVICE ARTICLES, and SINGLE-USE ARTICLES. The excluded individual must not be allowed to return to the above duties until they are symptom free for a minimum of 48 hours.

7.1.2.1.2 *Other Symptoms (11 C)*

FOOD EMPLOYEES who have conditions or symptoms of boils, open sores, infected wounds, diarrhea, jaundice, fever, vomiting, sore throat with fever, or discharges from the nose or mouth must report these conditions or symptoms to the vessel's medical staff and must be restricted from working with exposed FOOD, WAREWASHING, clean EQUIPMENT, UTENSILS, LINENS, and unwrapped SINGLE-SERVICE ARTICLES and SINGLE-USE ARTICLES.

7.1.2.1.3 *Sneeze/Cough (11 C)*

FOOD EMPLOYEES experiencing persistent sneezing, coughing, or a runny nose that causes discharges from the eyes, nose, or mouth must not work with exposed FOOD; WAREWASHING; clean EQUIPMENT, UTENSILS, and LINENS; or unwrapped SINGLE-SERVICE ARTICLES or

SINGLE-USE ARTICLES.

7.1.2.1.4 *Restrictions Removal (11 C)*

The restriction must not be removed until the supervisor or PERSON IN CHARGE of the FOOD operation obtains written approval from the vessel's physician or equivalent medical staff.

7.1.2.1.5 *Record of Restriction and Release (02)*

A written or electronic record of both the work restriction and release from restriction must be maintained on the vessel for 12 months for inspection review.

7.1.3 Employee Cleanliness

7.1.3.1 Hands and Arms

7.1.3.1.1 *Hands and Arms Clean (12 C)*

FOOD EMPLOYEES must keep their hands and exposed portions of their arms clean.

7.1.3.1.2 *Cleaning Procedures (12 C)*

FOOD EMPLOYEES must clean their hands and exposed portions of their arms with a cleaning compound in a handwashing sink by vigorously rubbing together the surfaces of their lathered hands and arms for at least 20 seconds and thoroughly rinsing with clean water. Employees must pay particular attention to the areas underneath the fingernails and between the fingers.

7.1.3.1.3 *When to Wash Hands (12 C)*

FOOD EMPLOYEES must clean their hands and exposed portions of their arms immediately before engaging in FOOD preparation, including working with exposed FOOD, clean EQUIPMENT and UTENSILS, and unwrapped SINGLE-SERVICE ARTICLES and SINGLE-USE ARTICLES **AND**

- After touching bare human body parts other than clean hands and clean, exposed portions of arms.
- After using the toilet room.
- After coughing, sneezing, using a handkerchief or disposable tissue, using tobacco, eating, or drinking.
- After handling soiled EQUIPMENT or UTENSILS.
- During FOOD preparation (as often as necessary to remove soil and CONTAMINATION and to prevent CROSS-CONTAMINATION when changing tasks).
- When switching between working with raw FOOD and working with READY-TO-EAT FOOD.
- Before putting on gloves for working with FOOD or clean EQUIPMENT and between glove changes.
- After engaging in other activities that contaminate the hands.

7.1.3.1.4 *Hand Antiseptic (14)*

A HAND ANTISEPTIC, a HAND ANTISEPTIC used as a hand dip, or a HAND ANTISEPTIC soap must comply with applicable formulation and use

LAWS under FDA 21 CFR 170.39, 178, 182, 184, or 186.

7.1.3.1.5 Apply to Clean Hands (12 C)

HAND ANTISEPTIC, HAND ANTISEPTIC used as a hand dip, or HAND ANTISEPTIC soap must only be applied to hands cleaned as described in section 7.1.3.1.2.

7.1.3.2 Fingernails (14)

FOOD EMPLOYEES must keep their fingernails trimmed, filed, and maintained so the edges and surfaces are cleanable and not rough. A FOOD EMPLOYEE must not wear fingernail polish or artificial fingernails when preparing exposed FOOD.

7.1.3.3 Jewelry (14)

While preparing FOOD, FOOD EMPLOYEES, including bartenders, must not wear jewelry on their arms and hands. **FOOD EMPLOYEES may wear a plain ring such as a SMOOTH simple wedding band.**

7.1.3.4 Food Service Uniform or Apron (14)

FOOD EMPLOYEES must wear a clean uniform or apron to prevent CONTAMINATION of FOOD, EQUIPMENT, UTENSILS, LINENS, and SINGLE-SERVICE ARTICLES and SINGLE-USE ARTICLES.

7.1.4 Hygienic Practices

7.1.4.1 Eating, Drinking, and Using Tobacco (12 C)

An employee must not eat, drink, or use any form of tobacco in designated areas where the CONTAMINATION of exposed FOOD; clean EQUIPMENT, UTENSILS, and LINENS; unwrapped SINGLE-SERVICE ARTICLES and SINGLE-USE ARTICLES; or other items needing protection can occur.

7.1.4.2 Hair Restraints (14)

FOOD EMPLOYEES must wear hair restraints—such as hats, hair coverings or nets, beard restraints—and clothing that covers body hair. These items must be designed and worn to effectively keep their hair from contacting exposed FOOD; clean EQUIPMENT, UTENSILS, and LINENS; and unwrapped SINGLE-SERVICE ARTICLES and SINGLE-USE ARTICLES.

This applies to partial beards (such as goatees) and to heavy, pronounced mustaches.

This section does not apply to FOOD EMPLOYEES such as counter staff who serve only BEVERAGES and wrapped or PACKAGED FOOD, hostesses, and waitstaff if they present a minimal risk for contaminating exposed FOOD; clean EQUIPMENT, UTENSILS, and LINENS; and unwrapped SINGLE-SERVICE ARTICLES and SINGLE-USE ARTICLES.

7.1.4.3 Toilet Rooms Use (14)

While in working uniforms, FOOD EMPLOYEES must not use toilet rooms designated for passenger use.

This section does not apply to FOOD EMPLOYEES at bars where the only FOOD preparation includes garnish slicing in the pantry, and drink making in the pantry and bar.

7.2 Food

7.2.1 Food Condition

7.2.1.1 Safe and Unadulterated (15 C)

FOOD must be safe and unadulterated.

7.2.2 Food Sources

7.2.2.1 Lawful Sourcing

7.2.2.1.1 *Comply with Law (15 C)*

FOOD must be obtained from sources that comply with applicable local, state, federal, or country of origin's statutes, regulations, and ordinances.

7.2.2.1.2 *Food from Private Home (15 C)*

FOOD prepared in a private home must not be used or offered for human consumption on a vessel.

7.2.2.1.3 *Fish for Undercooked Consumption*

FISH—other than MOLLUSCAN SHELLFISH—intended for consumption in their raw form may be served if they are obtained from a supplier that freezes the FISH to destroy parasites or if they are frozen on the vessel and records are retained.

7.2.2.1.4 *Steaks (15 C)*

WHOLE-MUSCLE, INTACT BEEF steaks intended for consumption in an undercooked form without a CONSUMER advisory must be

- Obtained from a FOOD-PROCESSING PLANT that packages the steaks and labels them to indicate they meet the definition of WHOLE-MUSCLE, INTACT BEEF; **or**
- Cut individually on a vessel from WHOLE-MUSCLE, INTACT BEEF labeled by a FOOD-PROCESSING PLANT to indicate the beef meets the definition of WHOLE-MUSCLE, INTACT BEEF, and prepared so they remain intact.

7.2.2.1.5 *Hermetically Sealed Container (15 C)*

FOOD in a HERMETICALLY SEALED CONTAINER must be obtained from a FOOD-PROCESSING PLANT regulated by the FOOD regulatory agency that has jurisdiction over the plant.

7.2.2.1.6 *Milk (15 C)*

Fluid milk and milk products by U.S. suppliers must be obtained from sources that comply with GRADE A STANDARDS as specified in LAW. Milk received in interstate commerce must be from sources listed in the FDA Interstate Milk Shippers List. Non-U.S. sourced fluid milk and milk products must be obtained from sources that meet or exceed the

standards of the health authorities from the source country.

7.2.2.1.7 *Fish and Molluscan Shellfish Sources (15 C)*

FISH received for service must be commercially and legally caught or harvested or otherwise APPROVED for service by VSP through an APPROVED VARIANCE.

Recreationally caught MOLLUSCAN SHELLFISH must not be received for service.

MOLLUSCAN SHELLFISH must be obtained from sources according to LAW and the requirements specified in the FDA National Shellfish Sanitation Program *Guide for the Control of MOLLUSCAN SHELLFISH*, or equivalent standards. MOLLUSCAN SHELLFISH received in interstate commerce must be from sources listed in the FDA Interstate Certified Shellfish Shippers List or equivalent foreign certified shellfish listing.

7.2.2.1.8 *Wild Mushrooms (15 C)*

Mushroom species picked in the wild must be obtained from sources where each mushroom is individually inspected and found to be safe by an APPROVED mushroom identification expert.

This section does not apply to

- Cultivated wild mushroom species grown, harvested, and processed in an operation regulated by the FOOD regulatory agency that has jurisdiction over the operation.
- Wild mushroom species if they are in PACKAGED form and are the product of a FOOD-PROCESSING PLANT regulated by the FOOD regulatory agency that has jurisdiction over the plant.

7.2.2.1.9 *Game Animals (15 C)*

If GAME ANIMALS are received for sale or service, they must be

- Commercially raised for FOOD and raised, slaughtered, and processed under LAW; or
- Under a voluntary inspection program administered by USDA for GAME ANIMALS such as exotic animals (reindeer, elk, deer, antelope, water buffalo, or bison) inspected and APPROVED in accordance with 9 CFR 352 (Voluntary Exotic Animal Program) or rabbits inspected and certified in accordance with 9 CFR 354 (Rabbit Inspection Program); or
- Under an equivalent regulatory program specifically for GAME ANIMALS. The packaging must also be stamped/labeled by the REGULATORY AUTHORITY.

A GAME ANIMAL must not be received for service if it is a species of wildlife listed in 50 CFR 17 Endangered and Threatened Wildlife and Plants.

7.2.2.2 Receiving Condition**7.2.2.2.1 *Receiving Temperatures (16 C)***

Receiving temperatures must be as follows:

- Refrigerated TCS/PHF must be at a temperature of 5°C (41°F) or below when received.

If a temperature other than 5°C (41°F) for a TCS/PHF is specified in LAW governing its distribution, such as LAWS governing milk, MOLLUSCAN SHELLFISH, and shell eggs, the FOOD may be received at the specified temperature. For example, shell eggs can be received at 7°C (45°F) or less.

- TCS/PHF that is cooked and received hot must be at a temperature of 57°C (135°F) or above.
- A FOOD labeled and shipped frozen by a FOOD-PROCESSING PLANT must be received frozen.
- Upon receipt, TCS/PHF must be free of evidence of previous temperature abuse.

7.2.2.2.2 *Food Additives (15 C)*

FOOD must not contain unapproved FOOD ADDITIVES or ADDITIVES that exceed amounts specified in LAW, as specified in the current version of the FDA *FOOD Code*, including annexes.

7.2.2.2.3 *Shell Eggs (15 C)*

Shell eggs must be received clean and sound and must not exceed the restricted egg tolerances specified in LAW, as specified in the current version of the FDA *FOOD Code*, including annexes.

7.2.2.2.4 *Egg and Milk Products, Pasteurized (15 C)*

Eggs and milk products must be received as follows:

- Liquid, frozen, and dry eggs and egg products must be obtained pasteurized.
- Fluid and dry milk and milk products complying with GRADE A STANDARDS as specified in LAW must be obtained pasteurized.
- Frozen milk products, such as ice cream, must be obtained pasteurized as specified in 21 CFR 135 Frozen Desserts.
- Cheese must be obtained pasteurized unless alternative procedures to pasteurization are specified in the CFR, such as 21 CFR 133 Cheeses and Related Cheese Products for curing certain cheese varieties.

7.2.2.2.5 *Package Integrity (15 C)*

FOOD packages must be in good condition and protect the integrity of the contents, so the FOOD is not exposed to adulteration or potential contaminants. Canned goods with dents on end or side SEAMS must not be used.

7.2.2.2.6 *Ice (15 C)*

Ice for use as a FOOD or a cooling medium must be made from DRINKING WATER.

7.2.2.2.7 Shucked Shellfish (15 C)

Raw SHUCKED SHELLFISH must be obtained in nonreturnable packages that bear a legible label as specified in the FDA National Shellfish Sanitation Program *Guide for the Control of MOLLUSCAN SHELLFISH*.

7.2.2.2.8 Shellstock Shellfish (15 C)

SHELLSTOCK must be obtained in containers bearing legible source identification tags or labels affixed by the harvester and by each dealer that depurates (cleanses), ships, or reships the SHELLSTOCK, as specified in the National Shellfish Sanitation Program *Guide for the Control of MOLLUSCAN SHELLFISH*.

7.2.2.2.9 Shellstock Condition (19)

SHELLSTOCK must be reasonably free of mud, dead shellfish, and shellfish with broken shells when received by a vessel. Dead shellfish or SHELLSTOCK with badly broken shells must be discarded.

7.2.2.3 Maintaining Molluscan Shellfish Identification**7.2.2.3.1 Shucked Identification (15 C)**

Shucked MOLLUSCAN SHELLFISH must not be removed from the container in which they are received other than immediately before preparation for service.

7.2.2.3.2 Shellstock Identification (15 C)

SHELLSTOCK shellfish tags must

- Remain attached to the container in which the SHELLSTOCK are received until the container is empty.
- Be maintained by retaining SHELLSTOCK tags or labels for 90 calendar days from the date the container is emptied by using an APPROVED record-keeping system that keeps the tags or labels in chronologic order correlated to the date when the SHELLSTOCK are served. The date when the last SHELLSTOCK from the container is served must be recorded on the tag, label, or invoice.

7.2.3 Food Protection**7.2.3.1 Employee Contamination****7.2.3.1.1 Wash Hands (12 C)**

FOOD EMPLOYEES must wash their hands.

7.2.3.1.2 Ready-to-Eat Food – Hand Contact Prohibited (12 C)

Except when washing fruits and vegetables or when otherwise APPROVED, FOOD EMPLOYEES must not contact exposed, READY-TO-EAT FOOD with their bare hands. They must use suitable UTENSILS such as deli tissue, spatulas, tongs, SINGLE-USE gloves, or dispensing EQUIPMENT.

7.2.3.1.3 *Not Ready-to-Eat Food – Minimize Contact (19)*

FOOD EMPLOYEES must minimize bare hand and arm contact with exposed FOOD not in a READY-TO-EAT form.

7.2.3.1.4 *Tasting (12 C)*

A FOOD EMPLOYEE must not use the same UTENSIL more than once to taste FOOD that will be served.

7.2.3.2 Food and Ingredient Contamination

7.2.3.2.1 *Cross-Contamination (18 C)*

FOOD must be protected from cross-CONTAMINATION or other sources of CONTAMINATION by the following methods:

- Physically separating raw animal FOOD during storage, preparation, holding, and display from raw READY-TO-EAT FOOD (including other raw animal FOOD such as FISH for sushi or MOLLUSCAN SHELLFISH, or other raw READY-TO-EAT FOOD such as vegetables, and cooked READY-TO-EAT FOOD) so products do not physically touch and so that one product does not drip into another.
- Physically separating READY-TO-EAT FOOD from other READY-TO-EAT FOOD that include raw or undercooked animal products, including meat and FISH, so that products do not physically touch and so that one FOOD cannot drip into another.
- Separating types of raw animal FOOD such as beef, FISH, lamb, pork, and POULTRY from each other—except when combined as ingredients—during storage, preparation, holding, and display by using separate EQUIPMENT for each type, or by arranging each type of FOOD in EQUIPMENT so that CROSS-CONTAMINATION of one type with another is prevented, or by preparing each type of FOOD at different times or in separate areas. **Frozen, commercially processed and PACKAGED raw animal FOOD may be stored or displayed with or above frozen, commercially processed and PACKAGED, READY-TO-EAT FOOD.**
- Cleaning and sanitizing EQUIPMENT and UTENSILS.
- Storing the FOOD in packages, covered containers, or wrappings.
- Cleaning visible soil on HERMETICALLY SEALED CONTAINERS of FOOD before opening.

- Protecting FOOD containers that are received PACKAGED together in a case or overwrapped from cuts when the case or overwrap is opened.
- Separating damaged, spoiled, or recalled FOOD being held on the vessel.
- Separating unwashed fruits and vegetables from READY-TO-EAT FOOD.

Storage exceptions: Storing the FOOD in packages, covered containers, or wrappings does not apply to

- Whole, uncut, raw fruits and vegetables and nuts in the shell that require peeling or hulling before consumption.
- PRIMAL CUTS, quarters, or sides of raw MEAT or slab bacon hung on clean, sanitized hooks or placed on clean, sanitized racks.
- Whole, uncut, processed MEATS such as country hams, and smoked or cured sausages placed on clean, sanitized racks.
- FOOD being cooled.
- SHELLSTOCK.

7.2.3.2.2 Container Identity (19)

Containers holding FOOD or FOOD ingredients removed from their original packages for use on the vessel, such as cooking oils, flour, herbs, potato flakes, salt, spices, and sugar must be identified with the common name of the FOOD.

Containers holding FOOD that can be readily and unmistakably recognized such as dry pasta do not need to be identified.

Ingredients located at active cooking or preparation stations do not need to be identified.

7.2.3.2.3 Pasteurized Eggs (18 C)

Pasteurized eggs or egg products must be substituted for raw shell eggs in the preparation of FOOD such as Caesar salad, hollandaise or béarnaise sauce mayonnaise, eggnog, ice cream, and egg-fortified BEVERAGES or dessert items that are not cooked.

7.2.3.2.4 Wash Fruits/Vegetables (19)

Raw fruits and vegetables must be thoroughly rinsed in water to remove soil and other contaminants before being cut, combined with other ingredients, cooked, served, or offered for human consumption in READY-TO-EAT form.

Fruits and vegetables may be washed by using chemicals specified under 21 CFR 173.315 (Annex 13.11).

7.2.3.3 Ice as Coolant**7.2.3.3.1 *Ice Used as a Coolant (19)***

Ice must not be used as FOOD after use as a medium for cooling the exterior surfaces of FOOD such as melons or FISH, PACKAGED FOOD such as canned BEVERAGES, or cooling coils and tubes of EQUIPMENT.

7.2.3.3.2 *Coolant (19)*

PACKAGED FOOD must not be stored in direct contact with ice or water if the FOOD is subject to the entry of water because of the nature of its packaging, wrapping, or container, or its positioning in the ice or water.

7.2.3.3.3 *Undrained Ice (19)*

Except as specified in sections 7.2.3.3.4 through 7.2.3.3.6, unpackaged FOOD must not be stored in direct contact with undrained ice.

7.2.3.3.4 *Raw Fruit/Vegetables*

Whole, raw fruits or vegetables; cut, raw vegetables such as celery, carrot sticks, or cut potatoes; and tofu may be immersed in ice or water.

7.2.3.3.5 *Raw Chicken/Fish*

Raw chicken and raw FISH received immersed in ice in shipping containers may remain in that condition while in storage awaiting preparation, display, or service.

7.2.3.3.6 *Ongoing Meal Service*

Other unpackaged FOOD in a raw, cooked, or partially cooked state may be immersed in ice as part of an ongoing meal service process, such as liquid egg product, individual eggs, pasta, and reconstituted powdered mixes.

7.2.3.4 Equipment, Utensils, and Linens**7.2.3.4.1 *Cleaned/Sanitized (26 C)***

FOOD must only contact surfaces of cleaned and sanitized EQUIPMENT and UTENSILS.

7.2.3.4.2 *Storage During Use (19)*

During pauses in FOOD preparation or dispensing, FOOD preparation and dispensing UTENSILS must be stored in one of the following ways:

- In the FOOD with their handles above the top of the FOOD and the container.
- In FOOD that is not TCS/PHF with their handles above the top of the FOOD within containers or EQUIPMENT that can be closed, such as bins of sugar, flour, or cinnamon.
- On a clean portion of the FOOD preparation table or cooking EQUIPMENT only if the in-use UTENSIL and the FOOD-CONTACT SURFACE of the FOOD preparation table or cooking EQUIPMENT are cleaned and sanitized at least every 4 hours.
- In running water of sufficient velocity to flush particulates to the drain (if used with moist FOOD such as ice cream or mashed

potatoes).

- In a clean, protected location (if the UTENSILS, such as ice scoops, are used only with a FOOD that is not TCS/PHF).
- In a container of water (if the water is maintained at a temperature of at least 57°C [135°F] and the container is frequently cleaned and sanitized).

7.2.3.4.3 Linen/Napkins (19)

LINENS and napkins must not be used in contact with FOOD unless they are used to line a container for the service of FOOD and the LINENS and napkins are replaced each time the container is refilled for a new CONSUMER.

7.2.3.4.4 Wiping Cloths (25)

Wiping cloths must be restricted to the following:

- Cloths used for wiping FOOD spills must be used for no other purpose.
- Cloths used for wiping FOOD spills must be dry and used for wiping FOOD spills from TABLEWARE and SINGLE-SERVICE ARTICLES **OR** wet and cleaned, stored in a chemical SANITIZER, and used for wiping spills from FOOD-CONTACT and NONFOOD-CONTACT SURFACES of EQUIPMENT.
- Dry or wet cloths used with raw animal FOOD must be kept separate from cloths used for other purposes. Wet cloths used with raw animal FOOD must be kept in a separate sanitizing solution.
- Wet wiping cloths used with a freshly made sanitizing solution and dry wiping cloths must be free of FOOD debris and visible soil.

7.2.3.4.5 Glove Use (19)

Gloves must be used as follows:

- Single-use gloves must be used for only one hand-contact task with READY-TO-EAT FOOD and no other purpose. These single-use gloves must be discarded when damaged or soiled or when operation is interrupted.
- Slash-resistant gloves used to protect hands during operations requiring cutting must be used in direct contact only with FOOD that is subsequently cooked (such as frozen FOOD or a PRIMAL CUT of MEAT).
- Slash-resistant gloves may be used with READY-TO-EAT FOOD that will not be subsequently cooked if the slash-resistant gloves have a SMOOTH, durable, and nonabsorbent outer surface **or** if the slash-resistant gloves are covered with a SMOOTH, durable, nonabsorbent glove or a SINGLE-USE glove.
- Cloth gloves must not be used in direct contact with FOOD unless the FOOD is subsequently cooked (such as frozen FOOD or a PRIMAL CUT of MEAT).

7.2.3.4.6 Second Portions and Refills (19)

Procedures for second portions and refills must be as follows:

- FOOD EMPLOYEES must not use TABLEWARE soiled by the CONSUMER—including SINGLE-SERVICE ARTICLES—except for refilling a CONSUMER’S drinking cup or container without contact between the pouring UTENSIL and the lip-contact area of the drinking cup or container.
- Self-service CONSUMERS must not be allowed to use soiled TABLEWARE—including SINGLE-SERVICE ARTICLES—to obtain additional FOOD from the display and serving EQUIPMENT except as specified in the bullet below.
- **Self-service CONSUMERS may reuse drinking cups and containers if refilling is a CONTAMINATION-free process.**

7.2.3.5 Food Storage and Preparation

This section also applies to storage of candy and other FOOD items sold in candy shops, including self-service candy shops and shops where candy is served by a crew member.

7.2.3.5.1 Storage Protection (19)

FOOD must be protected from CONTAMINATION by storing it as follows:

- Covered or otherwise protected;
- In a clean, dry location;
- Where it is not exposed to splash, dust, or other CONTAMINATION; and
- At least 150 millimeters (6 inches) above the deck. FOOD in packages and working containers on pallets, skids, and racks may be 127 millimeters (5 inches) above the deck. Shelving units must be 150 millimeters (6 inches) above the deck.

7.2.3.5.2 Prohibited Storage (19)

FOOD must not be stored as follows:

- In locker rooms.
- In toilet rooms.
- In dressing rooms.
- In garbage rooms.
- In mechanical rooms.
- Under sewer lines that are not continuously sleeve welded.
- Under leaking water lines, including leaking automatic fire sprinkler heads, or under lines on which water has condensed.
- Under open stairwells.
- Under other sources of CONTAMINATION from nonfood items such as ice blocks, ice carvings, and flowers.
- In areas not finished in accordance with sections 7.6.5 and 7.6.6 for FOOD STORAGE AREAS.

7.2.3.5.3 Vending Machines (19)

TCS/PHF dispensed through a vending machine must be in the package in which it was placed in the galley or FOOD-PROCESSING PLANT at which it was prepared.

7.2.3.5.4 Preparation (19)

During preparation, unpackaged FOOD must be protected from environmental sources of CONTAMINATION such as rain.

7.2.3.6 Food Display and Service

This section also applies to self-service candy shops where customers serve themselves from candy displays or dispensers.

7.2.3.6.1 Display Preparation (19)

FOOD on display must be protected from CONTAMINATION using packaging; counter, service line, or salad bar FOOD guards; display cases; self-closing hinged lids; or other effective means. Install side protection for sneeze guards if the distance between exposed FOOD and where CONSUMERS are expected to stand is less than 1 meter (39 inches).

7.2.3.6.2 Condiments (19)

Condiments must be protected from CONTAMINATION by being kept in one of the following:

- Dispensers designed to provide protection.
- Protected FOOD displays provided with the proper UTENSILS.
- Original containers designed for dispensing.
- Individual packages or portions.

Condiments at a vending machine location must be in individual packages or provided in dispensers that are filled at an APPROVED location, such as the galley that provides FOOD to the vending machine location, a FOOD-PROCESSING PLANT, or a properly equipped facility located on the site of the vending machine location.

7.2.3.6.3 Self-Service (19)

CONSUMER self-service operations, such as salad bars and buffets, for unpackaged READY-TO-EAT FOOD must be

- Provided with suitable UTENSILS or effective dispensing methods that protect the FOOD from CONTAMINATION.
- Monitored by FOOD EMPLOYEES trained in safe operating procedures.

Self-service of scooped frozen dessert must be out of shallow pans no deeper than 100 millimeters (4 inches) and no longer than 300 millimeters (12 inches).

7.2.3.6.4 Utensils, Consumer Self-Service**7.2.3.6.4.1 Dispensing Utensil (19)**

A FOOD-dispensing UTENSIL must be available for each

container of FOOD displayed at a CONSUMER self-service unit such as a buffet or salad bar.

7.2.3.6.4.2 Utensil Protected (19)

The FOOD-contact portion of each self-service FOOD-dispensing UTENSIL must be covered or located beneath shielding during service.

Dishware, glassware, and UTENSILS out for service must be inverted or covered.

7.2.3.6.5 Food Reservice (15 C)

After being served and in the possession of a CONSUMER or being placed on a buffet service line, FOOD that is unused or returned by the CONSUMER must not be offered as FOOD for human consumption.

Exceptions:

- A container of FOOD that is not TCS/PHF may be transferred from one CONSUMER to another if the FOOD is dispensed so that it is protected from CONTAMINATION and the container is closed between uses (such as a narrow-neck bottle containing catsup, steak sauce, or wine) OR the FOOD (such as crackers, salt, or pepper) is in an unopened original package and is maintained in sound condition.
- Reservice for FOOD served to passengers from a fully enclosed display case and under strict employee monitoring, strict temperature control of hot and cold TCS/PHF, proper cooling and reheating of hot-held TCS/PHF, and complete protection from any other CONTAMINATION sources, including pests.

7.2.3.7 Other Contamination

7.2.3.7.1 Other Contaminants (19)

FOOD must be protected from CONTAMINATION that may result from a physical, chemical, biological origin.

7.2.4 Pathogen Destruction

7.2.4.1 Cooking Temperatures/Times

Refer to Annex 13.10 for food cooking temperature alternatives.

7.2.4.1.1 Cooking (16 C)

Raw animal FOOD such as eggs, FISH, MEAT, and POULTRY—and FOOD containing these raw animal FOOD—must be cooked to heat all parts of the FOOD to a temperature and for a time that complies with one of the following methods based on the FOOD being cooked:

- **63°C (145°F) or above** for 15 seconds for
 - Raw shell eggs broken and prepared in response to CONSUMERS' orders and for immediate service.
 - FISH, MEAT, and pork, including GAME ANIMALS

commercially raised for FOOD and GAME ANIMALS under a voluntary inspection program.

- **68°C (155°F) or above** for 15 seconds or equivalent temperature-time combination for
 - RATITES, MECHANICALLY TENDERIZED and INJECTED MEATS, and raw eggs not prepared for immediate service.
 - COMMINUTED FISH, MEAT, GAME ANIMALS commercially raised for FOOD, and GAME ANIMALS under a voluntary inspection program.
 - **74°C (165°F) or above** for 15 seconds for
 - POULTRY.
 - Wild GAME ANIMALS not specified in above bullet for 68°C (155°F).
 - Stuffed FISH, MEAT, pasta, POULTRY, or RATITES.
 - Stuffing containing FISH, MEAT, POULTRY, or RATITES.
 - Whole beef roasts, corned beef roasts, pork roasts, and cured pork roasts such as ham, must be cooked as detailed in sections a and b below.
- a. FOOD cooked in an oven preheated to the temperature specified below for the roast's weight and oven type **AND**

Oven Type	Roast Weight Less Than 4.5 Kilograms (10 Pounds)	Roast Weight 4.5 Kilograms (10 Pounds) or More
Still dry	Preheat to 177°C (350°F) or more	Preheat to 121°C (250°F) or more
Convection	Preheat to 163°C (325°F) or more	Preheat to 121°C (250°F) or more
High humidity*	Preheat to 121°C (250°F)	Preheat to 121°C (250°F)

*Relative humidity greater than 90% for at least 1 hour as measured in the cooking chamber or exit of the oven or in a moisture-impermeable bag that provides 100% humidity.

- b. All parts of the FOOD heated to a temperature and for the holding time corresponding to that temperature:

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

Temperature	Time*
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.

- A raw or undercooked **WHOLE-MUSCLE, INTACT BEEF** steak may be served or offered for sale in a **READY-TO-EAT** form if the steak is labeled to indicate that it meets the definition of “**WHOLE-MUSCLE, INTACT BEEF**” and the steak is cooked on both the top and bottom to a surface temperature of 63°C (145°F) or above and a cooked color change is achieved on all external surfaces.
- A raw animal **FOOD** (such as raw **FISH**, raw-marinated **FISH**, raw **MOLLUSCAN SHELLFISH**, or steak tartare) or a partially cooked **FOOD** (such as lightly cooked **FISH**, soft-cooked eggs, or rare **MEAT** other than **WHOLE-MUSCLE, INTACT BEEF** steaks) may be served or offered for sale in a **READY-TO-EAT** form if the **CONSUMER** is informed by the written **CONSUMER** advisory or if VSP grants a **VARIANCE** from the cooking recommendations based on a **HACCP PLAN** submitted by the vessel. The **HACCP PLAN** must document scientific data or other information showing that a lesser time and temperature regimen results in a safe **FOOD**. The **HACCP PLAN** must verify that **EQUIPMENT** and procedures for **FOOD** preparation and training of **FOOD EMPLOYEES** meet the conditions of the **VARIANCE**.

7.2.4.1.2 ***Microwave (16 C)***

Raw animal **FOOD** cooked in a microwave oven must be

- Rotated or stirred throughout or midway during cooking to compensate for uneven distribution of heat.
- Covered to retain surface moisture.
- Heated to a temperature of at least 74°C (165°F) in all parts of the **FOOD**.
- Allowed to stand covered for 2 minutes after cooking to obtain temperature equilibrium.

7.2.4.1.3 ***Fruits/Vegetables (17)***

Fruits and vegetables cooked for hot holding must be cooked to a temperature of 57°C (135°F).

7.2.4.2 Parasite Destruction

7.2.4.2.1 *Parasite Destruction (16 C)*

Before service in READY-TO-EAT form, raw, raw-marinated, partially cooked, or marinated-partially cooked FISH and fishery products other than MOLLUSCAN SHELLFISH must be frozen throughout according to one of these methods:

- Frozen and stored at a temperature of -20°C (-4°F) or below for a minimum of 168 hours (7 days) in a freezer.
- Frozen at -35°C (-31°F) or below until solid and stored at -35°C (-31°F) or below for a minimum of 15 hours.
- Frozen at -35°C (-31°F) or below until solid and stored at -20°C (-4°F) or below for a minimum of 24 hours.

This does not apply to

- Molluscan shellfish.
- A scallop product consisting only of the shucked adductor muscle.
- Tuna of the species *Thunnus alalunga*, *Thunnus albacares* (yellowfin tuna), *Thunnus atlanticus*, *Thunnus maccoyii* (southern bluefin tuna), *Thunnus obesus* (bigeye tuna), or *Thunnus thynnus* (northern bluefin tuna).
- Aquacultured fish, such as salmon, that
 - Are raised in net pens (in open water) or in ponds, tanks, or other land-based operations.
 - Are fed formulated feed, such as pellets, that contains no live parasites infective to the aquacultured FISH.
- FISH eggs that have been removed from the skein and rinsed.

7.2.4.2.2 *Records (17)*

If raw, raw-marinated, partially cooked, or marinated partially cooked FISH are served in READY-TO-EAT form,

- The supervisor or PERSON IN CHARGE must record the freezing temperature and time to which the FISH are subjected and must retain the records on the vessel for 90 calendar days beyond the time of service or sale of the FISH **OR**
- If the FISH are frozen by a supplier, a written letter from the supplier must specify the FISH species involved and both the temperature to which the FISH was frozen and the total time at that temperature. If the supplier provides any of the same FISH species to the vessel in a fresh state, the outer packaging must designate which one is the parasite-free FISH.

For FISH exempt from freezing requirements based on section 7.2.4.2.1, a written letter from the supplier must state both the species of FISH and the conditions in which they were raised and fed.

7.2.4.3 Reheating**7.2.4.3.1 Immediate Service**

Cooked and refrigerated FOOD prepared for immediate service in response to an individual CONSUMER order (such as a roast beef sandwich au jus) may be served at any temperature.

7.2.4.3.2 Reheating for Hot Holding (16 C)

TCS/PHF that is cooked, cooled, and reheated for hot holding must be reheated so that all parts of the FOOD reach a temperature of at least 74°C (165°F) for 15 seconds.

7.2.4.3.3 Microwave Heating (16 C)

If reheated in a microwave oven for hot holding, TCS/PHF must be reheated so that all parts of the FOOD reach a temperature of at least 74°C (165°F) and the FOOD is rotated or stirred, covered, and allowed to stand covered for 2 minutes after reheating.

7.2.4.3.4 Commercial Products (16 C)

READY-TO-EAT FOOD and TCS/PHF taken from a commercially processed, HERMETICALLY SEALED CONTAINER, or from an intact package from a FOOD-PROCESSING PLANT inspected by the FOOD REGULATORY AUTHORITY that has jurisdiction over the plant, must be heated to a temperature of at least 57°C (135°F) for hot holding.

Commercially PACKAGED FOOD must be cooked to heat all parts of the FOOD to a temperature at or above the manufacturer's instructions printed on the packaging.

Commercially PACKAGED FOOD for which the manufacturer has provided information that it has not been processed to control pathogens must be cooked according to a time and temperature appropriate for the FOOD according to section 7.2.4.1.1.

7.2.4.3.5 Rapid Reheat (16 C)

Reheating for hot holding must be done rapidly. The time the FOOD is between 5°C (41°F) and 74°C (165°F) must not exceed 2 hours.

7.2.4.3.6 Reheat Roast Beef

Remaining unsliced portions of roasts of beef cooked on the vessel may be reheated for hot holding using the oven parameters and minimum time and temperature conditions used in the original cooking process.

7.2.5 Food Holding Temperatures and Times**7.2.5.1 Frozen, Slacking, and Thawing Procedures****7.2.5.1.1 Store Frozen Food Frozen (17)**

Stored frozen FOOD must be maintained frozen.

7.2.5.1.2 *Slacking (17)*

Frozen TCS/PHF that is slacked to moderate the temperature must be held

- Under refrigeration that maintains the FOOD temperature at 5°C (41°F) or less; or
- At any temperature if the FOOD remains frozen.

7.2.5.1.3 *Thawing (17)*

TCS/PHF must be thawed by one of the following:

- Under refrigeration that maintains the FOOD temperature at 5°C (41°F) or less.
- Completely submerged under running water at a water temperature of 21°C (70°F) or below, with sufficient water velocity to agitate and float off loose particles in an overflow, and for a period that does not allow thawed portions of READY-TO-EAT FOOD to rise above 5°C (41°F).
- Completely submerged under running water at a water temperature of 21°C (70°F) or below with sufficient water velocity to agitate and float off loose particles in an overflow and for a period of time that does not allow thawed portions of a raw animal FOOD requiring cooking to be above 5°C (41°F) for more than 4 hours, including
 - The time the FOOD is exposed to the running water and the time needed for preparation for cooking **OR**
 - The time it takes under refrigeration to lower the FOOD temperature to 5°C (41°F).
- As part of a cooking process if the frozen FOOD is cooked or thawed in a microwave oven.

If a portion of frozen READY-TO-EAT FOOD is thawed and prepared for immediate service in response to an individual CONSUMER'S order, it can be thawed using any procedure.

7.2.5.2 Food Cooling**7.2.5.2.1 *Cooling Times/Temperatures (16 C)***

Cooked TCS/PHF must be cooled

- From 57°C (135°F) to 21°C (70°F) within 2 hours and
- From 21°C (70°F) to 5°C (41°F) or less within 4 hours.

7.2.5.2.2 *Cooling Prepared Food (16 C)*

TCS/PHF must be cooled within 4 hours to 5°C (41°F) or less if prepared from ingredients at ambient temperature (such as reconstituted FOOD and canned tuna).

7.2.5.2.3 *Cooling Received Food (16 C)*

A TCS/PHF received in compliance with LAWS allowing a temperature above 5°C (41°F) during shipment from the supplier, such as milk and MOLLUSCAN SHELLFISH, must be cooled within 4 hours to 5°C (41°F) or less. **This does not apply to shell eggs, which can be held at 7°C (45°F) or less.**

7.2.5.2.4 *Cooling Methods (17)*

Cooling must be accomplished using one or more of the following methods based on the type of FOOD being cooled:

- Placing the FOOD in shallow pans.
- Separating the FOOD into smaller or thinner portions.
- Using BLAST CHILLERS, freezers, or other rapid cooling EQUIPMENT.
- Stirring the FOOD in a container placed in an ice water bath.
- Using containers that facilitate heat transfer.
- Adding ice as an ingredient.
- Using other effective methods.

When placed in cooling or cold-holding EQUIPMENT, FOOD containers in which FOOD is being cooled must be arranged in the EQUIPMENT to provide maximum heat transfer through the container walls and must be loosely covered—or uncovered if protected from overhead CONTAMINATION—during the cooling period to facilitate heat transfer from the surface of the FOOD.

7.2.5.2.5 *Cooling Logs (17)*

Logs documenting cooked TCS/PHF cooling temperatures and times from the starting points designated in section 7.2.5.2.1 through the control points at 2 and 6 hours must be maintained on the vessel for 30 days from the date the FOOD was placed in a cooling process. Logs documenting cooling of TCS/PHF prepared from ingredients at ambient temperatures, with the start time to the time when 5°C (41°F) is reached, must also be maintained for 30 days beginning with the day of preparation.

7.2.5.3 Food Holding Temperatures and Times**7.2.5.3.1 *Holding Temperature/Time (16 C)***

Except during preparation, cooking, or cooling, or when time is used as the public health control, TCS/PHF must be maintained at

- 57°C (135°F) or above, except that roasts may be held at a temperature of 54°C (130°F); or
- 5°C (41°F) or less.

Shell eggs that have not been treated to destroy all viable *Salmonella* spp. must be maintained at 7°C (45°F) or less.

7.2.5.3.2 Ready-to-Eat TCS/PHF Shelf-Life: Date Marking (16 C)

Refrigerated, READY-TO-EAT FOOD, TCS/PHF

- Prepared on a vessel and held refrigerated for more than 24 hours must be clearly marked at the time of preparation to indicate the date or day by which the FOOD must be consumed (7 calendar days or fewer from the day the FOOD is prepared). The day of preparation is counted as day 1.
- Prepared and PACKAGED by a FOOD-PROCESSING PLANT and held on the vessel after opening for more than 24 hours must be clearly marked at the time the original container is opened to indicate the date by which the FOOD must be consumed (7 calendar days or fewer after the original container is opened). The day of package opening is counted as day 1.

The date marking requirement can be accomplished with a calendar date, day of the week, color-code, or other system, provided it is effective.

The date marking requirement does not apply to the following FOOD prepared and PACKAGED by a FOOD-PROCESSING PLANT inspected by a REGULATORY AUTHORITY:

- Deli salads (such as ham salad, seafood salad, chicken salad, egg salad, pasta salad, potato salad, and macaroni salad) manufactured in accordance with 21 CFR 117.
- Hard cheeses containing not more than 39% moisture as defined in 21 CFR 133 (such as cheddar, gruyere, parmesan and Reggiano, and Romano). Additional examples can be found in Annex 13.13.
- Semisoft cheeses containing more than 39% moisture but not more than 50% moisture, as defined in 21 CFR 133 (such as blue, edam, gorgonzola, gouda, and monterey jack).
- Cultured dairy products as defined in 21 CFR 131 (such as yogurt, sour cream, and buttermilk).
- Preserved FISH products (such as pickled herring and dried or salted cod) and other acidified FISH products defined in 21 CFR 114.
- Shelf stable, dry fermented sausages (such as pepperoni and Genoa salami) not labeled “keep refrigerated” as specified in 9 CFR 317. [Retain the original casing on the product.]
- Shelf stable salt-cured products (such as prosciutto and Parma [ham]) not labeled “keep refrigerated” as specified in 9 CFR 317.

These products are exempted from date marking even after being opened, cut, shredded, etc.

7.2.5.3.3 *Discarding Ready-to-Eat TCS/PHF (16 C)*

Refrigerated, READY-TO-EAT TCS/PHF must be discarded if not consumed within 7 calendar days from the date of preparation or opening.

7.2.5.3.4 *Retain Date (16 C)*

A refrigerated READY-TO-EAT TCS/PHF ingredient or a portion of a refrigerated READY-TO-EAT TCS/PHF subsequently combined with additional ingredients or portions of FOOD must retain the date marking of the earliest or first-prepared ingredient.

7.2.5.3.5 *Time as a Public Health Control (16 C)*

Refer to Annex 13.10 for food cooking temperature alternatives.

Time without temperature control can be used as a public health control for TCS/PHF before cooking or for READY-TO-EAT TCS/PHF that is displayed or held for immediate consumption.

Time—maximum up to 4 hours

If time without temperature control is used as the public health control with a maximum of 4 hours, then the FOOD

- Must have an initial temperature of 5°C (41°F) or less or 57°C (135°F) or greater before placement on time control. Note: 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 TCS/PHF after cutting **OR** it is a READY-TO-EAT hermetically sealed FOOD that becomes a TCS/PHF after opening.
- AND**
- The FOOD temperature does not exceed 21°C (70°F) within 4 hours from the time it became a TCS/PHF.
- The FOOD is marked or otherwise identified to indicate 4 hours past the time it became a TCS/PHF (regardless of whether the time between service setup and closing exceeds 4 hours).
- Must not be placed on temperature control again.
- Must be marked or otherwise identified to indicate the time 4 hours past the time when the FOOD is removed from temperature control IF the time between service set-up and closing is greater than 4 hours,
 - If FOOD is on/in a time control unit (bains-marie, cold basins, soup wells) and service is under 4 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 must be labeled with its 4-hour discard time. This does

not apply to self-service buffet lines.

- Containers of TCS/PHF under time control and placed on preparation counters must be labeled with the discard time, even if the outlet is open less than 4 hours.

- Must be discarded within 4 hours of placement on time control.

Time – maximum up to 6 hours

If time without temperature control is used as the public health control up to a maximum of 6 hours, then the FOOD

- Must have an initial temperature of 5°C (41°F) or less when removed from temperature control and the FOOD temperature must not exceed 21°C (70°F).
- Must be monitored to ensure the warmest portion of the FOOD does not exceed 21°C (70°F).
- Must be marked or otherwise identified to indicate the time when the FOOD is removed from temperature control and the time 6 hours later (regardless of whether the time between service setup and closing exceeds 6 hours).
- Must be discarded within 6 hours of placement on time control or if the FOOD temperature exceeds 21°C (70°F).
- Must not be placed on temperature control again.

7.2.5.3.6 Time Control Plan (17)

A written time control plan that ensures compliance with these standards must be maintained on the vessel and made available for review during inspections (Annex 13.12). A time control plan must be posted and available to all crew working at each outlet where time control is used.

The plan(s) must

- Include set-up and discard times for each outlet. Include all services and events where TCS/PHF is kept on time control. If used, colored labels must correspond to the discard times stated in the plan.
- List all units (to include refrigeration and hot holding units, preparation counters, cabinets, compartments, and EQUIPMENT) on time control. Cabinets and compartments on time control must be physically labeled.

EQUIPMENT that does not have cabinets or compartments does not need to be labeled as time control. Such EQUIPMENT includes bains-marie, cold tops, and soup wells.

- Describe or show the flow of TCS/PHF from when last in temperature control to placement in time control and discard.

7.2.6 Consumer Information

7.2.6.1 Consumer Advisory

CONSUMER advisory examples can be found in Annex 13.14.

7.2.6.1.1 *Raw Shell Egg Preparations (16 C)*

Raw shell egg preparations are prohibited in uncooked products as described in 7.2.3.2.3.

7.2.6.1.2 *Animal Food (16 C)*

If an animal FOOD such as beef, eggs, FISH, lamb, milk, pork, POULTRY, or shellfish that is raw, undercooked, or not otherwise processed to eliminate pathogens is offered in a READY-TO-EAT form or as a raw ingredient in another READY-TO-EAT FOOD, the CONSUMER must be informed by way of disclosure (as specified below using menu advisories, placards, or other easily visible written means) of the significantly increased risk for foodborne illnesses to certain people especially vulnerable CONSUMERS eating such FOOD in raw or undercooked form. The advisory must be located at the outlets where these types of FOOD are served.

Disclosure must be made by one of the two following methods:

- On a sign describing the animal-derived FOOD (for example, “oysters on the half-shell,” “hamburgers,” “steaks,” or “eggs”) **AND** that they can be cooked to order or may be served raw or undercooked **AND** a statement indicating that consuming raw or undercooked MEATS, seafood, shellfish, eggs, milk, or POULTRY may increase your risk for foodborne illness, especially if you have certain medical conditions. The advisory must be posted at the specific station where the FOOD is served raw, undercooked, or cooked to order.

OR

- On a menu using an asterisk at the animal-derived FOOD requiring disclosure and a footnote with a statement indicating that consuming raw or undercooked MEATS, seafood, shellfish, eggs, milk, or POULTRY may increase your risk for foodborne illness, especially if you have certain medical conditions.

It is acceptable to limit the list of animal-derived FOOD in the CONSUMER advisory to only the type(s) of animal-derived FOOD served raw, undercooked, or cooked to order at a specific location. For example, at a sushi counter, the CONSUMER advisory might only refer to seafood.

A CONSUMER advisory is not required for raw or undercooked WHOLE-MUSCLE, INTACT BEEF steak as specified under

section 7.2.2.1.4.

7.2.7 Contaminated Food

7.2.7.1 Discarding Food

7.2.7.1.1 *Unsafe/Adulterated (18 C)*

A FOOD that is unsafe or ADULTERATED must be discarded.

7.2.7.1.2 *Unapproved Source (18 C)*

FOOD that is not from an APPROVED source must be discarded.

7.2.7.1.3 *Restricted or Excluded Employee (18 C)*

READY-TO-EAT FOOD that may have been contaminated by an employee who has been restricted or excluded for FOOD EMPLOYEE health issues must be discarded.

7.2.7.1.4 *Contaminated by Others (18 C)*

FOOD that is contaminated by FOOD EMPLOYEES, CONSUMERS, or other persons through contact with their hands, bodily discharges (such as nasal or oral discharges), or other means must be discarded.

7.3 Equipment and Utensils

7.3.1 Materials

7.3.1.1 Multiuse Characteristics and Use Limitations

7.3.1.1.1 *Safe Food-Contact Materials (26 C)*

Materials used in the construction of multiuse UTENSILS and FOOD-CONTACT SURFACES of EQUIPMENT must not allow the migration of deleterious substances or impart colors, odors, or tastes to FOOD and must be safe under normal use conditions.

7.3.1.1.2 *Food-Contact Surfaces (20)*

Materials used in the construction of multiuse UTENSILS and FOOD-CONTACT SURFACES of EQUIPMENT must be as follows:

- Durable, corrosion-resistant, and nonabsorbent.
- Sufficient in weight and thickness to withstand repeated WAREWASHING.
- Finished to have a SMOOTH, EASILY CLEANABLE surface.
- Resistant to pitting, chipping, crazing, scratching, scoring, distortion, and decomposition.

7.3.1.1.3 *Cast Iron (20)*

Cast iron must not be used for UTENSILS or FOOD-CONTACT SURFACES of EQUIPMENT. **Cast iron may be used as a surface for cooking. Cast iron may be used in UTENSILS for serving FOOD if the UTENSILS are used only as part of an uninterrupted process from cooking through service.**

Cast iron FOOD DISPLAY dishes heated to a temperature of 74°C (165°F) for 15 seconds may be used for the immediate service of FOOD.

7.3.1.1.4 *Lead (26 C)*

Limitation of lead use must be as follows:

- Ceramic, china, crystal UTENSILS, and decorative UTENSILS such as hand-painted ceramic or china used in contact with FOOD must be lead-free or contain levels of lead not exceeding the limits for specific UTENSIL categories as allowed by LAW.
- Pewter alloys containing more than 0.05% lead must not be used as a FOOD-CONTACT SURFACE.
- Solder and flux containing more than 0.2% lead must not be used as a FOOD-CONTACT SURFACE.

7.3.1.1.5 *Copper/Brass (26 C)*

Copper and copper alloys such as brass must not be used in contact with a FOOD that has a PH below 6 (such as vinegar, fruit juice, or wine) or for a fitting or tubing installed between a BACKFLOW PREVENTION DEVICE and a carbonator.

Copper and copper alloys may be used in contact with beer brewing ingredients that have a PH below 6 in the prefermentation and fermentation steps of a beer brewing operation such as a brewpub or microbrewery.

7.3.1.1.6 *Galvanized (26 C)*

Galvanized metal must not be used for UTENSILS or FOOD-CONTACT SURFACES of EQUIPMENT.

7.3.1.1.7 *Wood (20)*

Wood use must be limited as follows:

- Wood and wood wicker must not be used as a FOOD-CONTACT SURFACE.
- **Hard maple or an equivalently hard, close-grained wood may be used for cutting boards; cutting blocks; bakers' tables; UTENSILS such as rolling pins, doughnut dowels, serving dishes, and chopsticks; and wooden paddles used in confectionery operations for pressure scraping kettles when manually preparing confections at a temperature of 110°C (230°F) or above.**
- **Whole, uncut, raw fruits and vegetables, and nuts in the shell may be kept in the wood shipping container in which they were received until the fruits, vegetables, or nuts are used.**
- **If the nature of the FOOD requires removal of rinds, peels, husks, or shells before consumption, the whole, uncut, raw FOOD may be kept in untreated wood containers or in treated wood containers if the containers are treated with a preservative that meets the requirements specified in**

21 CFR 178.3800 Preservatives for Wood.**7.3.1.1.8 Coatings (20)**

Multiuse KITCHENWARE such as frying pans, griddles, saucepans, cookie sheets, and waffle bakers that have a perfluorocarbon resin coating must be used with nonscoring or nonscratching UTENSILS and cleaning aids.

7.3.1.1.9 Nonfood-Contact Surfaces (21)

NONFOOD-CONTACT SURFACES of EQUIPMENT that are exposed to splash, spillage, or other FOOD soiling or that require frequent cleaning must be constructed of a corrosion-resistant, nonabsorbent, and SMOOTH material.

7.3.1.2 Single-Service and Single-Use Characteristics**7.3.1.2.1 Single-Service Materials Safe (26 C)**

Materials used to make SINGLE-SERVICE ARTICLES and SINGLE-USE ARTICLES must not allow the migration of deleterious substances and must be safe.

7.3.1.2.2 No Colors/Odors/Taste (20)

Materials used to make SINGLE-SERVICE ARTICLES and SINGLE-USE ARTICLES must not impart colors, odors, or tastes to FOOD and must be clean.

7.3.2 Design and Construction**7.3.2.1 Durability and Strength****7.3.2.1.1 Food-Contact Durability/Strength (20)**

FOOD-CONTACT SURFACES of EQUIPMENT and UTENSILS must be designed and constructed to be durable and to retain their characteristic qualities under normal use conditions.

7.3.2.1.2 Nonfood-Contact Durability/Strength (21)

NONFOOD-CONTACT SURFACES of EQUIPMENT and UTENSILS must be designed and constructed to be durable and to retain their characteristic qualities under normal use conditions.

7.3.2.1.3 Glass Temperature Measuring Devices (26 C)

FOOD TMDs must not have sensors or stems constructed of glass, except for thermometers with glass sensors or stems encased in a shatterproof coating (such as candy thermometers).

7.3.2.2 Cleanability**7.3.2.2.1 Multiuse Food-Contact Surfaces (20)**

Multiuse FOOD-CONTACT SURFACES must be

- SMOOTH.
- Free of breaks, open SEAMS greater than 0.8 millimeters (1/32 inch), cracks, chips, inclusions, pits, and similar imperfections.

- Free of sharp internal angles, corners, and crevices.
- Finished to have SMOOTH welds and joints.
- ACCESSIBLE for cleaning and inspection by one of the following methods. Note: This does not apply to cooking oil storage tanks, distribution lines for cooking oils, or BEVERAGE syrup lines or tubes.
 - Without being disassembled,
 - by disassembling without the use of tools, or
 - by easy disassembling with the use of handheld tools commonly available to maintenance and cleaning personnel (such as screwdrivers, pliers, open-end wrenches, and Allen wrenches).

Use low profile, nonslotted, NONCORRODING, and easy-to-clean fasteners on FOOD-CONTACT SURFACES and in splash zones. The use of exposed slotted screws, Phillips head screws, or pop rivets in these areas is prohibited.

7.3.2.2.2 *Cleaned-in-Place Equipment Design/Construction (20)*

CIP EQUIPMENT must be designed and constructed so cleaning and sanitizing solutions circulate throughout a fixed system and contact all interior FOOD-CONTACT SURFACES and so the system self-drains or can be completely drained of cleaning and sanitizing solutions.

CIP EQUIPMENT not designed to be disassembled for cleaning must be designed with inspection access points to ensure that all interior FOOD-CONTACT SURFACES throughout the fixed system are being effectively cleaned.

7.3.2.2.3 *“V” Type Threads (20)*

Except for hot oil cooking or filtering EQUIPMENT, “V” type threads must not be used on FOOD-CONTACT SURFACES.

7.3.2.2.4 *Oil Filtering Equipment (20)*

Hot oil filtering EQUIPMENT must be ACCESSIBLE for filter replacement and filter cleaning.

7.3.2.2.5 *Can Openers (20)*

Cutting or piercing parts of can openers must be readily REMOVABLE for cleaning and replacement.

7.3.2.2.6 *Nonfood-Contact Design (21)*

NONFOOD-CONTACT SURFACES must be free of unnecessary ledges, projections, and crevices, and must be designed and constructed to allow easy cleaning and facilitate maintenance.

7.3.2.2.7 *Kick Plates (21)*

Kick plates must be designed so that the areas behind them are ACCESSIBLE for inspection and cleaning by being easily REMOVABLE or capable of being rotated open without unlocking EQUIPMENT doors.

7.3.2.2.8 Grease Filters (21)

If not designed to be CLEANED IN PLACE, filters or other grease-extracting EQUIPMENT must be designed to be readily REMOVABLE for cleaning and replacement.

7.3.2.3 Food Temperature-Measuring Devices (20)

FOOD TMDs must be provided and available for use in ensuring attainment and maintenance of FOOD temperatures. Tip-sensitive TMDs, such as a thermocouple or thermistor, must be used for measuring thin FOOD products.

7.3.2.3.1 Food Temperature-Measuring Devices Accuracy (20)

FOOD TMDs

- Scaled only in Celsius or dually scaled in Celsius and Fahrenheit must be accurate to $\pm 1^{\circ}\text{C}$ ($\pm 2^{\circ}\text{F}$) in the intended range of use.
- Scaled only in Fahrenheit must be accurate to $\pm 2^{\circ}\text{F}$ in the intended range of use.

FOOD TMDs must have a numerical scale, printed record, or digital readout in increments no greater than 1°C (2°F) in the intended range of use.

7.3.2.3.2 Ambient Air Temperature-Measuring Devices Accuracy (21)

Ambient air TMDs

- Scaled in Celsius or dually scaled in Celsius and Fahrenheit must be designed to be easily readable and accurate to $\pm 1.5^{\circ}\text{C}$ ($\pm 3^{\circ}\text{F}$) in the intended range of use.
- Scaled only in Fahrenheit must be accurate to $\pm 3^{\circ}\text{F}$ in the intended range of use.

7.3.2.4 Functionality**7.3.2.4.1 Exhaust Ventilation Hood Systems (37)**

Exhaust ventilation hood systems in FOOD PREPARATION AREAS and WAREWASHING areas—including components such as hoods, fans, guards, and ducting—must be designed to prevent grease or condensation from draining or dripping onto FOOD, EQUIPMENT, UTENSILS, LINENS, and SINGLE-SERVICE ARTICLES and SINGLE-USE ARTICLES.

7.3.2.4.2 Equipment Openings, Closures, and Deflectors (20)

EQUIPMENT openings, closures, and deflectors must conform to the following:

- A cover or lid for EQUIPMENT must overlap the opening and be sloped to drain.
- An opening in the top of a unit of EQUIPMENT and designed for use with a cover or lid must be flanged upward at least 5 millimeters ($1/5$ of an inch).
- Fixed piping, TMDs, rotary shafts, and other parts extending into EQUIPMENT must be provided with a watertight joint at the point where the item enters the EQUIPMENT.

- If a watertight joint is not provided, the piping, TMDs, rotary shafts, and other parts extending through the openings must be equipped with an apron designed to deflect condensation, drips, and dust from openings into the FOOD; the opening must be flanged at least 5 millimeters (1/5 of an inch).

7.3.2.4.3 Beverage/Ice Dispensing (20)

In EQUIPMENT that dispenses liquid FOOD or ice in unpackaged form,

- The delivery tube, chute, orifice, and splash surfaces directly above the container receiving the FOOD must be designed in a manner (such as with barriers, baffles, or drip aprons) so that drips from condensation and splash are diverted from the opening of the container receiving the FOOD.
- The delivery tube, chute, and orifice must be protected from manual contact (such as by being recessed).
- The delivery tube or chute and orifice of EQUIPMENT used to vend liquid FOOD or ice in unpackaged form to self-service CONSUMERS must be designed so the delivery tube or chute and orifice are protected from dust, insects, rodents, and other CONTAMINATION by a self-closing door if the EQUIPMENT
 - Is in an outside area that does not otherwise afford protection against rain, windblown debris, insects, rodents, and other contaminants present in the environment **OR**
 - Is available for self-service during hours when it is not under the full-time supervision of a FOOD EMPLOYEE.

The dispensing EQUIPMENT actuating lever or mechanism and filling device of CONSUMER self-service BEVERAGE dispensing EQUIPMENT must be designed to prevent contact with the lip-contact surface of glasses or cups that are refilled.

7.3.2.4.4 Bearings and Gears (21)

EQUIPMENT containing bearings and gears that require lubricants must be designed and constructed so the lubricant cannot leak, drip, or be forced into FOOD or onto FOOD-CONTACT SURFACES.

7.3.2.4.5 Beverage Line Cooling (20)

BEVERAGE tubing and cold-plate BEVERAGE cooling devices must not be installed in contact with stored ice. **This does not apply to cold plates constructed integrally without SEAMS in an ice storage bin.**

7.3.2.4.6 Equipment Drainage (21)

EQUIPMENT compartments subject to accumulation of moisture because of conditions such as condensation, FOOD or BEVERAGE drip, or water from melting ice must be sloped to an outlet that allows

complete draining.

7.3.2.4.7 *Drain Lines (20)*

Liquid waste drain lines must not pass through an ice machine or ice storage bin.

7.3.2.4.8 *Condenser Unit (21)*

If a condenser unit is an integral component of EQUIPMENT, the condenser unit must be separated from the FOOD and FOOD STORAGE space by a dustproof barrier.

7.3.2.4.9 *Ambient Air Temperature-Measuring Devices (21)*

TMDs must be easily readable. They must conform to the following:

- In a mechanically refrigerated FOOD storage unit, the sensor of a TMD must be located to measure the air temperature in the warmest part of the unit.
- In a hot-FOOD storage unit, the sensor of a TMD must be located to measure the air temperature in the coolest part of the unit.
- Cold or hot holding EQUIPMENT used for TCS/PHF must be designed to include and must be equipped with at least one integral or affixed TMD that is located to allow easy viewing of the device's temperature display.

The above bullet does not apply to EQUIPMENT for which the placement of a TMD is not a practical means for measuring the ambient air surrounding the FOOD because of the design, type, and use of the EQUIPMENT (such as calrod units, heat lamps, cold plates, bains-marie, steam tables, insulated FOOD transport containers, and salad bars).

7.3.2.5 Food Equipment Standards and Classification

7.3.2.5.1 *Food-Contact Equipment Standards (20)*

FOOD-CONTACT SURFACES of FOOD EQUIPMENT must comply with American National Standards Institute (ANSI), National Sanitation Foundation International (NSF International), or other internationally accredited FOOD EQUIPMENT sanitation standards for materials, design, and construction.

7.3.2.5.2 *Nonfood-Contact Equipment Standards (21)*

NONFOOD-CONTACT SURFACES of FOOD EQUIPMENT must comply with American National Standards Institute (ANSI), National Sanitation Foundation International (NSF International), or other internationally accredited FOOD EQUIPMENT sanitation standards for materials, design, and construction.

7.3.3 Numbers and Capacities

7.3.3.1 Cold/Hot Holding Capacity (20)

EQUIPMENT for cooling and heating FOOD and for holding cold and hot FOOD must be sufficient in number and capacity to maintain temperatures in TCS/PHF.

7.3.3.2 Ventilation Hood (37)

Ventilation hood systems and devices must be sufficient in number and capacity to prevent grease or condensate from collecting on BULKHEADS and DECKHEADS.

7.3.4 Equipment Location and Installation

7.3.4.1 Fixed Equipment, Spacing or Sealing

7.3.4.1.1 *Fixed Equipment Installation (21)*

EQUIPMENT that is fixed because it is not EASILY MOVABLE must be installed in one of the following ways:

- Spaced to allow access for cleaning along the sides, behind, under, and above the EQUIPMENT.
- Spaced from adjoining EQUIPMENT, BULKHEAD, and DECKHEAD at a distance of no more than 0.8 millimeters (1/32 inch).
- Sealed to adjoining EQUIPMENT or BULKHEAD (if the EQUIPMENT is exposed to spillage or seepage).

7.3.4.1.2 *Table-Mounted Sealed or Elevated (21)*

TABLE-MOUNTED EQUIPMENT that is not EASILY MOVABLE must be installed to allow cleaning of the EQUIPMENT and areas underneath and around the EQUIPMENT in one of the following ways:

- Sealed to the table.
- Elevated on legs.

7.3.4.2 Fixed Equipment, Elevation or Sealing

7.3.4.2.1 *Deck-Mounted Sealed or Elevated (21)*

Deck-mounted EQUIPMENT that is not EASILY MOVABLE must be sealed to the deck or elevated on legs that provide at least 150 millimeters (6 inches) of clearance between the deck and the EQUIPMENT.

7.3.4.2.2 *Deck-Mounted Clearance*

If no part of the deck under the deck-mounted EQUIPMENT is more than 150 millimeters (6 inches) from the point of cleaning access, the clearance space may be only 100 millimeters (4 inches).

7.3.4.2.3 *Table-Mounted Elevated (21)*

TABLE-MOUNTED EQUIPMENT that is not EASILY MOVABLE must be elevated on legs that provide at least 100 millimeters (4 inches) of clearance between the table and the EQUIPMENT.

7.3.4.2.4 Table-Mounted Clearance

The clearance space between the table and TABLE-MOUNTED EQUIPMENT may be either of the following:

- 75 millimeters (3 inches) if the horizontal distance of the tabletop under the EQUIPMENT is no more than 500 millimeters (20 inches) from the point of access for cleaning.
- 50 millimeters (2 inches) if the horizontal distance of the tabletop under the EQUIPMENT is no more than 75 millimeters (3 inches) from the point of access for cleaning.

7.3.5 Maintenance and Operation**7.3.5.1 Equipment****7.3.5.1.1 Food-Contact Equipment in Good Repair (20)**

FOOD-contact EQUIPMENT must be maintained in good repair and proper adjustment, including the following:

- EQUIPMENT must be maintained in a state of repair and condition that meets the materials, design, construction, and operation specifications of these standards.
- Can opener parts that cut or pierce must be kept sharp to minimize the creation of metal fragments that can contaminate FOOD when the container is opened.

7.3.5.1.2 Nonfood-Contact Equipment in Good Repair (21)

Nonfood-contact EQUIPMENT must be maintained in good repair and proper adjustment, including the following:

- EQUIPMENT must be maintained in a state of repair and condition that meets the materials, design, construction, and operation specifications of these standards.
- EQUIPMENT components such as doors, seals, hinges, fasteners, and kick plates must be kept intact and tight and adjusted in accordance with manufacturer's specifications.

7.3.5.1.3 Cutting Boards (20)

Surfaces such as cutting blocks and boards subject to scratching and scoring must be resurfaced if they can no longer be effectively cleaned and sanitized or discarded if they cannot be resurfaced.

7.3.5.1.4 Microwave Ovens (20)

Microwave ovens must meet the safety standards specified in 21 CFR 1030.10 Microwave Ovens, or equivalent.

7.3.5.2 Good Repair and Calibration**7.3.5.2.1 Utensils and Temperature-Measuring Devices in Good Repair and Calibration (20)**

UTENSILS and TMDs must be maintained in good repair and proper adjustment, including the following:

- UTENSILS must be maintained in a state of repair or condition

that meets the materials, design, and construction specifications of these standards or must be discarded.

- FOOD TMDs must be calibrated in accordance with manufacturer's specifications as necessary to ensure their accuracy.

7.3.5.2.2 *Ambient Air Temperature-Measuring Devices in Good Repair and Calibration (21)*

Ambient air TMDs must be maintained in good repair and be accurate within the intended range of use.

7.3.5.3 Single-Service and Single-Use Articles

7.3.5.3.1 *No Reuse (28)*

SINGLE-SERVICE ARTICLES and SINGLE-USE ARTICLES must not be reused.

7.3.5.3.2 *Bulk Milk Tubes (20)*

Bulk milk container dispensing tubes must be cut on the diagonal, leaving no more than 25 millimeters (1 inch) protruding from the chilled dispensing head.

7.3.5.3.3 *Shell Reuse (28)*

Mollusk and crustacean shells must not be used more than once as serving containers.

7.4 Warewashing

7.4.1 Warewashing Design and Construction

WAREWASHING evaluation procedures can be found in Annex 13.15.

7.4.1.1 Warewashing Measuring Device Accuracy (22)

Provide a maximum registering TMD to verify the temperature in the WAREWASHING machines and the three-compartment sink.

7.4.1.1.1 *Water Temperature-Measuring Devices Accuracy (22)*

Water TMDs scaled

- In Celsius or dually scaled in Celsius and Fahrenheit must be designed to be accurate to $\pm 1.5^{\circ}\text{C}$ ($\pm 3^{\circ}\text{F}$) in the intended range of use.
- Only in Fahrenheit must be designed to be accurate to $\pm 3^{\circ}\text{F}$ in the intended range of use.

7.4.1.1.2 *Pressure Gauge Accuracy (22)*

Pressure measuring devices that display pressures in the water supply line for the fresh hot water sanitizing rinse must have increments of 7 kilopascals (1 pound per square inch or 0.07 bar) or smaller and must be accurate to ± 14 kilopascals (± 2 pounds per square inch or ± 0.14 bar) in the 100–170 kilopascals (15–25 pounds per square inch or 1.03–1.72 bars) range.

7.4.1.2 Warewashing Functionality**7.4.1.2.1 *Water Temperature-Measuring Devices Readable (22)***

Water TMDs must be designed to be easily readable.

7.4.1.2.2 *Water Temperature-Measuring Devices Readable Scale (22)*

Water TMDs on WAREWASHING machines must have a numerical scale, printed record, or digital readout in increments no greater than 1°C (2°F) in the intended range of use.

7.4.1.2.3 *Data Plate (22)*

A WAREWASHING machine must be provided with a readable data plate affixed to or posted adjacent to the machine that indicates the machine's design and operating specifications including the

- Wash tank, rinse tank(s) if present, and final sanitizing rinse temperatures.
- Pressure required for the freshwater sanitizing rinse unless the machine is designed to use only a pumped sanitizing rinse.
- Conveyor speed in meters or feet per minute or minimum transit time for belt conveyor machines, minimum transit time for rack conveyor machines, and wash and final sanitizing rinse times as specified by the manufacturer for stationary rack machines.

7.4.1.2.4 *Baffles/Curtains (22)*

WAREWASHING machine wash and rinse tanks must be equipped with baffles, curtains, or other means to minimize internal CROSS-CONTAMINATION of the solutions in wash and rinse tanks.

7.4.1.2.5 *Warewash Temperature Measuring Devices (22)*

A WAREWASHING machine must be equipped with a TMD that indicates the temperature of the water in each wash tank, in rinse tank(s) if present, and in the final sanitizing rinse manifold.

7.4.1.2.6 *Pressure Gauge (22)*

WAREWASHING machines that provide a fresh hot water sanitizing rinse must be equipped with a pressure gauge or similar device such as a transducer that measures and displays the water pressure in the supply line immediately before entering the WAREWASHING machine.

If the flow pressure measuring device is upstream of the fresh hot water sanitizing rinse control valve, the device must be mounted in a 6.4-millimeter (1/4-inch) iron pipe size valve.

This does not apply to a machine that uses only a pumped or recirculated sanitizing rinse.

7.4.1.2.7 *Manual Sanitizing Booster Heater (22)*

If hot water is used for SANITIZATION in manual WAREWASHING operations, the sanitizing compartment of the sink must be designed with an integral heating device capable of maintaining water at a

temperature not less than 77°C (171°F).

Provide a maximum registering TMD to verify the temperature in the sink.

7.4.1.2.8 Self-Draining (22)

Sinks and drainboards of WAREWASHING sinks and machines must be self-draining.

7.4.2 Warewashing Numbers and Capacities

7.4.2.1 Three-Compartment Sinks

7.4.2.1.1 Three-Compartment Sink (22)

A sink with at least three compartments must be provided for manually washing, rinsing, and sanitizing EQUIPMENT and UTENSILS.

7.4.2.1.2 Size (22)

Sink compartments must be large enough to accommodate immersion of the largest EQUIPMENT and UTENSILS. If EQUIPMENT or UTENSILS are too large for the WAREWASHING sink, a WAREWASHING machine or alternative EQUIPMENT, such as a three-bucket system, must be used.

7.4.2.1.3 Manual Warewashing Alternatives

Alternative manual WAREWASHING EQUIPMENT may be used when there are special cleaning needs or constraints, and its use is APPROVED. Alternative manual WAREWASHING EQUIPMENT may include the following:

- **High-pressure detergent sprayers.**
- **Low- or line-pressure spray detergent foamers.**
- **Other task-specific cleaning EQUIPMENT.**
- **Brushes or other implements.**
- **Receptacles such as a three-bucket system that substitute for the compartments of a three-compartment sink.**

7.4.2.2 Drainboards

7.4.2.2.1 Soiled/Clean Storage (22)

Drainboards, UTENSIL racks, or tables large enough to accommodate all soiled and cleaned items that may accumulate during hours of operation must be provided for UTENSIL holding before cleaning and after sanitizing.

7.4.2.3 Test Kit (22)

A test kit or other device that accurately measures the concentration in milligrams per liter (parts per million) of sanitizing solutions must be provided.

7.4.3 Warewashing Equipment Maintenance and Operation

7.4.3.1 Good Repair and Proper Adjustment

7.4.3.1.1 Warewashing Equipment Repair (22)

WAREWASHING EQUIPMENT must be maintained in good repair and proper adjustment, including the following:

- WAREWASHING EQUIPMENT must be maintained in a state of repair and condition that meets the standards of the materials, design, and construction.
- Water pressure and water TMDs must be maintained in good repair and be accurate within the intended range of use.

7.4.3.1.2 Warewashing Equipment Cleaning (22)

WAREWASHING machines, drainboards, and the compartments of sinks, basins, or other receptacles used for washing and rinsing EQUIPMENT, UTENSILS, or raw FOOD, or laundering wiping cloths must be cleaned as follows:

- Before use.
- Throughout the day at a frequency necessary to prevent recontamination and accumulation of debris and to ensure the EQUIPMENT performs its intended function.
- At least every 24 hours (if used).

7.4.3.1.3 Warewashing Equipment Operation (22)

A WAREWASHING machine and its auxiliary components must be operated in accordance with the machine's data plate and other manufacturer's instructions.

A WAREWASHING machine's conveyor speed or automatic cycle times must be maintained accurately timed in accordance with manufacturer's specifications.

7.4.3.1.4 Cleaners (22)

When used for WAREWASHING, the wash compartment of a sink, mechanical warewasher, or wash receptacle of alternative manual WAREWASHING EQUIPMENT must contain a wash solution of soap, detergent, acid cleaner, alkaline cleaner, degreaser, abrasive cleaner, or other cleaning agent according to the cleaning agent manufacturer's label instructions.

7.4.3.1.5 Solution Clean (22)

The wash, rinse, and sanitize solutions must be kept clean.

7.4.3.2 Wash Temperatures

7.4.3.2.1 Manual Wash Temperature (23)

The temperature of the wash solution in manual WAREWASHING EQUIPMENT must be maintained at not less than the temperature specified on the cleaning agent manufacturer's label instructions.

7.4.3.2.2 Warewashing Wash Temperatures (23)

The temperature of the wash solution in spray type warewashers that use hot water to sanitize must not be less than

- 74°C (165°F) for a stationary-rack, single-temperature machine.
- 66°C (150°F) for a stationary-rack, dual-temperature machine.
- 71°C (160°F) for a single-tank, conveyor, dual-temperature machine.
- 66°C (150°F) for a multi-tank, conveyor, multitemperature machine.

High wash temperatures do not compensate for low auxiliary rinse and/or hot water final rinse sanitizing temperatures.

7.4.3.2.3 Wash Temperatures for Chemical Machines (23)

The temperature of the wash solution in spray-type warewashers that use chemicals to sanitize must not be less than 49°C (120°F).

7.4.3.2.4 Alarm (22)

Warewash machines for vessels built to *VSP 2005 Construction Guidelines* or later or installed/replaced on existing vessels after July 2005 must be equipped with an audible or visual alarm that indicates when the sanitizing temperature or chemical SANITIZER level drops below the levels stated on the machine data plate.

7.4.4 Cleaning Equipment and Utensils**7.4.4.1 Cleaning Frequency****7.4.4.1.1 Food-Contact Surfaces Clean (26 C)**

FOOD-CONTACT SURFACES of EQUIPMENT and UTENSILS must be clean to sight and touch.

7.4.4.1.2 Encrusted (26 C)

FOOD-CONTACT SURFACES of cooking EQUIPMENT and pans must be kept free of encrusted grease deposits and other soil accumulations.

7.4.4.1.3 Nonfood-Contact Surfaces (27)

NONFOOD-CONTACT SURFACES of EQUIPMENT must be kept free of an accumulation of dust, dirt, FOOD residue, and other debris.

7.4.4.1.4 Food-Contact Cleaning Frequency (26 C)

FOOD-CONTACT SURFACES of EQUIPMENT and UTENSILS must be washed, rinsed, and sanitized as follows:

- Before each use with a different type of raw animal FOOD such as beef, FISH, lamb, pork, or POULTRY.
- Each time there is a change from working with raw FOOD to working with READY-TO-EAT FOOD.
- Between uses with raw fruits and vegetables and with TCS/PHF.
- Before using or storing a FOOD TMD.
- Any time during the operation when CONTAMINATION might have occurred.

7.4.4.1.5 In-Use Food-Contact Equipment (28)

If used with TCS/PHF, FOOD-CONTACT SURFACES of EQUIPMENT and UTENSILS used on a continuing basis must be washed, rinsed, and sanitized at least every 4 hours.

7.4.4.1.6 Dispensing Equipment Cleaning (28)

Cleaning of EQUIPMENT such as ice bins; BEVERAGE dispensing nozzles; and enclosed components of EQUIPMENT such as ice makers, cooking oil storage tanks, and distribution lines, BEVERAGE dispensing lines, and syrup dispensing lines or tubes; and coffee bean grinders must be conducted

- At a frequency specified by the manufacturer, or
- In the absence of manufacturer specifications, at a frequency necessary to preclude accumulation of soil or mold.

7.4.4.1.7 Cooking/Baking Equipment Cleaning (28)

Cooking and baking EQUIPMENT must be cleaned as follows:

- FOOD-CONTACT SURFACES of cooking and baking EQUIPMENT must be cleaned at least every 24 hours.
- Cavities and door seals of microwave ovens must be cleaned at least every 24 hours by using the manufacturer's recommended cleaning procedure.

7.4.4.2 Dry Cleaning (28)

If dry cleaning is used, it must be conducted as follows:

- Methods such as brushing, scraping, and vacuuming must contact only surfaces soiled with dry FOOD residues that are not TCS/PHF.
- Cleaning EQUIPMENT used in dry cleaning FOOD-CONTACT SURFACES must not be used for any other purpose.

7.4.4.3 Precleaning and Racking**7.4.4.3.1 Precleaning/Scrapping (23)**

FOOD debris on EQUIPMENT and UTENSILS must be scrapped over a waste disposal unit, pulper, or garbage receptacle or must be removed in a WAREWASHING machine with a prewash cycle.

7.4.4.3.2 Presoak/Scrubbed (23)

If necessary for effective cleaning, EQUIPMENT and UTENSILS must be preflushed, presoaked, or scrubbed with abrasives.

7.4.4.3.3 Racking (22)

Soiled items to be cleaned in a WAREWASHING machine must be loaded into racks, trays, or baskets or onto conveyors in a position that

- Exposes the items to the unobstructed spray from all cycles and
- Allows the items to drain.

7.4.4.4 Wet Cleaning**7.4.4.4.1 *Washing (23)***

FOOD-CONTACT SURFACES of EQUIPMENT and UTENSILS must be effectively washed to remove or completely loosen soils by using whatever manual or mechanical means is necessary (such as application of detergents containing wetting agents and emulsifiers; acid, alkaline, or abrasive cleaners; hot water; brushes; scouring pads; high-pressure sprays; or ultrasonic devices).

7.4.4.4.2 *Soil Specific (22)*

The washing procedures selected must be based on the type and purpose of the EQUIPMENT or UTENSIL and on the type of soil to be removed.

7.4.4.5 Alternative Manual Warewashing Procedures**7.4.4.5.1 *Alternative Warewashing Procedures (23)***

If washing in sink compartments or a WAREWASHING machine is impractical (such as when the EQUIPMENT is fixed or the UTENSILS are too large), washing must be done by using alternative manual WAREWASHING EQUIPMENT in accordance with the following procedures:

- EQUIPMENT must be disassembled as necessary to allow access of the detergent solution to all parts.
- EQUIPMENT components and UTENSILS must be scrapped or rough-cleaned to remove FOOD particle accumulation.
- EQUIPMENT and UTENSILS must be washed.

7.4.4.5.2 *Sponges Limited (22)*

Sponges must not be used in contact with cleaned and sanitized or in-use FOOD-CONTACT SURFACES.

7.4.4.6 Rinsing Procedures**7.4.4.6.1 *Rinsing (23)***

Washed EQUIPMENT and UTENSILS must be rinsed so that abrasives are removed, and cleaning chemicals are removed or diluted with water by using one of the following procedures:

- Use of a distinct, separate water rinse after washing and before sanitizing (if using a three-compartment sink, alternative manual WAREWASHING EQUIPMENT equivalent to a three-compartment sink, or a three-step washing, rinsing, and sanitizing procedure in a WAREWASHING system for CIP EQUIPMENT).
- Use of a nondistinct water rinse integrated in the application of the sanitizing solution and wasted immediately after each application (if using a WAREWASHING machine that does not

recycle the sanitizing solution or if using alternative manual WAREWASHING EQUIPMENT such as sprayers).

- Use of a nondistinct water rinse integrated in the application of the sanitizing solution (if using a WAREWASHING machine that recycles the sanitizing solution for use in the next wash cycle).

7.4.5 Sanitizing

7.4.5.1 Food-Contact Surfaces (24 C)

FOOD-CONTACT SURFACES of EQUIPMENT and UTENSILS must be sanitized.

7.4.5.2 Sanitizing Temperatures

7.4.5.2.1 Manual Hot-Water Sanitizing (24 C)

In a manual operation, if immersion in hot water is used for sanitizing,

- The temperature of the water must be maintained at 77°C (171°F) or above and
- The FOOD-CONTACT SURFACE must be immersed for at least 30 seconds.

7.4.5.2.2 Warewasher Hot-Water Sanitizing (24 C)

In a mechanical operation, the temperature of the fresh hot water sanitizing rinse as it enters the manifold must not be more than 90°C (194°F) or less than

- 74°C (165°F) for a stationary rack, single-temperature machine.
- 82°C (180°F) for all other machines.

The UTENSIL surface temperature must not be less than 71°C (160°F) as measured by an irreversible registering temperature indicator.

The maximum temperature of 90°C (194°F) does not apply to the high pressure and temperature systems with wand-type, hand-held spraying devices used for in-place cleaning and sanitizing of EQUIPMENT such as MEAT saws.

7.4.5.2.3 Warewasher Hot-Water Sanitizing Pressure (22)

The flow pressure of the fresh hot water sanitizing rinse in a WAREWASHING machine must not be less than 34.5 kilopascals (5 pounds per square inch or 0.34 bars) or more than 207 kilopascals (30 pounds per square inch or 2.07 bars) as measured in the water line immediately downstream or upstream from the fresh hot water sanitizing rinse control valve.

7.4.5.3 Sanitizing Concentrations

7.4.5.3.1 Chemical Sanitizing Solutions (24 C)

A chemical SANITIZER used in a sanitizing solution for a manual or mechanical operation must be listed in 40 CFR 180.940 Sanitizing Solutions.

7.4.5.3.2 Chemical Sanitizing Exposure (24 C)

A chemical SANITIZER must be used in accordance with the EPA-APPROVED manufacturer's label use instructions at a minimum temperature of 24°C (75°F) with an exposure time of 7 seconds for a chlorine solution and 30 seconds for other chemical SANITIZERS.

7.4.5.3.3 Chemical Sanitizing Concentration (24 C)

Sanitizing solutions must be used with the following concentrations:

- A chlorine solution must have a concentration between 50 MG/L (ppm) and 200 MG/L (ppm).
- An iodine solution must have a PH of 5.0 or less or a PH no higher than the level for which the manufacturer specifies the solution is effective **AND** a concentration between 12.5 MG/L (ppm) and 25 MG/L (ppm).
- A quaternary ammonium compound solution must have a concentration as specified in 40 CFR 180.940 Sanitizing Solutions **AND** as indicated by the manufacturer's use directions included in the labeling.

If another solution concentration or PH of a chlorine, iodine, or quaternary ammonium compound is used, the vessel must demonstrate to VSP that the solution achieves SANITIZATION, and the use of the solution must be APPROVED.

If a chemical SANITIZER other than a chlorine, iodine, or quaternary ammonium compound is used, it must be applied in accordance with the manufacturer's use directions included in the labeling.

7.4.5.3.4 Sanitizer Concentration Testing (22)

Concentration of the sanitizing solution must be accurately determined by using a test kit or other device.

7.4.6 Protection of Clean Items**7.4.6.1 Drying****7.4.6.1.1 Air Dried/Drained (28)**

After cleaning and sanitizing, EQUIPMENT and UTENSILS must be air dried or ADEQUATELY drained before contact with FOOD. **Cleaned, sanitized, and air-dried dishware, glassware, and UTENSILS may be polished with a clean, dry, lint-free cloth.**

7.4.6.2 Lubricating and Reassembling**7.4.6.2.1 Lubricating (28)**

Lubricants must be applied to FOOD-CONTACT SURFACES that require lubrication in a manner that does not contaminate FOOD-CONTACT

SURFACES.

7.4.6.2.2 *Assembling (28)*

EQUIPMENT must be reassembled so that FOOD-CONTACT SURFACES are not contaminated.

7.4.6.3 Storing Equipment, Utensils, Linens, and Single-Service and Single-Use Articles

7.4.6.3.1 *Storing Protected (28)*

Cleaned EQUIPMENT and UTENSILS, laundered LINENS, and SINGLE-SERVICE ARTICLES and SINGLE-USE ARTICLES must be stored

- In a clean, dry location.
- In a location where they are not exposed to splash, dust, or other CONTAMINATION.
- At least 150 millimeters (6 inches) above the deck unless in packages on pallets, skids, or racks, which may be 127 millimeters (5 inches) above the deck.

EQUIPMENT can be stored in unfinished lockers or rooms in sealed or resealed original packaging, plastic boxes with complete coverage (plastic wrap if needed), and/or wrapped in plastic. EQUIPMENT must be off the deck (rack/deck stand/pallet) and the deck must be clean.

EQUIPMENT and shelving in unfinished lockers or rooms must be kept clean. **Shelving does not need to meet EASILY CLEANABLE standard.**

SINGLE-SERVICE ARTICLES and SINGLE-USE ARTICLES must not be stored in unfinished lockers or rooms.

Chemicals must not be stored in unfinished lockers with FOOD equipment.

Exposed GRAY WATER and BLACK WATER lines must not be in unfinished EQUIPMENT lockers if they are push-fit or coupled. These lines can be solid pipe, butt-welded, or sleeve-welded. If plastic pipe, the lines can be heat fused or chemically welded.

7.4.6.3.2 *Storing Inverted (28)*

Clean EQUIPMENT and UTENSILS must be stored

- In a self-draining position that allows air drying.
- Covered or inverted.

7.4.6.3.3 *Preset Tableware (28)*

TABLEWARE preset longer than 4 hours before the beginning of service must be protected from CONTAMINATION by being wrapped, covered, or inverted.

When TABLEWARE is preset, exposed unused settings must be

- removed at the time a CONSUMER is seated or
- washed, rinsed, and sanitized before further use if the settings are not removed when a CONSUMER is seated.

7.4.6.3.4 *Original Package (28)*

SINGLE-SERVICE ARTICLES and SINGLE-USE ARTICLES must be kept in the original protective package or stored by using other means that afford protection from CONTAMINATION until used.

7.4.6.3.5 *Utensil Dispensing (28)*

Eating UTENSILS dispensed at a CONSUMER self-service unit such as a buffet or salad bar must be protected from CONTAMINATION.

7.4.7 Laundering

7.4.7.1 Laundry Facilities

7.4.7.1.1 *Laundry Equipment (28)*

If LINENS used in FOOD AREAS are laundered on the vessel, a mechanical clothes washer and dryer must be provided and used.

7.4.7.1.2 *Laundry Operations Location (28)*

Laundry operations must be located to protect operations from CONTAMINATION and only located where there are none of the following: Exposed FOOD; clean EQUIPMENT, UTENSILS, and LINENS; or unwrapped SINGLE-SERVICE ARTICLES and SINGLE-USE ARTICLES.

7.4.7.2 Laundry Procedures

7.4.7.2.1 *Laundry Frequency (28)*

LINENS that do not come in direct contact with FOOD must be laundered between operations if they become wet, sticky, or visibly soiled.

7.4.7.2.2 *Cloth Gloves (28)*

Cloth gloves must be laundered before being used with a different type of raw animal FOOD such as beef, lamb, pork, and FISH.

7.4.7.2.3 *Linens/Napkins (28)*

LINENS and napkins used to line FOOD-service containers and cloth napkins must be laundered between each use.

7.4.7.2.4 *Wet Wiping Cloths (28)*

Wet wiping cloths must be laundered daily.

7.4.7.2.5 *Dry Wiping Cloths (28)*

Dry wiping cloths must be laundered as necessary to prevent CONTAMINATION of FOOD and clean serving UTENSILS.

7.4.7.2.6 *Soiled Linens (28)*

Soiled LINENS must be kept in clean, nonabsorbent receptacles or clean, washable laundry bags and stored and transported to prevent

CONTAMINATION of FOOD, clean EQUIPMENT, clean UTENSILS, and SINGLE-SERVICE ARTICLES and SINGLE-USE ARTICLES.

7.4.7.2.7 Washing (28)

LINENS must be mechanically washed.

7.5 Poisonous and Toxic Materials

7.5.1 Identification

7.5.1.1 Labeling

7.5.1.1.1 *Manufacturer Label (31 C)*

Original containers of POISONOUS OR TOXIC MATERIALS and PERSONAL CARE ITEMS must bear a legible manufacturer's label.

7.5.1.1.2 *Working Containers (31 C)*

Working containers used for storing POISONOUS OR TOXIC MATERIALS such as cleaners and SANITIZERS taken from bulk supplies must be clearly and individually identified with the common name of the material.

7.5.2 Operational Supplies and Applications

7.5.2.1 Storage

7.5.2.1.1 *Pesticide/Rodenticide Locker (31 C)*

PESTICIDES, insecticides, and rodenticides must be stored in a locked area of the vessel that is not in a FOOD AREA.

7.5.2.1.2 *Cleaning Materials Locker (31 C)*

POISONOUS OR TOXIC MATERIALS used in the cleaning and maintenance of FOOD AREAS must be stored in a cleaning materials locker so they cannot contaminate FOOD, EQUIPMENT, UTENSILS, LINENS, and SINGLE-SERVICE ARTICLES and SINGLE-USE ARTICLES.

This does not apply to EQUIPMENT and UTENSIL cleaners and SANITIZERS stored in WAREWASHING areas for availability and convenience if the materials are stored to prevent CONTAMINATION of FOOD, EQUIPMENT, UTENSILS, LINENS, and SINGLE-SERVICE ARTICLES and SINGLE-USE ARTICLES.

7.5.2.2 Use

7.5.2.2.1 *Necessary Materials (31 C)*

Only POISONOUS OR TOXIC MATERIALS required for the operation and maintenance of a FOOD AREA of the vessel—such as for cleaning and sanitizing EQUIPMENT and UTENSILS and controlling insects and rodents—are allowed in the FOOD AREAS of the vessel.

7.5.2.2.2 Use Conditions (31 C)

POISONOUS OR TOXIC MATERIALS must be used according to the following:

- LAW and these standards.
- Manufacturer's use directions included in labeling (and, for a PESTICIDE, manufacturer's label instructions stating that use is allowed in a FOOD AREA).
- Conditions of certification (if certification is required) for use of the pest-control materials.

7.5.2.2.3 Application (31 C)

POISONOUS OR TOXIC MATERIALS must be applied in a manner that prevents

- A HAZARD to employees or other persons.
- CONTAMINATION including toxic residues resulting from drip, drain, fog, splash, or spray on FOOD; EQUIPMENT; UTENSILS; LINENS; and SINGLE-SERVICE ARTICLES and SINGLE-USE ARTICLES.

7.5.2.2.4 Restricted-Use Applications (31 C)

When a RESTRICTED-USE PESTICIDE is applied, FOOD, EQUIPMENT, UTENSILS, LINENS, and SINGLE-SERVICE ARTICLES and SINGLE-USE ARTICLES must be removed; covered with impermeable covers; or other precautions taken.

7.5.2.2.5 Restricted-Use Applicator (31 C)

A RESTRICTED-USE PESTICIDE must be applied only by an applicator certified as defined in 7 USC 136(e) Certified Applicator of the Federal Insecticide, Fungicide, and Rodenticide Act or a person under the direct supervision of a certified applicator.

7.5.2.2.6 Equipment Cleaning and Sanitizing (31 C)

FOOD EQUIPMENT and UTENSILS in the area treated must be cleaned and sanitized after the application.

7.5.2.2.7 Containers (31 C)

A container previously used to store cleanser, chemicals, or POISONOUS OR TOXIC MATERIALS must not be used to store, transport, or dispense FOOD. Additionally, FOOD containers must not be used to store, transport, or dispense cleanser, chemicals, or POISONOUS OR TOXIC MATERIALS.

7.5.2.3 Sanitizers and Other Food Area Chemicals**7.5.2.3.1 Sanitizers (31 C)**

Chemical SANITIZERS, including chemical sanitizing solutions generated on-site, and other chemical antimicrobials applied to FOOD-CONTACT SURFACES must meet the requirements specified in 40 CFR 180.940 Sanitizing Solutions.

7.5.2.3.2 *Chemicals for Fruits and Vegetables (31 C)*

Chemicals used to wash or peel raw whole fruits and vegetables must meet the requirements specified in 21 CFR 173.315 Chemicals Used in Washing or to Assist in the Peeling of Fruits and Vegetables (Annex 13.11).

7.5.2.3.3 *Boiler Water Additives (31 C)*

Chemicals used as boiler water ADDITIVES for culinary steam or other FOOD AREA purposes must meet the requirements specified in 21 CFR 173.310 Boiler Water ADDITIVES.

7.5.2.3.4 *Drying Agents (31 C)*

Drying agents used in conjunction with SANITIZATION must contain only components listed as one of the following:

- Generally recognized as safe for use in FOOD as specified in 21 CFR 182 Substances Generally Recognized as Safe or in 21 CFR 184 Direct FOOD Substances Affirmed as Generally Recognized as Safe.
- Generally recognized as safe for the intended use as specified in 21 CFR 186 Indirect FOOD Substances Affirmed as Generally Recognized as Safe.
- APPROVED for use as a drying agent under a prior sanction specified in 21 CFR 181 Prior-Sanctioned FOOD Ingredients.
- Specifically regulated as an indirect FOOD ADDITIVE for use as a drying agent as specified in 21 CFR Parts 175-178.
- APPROVED for use as a drying agent under the threshold of regulation process established by 21 CFR 170.39 Threshold of Regulation for Substances Used in FOOD-Contact Articles.

7.5.2.3.5 *Approved for Use with Chemical Sanitizers (31 C)*

When used with chemical SANITIZATION, drying agents must be specifically APPROVED for use with chemical sanitizing solutions.

7.5.2.3.6 *Lubricants (31 C)*

Lubricants must meet the requirements specified in 21 CFR 178.3570 Lubricants with Incidental food contact if they are used on FOOD-CONTACT SURFACES; on bearings and gears or within FOOD-CONTACT SURFACES; or on bearings and gears located so that lubricants may leak, drip, or be forced into FOOD or onto FOOD-CONTACT SURFACES.

7.5.2.4 Pesticides and Rodenticides

7.5.2.4.1 *Restricted-Use Pesticides (31 C)*

RESTRICTED-USE PESTICIDES used in FOOD AREAS must meet the requirements specified in 40 CFR 152 Subpart I Classification of

PESTICIDES.

7.5.2.4.2 *Rodent Bait (31 C)*

Rodent bait used in FOOD AREAS must be contained in a covered, tamper-resistant bait station.

7.5.2.4.3 *Tracking Powder Pesticides (31 C)*

A tracking powder PESTICIDE must not be used in a FOOD AREA.

7.5.2.4.4 *Nontoxic Tracking Powders (19)*

A nontoxic tracking powder such as talcum or flour, if used, must not contaminate FOOD.

7.5.2.4.5 *Prevent Contamination (28)*

If a nontoxic tracking powder such as talcum or flour is used, it must not contaminate EQUIPMENT, UTENSILS, LINENS, or SINGLE-SERVICE ARTICLES and SINGLE-USE ARTICLES.

7.5.3 Medicines

7.5.3.1 Restriction and Storage

7.5.3.1.1 *Necessary Medicines (31 C)*

Only medicines necessary for the health of the FOOD EMPLOYEES are allowed in a FOOD AREA.

7.5.3.1.2 *Medicine Labeling/Separation (31 C)*

Medicines in a FOOD AREA for FOOD EMPLOYEES' use must be labeled and be in an area such as the chef's office to prevent the CONTAMINATION of FOOD, EQUIPMENT, UTENSILS, LINENS, or SINGLE-SERVICE ARTICLES and SINGLE-USE ARTICLES.

7.5.3.1.3 *First Aid Supplies (31 C)*

First aid supplies in a FOOD AREA for FOOD EMPLOYEES' use must be labeled and stored in a kit or a container in a location that prevents the CONTAMINATION of FOOD, EQUIPMENT, UTENSILS, LINENS, or SINGLE-SERVICE ARTICLES and SINGLE-USE ARTICLES.

7.6 Facilities

7.6.1 Handwashing and Toilet Facilities for Food Employees

This applies to toilet facilities for FOOD EMPLOYEES even if those facilities are available to other crew members.

7.6.1.1 Handwashing Station Installation

7.6.1.1.1 *Convenient (29 C)*

Each FOOD PREPARATION AREA, bar, WAREWASHING area, and garbage-processing area must have at least one handwashing station.

This also applies to self-service and served candy shops where employees serve candy, refill self-service containers, etc.

7.6.1.1.2 8 Meters/26 Feet (29 C)

The handwashing station must be within 8 meters (26 feet) of all parts of the area and must not be in an adjacent area that requires passage through a closed door where users make hand contact with the door.

Handwashing sinks must be at least 750 millimeters (30 inches) above the deck, so users do not have to reach excessively to wash their hands.

Counter-mounted handwashing sinks may be installed a minimum of 600 millimeters (24 inches) above the deck, as measured at the counter level.

7.6.1.1.3 Tempered Water (29 C)

A handwashing sink must be equipped to provide water at a temperature of at least 29.4°C (85°F) through a mixing valve or combination faucet. For handwashing sinks with electronic sensors and other types of handwashing sinks where users cannot make temperature adjustments, the temperature after the mixing valve must not exceed 49°C (120°F).

7.6.1.1.4 Metered Faucet (30)

A self-closing, slow-closing, or metering faucet must provide a flow of water for at least 15 seconds without the need to reactivate the faucet.

7.6.1.1.5 Automatic Systems (30)

An automatic handwashing station must be installed in accordance with manufacturer's instructions.

7.6.1.1.6 Dispenser/Receptacle (30)

A handwashing station must include a sink, soap dispenser, single-use towel dispenser, and waste receptacle.

7.6.1.1.7 Sign (30)

A sign stating "wash hands often," "wash hands frequently," or similar wording in a language the FOOD EMPLOYEES understand must be posted over handwashing sinks.

7.6.1.2 Toilet Facility Installation**7.6.1.2.1 Convenient (29 C)**

Toilet rooms must be provided and conveniently located.

7.6.1.2.2 Handwashing Facilities (29 C)

Handwashing facilities must be in or immediately adjacent to toilet rooms or vestibules.

7.6.1.2.3 Sign (30)

A sign must be conspicuously posted on the BULKHEAD adjacent to the door of the toilet or on the back of the door. The sign must state "WASH HANDS AFTER USING TOILET" in a language the FOOD EMPLOYEES understand.

A sign must be posted advising users of toilet facilities to use hand towel, paper towel, or tissue to open the door unless the exit is hands free.

A pictogram that illustrates the correct use and disposal of paper towels may be used instead of a sign.

Toilet facilities must be equipped so persons exiting the toilet room are not required to touch the door handle with bare hands.

Where toilet stalls include handwashing facilities, the bare-hands-free contact must begin in the toilet stall. Toilet facilities with multiple exits must have bare-hands-free contact at each exit.

Bare-hands-free contact may be accomplished by methods such as locating paper towel dispensers at sinks and waste containers near the room door, installing mechanically operated doors, or using other effective means.

7.6.1.2.4 Enclosed/Doors (30)

Toilet rooms must be completely enclosed and must have tight-fitting, self-closing doors that must be kept closed except during cleaning or maintenance.

7.6.1.2.5 Waste Receptacle (30)

EASILY CLEANABLE receptacles must be provided for waste materials.

7.6.1.2.6 Unlocked (29 C)

Toilet facilities intended for use by FOOD EMPLOYEES must not be locked when the FOOD AREA is in service.

7.6.1.3 Handwashing and Toilet Facility Maintenance

7.6.1.3.1 Accessible (29 C)

Handwashing facilities must be used for no other purpose and must always be accessible.

7.6.1.3.2 Facilities Clean/Good Repair (30)

Handwashing facilities must be kept clean and in good repair.

7.6.1.3.3 Soap/Towels (30)

Each handwashing station must have a supply of hand-cleansing soap or detergent and a supply of single-service paper towels.

7.6.1.3.4 Toilets Clean/Good Repair (30)

Toilet fixtures must be kept clean and in good repair.

7.6.1.3.5 Toilet Tissue (30)

A supply of toilet tissue must be always provided at each toilet.

7.6.2 Self-Service Buffet Handwashing Stations

For passenger self-service buffets, this section applies to all vessels with a keel laid date of June 1, 2018, or later and any FOOD self-service areas that have been modified since June 1, 2018. Modifications include replacement, relocation, or addition of buffet self-service counter(s) or self-service EQUIPMENT.

7.6.2.1 Number (30)

Provide one obvious handwashing station per 100-people seating or fraction thereof. Stations must be equally distributed between the major entry points to the buffet area and must be separate from a toilet room.

7.6.2.2 Entries (30)

Provide handwashing stations at each minor entry to the main buffet areas proportional to the capacity, with at least one per entry. These handwashing stations can count toward the requirement of one station per 100 people.

7.6.2.3 Self-Service Stations Outside the Main Buffet (30)

Provide at least one handwashing station at the entrance of each self-service station outside of the main buffet. BEVERAGE stations are excluded.

7.6.2.4 Equipment and Supplies (30)

The handwashing station must include a handwashing sink with hot and cold water, soap dispenser, and single-use paper towel dispenser. Electric hand dryers can be installed in addition to paper towel dispensers. Each handwashing station must have a supply of hand-cleansing soap or detergent and a supply of single-service paper towels. Waste receptacles must be provided near the handwashing sink and sized to accommodate the quantity of paper towel waste generated. The handwashing station may be decorative but must be nonabsorbent, durable, and easy to clean.

7.6.2.5 Automatic Handwashing System (30)

An automatic handwashing system instead of a handwashing sink is acceptable.

7.6.2.6 Sign (30)

Each handwashing station must have a sign advising everyone to wash their hands before eating. **A pictogram can be used instead of words on the sign.**

7.6.2.7 Location (30)

Position the handwashing stations along the flow to the buffets. **Stations can be installed just outside of the entry.**

7.6.2.8 Lighting (36)

The light intensity must be at least 110 lux (10 foot-candles) at handwashing stations.

7.6.3 Solid Waste

7.6.3.1 Waste-Handling Receptacles and Containers

7.6.3.1.1 Containers (32)

Receptacles and containers for REFUSE and recyclables and for use with materials containing FOOD residue must be durable, nonabsorbent, EASILY CLEANABLE, and leakproof.

7.6.3.1.2 Insect/Rodent Resistant (32)

Receptacles and containers for REFUSE and recyclables and for use with materials containing FOOD residue must be insect and rodent resistant and must have tight-fitting lids.

7.6.3.1.3 Covered/Provided (32)

Receptacles and containers must be kept covered when not in continuous use and after they are filled.

7.6.3.1.4 Location (32)

A receptacle or container must be provided in each area of the vessel or premise where REFUSE is generated or commonly discarded or where recyclables are placed.

7.6.3.1.5 Washing Facilities (32)

Facilities suitable for washing receptacles and containers must be separate from FOOD EQUIPMENT and UTENSIL storage areas or FOOD PREPARATION AREAS.

7.6.3.1.6 Design/Supplies (32)

The designated container wash area must be EASILY CLEANABLE and have tempered water, access to detergent, and suitable drainage.

7.6.3.1.7 Cleaned (32)

Receptacles and containers must be cleaned when emptied.

7.6.3.2 Garbage and Refuse Storage Room

7.6.3.2.1 Easily Cleanable/Durable (32)

The dry and refrigerated garbage and REFUSE storage room must be constructed of EASILY CLEANABLE, corrosion-resistant, nonabsorbent, and durable materials.

7.6.3.2.2 Size (32)

The garbage and REFUSE storage room must be large enough to store and process the garbage and REFUSE.

7.6.3.2.3 Prevent Contamination (32)

The garbage and REFUSE storage room must be located to prevent CONTAMINATION in FOOD PREPARATION, FOOD STORAGE, and UTENSIL washing areas.

7.6.3.2.4 *Good Repair/Clean (32)*

The garbage and REFUSE storage room must be maintained in good repair and kept clean.

7.6.4 Liquid Waste Disposal and Plumbing**7.6.4.1 Drain Lines****7.6.4.1.1 *Drain Lines (19)***

Drain lines from all fixtures; sinks; appliances; compartments; refrigeration units; or devices used, designed for, or intended to be used in the a) preparation, b) processing, c) storage, or d) handling of FOOD, ice, or drinks must be indirectly connected to appropriate waste systems by means of an AIR GAP or AIR BREAK.

Drain lines from handwashing and mop sinks may be directly connected to the appropriate waste system.

7.6.4.1.2 *Overhead (19)*

Drain lines carrying SEWAGE or other liquid waste must not pass directly overhead or horizontally through spaces used for preparing, serving, or storing FOOD or for washing or storing UTENSILS and EQUIPMENT. Drain lines that are unavoidable in these FOOD AREAS must be sleeve-welded and must not have mechanical couplings.

7.6.4.1.3 *Warewash Sink/Machine Drains (28)*

All drain lines from WAREWASHING sinks or machines must drain through an AIR GAP or AIR BREAK to a drain or SCUPPER.

7.6.4.2 Liquid Waste Disposal**7.6.4.2.1 *Discharge (35)***

BLACK and GRAY WATER must be discharged to the vessel's wastewater disposal system and must not pool on the deck.

7.6.4.2.2 *Leakage (35)*

Leakage of SEWAGE tanks or discharge of SEWAGE into the bilge or other areas on the vessel is prohibited.

7.6.4.3 Plumbing**7.6.4.3.1 *Good Repair (34)***

The PLUMBING SYSTEM in FOOD AREAS must be in good repair.

7.6.5 Decks, Bulkheads, and Deckheads

This also applies to self-service and served candy shops where employees serve candy and refill self-service containers and CONSUMERS serve themselves.

7.6.5.1 Cleanable (33)

Decks, BULKHEADS, and DECKHEADS in FOOD preparation, WAREWASHING, pantries, bars, and FOOD and EQUIPMENT storage areas must be constructed and maintained for easy cleaning.

Decks may be of nonskid construction provided they are EASILY CLEANABLE. Carpet is not considered EASILY CLEANABLE and must not be used in these areas.

7.6.5.2 Coving (33)

BULKHEAD/deck, EQUIPMENT/deck, cabinet/deck, counter/BULKHEAD/backsplash and DECK SINK coaming/deck junctures must have COVING. This applies to galleys, pantries, buffets, bars, waiter stations, dining room work counters, provisions, scrapping stations, FOOD STORAGE ROOMS, FOOD TRANSPORTATION CORRIDORS, EQUIPMENT or UTENSIL storage rooms, and toilet rooms intended for use by FOOD EMPLOYEES.

This does not apply to consumer sides of bars or to BEVERAGE storage containing unopened BEVERAGES in guest or crew public spaces.

7.6.5.3 Finishes (33)

BULKHEADS and DECKHEADS must have SMOOTH, hard finishes.

7.6.5.4 Corrosion Resistant (33)

Decks, BULKHEADS, and DECKHEADS in FOOD PREPARATION, WAREWASHING, pantries, and storage areas must be corrosion resistant.

7.6.5.5 Attached Equipment (33)

Light fixtures, vent covers, and similar EQUIPMENT attached to the BULKHEADS or DECKHEADS must be EASILY CLEANABLE.

7.6.5.6 Exposed Lines (33)

Exposed utility service lines and pipes, including lines for fire detection and protection systems, must be installed so they do not obstruct or prevent cleaning.

7.6.5.7 Cleanable Surfaces (33)

Surfaces subject to routine splashes, spillage, or other soiling during normal use must have EASILY CLEANABLE features.

7.6.5.8 Deck Mats (33)

Mats must be designed to be REMOVABLE and EASILY CLEANABLE.

7.6.5.9 Clean (33)

Decks, BULKHEADS, DECKHEADS, and attached EQUIPMENT in FOOD PREPARATION, WAREWASHING, pantries, and storage areas must be cleaned as often as necessary.

7.6.5.10 Timing (33)

Cleaning must be done during periods when the least amount of FOOD is exposed.

7.6.5.11 Good Repair (33)

Decks, BULKHEADS, and DECKHEADS in FOOD PREPARATION, WAREWASHING, pantries, and storage areas must be maintained in good repair.

7.6.5.12 Ventilation (33)

Slots for supply ventilation over the void space (plenum) are not allowed directly over FOOD PREPARATION AREAS, FOOD STORAGE AREAS, or clean EQUIPMENT storage.

This section applies to vessels built or renovated in accordance with the *2011 VSP Construction Guidelines* or later.

7.6.6 Lighting

This section also applies to self-service and served candy shops where employees serve candy and refill self-service containers and CONSUMERS serve themselves.

7.6.6.1 Intensity

7.6.6.1.1 220 Lux/20 Foot-Candles (36)

The light intensity must be at least 220 lux (20 foot-candles) on FOOD preparation surfaces.

The light intensity must be at least 220 lux (20 foot-candles) as measured 750 millimeters (30 inches) above the deck in FOOD PREPARATION AREAS, handwashing facilities, WAREWASHING areas, EQUIPMENT, and UTENSIL storage, pantries, toilet rooms, and CONSUMER self-service areas.

7.6.6.1.2 110 Lux/10 Foot-Candles (36)

When lights are in use, the light intensity must be at least 110 lux (10 foot-candles) at 750 millimeters (30 inches) above the deck in walk-in refrigerator units, DRY STORAGE AREAS, LINEN storage, waiter stations, scrapping stations, and handwashing stations in bars.

The light intensity must be at least 110 lux (10 foot-candles) behind and around mounted EQUIPMENT, including counter-mounted EQUIPMENT.

7.6.6.1.3 Light Intensity During Cleaning Operations (36)

In bars and dining room waiter stations, the light intensity must be at least 220 lux (20 foot-candles) during cleaning operations. This includes open shelves (such as shelves without doors or shutters) where FOOD and BEVERAGES are stored.

7.6.6.2 Light Bulbs (36)

Light bulbs must be shielded, coated, or otherwise shatter resistant in areas with exposed FOOD; clean EQUIPMENT, UTENSILS, and LINENS; or unwrapped SINGLE-SERVICE ARTICLES and SINGLE-USE ARTICLES.

An infrared or other heat lamp must be protected against breakage by a shield surrounding and extending beyond the bulb so only the face of the bulb is exposed.

7.6.7 Ventilation**7.6.7.1 Sufficient (37)**

All FOOD PREPARATION AREAS, WAREWASHING areas, and toilet rooms must have sufficient ventilation to keep them free of excessive heat, steam, condensation, vapors, obnoxious odors, smoke, and fumes.

7.6.7.2 Effective (37)

Ventilation hood systems and devices must operate effectively to prevent grease and condensate from collecting on the BULKHEADS and DECKHEADS and to remove contaminants generated by EQUIPMENT located under them.

7.6.7.3 No Contamination (37)

Heating, ventilating, and air conditioning systems must be designed and installed so that make-up air intake and exhaust vents do not cause CONTAMINATION of FOOD, FOOD-CONTACT SURFACES, EQUIPMENT, or UTENSILS.

7.6.7.4 Filters (37)

Filters and other grease-extracting EQUIPMENT must be designed to be readily REMOVABLE for cleaning and replacement if not designed to be CLEANED IN PLACE. Intake and exhaust air ducts must be cleaned, and filters changed so they are not a source of CONTAMINATION by dust, dirt, and other materials.

7.6.8 Cleaning Equipment and Unnecessary Articles**7.6.8.1 Storage****7.6.8.1.1 Necessary Articles (38)**

Only articles necessary for the operation of FOOD service areas must be stored in FOOD PREPARATION, FOOD STORAGE, and WAREWASHING areas.

7.6.8.1.2 Cleaning Locker (38)

Maintenance tools such as mops, brooms, and similar items must be stored in a designated locker, so they do not contaminate FOOD, FOOD-CONTACT SURFACES of UTENSILS and EQUIPMENT, LINENS, or SINGLE-SERVICE ARTICLES and SINGLE-USE ARTICLES.

7.6.8.1.3 Labeled (38)

The locker must be labeled "CLEANING MATERIALS ONLY."

7.6.8.1.4 Orderly Manner (38)

Maintenance tools such as mops, brooms, and similar items must be stored in an orderly manner that facilitates cleaning of the area used for storing the maintenance tools.

7.6.8.1.5 Mop Drying (38)

After use, mops must be placed in a position that allows them to air dry without soiling walls, EQUIPMENT, or supplies.

7.6.8.1.6 *Bucket Storage (38)*

Buckets or other containers for washing, rinsing, and sanitizing can be stored with maintenance tools if they are stored inverted and nested.

7.7 Water Filling Stations and Drinking Fountains in Nonfood Areas

This section applies to bulkhead-recessed, bulkhead-mounted, freestanding POTABLE WATER filling stations and to drinking fountains outside of FOOD AREAS for crew and passengers. These areas include passenger and crew corridors, gym, spa, engine control room, jogging track, child activity centers, and provision corridors.

7.7.1 Lighting (36)

The light intensity must be at least 220 lux (20 foot-candles) at the dispensing nozzle(s) and the filling surface(s) during cleaning operations. This does not apply to outdoor drinking fountains.

8.0 Integrated Pest Management (IPM)

This section includes the following subsections:

- 8.1 Plan Development, Evaluation, and Use of Pesticides
- 8.2 Pest Control
- 8.3 Integrated Pest Management Knowledge

References for 8.0 Integrated Pest Management (IPM) can be found in Annex 14.8.

8.1 Plan Development, Evaluation, and Use of Pesticides

8.1.1 IPM Plans

8.1.1.1 IPM Plan (40)

Each vessel must have an IPM plan to implement effective monitoring and control strategies for pests on the vessel.

8.1.1.2 Monitoring (40)

The IPM plan must set a schedule for periodic active monitoring inspections, including some at night or during periods of no or minimal activity.

8.1.1.3 Logs (40)

The IPM plan must include provisions for logs for active monitoring of pest sightings in operational areas of the vessel. The IPM plan also must include provisions for training of crew members in charge of log completion. The time of the active monitoring inspections must be recorded in the log.

8.1.1.4 Passive Surveillance (40)

The IPM plan must include passive surveillance procedures such as glue traps or other passive monitoring devices and must include the location of each. A passive device monitoring log must be maintained.

8.1.1.5 Action and Follow Up (40)

When pests are observed during an inspection, the log must include action taken as well as follow-up inspection results.

8.1.2 Plan Evaluation

8.1.2.1 Evaluation (40)

The IPM plan must be evaluated for effectiveness periodically or whenever there is a significant change in the vessel's operation or structure (for example, renovation).

Evaluation may be required more frequently in areas where pest infestations cannot be controlled.

8.1.2.2 Reviews (40)

IPM plan evaluations and changes must be documented in the IPM plan.

8.1.2.3 Inspections (40)

The IPM plan, monitoring records, and other documentation must be available for review during inspections.

8.1.3 IPM and Pesticide Use**8.1.3.1 Pesticide Application****8.1.3.1.1 *Pesticide Record (40)***

The IPM plan must include a record of GENERAL-USE and RESTRICTED-USE PESTICIDES used to control pests and vectors. The record must include all GENERAL-USE and RESTRICTED-USE PESTICIDES currently on the vessel and those used in the previous 12 months.

8.1.3.1.2 *Restricted Use (39 C)*

A RESTRICTED-USE PESTICIDE must be applied only by a certified applicator or a person with training and testing equivalent to that of a certified applicator.

8.1.3.1.3 *Applicator Training (40)*

Training of the pest-control personnel must be documented.

8.1.3.1.4 *Safety (40)*

The IPM plan must establish health and safety procedures to protect the passengers and crew.

8.2 Pest Control**8.2.1 Food Areas Exclusion****8.2.1.1 *Effective Control (39 C)***

The presence of insects, rodents, and other pests must be effectively controlled to minimize their presence in FOOD AREAS.

8.2.1.2 *Exclusion (40)*

Entry points where pests may enter the FOOD AREAS must be protected.

Rat guards must be made of a durable and nonchewable material. Rat guards must be used according to the manufacturer's specifications for the effective prevention of pest migration.

Rat guards must be on all lines that go ashore on arrival and until 1 hour before the ship leaves port. Each line must have at least one rat guard placed either as far as practicable from the pier or as far as practicable from the ship but still close enough for any openings to be stuffed with nonchewable material. Rat guards must not be staggered on adjacent lines, and a group of lines must not be merged onto one rat guard.

8.2.1.3 *Incoming Food and Other Supplies (40)*

Incoming shipments of FOOD and all other supplies must be routinely inspected for evidence of insects, rodents, and other pests. A record of these inspections

must be available for review during inspections.

8.2.1.4 IPM Inspections (40)

All FOOD AREAS must be inspected at a frequency that can quickly detect the evidence of pests, harborage conditions, cleanliness, and protection of outer openings.

Reasonable care must be given to conduct inspections in nonfood areas for the presence of insects, rodents, and other pests.

The garbage handling areas of the vessel must be inspected at least weekly for the presence of insects, rodents, and other pests. The results of these inspections must be maintained in a log. **These results may be included in the log of the FOOD AREA inspections.**

8.2.2 Control Measures

8.2.2.1 Chemical Controls (39 C)

Chemical control measures must conform to products and application procedures specifically allowed in the FOOD safety section of these standards and the vessel's IPM plan.

8.2.2.2 Physical

8.2.2.2.1 Insect-Control Devices (40)

Insect-control devices that electrocute or stun flying insects are not permitted in FOOD AREAS.

8.2.2.2.2 Food Protection (19)

Insect-control devices such as insect light traps must not be located over FOOD STORAGE AREAS, FOOD PREPARATION AREAS, FOOD SERVICE AREAS, or clean EQUIPMENT. Dead insects and insect fragments must be prevented from falling on exposed FOOD.

8.2.2.2.3 Utensil Protection (28)

Insect-control devices must not be located over WAREWASHING, UTENSIL storage areas, EQUIPMENT, UTENSILS, LINENS, or unwrapped SINGLE-SERVICE ARTICLES or SINGLE-USE ARTICLES. Dead insects and insect fragments must be prevented from falling on clean items.

8.2.2.2.4 Cleaning (40)

Dead or trapped insects, rodents, and other pests must be removed from control devices and the vessel at a frequency that prevents their accumulation or decomposition or the attraction of other pests.

8.3 IPM Knowledge

8.3.1 Demonstration of Knowledge (44)

The supervisor or person responsible for IPM operations on the vessel must demonstrate to VSP—on request during inspections—knowledge of IPM operations.

The person must demonstrate this knowledge by compliance with this section of these standards or by responding correctly to the inspector's questions as they relate to the specific operation. In addition, the supervisor or person responsible for IPM operations on the vessel must ensure that employees are properly trained to comply with this section of these standards as it relates to their assigned duties.

9.0 Housekeeping

This section includes the following subsections:

- 9.1 OUTBREAK Prevention and Management Procedures
- 9.2 Housekeeping Knowledge

References for 9.0 Housekeeping can be found in Annex 14.9.

9.1 Outbreak Prevention and Management Procedures

9.1.1 Disinfection

9.1.1.1 Disinfectant (41)

DISINFECTANT products or systems (for example, on-site hypochlorous acid generators) must be effective against human norovirus or an acceptable surrogate (for example, calicivirus) and used according to the manufacturer's instructions (such as concentration, contact time, and approved surfaces). Surfaces must be cleaned thoroughly before DISINFECTION.

9.1.1.1.1 Continuous Disinfection of Public Areas (41)

When the cumulative percentage of REPORTABLE AGE CASES among passengers or crew members is greater than or equal to 2%, the OUTBREAK management response must include cleaning and disinfecting all public areas, including handrails and restrooms, on a continuous basis while passengers or crew are circulating in those areas.

This process involves DISINFECTION of hand-contact surfaces of all public areas throughout the ship, including handrails and restrooms. These areas are identified in the OUTBREAK prevention and response plan (OPRP). Workers disinfect these surfaces without interruption along a logical route by deck, venue, and area when people are present or circulating in these areas.

9.1.1.1.2 Cabin Cleaning (41)

Cabins that house passengers or crew with AGE must be cleaned and disinfected daily while the occupants are ill.

9.1.1.1.3 Precautionary Measures (41)

Precautionary measures by housekeeping personnel must be taken in consultation with the vessel's medical staff to prevent the spread of AGE.

Precautionary measures by housekeeping personnel may include using disposable personal protection EQUIPMENT, including gloves that are changed after each cabin; cleaning cabins with ill passengers or crew after all other cabins; or having specific crew members only clean cabins of ill passengers or crew.

9.1.2 Written OPRP (41)

Each vessel must have a written OUTBREAK prevention and response plan (OPRP) that details standard procedures and policies to specifically address AGE. The written OPRP must include the following at a minimum:

- Duties and responsibilities of each department and their staff for all passenger and crew public areas.
- Steps in OUTBREAK management and control and the trigger required for action at each step.

At a minimum, triggers must address a graduated approach to OUTBREAK management in response to increasing case counts. **Additionally, triggers may be based on events, such as reports of public vomiting or diarrhea, increased room service requests, meal or excursion cancellations, missed events, or others.**

Cruise ship AGE surveillance data has shown that a 0.45% daily ATTACK RATE is indicative of a pending OUTBREAK.

- DISINFECTANT products or on-site DISINFECTANT generators (such as generators making hypochlorous acid [electrolyzed water, electrochemically activated water, and electroactivated water]) used, including the surfaces or items the DISINFECTANTS will be applied to, concentrations, and required contact times.

On-site DISINFECTANT generators must generate output solutions that constitute an effective DISINFECTANT when used according to the manufacturer's instructions. Include and follow parameters for use (concentration, contact time, PH, approved surfaces, and other applicable factors) in the OPRP.

For on-site DISINFECTANT generators, the following must be available for inspector review:

- Studies demonstrating effectiveness against human norovirus or an acceptable surrogate (for example, calicivirus).
 - Device operating and maintenance procedures.
- Procedures for informing passengers and crew members of the OUTBREAK. This section should address the procedures for notification of passengers embarking the vessel after an OUTBREAK voyage. In the case of an extended voyage separated into segments, such as a world cruise, this requirement applies to passengers embarking for the segment after an OUTBREAK segment.
 - Procedures for returning the vessel to normal operating conditions after an OUTBREAK.

- Procedures to protect the passengers and crew from exposure to DISINFECTANTS, if not already included in the vessel's safety management system. At a minimum, this must include the following:
 - Safety data sheets (SDSs).
 - Personal protective equipment for crew.
 - Health and safety procedures to minimize respiratory and dermal exposures to both passengers and crew.

Wash contaminated linen with an adequate amount of detergent at a minimum temperature of 71°C (160°F) for a minimum of 25 minutes. Many factors contribute to the effectiveness of the laundering process. These include washer and dryer machine cycles, water temperature, and detergent.

9.1.3 Public Toilet Facilities (41)

Passenger and crew public toilets facilities (not including those in FOOD AREAS) must be provided with a handwashing station that includes the following:

- Hot and cold running water.
- Soap.
- A method to dry hands (for example, sanitary hand-drying device, paper towels).
- A sign advising users to wash hands. (Pictograms are acceptable.)

9.1.3.1 Hands-Free Exit (41)

Passenger and crew public toilet facilities must be equipped so persons exiting the toilet room are not required to touch the door handle with bare hands.

Where toilet stalls include handwashing facilities, the bare-hands-free contact must begin in the toilet stall. Toilet facilities with multiple exits, such as spa dressing rooms, must have bare-hands-free contact at each exit **leading to the public area (such as corridor, outside deck).**

Bare-hands-free contact may be accomplished by methods such as locating paper towel dispensers at sinks and waste containers near the room door, installing mechanically operated doors, removing doors, or using other effective means.

9.1.3.2 Sign (41)

A sign must be posted advising users of toilet facilities to use hand towel, paper towel, or tissue to open the door unless the exit is hands free.

A pictogram that illustrates the correct use and disposal of paper towels may be used instead of a sign.

9.2 Housekeeping Knowledge

9.2.1 Demonstration of Knowledge (44)

The supervisor or person responsible for housekeeping operations on the vessel must demonstrate to VSP—on request during inspections—knowledge of housekeeping operations.

The person must demonstrate this knowledge by compliance with this section of these standards or by responding correctly to the inspector's questions as they relate to the specific operation. In addition, the supervisor or person responsible for housekeeping operations on the vessel must ensure that employees are properly trained to comply with this section of these standards as it relates to their assigned duties.

10.0 Child Activity Centers

This section includes the following subsections:

- 10.1 Diaper Changing
- 10.2 Toilets and Handwashing
- 10.3 Cleaning and DISINFECTION
- 10.4 Exclusions
- 10.5 Child Activity Center Knowledge

References for 10.0 Child Activity Centers can be found in Annex 14.10.

10.1 Diaper Changing

10.1.1 Diaper-Changing Facilities

10.1.1.1 Diaper Changing (42)

If children who wear diapers are accepted in the CHILD ACTIVITY CENTER, diaper-changing stations and disposal facilities must be provided.

10.1.1.2 Diaper-Changing Stations (42)

Each station must include the following:

- A changing table that is nonabsorbent, nontoxic, smooth, durable, easy-to-clean, and designed for diaper changing.
- A supply of disposable diapers, gloves, wipes, table cleanser, and DISINFECTANT.
- An airtight soiled-diaper receptacle.
- An adjacent handwashing station.

10.1.1.3 Signs (42)

Signs must be posted in the diaper changing area advising handwashing after each diaper change.

10.2 Toilets and Handwashing

10.2.1 Employee Handwashing (42)

Vessels constructed to the *VSP 2005 Construction Guidelines* or later must have at least one handwashing station separate from the **children's** toilet room(s). The handwashing station must be kept clean and must always be accessible.

10.2.2 Facilities

Step stools are only acceptable for vessels constructed to the *VSP 2011 Construction Guidelines* or earlier.

10.2.2.1 Child-Sized Toilet (42)

If toilet rooms are in a CHILD ACTIVITY CENTER, CHILD-SIZED TOILET(s), or toilet with child-sized seat and step stool and handwashing facilities must be provided.

CHILD-SIZED TOILETS (to include the toilet seat) must have a maximum height of 305 millimeters (12 inches) and a toilet seat opening no greater than 203 millimeters (8 inches).

10.2.2.2 Toilet Supplies (42)

Each child's toilet facility must be provided with a supply of toilet tissue, disposable gloves, and sanitary wipes.

10.2.2.3 Handwashing Stations (42)

The maximum water temperature for a handwashing station must not exceed 43°C (110°F).

Handwashing sinks must have a maximum height of 560 millimeters (22 inches) above the deck or a step stool must be provided.

Soap, paper towels or air dryers, and a waste towel receptacle must be located at handwashing stations.

10.2.2.4 Waste Receptacle (42)

An airtight, washable waste receptacle must be conveniently located to dispose of excrement, soiled sanitary wipes, and soiled gloves. Waste materials must be removed from the CHILD ACTIVITY CENTER each day.

10.2.2.5 Signs (42)

Signs must be posted in children's toilet room with the exact wording "Wash your hands and assist the children with handwashing after helping them use the toilet."

10.2.2.6 Assistance (42)

Children under 6 years old must be assisted in washing their hands in the CHILD ACTIVITY CENTER after using the toilet room, before eating, and after otherwise contaminating their hands.

10.2.2.7 Separate (42)

Separate toilet facilities must be provided for CHILD ACTIVITY CENTER staff. CHILD ACTIVITY CENTER staff must not use the children's toilet facilities. Public toilet facilities are acceptable.

10.2.2.8 Exiting (41)

Toilet rooms must be equipped so that persons exiting the toilet room are not required to touch the door handle or button with bare hands.

Bare-hands-free contact may be accomplished by methods such as locating paper towel dispensers at sinks and waste containers near the room door, installing mechanically operated doors, removing doors, or using other effective means.

10.2.2.9 Child-Sized Handwashing Station (42)

Handwashing stations designated for children and located outside toilet rooms must meet the requirements in section 10.2.2.3.

10.3 Cleaning and Disinfection

10.3.1 Employee Handwashing (12 C)

Childcare providers must wash their hands before giving FOOD or BEVERAGES to children.

10.3.2 Furnishings and Toys

10.3.2.1 Construction

10.3.2.1.1 *Cleanable (42)*

Surfaces of tables, chairs, and other furnishings that children touch with their hands must be cleanable.

10.3.2.1.2 *Condition (42)*

Toys used in the CHILD ACTIVITY CENTER must be cleanable and maintained in a clean condition.

10.3.2.2 Procedures

10.3.2.2.1 *Hard Surfaces (42)*

Surfaces that children touch with their hands must be cleaned and disinfected daily with products labeled by the manufacturer for that purpose.

10.3.2.2.2 *Toy Cleaning and Ball Pits (42)*

Toys used in the CHILD ACTIVITY CENTER must be cleaned and disinfected daily.

Balls used in ball pits/pens must be cleaned when contaminated or at least once per week.

If a chemical DISINFECTANT is used, toys must be air dried before use.

10.3.2.2.3 *Tables and Highchairs (42)*

Tables and highchair trays must be cleaned and disinfected before and after they are used for eating.

10.3.2.2.4 *Decks (42)*

Carpeting must be vacuumed daily and must be periodically cleaned when it becomes visibly soiled. Decks must be washed and disinfected when soiled or at least daily.

10.3.2.2.5 *Facility Cleaning and Disinfecting (42)*

Diaper changing stations, handwashing facilities, and toilet rooms must be cleaned and disinfected daily and when soiled during use.

10.3.2.2.6 *Linens Laundered (42)*

LINENS such as blankets, sheets, and pillowcases must be laundered between each use.

10.3.2.2.7 *Costumes (42)*

Costumes worn by children—including clothing items, masks, and

hats—must be laundered, cleaned and disinfected, discarded, retained by the guest, or dry cleaned between each use.

10.4 Exclusions

10.4.1 Children with Infectious Illness

10.4.1.1 Procedures

10.4.1.1.1 *Written Guidance (42)*

Written guidance on symptoms of common childhood infectious illnesses must be posted at the entrance of the CHILD ACTIVITY CENTER.

10.4.1.1.2 *Exclusion Policy (42)*

The CHILD ACTIVITY CENTER must have a written exclusion policy on procedures to be followed when a child develops symptoms of an infectious illness while at the center.

The policy must include a requirement for written clearance from the medical staff before a child with symptoms of infectious illness can be allowed in the CHILD ACTIVITY CENTER.

This policy must be posted in a prominent location at the entrance of the CHILD ACTIVITY CENTER.

10.4.1.1.3 *Infectious Illness (42)*

Children with symptoms of an infectious illness must not be allowed in the CHILD ACTIVITY CENTER without written permission from vessel medical staff.

10.5 Child Activity Center Knowledge

10.5.1 Demonstration of Knowledge (44)

The supervisor or person responsible for CHILD ACTIVITY CENTER operations on the vessel must demonstrate to VSP—on request during inspections—knowledge of CHILD ACTIVITY CENTER operations.

The person must demonstrate this knowledge by compliance with this section of these standards or by responding correctly to the inspector's questions as they relate to the specific operation. In addition, the supervisor or person responsible for CHILD ACTIVITY CENTER operations on the vessel must ensure that employees are properly trained to comply with this section of these standards as it relates to their assigned duties.

11.0 Heating, Ventilation, and Air Conditioning (HVAC) Systems, Fountains, Misting Systems, Humidifiers, and Showers

This section includes the following subsections:

- 11.1 HVAC Construction and Maintenance
- 11.2 Fountains, Humidifiers, Misting Systems, and Showers
- 11.3 HVAC Systems, Fountains, Misting Systems, Humidifiers, and Showers Knowledge

References for 11.0 Heating, Ventilation, and Air Conditioning (HVAC) Systems, Fountains, Misting Systems, Humidifiers, and Showers can be found in Annex 14.11.

11.1 HVAC Construction and Maintenance

11.1.1 Construction

11.1.1.1 Condensate Pans (43)

Air handling unit condensate drain pans and collection systems must be able to be accessed for inspection, maintenance, and cleaning. Installation of sight windows or other effective methods for full inspection of condensate collection pans must be used when original equipment access makes evaluation during operational inspections impractical.

11.1.1.2 Self Draining (43)

Condensation collection pans must be self-draining.

11.1.1.3 Potable Water (43)

Only POTABLE WATER can be used for cleaning the HVAC system.

11.1.2 Maintenance

11.1.2.1 Air Handling Units (43)

Air handling units must be kept clean.

11.1.2.2 Condensers (43)

Evaporative condensers must be inspected at least annually and cleaned as necessary to remove scale and sediment. Cooling coils and condensate pans must be cleaned as necessary to remove dirt and organic material.

11.1.2.3 Inspection and Maintenance Plan (43)

Vessels must have a plan to inspect and maintain HVAC systems in accordance with the manufacturer's recommendations and industry standards. The written inspection, cleaning, and maintenance plan for the HVAC system must be maintained on the vessel and available for review during inspections.

Documentation of the inspection, cleaning, and maintenance plan must be available for review during inspections.

An electronic maintenance tracking system is acceptable for both the plan and the documentation if the work description and action completed are available.

11.2 Fountains, Humidifiers, Misting Systems, and Showers

11.2.1 Fountains, Humidifiers, and Misting Systems

11.2.1.1 Water Source

11.2.1.1.1 *Sprays (43)*

Only POTABLE WATER can be used for water sprays, decorative fountains, humidifiers, and misting systems. The water must be further treated to avoid microbial buildup in the operation of water sprays, fountains, humidifiers, and misting systems.

11.2.1.2 Fountains and Misting Systems

11.2.1.2.1 *Clean (43)*

Decorative fountains and misting systems must be maintained free of *Mycobacterium*, *Legionella*, algae, and mold growth.

For systems installed after the adoption of the *VSP 2011 Operations Manual*,

- Provide an automated treatment system (halogenation, UV, or other effective DISINFECTANT) to prevent the growth of *Mycobacterium* and *Legionella* in any decorative fountain, misting system, or similar facility.
- Ensure that nozzles are REMOVABLE for cleaning and DISINFECTION.
- Ensure that pipes and reservoirs can be drained when the fountain/system is not in use.

PORTABLE units must be kept clean.

11.2.1.2.2 *Shock Treatment (43)*

For misting systems and similar facilities, ensure that these systems can also be manually disinfected (halogenation, heat, etc.).

If heat is used as a DISINFECTANT, ensure that the water temperature, as measured at the misting nozzle, can be maintained at 65°C (149°F) for a minimum of 10 minutes.

11.2.2 Hot-Water System and Showers

11.2.2.1 Maintenance

11.2.2.1.1 *Hot-Water System (43)*

The potable hot-water system—including shower heads—must be maintained to preclude growth of *Mycobacterium* or *Legionella*.

11.2.2.1.2 *Showers (43)*

Shower heads must be cleaned and disinfected every 6 months. DISINFECTION must be accomplished with an appropriate HALOGEN-based DISINFECTANT at 10 MG/L (ppm) for 60 minutes, or an

equivalent CT VALUE.

Shower head cleaning and DISINFECTION must be recorded in a log and maintained on the vessel.

11.3 HVAC Systems, Fountains, Misting Systems, Humidifiers, and Showers Knowledge

11.3.1 Demonstration of Knowledge (44)

The supervisor or person responsible for HVAC operations on the vessel must demonstrate to VSP—on request during inspections—knowledge of HVAC systems, fountains, misting systems, humidifiers, and showers operations.

The person must demonstrate this knowledge by compliance with this section of these standards or by responding correctly to the inspector's questions as they relate to the specific operation. In addition, the supervisor or person responsible for HVAC systems, fountains, misting systems, humidifiers, and showers operations on the vessel must ensure that employees are properly trained to comply with this section of these standards as it relates to their assigned duties.

12.0 Administrative Guidelines

This section includes the following subsections:

- 12.1 Inspections
- 12.2 Inspection Report
- 12.3 Risk-Based Scoring and Correction Priority
- 12.4 Closing Conference
- 12.5 Inspection Review
- 12.6 Corrective Action Statement
- 12.7 Correction Affidavit
- 12.8 Inspection Publication
- 12.9 Recommendation That the Vessel Not Sail
- 12.10 Reinspections and Follow-up Inspections
- 12.11 Construction and Renovation Inspections
- 12.12 Other Environmental Investigations
- 12.13 VARIANCES

Refer to Annex 13.18 for information on how to access inspection reports. References for 12.0 Administrative Guidelines can be found in Annex 14.12.

12.1 Inspections

12.1.1 Routine Inspections

VSP conducts unannounced sanitation inspections twice a year if a vessel is available.

12.1.2 Ship Sanitation Certificates

VSP may choose to issue a ship sanitation certificates on request during VSP routine, unannounced inspections of cruise ships.

12.1.3 Inspectors

VSP inspectors are trained in the interpretation and application of the current *VSP Environmental Public Health Standards*.

12.1.4 Boarding

VSP inspectors will board the vessel and immediately inform the master of the vessel or a designated agent that a vessel sanitation inspection is to be conducted.

12.1.5 Sequence

VSP inspectors will then conduct the inspection in a logical sequence until all areas identified in these standards have been inspected.

12.1.6 Imminent Health Hazard Detection

VSP inspectors will contact the master of the vessel or a designated agent and the VSP Chief immediately during an inspection about a possible recommendation that the vessel not sail

- If an IMMINENT HEALTH HAZARD as specified in section 12.9.1 is found to exist on the vessel **AND**
- If these deficiencies possibly cannot be corrected before the inspection is completed.

12.1.7 Incomplete Inspections

Once an inspection has begun, it will be completed in that same visit. If the inspection cannot be completed, the results of an incomplete inspection will be discussed with the vessel's staff. A complete inspection will be conducted at a later date.

12.2 Inspection Report

12.2.1 Draft Report

12.2.1.1 Provided

VSP inspectors will provide a draft inspection report to the master of the vessel, or a designated agent, at the conclusion of the inspection.

12.2.1.2 Information

The draft inspection report will provide administrative information and inspection score.

12.2.1.3 Deficiency Descriptions

The draft inspection report will provide a written description of the items found deficient and where the deficiency was observed.

12.2.2 Final Report

12.2.2.1 Report Form

VSP inspectors will use the Vessel Sanitation Inspection Report (Annex 13.16) to summarize the inspection score. The inspection report will contain the elements in sections 12.2.2.2 through 12.2.2.5.

12.2.2.2 Administrative

The inspection report includes administrative information that identifies the vessel. It also includes the inspection report score, which is calculated by subtracting credit point values for all observed deficiencies from 100.

12.2.2.3 Deficiencies

The item number and the point value for that item number will be indicated if the vessel does not meet the current *VSP Environmental Public Health Standards* for that item.

12.2.2.4 Medical Review

The medical documentation (for example, GI logs, medical logs, special reports) will be available for review by VSP for accuracy and timeliness of reporting.

12.2.2.5 Report Detail

A written description of the items found deficient will be included. The deficiencies will be itemized with references to the section of the current *VSP Environmental Public Health Standards*. The description will include the deficiency location and citation of the appropriate *VSP Environmental Public Health Standards* section.

12.3 Risk-Based Scoring and Correction Priority

12.3.1 Scoring System

12.3.1.1 Weighted Items

The inspection report scoring system is based on inspection items with a total value of 100 points.

12.3.1.2 Risk Based

Inspection items are weighted according to their probability of increasing the risk for an AGE OUTBREAK.

12.3.1.3 Critical Items

CRITICAL ITEMS are those with a value of 3 to 5 points values on the inspection report.

12.3.1.4 Critical Designation

CRITICAL ITEMS are designated in the *VSP Environmental Public Health Standards* in bold red underlined text. In addition, a capital C appears in parentheses after the section number and keywords; for example, **7.4.5.1 Food-Contact Surfaces (24 C)**. The section numbers of the CRITICAL ITEMS in these standards are also provided in red text.

12.3.1.5 Noncritical Items

Noncritical items are those with a value of 1 to 2 points on the inspection report.

12.3.1.6 Scoring

Each weighted deficiency found on an inspection will be deducted from 100 possible points.

12.3.2 Risk-Based Correction Priority

12.3.2.1 Critical Correction Time Frame

At the time of inspection, a vessel will correct a critical deficiency as defined in the current *VSP Environmental Public Health Standards* and implement a corrective-action plan for monitoring the CRITICAL ITEM for continued compliance.

12.3.2.2 Extension

Considering the nature of the potential HAZARD involved and the complexity of the corrective action needed, VSP may agree to, or specify, a longer time frame (not to exceed 10 calendar days after the inspection) for the vessel to correct critical deficiencies.

12.4 Closing Conference

12.4.1 Closing Conference

The results of the inspection will be explained to the master or a designee before VSP leaves the vessel.

12.4.2 Report Copy

VSP will leave a copy of the draft inspection report with the master or designee. The report will be reviewed in detail and opportunity provided for discussions of the findings. The draft report is provided so vessel personnel can begin correcting deficiencies immediately.

12.4.3 Invoice

VSP will forward the invoice to the vessel's company office along with the final inspection report.

12.4.4 Fee Schedule

The fee for inspections is based on the existing fee schedule for routine inspections of passenger cruise vessels. The schedule is published annually in the *Federal Register*.

12.5 Inspection Review

12.5.1 Inspection Report Review Requests

12.5.1.1 Contested Results

The vessel owner or operator must notify VSP within 72 hours of the inspection closing conference of their intent to contest results of the inspection. After the initial notification and within 2 weeks of the inspection, the vessel owner or operator must provide VSP with the specific reference and facts concerning the contested deficiencies documented by VSP during the inspection.

12.5.1.2 Interim Report

At the request of the owner or operator, VSP will complete an interim report if an inspection is under review. The interim report will indicate the item(s) under review. VSP will modify the final inspection report, as necessary, after the review by the VSP Chief.

12.5.1.3 Report Remarks

After receiving a request for review, VSP will mark the vessel's inspection report as under review at the request of the vessel owner or operator.

12.5.1.4 Address

Email requests to vsp@cdc.gov.

12.5.2 Inspection Report Review Procedures

12.5.2.1 Review

The VSP Chief will review the matter and respond. In the response, the VSP Chief will state whether the inspection report will be changed.

12.5.2.2 No Score

No numerical score will be published before the VSP Chief makes a final determination on the review.

12.5.2.3 Final Report

The interim report will be issued as a final report if the written request for review is not received within 2 weeks of the inspection.

12.5.2.4 Appeal

If the ship owner does not agree with the review and decision of the VSP Chief, he or she may appeal the decision to the Director, Division of Environmental Health Science and Practice, National Center for Environmental Health.

12.5.3 Other Recommendations Review

12.5.3.1 Review

A vessel owner or operator has the right to request a review of recommendations made during a technical consultation or inspection if the owner or operator believes VSP officials have imposed requirements inconsistent with or beyond the scope of these standards.

12.5.3.2 Written Request

The owner or operator must send a written statement explaining the problem in detail to the VSP Chief within 30 days of the date the recommendation was made.

12.5.3.3 Review

The VSP Chief will review the issue and respond within 2 weeks of receiving the statement, advising whether the recommendation will be revised.

12.5.3.4 Appeal

If the ship owner does not agree with the review and decision of the VSP Chief, he or she may appeal the decision to the Director, Division of Environmental Health Science and Practice, National Center for Environmental Health.

12.6 Corrective Action Statement

12.6.1 Corrective Actions

Corrective-action statements (Annex 13.17) must be submitted to VSP by the master, owner, or operator. Corrective-action statements must detail each deficiency identified during the inspection and the corrective action taken.

These statements must be submitted to VSP within 2 weeks of receiving the final inspection report.

12.6.2 Critical-Item Corrective Actions

Critical-item deficiencies must also include standard operating procedures and monitoring procedures implemented to prevent the recurrence of the critical deficiency.

12.6.3 Public Distribution

The corrective-action statement will be appended to the final inspection report for future reference and, if requested, made available for public distribution.

12.6.4 Same Score

A corrective-action statement will not affect the inspection score.

12.7 Correction Affidavit**12.7.1 Procedures**

An affidavit of correction from the owner or operator, certifying that corrective action has been completed, may be submitted to VSP. The procedure may be used only one time for an item. The item must be structure or EQUIPMENT-related and must be corrected within a reasonable period.

12.7.2 Conditions

At least one of the following conditions must apply for an item to qualify for an affidavit of correction. The item must be a

- Longstanding deficiency that has not been identified during previous inspections **OR**
- Deficiency in which the function of the EQUIPMENT is being accomplished by an alternative method.

12.7.3 Requested at Inspection

After the inspection, but before VSP leaves the vessel, the vessel's master or a representative must provide notification of the intent to submit an affidavit of correction. This notice must specify the deficiency or deficiencies to be corrected and the corrective action to be taken. The draft inspection report will include a notation of the items to be corrected.

12.7.4 Final Inspection Score

After acceptance of the affidavit, the final inspection score will be recalculated to include credit for the items corrected.

12.8 Inspection Publication**12.8.1 Report Availability on Website**

CDC publishes inspection reports and scores on the VSP website (www.cdc.gov/vessel-sanitation/about/index.html).

12.8.2 Data

The website will include, at a minimum, the names of the vessels in the inspection program, the dates of their most recent inspections, and the numerical score achieved by each vessel.

12.8.3 Public Record

Reports, including corrective-action statements, are available on the VSP website. Paper copies are available to the public on request.

12.9 Recommendation That the Vessel Not Sail

12.9.1 Imminent Health Hazards

An IMMEDIATE HEALTH HAZARD will be determined to be, but not limited to, one of the following situations:

- Free HALOGEN residual in the POTABLE WATER distribution system is less than 0.2 MG/L (ppm) and this deficiency is not corrected before the inspection ends.
- Inadequate facilities for maintaining safe temperatures for TCS/PHF.
- Inadequate facilities for cleaning and sanitizing EQUIPMENT.
- Continuous problems with liquid and solid waste disposal, such as inoperative or overflowing toilets or shower stalls in passenger and crew member cabins.
- Infectious disease OUTBREAK among passengers or crew, and where it is suspected that continuing normal operations may subject newly arriving passengers to disease.

12.9.2 Procedures

12.9.2.1 Notify VSP Chief

VSP inspectors will immediately notify the VSP Chief when any of these IMMEDIATE HEALTH HAZARDS or similar imminent threats to public health are found on a vessel.

12.9.2.2 No Sail

CDC will recommend or direct the master of a vessel not to sail when an IMMEDIATE HEALTH HAZARD is identified and cannot be immediately corrected. Such a recommendation will be signed by the VSP Chief, with concurrence of the Director, National Center for Environmental Health/Agency for Toxic Substances and Disease Registry or the Director's designee.

12.10 Reinspection and Follow-up Inspections

A reinspection is a complete sanitation inspection performed on vessels that did not score at least 86 on the previous inspection.

12.10.1 Reinspection Procedures

12.10.1.1 Reasonable Time

Vessels that fail a routine inspection will be reinspected within a reasonable time, depending on vessel schedules and receipt of the corrective-action statement from the vessel's management.

12.10.1.2 Unannounced

Reinspections will be unannounced.

12.10.1.3 No-Sail Reinspections

If a no-sail recommendation is made, a follow-up inspection will be conducted as soon as requested.

12.10.1.4 Scheduling Priority

In scheduling inspections, VSP will give priority to the reinspection of vessels that failed routine inspections.

12.10.1.5 One Reinspection

Vessels that fail a routine inspection will undergo only one reinspection.

12.10.1.6 Written Requests

Exceptions to 12.10.1.6 may be made when the owner or operator submits a written request for an additional reinspection to the VSP Chief stating why the additional reinspection is warranted.

12.10.1.7 Unannounced; Inspection Fee

Additional reinspections are unannounced and the vessel will be charged the standard inspection fee.

12.10.2 Follow-up Inspection Procedures

12.10.2.1 Follow Up

A follow-up inspection is a partial inspection to review the status of deficiencies identified during the previous periodic inspection or reinspection.

12.10.2.2 Not Periodic or Reinspection

A follow-up inspection cannot be a substitute for a periodic inspection or reinspection.

12.10.2.3 Follow-up Reasons

Follow-up inspections may be conducted to resolve a contested inspection or to inspect IMMINENT HEALTH HAZARDS that resulted in a recommendation to prohibit the vessel from sailing.

12.10.2.4 Next Arrival

These inspections will be conducted as soon as possible after the routine inspection or reinspection, preferably the next time the vessel arrives at a U.S. port.

12.10.2.5 Limited

Follow-up inspections will be limited to inspection of deficiencies in question. For example, if an item under the refrigerator section of the inspection was a deficiency and was the only item contested, only refrigeration would be checked during the follow-up inspection.

12.10.2.6 Other Items

Any other problems noted during the follow-up inspection will be brought to the attention of the vessel's master or designee so the deficiencies can be corrected.

12.10.2.7 No Score

No inspection score will be provided, and no fee will be charged for follow-up inspections.

12.11 Construction and Renovation Inspections

12.11.1 Procedures

12.11.1.1 Construction

Whenever possible, VSP staff will conduct inspections of vessels being constructed or undergoing major retrofits on request of the vessel owner or operator.

12.11.1.2 Requesting Inspection

An official written request will be submitted to VSP requesting a voluntary construction renovation inspection. CDC's ability to honor these requests will be based on the availability of the VSP staff.

12.11.1.3 Time Frame

Construction/renovation inspections are normally conducted at the shipyard 4 to 6 weeks before completion. An additional inspection may also be conducted on completion of the work and before the vessel enters operational status.

12.11.1.4 Construction Compliance

Construction/renovation inspections will document the vessel's compliance with the *VSP Construction Standards*, which provide a framework for consistency in the sanitary design, construction, and construction inspections of cruise vessels.

12.11.1.5 New Vessels

The *VSP Construction Standards* will apply to all new vessels in which the keel is laid or the contract is signed, whichever is later, after publication of these standards.

12.11.1.6 Major Renovations

The *VSP Construction Standards* will also apply to major renovations planned after publication. A major renovation is a renovation where a new FOOD AREA (for example, galley, bar, buffet) is installed, a new facility (for example, recreational water, CHILD ACTIVITY CENTER) is installed, or an existing FOOD AREA or facility is changed by size or EQUIPMENT by 30% or more from the original. It also includes the addition of or change to an area/facility or a technical system (for example, POTABLE WATER, wastewater, air systems) through the introduction of new technology.

12.11.1.7 Minor Renovations

These standards will not apply to minor renovations.

12.11.1.8 Fee Schedule

The fee for construction or renovation inspections is based on the existing fee schedule for routine inspections.

12.11.2 Construction and Renovation Inspection Reports

12.11.2.1 Report

A written report will be issued by VSP after a construction or renovation inspection. These reports will summarize any changes recommended to ensure conformity with VSP standards.

12.11.2.2 Guides

Reports prepared by VSP in the shipyards during construction will be used as guides if VSP conducts a final construction or renovation inspection on the vessel before the vessel enters operational service.

12.11.2.3 No Score

There is no score for construction or renovation inspections.

12.11.3 Deficiencies Identified during Construction Activities (44)

Construction related deficiencies identified during construction activities (such as plan reviews, equipment reviews, consultations, and construction inspections) must be addressed after the initial construction or renovation inspection and before the first operational inspection.

If the deficiencies cannot be readily corrected, a timeline for correction must be discussed with VSP.

12.12 Other Environmental Investigations

12.12.1 Environmental Investigations

VSP may conduct or coordinate other activities such as investigating OUTBREAKS, checking a specific condition such as free HALOGEN residual in the POTABLE WATER distribution system, or investigating complaints of unsanitary conditions.

12.12.2 Problems Noted

Public health problems noted during other environmental investigations will be brought to the attention of the vessel's master or designee when these investigations are performed.

12.12.3 No Score

No inspection score will be provided, and no fee will be charged for other environmental investigations.

12.13 Variances

12.13.1 Procedures

12.13.1.1 Variance Procedures

VSP may grant a VARIANCE by modifying or waiving the requirements of current *VSP Environmental Public Health Standards* if VSP determines that a HEALTH HAZARD or nuisance will not result from the VARIANCE.

12.13.1.2 VSP Records

If a VARIANCE is granted, VSP will retain the information in its records for the vessel or, if applicable, multiple vessels.

12.13.1.3 Vessel Records

If a VARIANCE is granted, the vessel using the VARIANCE must retain the information in its records for ready reference.

12.13.1.4 Existing Variances

If changes are submitted for an existing APPROVED VARIANCE, the entire VARIANCE will be reviewed. If a new vessel is added to an existing APPROVED VARIANCE, the VARIANCE will be reviewed for that vessel.

If new technology or science has been developed since approval of a VARIANCE, that section of the VARIANCE where the new technology or science was developed will be reviewed.

12.13.2 Documentation

12.13.2.1 Detailed Justification

Before a VARIANCE from a requirement of the current *VSP Environmental Public Health Standards* is APPROVED, the person requesting the VARIANCE must provide the following, which will be retained in VSP's file on the vessel or vessels:

- A statement of the proposed VARIANCE from the current *VSP Environmental Public Health Standards* requirement including relevant section number citations.
- An analysis of the rationale for how the potential public health HAZARDS and nuisances addressed by the relevant current *VSP Environmental Public Health Standards* requirement will be alternatively addressed by the proposed VARIANCE.
- If required, a HACCP PLAN, standard operating procedures, training plan, and monitoring plan that includes all the information as it is relevant to the VARIANCE requested.
- Additional scientific data or other information as required to support the determination that public health will not be compromised by the proposal.
- Blanket requests and variances that apply to multiple ships must include the list of applicable ships.

12.13.3 Conformance

12.13.3.1 Conformance

If VSP grants a VARIANCE, the vessel must

- Comply with the HACCP PLANS, standard operating procedures, training plan, and monitoring plan submitted and APPROVED as a basis for the modification or waiver.

- Maintain and provide to VSP, on request, records to demonstrate that monitoring procedures for CRITICAL CONTROL POINTS are effective, done routinely, and corrective action is taken.

12.13.3.2 Rescinding Variance

VARIANCE approval may be rescinded at any time for noncompliance with these conditions or if it is determined that public health could be compromised.

12.13.3.3 Areas Not Identified (44)

Procedures, systems, EQUIPMENT, technology, processes, or activities not identified in the scope of these standards must not be tested or introduced operationally on any vessel until the concept is submitted in writing to VSP for review. If the review determines the concept is within the scope of the *VSP Environmental Public Health Standards*, written procedures, control measures, or a complete VARIANCE submission may be required.

13.0 Annexes

This section includes the following subsections:

- 13.1 Authority
- 13.2 ACUTE GASTROENTERITIS Surveillance System Reporting
- 13.3 ACUTE GASTROENTERITIS OUTBREAK Investigation
- 13.4 DISINFECTION Calculations for Water and EQUIPMENT
- 13.5 Potable Water Pipe and System Disinfection Method Examples (Nonemergency)
- 13.6 Sample CROSS-CONNECTION Control Program Guideline
- 13.7 BABY-ONLY WATER FACILITY
- 13.8 Fecal, Vomit, and Blood Accident Response for RWFs
- 13.9 Cartridge Filter Cleaning Procedures
- 13.10 FOOD Cooking Temperature Alternatives
- 13.11 Chemicals Used in Washing or to Assist in the Peeling of Fruits and Vegetables
- 13.12 TIME-CONTROL Plan Examples
- 13.13 List of Some Hard and Semisoft Cheeses Exempt from Datemarking
- 13.14 CONSUMER Advisory Examples
- 13.15 WAREWASHING Evaluation
- 13.16 Inspection Report
- 13.17 Corrective-Action Statement
- 13.18 Summary of Sanitation Inspections of International Cruise Ships

13.1 Authority

13.1.1 Public Health Service Act

Chapter 6A--Public Health Service Subchapter II--General Powers and Duties

Part G--Quarantine and Inspection

Sec. 264. Regulations to control communicable diseases

Sec. 269. Bills of health

Sec. 271. Penalties for violation of quarantine laws

13.1.2 Title 42 Code of Federal Regulations

Title 42--Public Health

Chapter I--Public Health Service, Department of Health and Human Services

Part 71--Foreign Quarantine

13.2 Acute Gastroenteritis Surveillance System Reporting

13.2.1 Introduction

13.2.1.1 Environmental Public Health Standards

Details of the AGE surveillance data collection and notification system are contained in section 4.0 of these standards (ACUTE GASTROENTERITIS [AGE] Surveillance).

Following are some sample itineraries of vessels that may call upon a U.S. port. The ports where the routine AGE surveillance report is required at least 24 hours before arrival, but not more than 36 hours, are marked with ⇐.

13.2.1.2 Sample Itineraries

Itinerary A

Port Everglades, FL
at Sea
at Sea
St. Thomas, U.S. Virgin Islands
Philipsburg, St. Maarten
at Sea
Nassau, Bahamas
Port Everglades, FL ⇐

Itinerary B

Vancouver, BC
at Sea
Juneau, AK ⇐
Ketchikan, AK
Sitka, AK
at Sea
Seward, AK
Vancouver, BC

Itinerary C*

Barcelona, Spain
at Sea
at Sea
at Sea
St. Thomas, U.S. Virgin Islands ⇐
at Sea
Port Everglades, FL

Itinerary D

Miami, FL
at Sea
St. Barthélemy, French West Indies
San Juan, PR ⇐
St. Thomas, U.S. Virgin Islands
at Sea
Freeport, Bahamas
Miami, FL ⇐

*Note: The report in Itinerary C includes passengers and crew members during the 15 days before arrival in St. Thomas, U.S. Virgin Islands.

13.2.2 Submission Procedures

13.2.2.1 Mechanism

Email vsp@cdc.gov for the current reporting mechanism.

13.2.2.2 Telephone Call Required

A telephone notification to VSP at 1-800-323-2132 is required to accompany a special 2% report when the vessel is within 15 days of expected arrival at a U.S. port.

13.3 Acute Gastroenteritis Outbreak Investigation

13.3.1 Introduction

13.3.1.1 Introduction

OUTBREAKS of AGE on cruise ships are relatively infrequent occurrences. Since implementation of the cooperative program between the cruise industry and VSP, the OUTBREAK rate on vessels has steadily declined each year.

13.3.1.2 Vigilance

Ongoing vigilance and rapid OUTBREAK detection and response are still warranted. Because so many people share the same environment, meals, and water, disease can often spread quickly to passengers and crew members on the vessel and overwhelm the vessel's medical system. The infection can also continue unabated between cruises if proper interventions are not instituted.

13.3.1.3 Consultation

An OUTBREAK of AGE occurs on a vessel when the number of cases is above baseline. When the cumulative percentage of REPORTABLE CASES of AGE reaches 2% among passengers or 2% among crew and the vessel is within 15 days of arrival at a U.S. port, the vessel must submit a special report to VSP. This provides an early opportunity for consultation to potentially avert more illness among passengers and crew members.

13.3.1.4 Monitoring

In most instances, a 2% proportion of illness will not lead to an investigation on the vessel but will provide the opportunity to discuss and monitor illness patterns and collaboratively develop intervention strategies. VSP staff members are always available to discuss disease TRANSMISSION and intervention questions.

13.3.1.5 Investigation

OUTBREAKS of AGE on cruise ships are relatively infrequent occurrences. VSP can conduct an onboard investigation if warranted.

13.3.1.6 Special Circumstances

Under special circumstances, when an unusual AGE pattern or disease characteristic is found, an investigation may be conducted when the proportion of cases is less than 3%. These special circumstances may include a high incidence of illness in successive cruises, unusual severity of illnesses or complications, or a large number of persons reporting the illness over a brief period of time.

13.3.1.7 Rapid Response

Conducting an OUTBREAK investigation on a vessel demands a rapid, organized, and comprehensive response.

13.3.1.8 Collaboration

The investigation is a collaborative effort of the cruise line, passengers and crew members on the vessel, and VSP. Therefore, an organized plan drafted between

the organizations and individuals involved is crucial in conducting a successful investigation—a comprehensive effort that includes epidemiologic, environmental, and laboratory studies. Recommendations based on the success of the investigation can then be implemented to prevent a recurrence on the following cruise.

13.3.2 Objectives

The objectives of an investigation are to

- Determine the extent of the AGE among passengers and crew.
- Identify the agent causing the illness.
- Identify risk factors associated with the illness.
- Formulate control measures to prevent the spread of the illness.

13.3.3 Outbreak Investigation Procedures

13.3.3.1 Contingency Plan

The early stages of an investigation are usually coordinated on the vessel by the vessel's medical staff in cooperation with engineering and hotel staff. It is important to have a coordinated contingency plan in place on the vessel before implementation is needed. All staff with a potential for involvement in an investigation should be familiar with the contingency plan.

13.3.3.2 Periodic Review

This preliminary preparation will assist the vessel with the necessary rapid implementation of investigation and response measures before the arrival of the VSP team. The OUTBREAK contingency plan should be periodically reviewed to ensure it will still meet the vessel's needs in dealing with an OUTBREAK.

13.3.3.3 Specimens and Samples

Timely collection of medical specimens and FOOD and water samples is important in the disease investigative process. The proper materials and techniques for collection and preservation are a part of the planning. It is important to periodically review these to make sure they are on hand and ready to use in the event they are needed.

13.3.3.4 Ready to Use

A list of recommended medical specimen and FOOD sample collection supplies for investigating AGE OUTBREAKS can be found in Annex 13.3.5 and 13.3.6.

13.3.3.5 Useful Information

To assist in the rapid evaluation of the extent of illness among passengers and crew and identify the causative pathogen and associated risk factors, VSP may request the following items:

- AGE OUTBREAK Action Plan for turnaround day.
- General OUTBREAK prevention and response plan.
- AGE surveillance logs (previous and current voyages).
- AGE 72-hour questionnaires.
- Vessel's itinerary (previous and current voyages).
- List of shore excursions, including lunch and BEVERAGE menus.

- Public vomiting/diarrhea logs (previous and current voyages).
- POTABLE WATER bunkering, production, and distribution logs.
- POTABLE WATER bacteriological testing records.
- POTABLE WATER maintenance records.
- RWF logs, including information about fecal and vomit accidents.
- Vessel map of cabins with REPORTABLE AGE CASES.
- Dining room seating maps with AGE passenger cases indicated.
- Dining room seating maps with AGE waiter and assistant waiter stations indicated.
- All menus.
- Cooling logs for TCS/PHF.
- Vessel daily newsletters indicating guest activities.
- Letter for passengers embarking on turnaround day.
- Manifests for all groups of more than or equal to 15 people (groups traveling together).
- Manifests for shore excursions within 48 hours of first peak of cases.
- Security gangway records for REPORTABLE AGE CASES within 48 hours of ILLNESS ONSET.

13.3.3.6 Survey

VSP may also request distribution of a survey to all passengers and crew members. VSP will provide this survey to the vessel. Completed surveys should be held in the infirmary until collection by VSP staff for epidemiologic analysis.

13.3.3.7 Interviews

Interviews with cases may also be useful for identifying the etiology and associated risk factors of an OUTBREAK. When distributing the surveys, medical staff should advise cases that interviews may be requested when VSP arrives at the vessel.

13.3.4 Report

13.3.4.1 Preliminary Report

After an OUTBREAK investigation, a preliminary report of findings based on available clinical and epidemiologic information, environmental inspection reports of the investigation, and interim recommendations will be presented to the master of the vessel. Based on preliminary findings, additional materials (including additional passenger and crew information) may be requested from the cruise line or the vessel and follow-up studies may be undertaken to address specific suspicions or concerns.

13.3.4.2 Final Report

The report presented to the master of the vessel will remain preliminary until completion of more-extensive epidemiologic and laboratory studies and distribution of a final report containing summary recommendations.

13.3.5 AGE Specimens

13.3.5.1 AGE Specimen Supplies

Supplies recommended for specimen collection include the following:

- 20–50 wide-mouth plastic jars or specimen cups with screw caps for stool specimens.
- 20 plastic bags for storing specimen cups.
- Disposable medical gloves.
- Plastic disposable spoons for collecting stool.
- 20 sterile bottles or tubes containing bacterial preservative and transport medium (for example, Cary-Blair).
- Sterile swabs.
- Stool preservative medium for parasites.
- A large commercial roll of plastic wrap.
- Shipping containers (for diagnostic specimens).
- Shipping container labels and markings (as required by current shipping regulations for diagnostic specimens).

13.3.5.2 Specimen Collection

13.3.5.2.1 Request Procedures

It may be advisable to collect clinical specimens of stool or vomitus from passengers and crew members with AGE. Timely notification of the vessel as to what samples and information will be required is essential. Collection of specimens for analysis for viruses, bacteria, or parasites may be recommended depending on the likely etiology of illness.

It is recommended that specimens be requested from patients during clinical evaluation in the infirmary or after infirmary visits by direct contact with or a letter from medical staff. Each person asked to provide specimens should be given disposable gloves, two specimen cups, a disposable spoon, and plastic wrap.

The following are

- Suggested language for a passenger letter requesting stool specimens.
- Instructions to passengers and crew for stool collection.

Request to Passengers for Stool Specimens

The [U.S. Public Health Service/Name of Cruise Line/Medical Department] is requesting stool specimens from some people who became ill with AGE on this cruise. Please give one cup to a friend who has recently become ill and use the other cup for yourself. Put your next bowel movement into the cup and return the cup to the vessel's medical center as soon possible so it can be refrigerated.

Patient Instructions

1. Urinate into the toilet (if you feel the need).
2. Wash and dry your hands.
3. Lift the toilet seat.
4. Place sheets of plastic wrap over the toilet bowl, leaving a slight dip in the center.
5. Put the toilet seat down.
6. Pass some stool onto the plastic wrap. Do not let urine or water touch the stool specimen, if possible.
7. Using the spoon given to you, place bloody, slimy, or whitish areas of the stool into the container first. Fill the cup at least two-thirds full, if possible.
8. Tighten the cap.
9. Wash your hands.
10. Label the specimen jar with your name, the date, and your cabin number.

13.3.5.2.2 Medical Staff Instructions

Specimen Labeling

Please ensure that each specimen is properly labeled with the following:

- Date of collection.
- Unique identifying number. (A separate log containing unique identifying number linked to case name must be kept on the ship.)
- Notation on use of antidiarrheal or antibiotic medication.

Collection, Storage, and Transport

Complete guidelines for collection and storage of specimens for viral, bacterial, and parasite analysis are listed below, although it may not be necessary to implement all procedures during each investigation.

Transport of specimens will be arranged in collaboration with VSP.

13.3.5.3 Guidelines for Collecting Fecal Specimens for Viral Diagnosis

(Modified from Hall AJ, Vinjé J, Lopman B, Park GW, Yen C, Gregoricus N, et al. Updated norovirus outbreak management and disease prevention guidelines. MMWR. 2011;60[RR03];1–15)

13.3.5.3.1 Stool for Viral Diagnosis

1. Collect stool specimens within the first 48 hours of ILLNESS ONSET. Specimen collection should not await the results of epidemiologic and other investigations because delay will almost certainly preclude a viral diagnosis. If information gathered subsequently indicates that a viral etiology is unlikely, the specimens can be discarded.
2. Collect 10 diarrhea bulk specimens, if possible. Bulk specimens, enough to fill a large stool cup, are preferred. Serial specimens from persons with acute, frequent, high-volume diarrhea are particularly useful. The smaller the specimen and the more formed the stool,

the lower the diagnostic yield. Specimens from at least 10 ill persons should be collected to maximize the chance that a diagnosis can be made. The diagnostic yield is low when specimens from fewer than 10 persons are submitted.

3. Store specimens at 4°C (40°F). Freezing may destroy the characteristic viral morphology that permits a diagnosis by electron microscopy.
4. Take special care to prevent cross-contamination of specimens during collection and transport because new amplification techniques are exquisitely sensitive.

13.3.5.3.2 Other Specimens for Viral Diagnosis

Water, FOOD, and Environmental Samples

Viruses causing AGE are not routinely detected in water or left-over FOOD but may be detectable on surfaces with environmental swabbing. Swabbing of surfaces may be completed under the guidance of VSP staff or staff of CDC's National Calicivirus Laboratory.

Noroviruses have been successfully detected in vomitus specimens using the same methodology as for stool specimens and is recommended to collect if vomitus is the only specimen that can be obtained from a patient.

13.3.5.4 Guidelines for Collecting Fecal Specimens for Bacteriologic Diagnosis

Before use, the transport media should be stored in a refrigerator or at room temperature. If the transport media is stored at room temperature, it should normally be chilled for 1 to 2 hours by refrigeration before use.

At least two rectal swabs or swabs of fresh stools should normally be collected for bacterial analysis and placed in refrigerated Cary-Blair transport media.

It is recommended that the swabs be inserted initially into the transport media to moisten, then inserted about 25–38 millimeters (about 1–1½ inches) into the rectum, gently rotated, and removed for insertion individually into the same tube of transport media.

If possible, there should be visible fecal material on the swabs.

Both swabs should be inserted into the same tube of media and the swabs pushed completely to the bottom of the tube.

The top portion of the stick touching the fingers should be broken off and discarded.

Refrigeration during transport may be accomplished by shipping in an insulated box with frozen refrigerant packs. The specimens must never be frozen during storage or transport.

13.3.5.5 Guidelines for Collecting Fecal Specimens for Parasite Diagnosis

13.3.5.5.1 *Parasite Specimens*

In the event a disease of parasitic etiology is suspected, arrangements will be made for shipment of appropriate specimen containers containing 10% formalin and PVA (polyvinyl alcohol).

A summary table with instructions for collecting clinical specimens during OUTBREAKS to test for bacteria, viruses, and parasites is available at www.cdc.gov/foodsafety/outbreaks/investigating-outbreaks/specimen-collection.html.

13.3.6 Food and Water Samples

13.3.6.1 Food and Water Sample Collection Kit

A recommended FOOD and water sampling kit includes the following:

- Sterile sampling containers (15 or more sealable plastic bags and wide-mouth screw top jars; 15 water sample bottles with sodium thiosulfate solution to provide concentration of 100 mg per mL of sample volume; foil or heavy wrapping paper).
- Sterile specimen collection devices (spoons, tongs, scoop, knife, scissors, swabs, and pipettes).
- DISINFECTION agents (sanitizing solution, 95% ethyl alcohol, and propane torch).
- Support equipment (plastic gloves, plastic container liners for iced samples, waterproof marking pen for sample identification, roll of adhesive or masking tape, labels, waterproof cardboard tags with ties, insulated ice chests, and frozen refrigerant packs).

13.3.6.2 Food and Water Sampling Procedures

13.3.6.2.1 *Sample Plan*

Environmental sampling should be directed toward suspect FOOD and sources identified by the preliminary epidemiologic investigation.

13.3.6.2.2 *Aseptic Techniques*

FOOD and water samples should be collected using aseptic techniques. Washed and gloved hands and sterile sampling UTENSILS and containers protect the integrity of the sample during collection. Taps used for water collection should be sterilized with heat or chemicals. The sample should be collected after 1 minute of flow time.

13.3.6.2.3 *Sample Amount*

Approximately 200 grams or 200 mL of sample will usually suffice for the laboratory analytical requirements. Carefully squeeze most of the air out of the bag before sealing FOOD samples.

13.3.6.2.4 *Sample Identification*

Sample numbers should be assigned on each collection container and recorded on a sample log that will accompany samples to the laboratory. Record information that identifies the date, time, and

location of collection; product information; codes; storage conditions and temperatures for each sample on the sample log. Include contact information for the person responsible for collecting samples.

13.3.6.2.5

Sample Temperatures

FOOD and water samples should be held below 5°C (41°F) but not frozen. Sufficient frozen refrigerant packs should be used to maintain cold sample temperatures during transport to the laboratory.

13.4 Disinfection Calculations for Water and Equipment

13.4.1 Introduction

POTABLE WATER and RWF systems and EQUIPMENT, SWIMMING POOLS, and WHIRLPOOL SPAS on a vessel may need to be disinfected when there is a possibility of CONTAMINATION and as a routine part of maintenance.

This annex provides tables for calculating the amount of chlorine to be used in emergency chlorination of POTABLE WATER and for the routine DISINFECTION of POTABLE WATER and RWF systems.

13.4.2 Water Chlorination

Calculate the amount of chlorine to be used in the DISINFECTION of POTABLE WATER and RWF systems.

The chlorine compound column in Tables 1 and 2 (Annex 13.4.4) refers to the amount of available chlorine in the compound as stated on the product label. Use Table 1 for chlorine compound in grams; use Table 2 for chlorine compound in kilograms.

Requirements varying from those shown in the table—for example: metric tons of water, available chlorine compounds, or final chlorine concentrations—may be extrapolated.

For example, POTABLE WATER TANKS or freshwater tanks must be superchlorinated to at least 50 MG/L (ppm) available chlorine when samples taken from these tanks indicate potential CONTAMINATION with fecal coliform bacteria.

The total amount of 70% chlorine compound required to obtain 50 MG/L (ppm) in 166 metric tons of water is calculated in Example 1, which illustrates how to use the tables.

Example 1. The capacity of a POTABLE WATER TANK from which a coliform-positive sample was obtained is 166 metric tons. The vessel has a compound containing 70% available chlorine.

The amount of chlorine required for 50 MG/L (ppm) is determined as follows:

- Use the 70% chlorine compound columns in Table 1.
- Find the 70% row that corresponds to 100 metric tons of water.
- Follow this 70%/100-ton row across until you reach the “50 ppm” column (7,150 grams).
- Do the same using the 50, 10, 5, and 1 metric ton columns to determine the totals for 166 metric tons.
- Total each column as shown in the calculation table below.

Calculation Table for Example 1

Metric Tons of Water	Grams Required, 70% Available Chlorine Solution
100	7,150.0
50	3,575.0
10	715.0
5	357.5
1	71.5
166 Total Weight of Water	11,869.0 grams or 11.87 kilograms

In this example, the amount of 70% chlorine compound required for 166 tons of water at 50 MG/L (ppm) is 11,869.0 grams or 11.87 kilograms.

13.4.3 Equipment Disinfection

The Available Chlorine in Compounds table lists the various chlorine compounds and the amount of the compound required in grams per liter of water to produce a solution containing 100 MG/L (ppm) of chlorine. The 100-MG/L (ppm) chlorine solution should be applied as outlined in these standards.

Available Chlorine in Compounds

Grams per Liter of Available Chlorine	Grams per Liter for 100 MG/L (ppm)
70%	0.143
65%	0.154
25%	0.4
15%	0.7
10%	1.0
5%	2.0

13.4.4 Tables

Table 1. Amount of Chlorine Required in Grams to Produce Desired MG/L (ppm)

Chlorine Compound	Metric Tons of Water	1 ppm	2 ppm	5 ppm	10 ppm	50 ppm	100 ppm
70%	1	1.43	2.86	7.15	14.30	71.50	143.00
70%	5	7.15	14.30	35.75	71.50	357.50	715.00
70%	10	14.30	28.60	71.50	143.00	715.00	1,430.00
70%	50	71.50	143.00	357.50	715.00	3,575.00	7,150.00
70%	100	143.00	286.00	715.00	1,430.00	7,150.00	14,300.00
65%	1	1.54	3.08	7.70	15.40	77.00	154.00
65%	5	7.70	15.40	38.50	77.00	385.00	770.00
65%	10	15.40	30.80	77.00	154.00	770.00	1,540.00
65%	50	77.00	154.00	385.00	770.00	3,850.00	7,700.00
65%	100	154.00	308.00	770.00	1,540.00	7,700.00	15,400.00
25%	1	4.00	8.00	20.00	40.00	200.00	400.00
25%	5	20.00	40.00	100.00	200.00	1,000.00	2,000.00
25%	10	40.00	80.00	200.00	400.00	2,000.00	4,000.00

Chlorine Compound	Metric Tons of Water	1 ppm	2 ppm	5 ppm	10 ppm	50 ppm	100 ppm
25%	50	200.00	400.00	1,000.00	2,000.00	10,000.0	20,000.00
25%	100	400.00	800.00	2,000.00	4,000.00	20,000.0	40,000.00

Table 2. Amount of Chlorine Required in Kilograms to Produce Desired Parts MG/L (ppm)

Chlorine Compound	Metric Tons of Water	1 ppm	2 ppm	5 ppm	10 ppm	50 ppm	100 ppm
15%	1	0.007	0.01	0.03	0.07	0.34	0.70
15%	5	0.035	0.07	0.17	0.35	1.70	3.50
15%	10	0.070	0.13	0.34	0.70	3.40	7.00
15%	50	0.350	0.65	1.70	3.50	17.00	35.00
15%	100	0.70	1.30	3.40	7.00	34.00	70.00
10%	1	0.01	0.02	0.05	0.10	0.50	1.00
10%	5	0.05	0.10	0.25	0.50	2.50	5.00
10%	10	0.10	0.20	0.50	1.00	5.00	10.00
10%	50	0.50	1.00	2.50	5.00	25.00	50.00
10%	100	1.00	2.00	5.00	10.00	50.00	100.00
5%	1	0.02	0.04	0.10	0.20	1.00	2.00
5%	5	0.10	0.20	0.50	1.00	5.00	10.00
5%	10	0.20	0.40	1.00	2.00	10.00	20.00
5%	50	1.00	2.00	5.00	10.00	50.00	100.00
5%	100	2.00	4.00	10.00	20.00	100.00	200.00

13.5 Potable Water Pipe and System Disinfection Method Examples (Nonemergency)

Examples in this section relate to nonemergency situations. In an emergency, refer to section 5.3.5.3 for concentration and contact time.

To achieve the proper DISINFECTION of a section of pipe being replaced,

- Fill the pipe with 50 MG/L (ppm) of free HALOGEN residual, cap on both ends, and let it sit for 4 hours **OR** place small sections of pipes in a large container filled with 50 MG/L (ppm) of free HALOGEN residual for 4 hours.
- Drain and flush disinfected parts of the system with POTABLE WATER.

To achieve the proper DISINFECTION of a section of pipe already installed on part of the distribution system,

1. Install temporary shut-off valves at each end of the new section.
2. Close the valves.
3. Inject 50 MG/L (ppm) of free HALOGEN residual through a temporary injection port.
4. Let it stand for 4 hours.
5. Drain and flush disinfected parts of the system with POTABLE WATER.

13.6 Sample Cross-Connection Control Program Guidelines

13.6.1 Background

Unprotected CROSS-CONNECTIONS to the POTABLE WATER system can result in mild changes to the aesthetic quality of the water affecting taste, odor, and color or severe changes that can result in illness or death. The purpose of a CROSS-CONNECTION control program is to identify these connections and provide appropriate protection.

13.6.2 Introduction

Use this outline to either develop a comprehensive CROSS-CONNECTION control program or update and maintain an existing program.

13.6.3 Cross-Connection Survey

One of the first steps in developing a CROSS-CONNECTION control program is to conduct a thorough survey of the POTABLE WATER system to identify all actual or potential CROSS-CONNECTIONS. It is essential to ensure that all connections are identified so that appropriate protection can be decided on.

Surveyors should be

- Knowledgeable in basic plumbing.
- Knowledgeable in the principles of BACKFLOW, including BACKSIPHONAGE and BACKPRESSURE.
- Able to identify both potential and actual CROSS-CONNECTIONS.
- Familiar with the level of HAZARD posed by each connection.

Surveyors should physically inspect all areas of the vessel supplied with POTABLE WATER. An approach for this may be to go deck by deck, starting with the decks with connections that pose the greatest risk to health.

This may require starting with the engine room deck. As each connection is identified, it is added to a listing. All information related to this connection must also be added to the listing. An example of required information can be found in section 13.6.5.1. Unprotected or inadequately protected connections must be addressed as quickly as possible, especially if the connection is a HEALTH HAZARD.

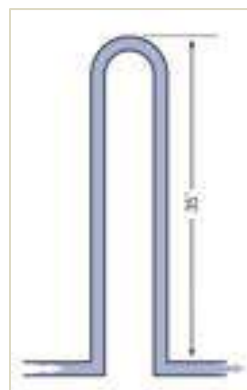
13.6.4 Backflow Protection Methods

All figures in this section are from the EPA CROSS-CONNECTION Control Manual (2003).

13.6.4.1 Nonmechanical Backflow Protection

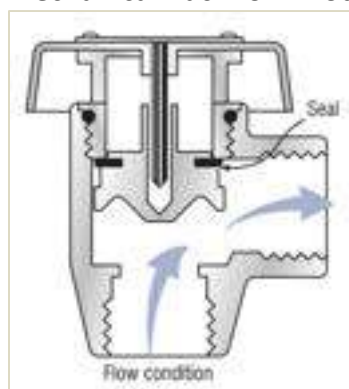


AIR GAP

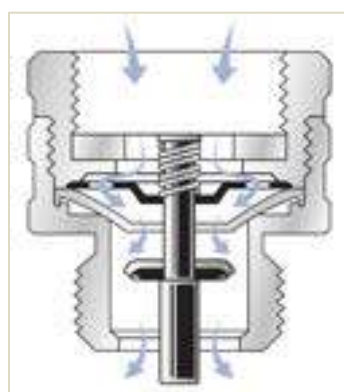
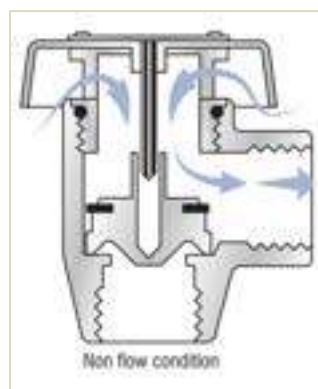


Antisiphon loop

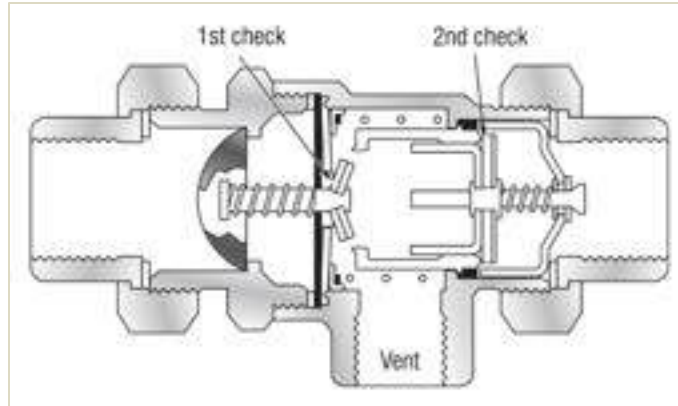
13.6.4.2 Mechanical Backflow Protection



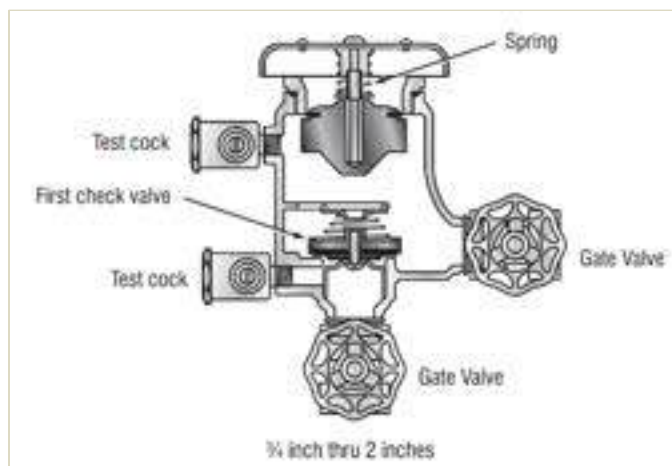
ATMOSPHERIC VACUUM BREAKER



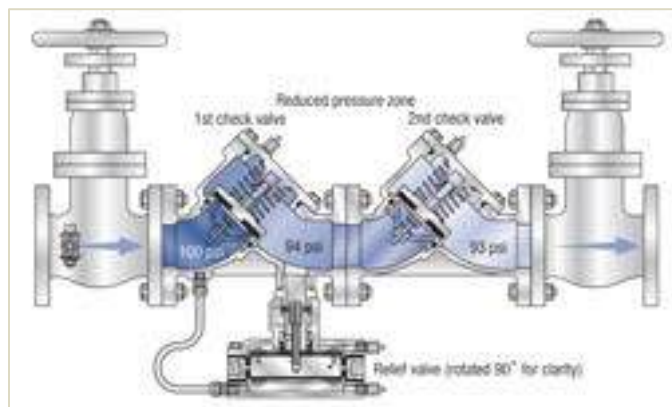
HOSE BIBB CONNECTION VACUUM BREAKER



DUAL CHECK VALVE WITH AN INTERMEDIATE ATMOSPHERIC VENT



PRESSURE VACUUM BREAKER ASSEMBLY



REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION ASSEMBLY

13.6.5 Cross-Connections on Vessels

13.6.5.1 List of Connections Requiring Backflow Prevention on Vessels

A log listing all CROSS-CONNECTIONS on the vessel must be developed. At a minimum the log must contain the data elements in numbers 2, 3, 6, 7, and 8. Inclusion of the additional data in numbers 1, 4, and 5 is recommended.

1. Deck (A, B, C, 1, 2, 3...).
2. Location (of connection and of device, if different).
3. Connection description (for example, hose, chemical tank, coffee machine, detergent dispenser).
4. Connection subjected to CONTINUOUS PRESSURE or noncontinuous pressure.
5. Connection subjected to *BACKSIPHONAGE only* or *BACKSIPHONAGE and BACKPRESSURE*.
6. Protection used (AIR GAP or device manufacturer name and designation).
7. Inspection date for visual inspection of air gaps and nontestable devices.
8. Inspection results (passed, replaced, pressure differential) for testable devices.

13.6.5.2 Specific Backflow Protection Choices on Vessels: Air Gaps and Backflow Prevention Devices

Use this section to provide information to vessel staff on the specific BACKFLOW PREVENTION DEVICES used on the vessel. For each device, a copy of the specification sheets or technical sheets as well as the manufacturer's installation recommendations should be included in the program documentation file. Generally, these documents are available online from the websites of each device manufacturer.

AIR GAPS

Vessel-designed AIR GAPS

- See definitions



Image: U.S. Environmental Protection Agency. Cross-Connection Control Manual. Washington, DC: EPA Office of Water Office of Ground Water and Drinking Water; 2003.

Manufactured AIR GAPS

- Manufacturer's specification sheets
- Manufacturer's installation recommendations

Noncontinuous Pressure Devices

ATMOSPHERIC VACUUM BREAKER

- Manufacturer's specification sheets
- Manufacturer's installation recommendations

HOSE BIBB VACUUM BREAKER (HBV)

- Manufacturer's specification sheets
- Manufacturer's installation recommendations

Select DUAL-CHECK VALVE WITH AN INTERMEDIATE ATMOSPHERIC VENT (DCIV) (such as Watts NLF9)

- Manufacturer's specification sheets
- Manufacturer's installation recommendations

CONTINUOUS PRESSURE devices

Select DUAL-CHECK VALVE WITH AN INTERMEDIATE ATMOSPHERIC VENT (DCIV) (such as Watts N9)

- Manufacturer's specification sheets
- Manufacturer's installation recommendations

PRESSURE VACUUM BREAKER ASSEMBLY

- Manufacturer's specification sheets
- Manufacturer's installation recommendations
- Test kit and instructions

REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION ASSEMBLY

- Manufacturer's specification sheets
- Manufacturer's installation recommendations
- Test kit and instructions

13.7 Baby-Only Water Facility

For use by children who are in diapers or who are not completely toilet trained.

13.7.1 Introduction

VSP recognizes the increased desire of passengers to allow children who are in diapers or who are not completely toilet trained to use RWFs. With that in mind, following are requirements for operating an RWF for the sole use by children who are in diapers or who are not completely toilet trained. Each cruise line is required to submit a VARIANCE request to operate this type of facility.

13.7.2 Design and Construction

Facilities must be designed and constructed in accordance with the latest version of the *VSP Construction Standards* regardless of the date the keel was laid or the contract was signed.

Before new construction or remodeling of an existing RWF, all plans must be submitted for review and approval by VSP. Once APPROVED, no parts of the system or its operation may be changed without prior written approval from VSP. For maintenance purposes, system components of at least equal performance specifications may be changed without prior approval.

13.7.3 Water Source

13.7.3.1 Recirculation

The water source for this facility must only be POTABLE WATER for recirculation systems.

13.7.3.2 Flow-Through

RECREATIONAL SEAWATER or POTABLE WATER may be used for a flow-through system.

13.7.3.3 Operation

The system must be designed to operate in flow-through only or recirculation only.

13.7.3.3.1 Flow-Through

At Sea

A flow-through seawater supply system must be used only while the vessel is MAKING WAY and at sea beyond 20 kilometers (12 miles) from nearest land or any point of land discharge.

In Port

Before arriving to a port or HARBOR, the seawater supply system must be shut down and the facility closed for use before the vessel reaches the 20-kilometer (12-mile) mark or any point of land-based discharge. The system must remain empty while in port or at anchor or the flow-through supply must be switched to POTABLE WATER.

Recirculation

Fill water must be provided only to the compensation tank and not directly to the BABY-ONLY WATER FACILITY.

TURNOVER Rate

The entire volume of water must pass through all parts of the system to include filtration, secondary ultraviolet (UV) DISINFECTION, and halogenation at least once per half hour.

The filtration, ultraviolet (UV) DISINFECTION, and HALOGEN and PH control systems must be operated 24 hours a day. This is required even when the facilities are not in use. The systems may only be shut down for required maintenance or cleaning of system components.

13.7.3.4 Filtration

BABY-ONLY WATER FACILITY water must be filtered. At least one replacement cartridge or canister-type filter must be available.

Cartridge or canister-type filters must be inspected weekly for cracks, breaks, damaged components, and accumulation of excessive organic material.

Granular filters must be backwashed daily. Backwashing must be repeated until the water viewed through the sight glass or discharge point is clean flowing.

The granular filters must be opened monthly and examined for channeling, mounds, or holes in the filter media. **Inspection method: Drain the water from the filter housing and inspect the granular filter for cracks, mounds, or holes.**

A core sample must be examined monthly for accumulation of excessive organic material. **Core sample method:**

- 1. Take a sand sample from the filter core after inspection and place it in a clear container. A core sample can be taken by inserting a rigid hollow tube or pipe into the filter media.**
- 2. Add clean water to the clear container, cover, and shake.**
- 3. Allow the container to rest undisturbed for 30 minutes.**
- 4. Evaluate sample. If, after 30 minutes of settling, a measurable layer of sediment is within or on top of the filter media or fine, colored particles are suspended in the water, the organic loading may be excessive. Consider media replacement.**
- 5. Record results of filter inspection and sedimentation test in a log.**

Cartridge filters must be replaced based on inspection results or manufacturer's recommendations, whichever is sooner.

The granular filter media must be replaced at least every 6 months. Before the new filter media is placed in the filter housing, the housing must be scrubbed with an appropriate cleanser, rinsed, and disinfected. DISINFECTION must be accomplished with an appropriate HALOGEN-based DISINFECTANT at 1 MG/L

(ppm) for 50 minutes, or an equivalent CT VALUE. Record the filter replacement date and cleaning and DISINFECTION of the filter housing in a log. The log must include the DISINFECTANT residual and contact time or CT VALUE.

Filter pressure gauges and valves must be replaced when they are defective.

The operating manuals for all components such as filters, pumps, HALOGEN and PH control equipment, and ultraviolet (UV) DISINFECTION systems must be maintained on the vessel in a location available to crew members who are responsible for the operation and maintenance of these facilities.

13.7.3.5 Halogen and pH Control

Automated HALOGEN dosing and PH control systems must be installed and maintained.

Halogenation must be accomplished by using chlorine or bromine. A free residual of HALOGEN must be maintained between 3.0–10.0 MG/L (ppm) for chlorine and 4.0–10.0 MG/L (ppm) for bromine.

The PH levels must be maintained between 7.2 and 7.6.

13.7.3.6 Ultraviolet Disinfection

A UV DISINFECTION system must be installed after filtration and before HALOGEN-based DISINFECTION.

The UV DISINFECTION system must be maintained at an intensity that inactivates *Cryptosporidium parvum* and *Giardia*.

The UV DISINFECTION system must be maintained and operated in accordance with the manufacturer's recommendation. At least one spare UV lamp must be available.

13.7.3.7 System Shutdown

An automatic shutdown must be maintained whereby any failure in maintaining the required free HALOGEN residual level, PH level, or UV lamp intensity must cause the water to completely divert from the BABY-ONLY WATER FACILITY and instead loop back to the compensation tank. Additionally, this system must be equipped with an audible alarm that sounds in a continuously manned space, such as the bridge or engine control room.

13.7.3.8 Shutdown and Alarm Testing

The emergency shutdown and alarms systems must be tested monthly. Testing procedures and results must be recorded.

13.7.4 System Cleaning and Disinfection

13.7.4.1 Daily Cleaning of Spray Pad Surface

Every 24 hours, the SPRAY PAD surface and any associated features must be cleaned with an appropriate cleaner. The surface must be rinsed and disinfected at 50-MG/L (ppm) free HALOGEN residual for 1 minute, or the equivalent CT

VALUE. Ensure that the liquid waste from this process is not directed to the compensation tank.

At least every 72 hours, the facility must be shut down and these procedures must be followed:

1. The entire volume of water within the system must be discharged. This includes the BABY-ONLY WATER FACILITY, compensation tank, filter housing, and all associated piping.
2. The BABY-ONLY WATER FACILITY, compensation tank, and filter housing (cartridge filter) must be cleaned with an appropriate cleanser, rinsed, and disinfected (chlorine or bromine). DISINFECTION must be accomplished with a solution of at least 50 MG/L (ppm) free HALOGEN residual for 1 minute, or the equivalent CT VALUE.

13.7.5 Monitoring and Record Keeping

An automated analyzer-chart recorder capable of recording free HALOGEN residual levels in MG/L (ppm) and PH levels must be installed.

The system must be checked for calibration before opening the facility for use, and then every 3 hours thereafter with a test kit accurate to within 0.2 MG/L (ppm) free HALOGEN residual and 0.2 PH.

- Charts must be reviewed and signed daily by trained supervisory staff.
- Charts must be dated and changed daily.
- Records must be retained for 12 months.

In the event of a failure in the automated analyzer-chart recorder, manual tests must be conducted and recorded for each required parameter on an hourly basis. A maximum of 72 hours will be allowed for manual tests while repairs are under way. If more than 72 hours pass, the facilities must be shut down until repairs are completed.

All maintenance activities must be detailed in a log, including the following:

- Filter changes including filter housing cleaning and DISINFECTION (including concentration and contact time).
- Backwashing time.
- Fecal accidents.
- Injury accidents.
- Facility opening and closing times.

One test must be conducted at the end of each day for the presence of *Escherichia coli* (*E. coli*) using a test in accordance with the latest edition of *Standard Methods for the Examination of Water and Wastewater*. Test kits, incubators, and associated equipment must be operated and maintained in accordance with the manufacturers' specifications.

For positive *E. coli* tests, follow the following procedure:

- Discharge the entire volume of water within the system. This includes the BABY-ONLY WATER FACILITY, compensation tank, filter housing, and all associated piping.
- Use an appropriate cleaner on the BABY-ONLY WATER FACILITY, compensation tank, and filter housing (cartridge filter), then rinse and disinfect them (chlorine or bromine). DISINFECTION must be accomplished with a solution of at least 50 MG/L (ppm) for 1 minute, or the equivalent CT VALUE.
- Conduct follow-up testing. The facility must not be put back in operation unless follow-up test results are negative for the presence of *E. coli*.

A record of the test results must be maintained on the vessel and must be available for review during inspections. Retain records for 12 months.

The maintenance logs, records, and charts must be kept for 12 months.

13.7.6 Training

At least one person trained in the maintenance and operation of RWFs must be on the vessel and always available when the RWF is open for use. Such training includes the requirements of this manual, prevention of recreational water illnesses and injuries, HALOGEN and PH control chemicals, UV DISINFECTION systems, recreational water safety, and using test kits for HALOGEN-based DISINFECTANTS and PH. A record must be kept with the names of all trained individuals.

13.7.7 Monitor

At least one individual must be available in the immediate area of the RWF when it is open for use. This individual must monitor the area to ensure all the following:

- Children are wearing swim diapers.
- Diapers are changed at suitable diaper-changing stations and not at the RWF.
- All children are under adult supervision.
- FOOD, BEVERAGES, and glass are not used near the facility.
- There is no running or boisterous play near the facility.
- Children who are ill are prohibited from using the facility.

13.7.8 Safety

13.7.8.1 Eye Damage

Ensure that water sprays are designed with pressures and directional flow controls to prevent eye damage to users.

13.7.8.2 Safety Sign

An **easy-to-read permanent** safety sign must be posted **at each entrance of** the RWF. Letters on the sign heading must be at least 25 millimeters (1 inch) high; all other lettering must be at least 13 millimeters (½ inch) high.

At a minimum, the sign should state the following:

- This facility is only for use by children in diapers or who are not completely toilet trained.

- Children who have a medical condition that may put them at increased risk for illness should not use these facilities.
- Children who are experiencing symptoms such as vomiting, fever, or diarrhea are prohibited from using these facilities.
- Children must be accompanied by an adult at all times.
- Children must wear a clean swim diaper before using these facilities. Frequent swim diaper changes are recommended.
- Do not change diapers in the area of the BABY-ONLY WATER FACILITY. A diaper changing station has been provided (exact location) for your convenience.

Pictograms may replace words as appropriate or available. Wording may vary if the message is not changed.

This information may be included on multiple signs if they are posted at the entrances to the facility.

13.7.9 Swim Diapers

Swim diapers in a variety of sizes must be available near this RWF.

13.8 Fecal, Vomit, and Blood Accident Response for RWFs

13.8.1 Fecal and Vomit Accident Response for RWFs

This annex includes a sample fecal and vomit accident plan with required data elements. The sample plan is based in part on recommendations found on CDC's Healthy Swimming website (www.cdc.gov/healthywater/swimming).

In the sample plan (section 13.8.1.1), two tables address chlorine residuals and contact times to be used for DISINFECTION after an accident involving fecal material or vomitus. Each table has chlorine residuals and contact times that reduce the risk for recreational water illness based on the pathogenic organisms that might be present because of a fecal or vomit accident.

- The Residual and Contact Time for Loose Stool table shows chlorine residuals and contact times to address loose stools. The primary pathogenic organism of concern in loose stool is *Cryptosporidium*. This organism is highly chlorine resistant; to destroy it, a CT VALUE of 15,300 is required. This means that when the chlorine residual in MG/L (ppm) is multiplied by the contact time in minutes, a minimum of 15,300 is required.
 - Concentration in MG/L (ppm) X Contact Time in minutes $\geq$ 15,300
- The Residual and Contact Time for Formed Stool or Vomitus table shows chlorine residuals and contact times to address accidents involving formed stools or vomitus. The disease-causing organisms of primary concern are *Giardia*, *E. coli* 0157:H7, and *Shigella*. To destroy the more highly chlorine resistant of these organisms (*Giardia*), a CT VALUE of 50 is required. This means that when the chlorine residual in MG/L (ppm) is multiplied by the contact time in minutes, a minimum of 50 is required.
 - Concentration in MG/L (ppm) X Contact Time in minutes $\geq$ 50

To determine the appropriate chlorine residual and contact time, operators should observe the nature of the accident.

- If the fecal accident is loose (diarrhea), the loose-stool table should be used for DISINFECTION.
- If the fecal material is solid or formed or if the accident involves vomitus, the formed stool or vomitus table should be used for DISINFECTION.

It is important to remember that the DISINFECTION capabilities of chlorine diminish as PH increases. Operators must ensure that PH levels are maintained 7.5 or less at 25°C (77°F) or higher during this DISINFECTION process.

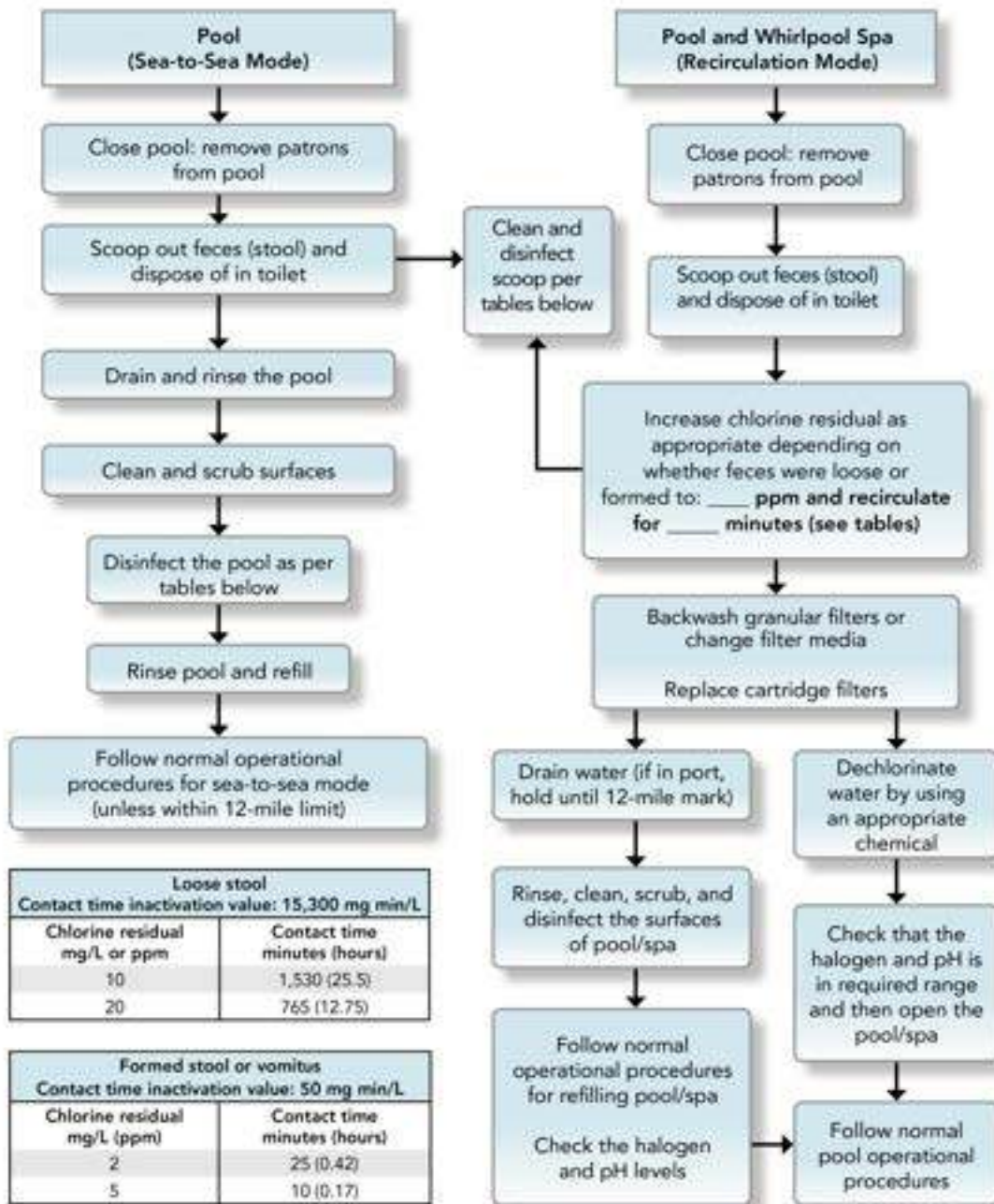
Record all fecal and vomit accidents in a log with all the following information:

- Name of RWF.
- Date of event.
- Time of event.
- Number of bathers.
- Formed stool, loose stool, or vomitus.

- Chlorine residual for DISINFECTION.
- Contact time for DISINFECTION.
- PH level for DISINFECTION.
- Chlorine residual for reopening.
- PH for reopening.

13.8.1.1 Fecal/Vomit Accident Plan

Sample Fecal/Vomit Accident Plan



13.8.2 Blood in the RWF Water

Extracted from www.cdc.gov/healthy-swimming/response/responding-to-blood-and-vomit-in-the-pool.html.

Chlorine kills germs found in blood (such as hepatitis B and HIV). CDC is not aware of any instances in which a person has become infected with bloodborne germs after being exposed to blood in a pool.

While there is no public health reason to do so, aquatic staff might choose to respond to blood spill in the water as if responding to vomit in the pool.

13.9 Cartridge Filter Cleaning Procedures

Cartridges should be cleaned in accordance with manufacturer's instructions where available and complete. In the absence of instructions, clean filters when the gauge pressure differential is 69 kilopascals (10 pounds per square inch).

Cleaning equipment should include a soaking container properly sized to immerse the filter elements, a rinsing area with proper drainage, and a drying area protected from CONTAMINATION (for example, birds and insects).

New filters do not regain 100% of their capacity. Perhaps only about 80% of the capacity is recoverable, regardless of the treatment. If the recommended design flow rate exceeds 80% of the maximum flow allowed on the filter, the filter may be undersized.

Facilities with cartridge filters are recommended to have equipment on-site to clean the cartridges. This includes a basin or tub large enough to immerse the entire cartridge. Water from the cleaning and soaking process must be discharged to the sanitary sewer. Proper cleaning is critical. Failure to clean the cartridge properly can lead to disease OUTBREAKS.

How to Clean Cartridge Filters:

1. Rinse Thoroughly: Rinse the cartridge of as much dirt and debris as possible by washing inside and out with a garden hose and spray nozzle.

DO NOT use a pressure washer. High flow/pressure can drive dirt into the interior and permanently damage the cartridge. It can also aerosolize pathogens in the filter.

2. Degrease: Cartridge filters need to be degreased each time they are cleaned. Body oil, suntan oil, cosmetics, hair products, and/or algae and biofilms can form a greasy coating on the filter pleats, which will clog the pores and reduce the filter capacity.

Soak the cartridge overnight in one of the following:

- Filter cleaner/degreaser **OR**
- A solution of water with 237 grams (1 cup) of trisodium phosphate **OR**
- 237 grams (1 cup) of automatic dishwashing detergent per 19 liters (5 gallons) of water.

Never use muriatic acid or products with acid in them before degreasing. Acid may permanently set the grease and ruin the cartridge.

Rinse thoroughly.

3. Sanitize: To remove or prevent biofilms, algae, and bacteria growing on the cartridge, add 0.95 liters (1 quart) of household bleach per 19 liters (5 gallons) of clean water and soak 1 hour before rinsing.

4. Rinse: Remove the clean cartridge from the SANITIZATION soak water and rinse thoroughly with a hose.

5. Dry: After the filter is cleaned and degreased, it should be allowed to dry completely. Some bacteria (for example, *Legionella* spp.) that survive the cleaning process can be killed by drying. Do not allow the filter to become contaminated with dirt or soil after it is cleaned. Put the cartridges in a clean plastic trash bag if they are to be transported and the original boxes are not available.

Acid Wash (Only if Necessary): Excessive calcium or mineral deposits on the filter media can be cleaned with a 1:20 solution of clean water and muriatic acid. Put a few drops of muriatic acid on the filter. If it foams, it might need to be acid washed. Very few filters need to be acid washed.

13.10 Food Cooking Temperature Alternatives

13.10.1 Introduction

To be effective in eliminating pathogens, cooking must be adjusted to a number of factors. These include the anticipated level of pathogenic bacteria in the raw product, the initial temperature of the FOOD, and the FOOD's bulk, which affects the time to achieve the needed internal product temperature. Other factors to be considered include postcooking heat rise and the time the FOOD must be held at a specified internal temperature.

To kill microorganisms, FOOD must be held at a sufficient temperature for the specified time. Cooking is a scheduled process in which each of a series of continuous time and temperature combinations can be equally effective. For example, in cooking a beef roast, the microbial lethality achieved at 112 minutes after it has reached 54°C (130°F) is the same lethality attained as if it were cooked for 4 minutes after it has reached 63°C (145°F).

Cooking requirements are based in part on the biology of pathogens. The thermal destruction of a microorganism is determined by its ability to survive heat. Different species of microorganisms have different susceptibilities to heat. Also, the growing stage of a species (such as the vegetative cell of bacteria, the trophozoite of protozoa, or the larval form of worms) is less resistant than the same organism's survival form (the bacterial spore, protozoan cyst, or worm egg).

FOOD characteristics also affect the lethality of cooking temperatures. Heat penetrates different FOOD at different rates. High fat content in FOOD reduces the effective lethality of heat. High humidity within the cooking vessel and the moisture content of FOOD aids thermal destruction.

Heating a large roast too quickly with a high oven temperature may char or dry the outside, creating a layer of insulation that shields the inside from efficient heat penetration. To kill all pathogens in FOOD, cooking must bring *all* parts of the FOOD up to the required temperatures for the correct length of time.

The temperature and time combination criteria specified in Annex 13.10.2 are based on the destruction of *Salmonellae*. This section includes temperature and time parameters that provide "D" values (decimal log reduction values) that may surpass 7D. For example, at 63°C (145°F), a time span of 15 seconds will provide a 3D reduction of *Salmonella enteritidis* in eggs. This organism, if present in raw shell eggs, is generally found in relatively low numbers.

Other FOOD, FISH, and MEATS that have not been ground or minced—including commercially raised GAME ANIMAL MEAT specified as acceptable for cooking at this temperature and time parameter—are expected to have a low level of internal CONTAMINATION. The parameters are expected to provide destruction of the surface contaminants on these FOOD.

13.10.2 Temperature-Time Alternatives**Chart 1. Alternative Temperature Times for 68°C (155°F)**

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

Chart 2. Cooking Exemptions

FOOD	Provisions
Beef steak: WHOLE-MUSCLE, INTACT	Steak is cooked on top and bottom to a surface temperature of 63°C (145°F) or above and a cooked color change is achieved on all surfaces.
Eggs, FISH, MOLLUSCAN SHELLFISH, and other MEATS	CONSUMER information is provided as specified in section 7.2.6.1.2 or a VARIANCE is granted as specified in section 12.13 of the current <i>VSP Environmental Public Health Standards</i> .

Extracted from *FOOD Code* (2022).

13.11 Chemicals Used in Washing or to Assist in the Peeling of Fruits and Vegetables

Title 21--Food and Drugs

Chapter I--Food and Drug Administration, Department of Health and Human Services

PART 173--Secondary Direct Food Additives Permitted in Food for Human Consumption

Subpart D--Specific Usage Additives

Sec. 173.315 Chemicals used in washing or to assist in the peeling of fruits and vegetables.

13.12 Time-Control Plan Examples

Time Control Plan for Time/Temperature Control for Safety Food/Potentially Hazardous Food (TCS/PHF)

Location _____

TCS/PHFs in storage at 5°C (41°F) or less, fully cooked, or in hot holding at 57°C (135°F) or greater.

Time control begins when

- Cold foods are removed from refrigeration and placed in time-control units.
- Hot foods are removed from hot holding units or cooking and placed in time-control units.

Foods placed out for service

Loose containers of TCS/PHFs, including mise-en-place, that are placed on preparation counters, in non-operating equipment, or on open trolleys must be labeled with the discard time, even if the outlet has been open for less than 4 hours.

**4 hours
maximum**



**TCS/PHFs discarded
within 4 hours**

If the time from initial setup to final discard exceeds 4 hours, each TCS/PHF container must be labeled with its 4-hour discard time.

Setup and Discard Times

Embarkation day, port day, sea day
Breakfast
Lunch
Afternoon tea
Dinner (include 1st & 2nd seating)
Captain's cocktail event
Crew midnight snack

Units on Time Control

-
-
-

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Time Control Plan for Time/Temperature Control for Safety Food/Potentially Hazardous Food (TCS/PHF)

Location _____

Operation Hours

Breakfast:

Embarkation day: 0530–0930

Port/sea days: 0630–1030

Lunch: 1130–1400

Dinner 1st: 1730–1945

Dinner 2nd: 2000–2145

Units on Time Control:

Roll-in refrigerators: 104, 105, 106, 325, and 326

Cold soup well port/starboard 146A and 147B

All bains marie including soup line

All food preparation counters

TCS/PHFs are stored at
41°F (5°C) or below or
135°F (57°C) or above

All TCS/PHFs, including mis-en-place on the food preparation counters, are on time control.

Containers of TCS/PHFs are labeled with the start time and 4-hour discard time.



Time control begins when

- Cold foods are removed from refrigeration and placed in/on time-control units.
- Hot foods are removed from hot holding units or cooking and placed in time-control units.



All TCS/PHFs are discarded at the end of the service period.

Six-hour Time Control Plan for Time/Temperature Control for Safety Food/Potentially Hazardous Food (TCS/PHF)

Location _____

TCS/PHFs must have an initial temperature of 5°C (41°F) or less when removed from refrigeration and placed on time control.

TCS/PHFs on time control must not exceed 21°C (70°F).

Foods placed out for service

Must be labeled to indicate the time removed from refrigeration and the discard time 6 hours later (regardless of whether the time between service setup and closing exceeds 6 hours).

**6 hours
maximum**



TCS/PHFs must be discarded within 6 hours OR if temperature exceeds 21°C (70°F).

Setup and Discard Times

Embarkation day, port day, sea day
Breakfast
Lunch
Afternoon tea
Dinner (include 1st & 2nd seating)
Captain's cocktail event
Crew midnight snack

Units on Time Control

-
-
-

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13.13 List of Some Hard and Semisoft Cheeses Exempt from Datemarking

The cheeses listed below are exempted from 7-day datemarking:

Abertam	Limburger
Appenzeller	Lorraine
Asadero	Manchego
Asiago medium or old	Milano
Asiago soft	Monterey
Battelmatt	Muenster
Bellelay (blue veined)	Oaxaca
Blue	Oka
Bra Brick	Parmesan
Camosum	Pecorino
Chantelle	Port du Salut
Cheddar	Provolone
Christalinna	Queso Anejo
Colby	Queso Chihuahua
Coon	Queso de Bola
Cotija	Queso de la Tierra
Cotija Anejo	Queso de Prensa
Derby	Reggiano
Edam	Robbiole
Emmentaler	Romanello
English Dairy	Romano
Fontina	Roquefort (blue veined)
Gex (blue veined)	Samsoe
Gjetost	Sapsago
Gloucester	Sassenage (blue veined)
Gorgonzola (blue veined)	Stilton (blue veined)
Gouda	Swiss
Gruyere	Tignard (blue veined)
Havarti	Tilsiter
Herve	Trappist
Konigskase	Vize
Lapland	Wenssleydale (blue veined)

13.14 Consumer Advisory Examples

13.14.1 Menu Example

*Hamburgers
Chicken
Potato Salad
*Seared Tuna
French Fries
House Salad

*Public Health Advisory: Consuming raw or undercooked MEATS, POULTRY, seafood, shellfish, or eggs may increase your risk for foodborne illness, especially if you have certain medical conditions.

13.14.2 Point-of-Service Examples

13.14.2.1 At an Omelet Station

Eggs can be cooked to order.

Public Health Advisory: Consuming raw or undercooked eggs may increase your risk for foodborne illness, especially if you have certain medical conditions.

13.14.2.2 At a Hamburger Grill

Hamburgers and cheeseburgers can be cooked to order.

Public Health Advisory: Consuming raw or undercooked MEATS may increase your risk for foodborne illness, especially if you have certain medical conditions.

13.14.2.3 At a Buffet Station

Cold smoked salmon is served undercooked.

Public Health Advisory: Consuming raw or undercooked seafood may increase your risk for foodborne illness, especially if you have certain medical conditions.

13.15 Warewashing Evaluation

13.15.1 Introduction

13.15.1.1 Methodology Source

The following WAREWASHING machine evaluation procedure was compiled from the NSF International (NSF) brochure *FOOD Service: Recommended Field Evaluation Procedures for Spray-type Dishwashing Machines* (1991), and *FOOD Code* (2022).

Consult section 7.4 in these standards and NSF/ANSI 3, *Commercial Warewashing Equipment Machines* for recommended construction and operational parameters.

13.15.1.2 Recommended Evaluation Equipment

The following EQUIPMENT to conduct WAREWASHING evaluations is recommended:

- Thermocouple or thermistor TMD for warewasher operational temperatures.
- Maximum registering TMD or temperature-sensitive tapes for verifying hot water warewasher final rinse temperature of 73°C (160°F) at the utensil surface.
- Optional: Calibrated melting temperature wax crayons with melt points set at 82°C (180°F) and another at 91°C (195°F).
- Pressure gauge, as applicable, for determining in-line pressure of hot water at injection point of warewasher in the range of 100–170 kilopascals (15–25 pounds per square inch).
- Chemical test kits for different chemical SANITIZER types used on the vessel.
- Flashlight.
- Tape measure.
- Watch or stopwatch.

13.15.1.2.1 Calibration

Calibrate TMDs and pressure gauges against standards to ensure reliable warewasher evaluations.

Maintain chemical test kits and temperature sensitive tapes as specified by their manufacturers to ensure accuracy.

13.15.1.2.2 Mercury Spills

Use mercury-filled maximum registering TMDs carefully during the evaluations; these devices are subject to breakage. If they break, clean up thoroughly before WAREWASHING operations resume.

13.15.2 Machines Data Plates

13.15.2.1 Data Plate Required

Review the required manufacturer's data plate for correct operating parameters.

- If the data plate indicates a flow pressure, the machine must have a gauge or a gauge valve to measure it.
- If the data plate does not indicate a flow pressure, the machine is not required to have a gauge or a gauge valve.

13.15.2.2 Temperature Requirements

Temperatures stated on the warewash machine data plate are considered minimums unless a specified range is given.

13.15.2.3 Conform to NSF/ANSI 3

The warewash machine temperatures must conform to those specified in these standards for the specific type of machine. For those manufactured to different temperature standards, evidence must be furnished that they at least conform to the minimum equivalent standards of NSF/ANSI 3, *Commercial Warewashing Equipment Machines*.

13.15.3 Evaluation Procedures

13.15.3.1 Operational Evaluation

VSP will evaluate WAREWASHING as follows:

- Dishes properly prescraped and racked.
- Machine prewash scrap trays clear of excessive soil and debris.
- Curtains and baffles on conveyor type machines intact and in their proper position.
- Conveyor speed and cycle times set according to manufacturer's specifications.
- Overflow standpipe installed and not blocked or leaking.
- Wash and rinse nozzles properly aligned and providing a uniform spray pattern.
- Wash and rinse nozzles clear of obstructions.
- Wash and rinse manifolds in good repair, properly installed in the machine, and end caps installed.
- Heating elements used in tanks free of mineral or other deposits.
- Rinse supply line strainer clear of debris.
- Wash and rinse tanks and final rinse manifold TMDs accurate to $\pm 1.5^{\circ}\text{C}$ ($\pm 3^{\circ}\text{F}$).
- Pressure regulator functioning properly.
- Flow pressure within the range specified on the data plate and between 34.5–207 kilopascals (5–30 pounds per square inch).

13.15.3.2 Temperature Evaluation

13.15.3.2.1 *Manufacturer's Instructions*

Install and operate the machine in accordance with the manufacturer's instructions.

13.15.3.2.2 *Warmup*

Run the machine through at least two complete cycles before testing unless it has been operating just before the evaluation. On conveyor machines, run at least two racks through the machine.

13.15.3.2.3 *Additional Warmup*

When minimum temperatures are not indicated on machine-mounted TMDs, additional pre-evaluation cycles may be run to determine if higher temperatures are possible.

13.15.3.2.4 *Tank Thermometer Calibration*

Take temperatures of the wash water and pumped rinse directly from the tanks of the machines and compare them against the machine-mounted TMDs. If possible, place the evaluation TMD probe in the tank near the machine-mounted TMD probe.

13.15.3.2.5 *Sanitizing Rinse TMDs*

Use a maximum registering TMD, remote sensing thermocouple, or nonreversible thermolabels such as paper TMDs that turn from silver to black or similar device to confirm the effectiveness of heat SANITIZATION.

13.15.3.2.6 *Rinse Exposure*

Attach the maximum registering TMD in a vertical position in a rack that is exposed to the final sanitizing rinse spray at the approximate level of a plate. Attach nonreversible thermolabels to the center of a dry ceramic plate.

13.15.3.2.7 *High Wash/Rinse Temperature Factor*

Factor the effect of the temperatures of the wash water and pumped rinse into the evaluation if tank thermometers indicate they are above 71°C (160°F).

If the wash and or rinse tank temperatures are greater than or equal to 71°C (160°F), verify the final sanitizing rinse temperature using one of the methods in section 13.15.3.2.9 or another isolation method where a rapid response TMD is held at plate level in the final sanitizing rinse spray for at least 8 seconds. The maximum-registering TMD may also be checked at the end of each part of the cycle to verify that the wash and rinse temperatures have not been in excess of 71°C (160°F).

13.15.3.2.8 *Effective Sanitation*

Evaluate effective SANITIZATION by noting that in a mechanical operation, the temperature of the fresh hot water sanitizing rinse as it

enters the manifold must not be more than 90°C (194°F) or less than

- 74°C (165°F) for a stationary rack, single-temperature machine.
- 82°C (180°F) for all other machines.
- 71°C (160°F) at the UTENSIL surface, as measured by an irreversible registering temperature indicator.

13.15.3.2.9 Indirect Methods

The final rinse spray temperature may be indirectly evaluated by using a nonreversible thermolabel attached to the manifold or final rinse spray arm near the hub or by using calibrated melting temperature wax crayons. Make a mark on a dry portion of the final sanitizing rinse manifold or supply line with a crayon that melts at 82°C (180°F) and another that melts at 91°C (195°F).

Another acceptable test to establish the final sanitizing rinse temperature (manifold) is to dry the final sanitizing rinse spray arm as near to the manifold entry into the machine as possible and affix an 82°C (180°F) thermolabel. The thermolabel should be left in place through one full warewash cycle. There may be slight temperature decreases at positions distant from the manifold entry into the machine.

A third method is to attach a maximum registering thermometer to the end of a rod and hold the thermometer in the final rinse spray at plate level for 8 seconds.

After any of the three of the indirect method tests above, assess the spray pattern from the final rinse spray arm to ensure that the spray pattern is effective.

For a stationary rack machine, the final rinse temperature can be evaluated by running the machine with a maximum registering thermometer at plate level. Stop the machine at the end of the wash cycle to check the temperature, and again at the end of the final rinse cycle.

13.15.3.3 Chemical Sanitizing Evaluation

Obtain sample at the end of the final chemical sanitizing rinse cycle and use a SANITIZER test kit to confirm the SANITIZER level is at the minimum specified on machine data plate and in these standards.

13.15.4 Routine Monitoring

13.15.4.1 Periodic Detailed Evaluations

Proper WAREWASHING is critical to protecting the health of a vessel's passengers. The procedures provided in this annex may assist the vessel crew in periodically verifying the proper operation of its WAREWASHING machines. Following the manufacturer's recommendations for maintenance and operation will ensure the WAREWASHING machines continue to meet the criteria of these standards and standards of NSF/ANSI 3, *Commercial Warewashing*

Equipment Machines.

13.15.4.2 Startup Evaluations

During each WAREWASHING machine's startup, the proper setup and operation of the EQUIPMENT should be verified with basic checks. These include checks of the tank, manifold, and curtain assemblies to ensure they are properly installed. Proper operating temperatures should be verified to meet the minimum required temperatures during the start-up.

13.15.4.3 Routine Operation Evaluations

Periodic operation and temperature checks by the WAREWASHING crew during the WAREWASHING time should detect problems soon after they occur. The person removing the clean and sanitized ware must examine each piece to determine if it is clean. Periodic management checks of the WAREWASHING process during operation verify that the machines are operating properly and the UTENSILS processed are indeed clean and sanitized.

13.15.4.4 Simple Records

Simple records can assist in the WAREWASHING machine monitoring process. A review of these records can ensure proper monitoring is being conducted and assist in determining a gradual or severe malfunction of the machine.

13.16 Inspection Report

13.16.1 Report Form

VESSEL SANITATION INSPECTION REPORT				
	Vessel:		Date:	
	Cruise Line:		Type: Periodic	
	Port:			
Item No. / Point Value / Description			* = Critical Item	
DISEASE REPORTING				
01*	4	Disease reporting		
02	1	Medical logs maintained		
POTABLE WATER				
03*	5	Tanker / production source; Halogen residual		
04*	5	Distribution system halogen residual		
05	2	Distribution system halogen analyzer calibrated		
06	2	Halogen analyzer chart recorder maintenance, operation, records; Micro sampling records		
07*	3	System protection cross-connections, backflow; Disinfection		
08	1	Filling hoses, caps, connections, procedures; Sample records, valves; System construction, maintenance		
RECREATIONAL WATER FACILITIES				
09*	3	RWT halogen residuals		
10	2	RWT maintenance, safety equipment		
FOOD SAFETY				
PERSONNEL				
11*	5	Food handler's infections, communicable disease		
12*	4	Hands washed; Hygiene practices		
13*	3	Management, knowledge, monitoring		
14	1	Outer clothing clean, jewelry, hair; Hand Sanitizers		
FOOD				
15*	5	Food source, sound condition; Food re-service		
16*	5	Potentially hazardous food temperatures		
17	2	Temperature practices; Thawing		
18*	3	Cross-contamination		
19	2	Food protected; Original containers, labeling; Re-use food; discarded; re-utilized outside		
EQUIPMENT				
20	2	TSE temperature maintenance facilities; Food-contact surfaces; Food TMEs		
21	1	Nonfood-contact surfaces; Ambient TMEs		
22	3	Warewashing facilities; TMEs; Test Kits		
23	2	Pre-rinse; Wash and rinse solutions		
24*	1	Sanitizing rinse		
25	1	Wiping cloths / dusters/ towels		
26*	1	Food-contact surfaces equipment; materials clean; Safe materials		
27	1	Equipment / materials non-food-contact surfaces clean		
28	2	Equipment stored / leak / single / service storage, handling, dispensing chamber functionality		
TOILET AND HANDWASHING FACILITIES				
29*	3	Facilities convenient, accessible, design, installation		
30	1	Hand cleanser, sanitary towels, waste receptacles, handwash timer; Maintenance		
TOXIC SUBSTANCES				
31*	1	Toxic items		
FACILITIES				
32	1	Solid waste containers		
33	1	Decks / bulkheads / deckheads		
34	1	Plumbing fixtures / supply lines / drain lines / drains		
35	2	Liquid waste disposal		
36	1	Lighting		
37	1	Rooms / equipment venting		
38	1	Unnecessary articles, cleaning equipment; Unauthorized personnel		
ENVIRONMENTAL HEALTH				
39*	3	IPM program effective; Approved pesticide application		
40	1	IPM procedures; Outer openings protection		
41	2	Housekeeping		
42	1	Child activity centers		
43	1	Ventilation		
KNOWLEDGE				
44	2	Person in charge; Knowledge		

13.17 Corrective-Action Statement

13.17.1 Introduction

13.17.1.1 Purpose

VSP established a procedure for postinspection reporting of corrective actions to encourage the correction of deficiencies noted during an inspection. A corrective action statement will not affect the inspection score.

13.17.1.2 Critical Item Monitoring

The corrective-action statement, particularly for CRITICAL ITEMS, should include a management monitoring plan to ensure that the procedure or process that was out of control will be monitored and controlled in the future. The public health goal of the inspection is to prevent the recurrence of the critical deficiency in the specific instance where it was found and generally in future similar operations on the vessel.

13.17.1.3 Publicly Available

The corrective-action statement will be appended to the final inspection report for future reference and public distribution via the VSP website.

13.17.1.4 Email Submission

Please use the corrective-action template at www.cdc.gov/vessel-sanitation/php/communication-resources/index.html and send it to vsp@cdc.gov.

13.18 Summary of Sanitation Inspections of International Cruise Ships

13.18.1 Introduction

Every vessel that has an international voyage with a stop at a U.S. port and carries 13 or more passengers is subject to twice-yearly inspections and, when necessary, to reinspection by VSP. To ensure a clean and healthful environment, cruise ships must meet the criteria established by VSP.

The score and the complete report for each inspection are published on the VSP website (www.cdc.gov/vessel-sanitation/about/index.html).

The ship's level of sanitation is acceptable to VSP if its score on the inspection is 86 or higher.

13.18.2 Online Information

The VSP website has a searchable database of inspection report summaries and lists. The complete inspection report information is also retrievable.

Lists available on the VSP website include the following:

- Advanced Cruise Ship Inspection Search.
- Green Sheet Report.
- Cruise Ship Inspection Score 100.

These lists show the data by

- Ship name.
- Cruise line.
- Inspection date.
- Score (all scores, scores of 86 or higher [satisfactory scores], and scores of 85 or lower [unsatisfactory scores]).

Further information can be obtained on a particular ship, including all scores for that ship and an inspection report preview.

The VSP website also provides the detailed inspection report for each ship inspection. This report provides a categorical review of the deficiencies noted along with the number of points deducted for that category and the numerical score for the inspection of a particular ship. Details of the inspection with the specific deficiencies and recommendations are also available from this page.

Further information on VSP, inspection results, and vessels' corrective action statements may be obtained

- On the VSP website (www.cdc.gov/vessel-sanitation).
- Through email (vsp@cdc.gov).

14.0 Bibliography

This section includes the following subsections:

- 14.1 Introduction
- 14.2 Authority
- 14.3 Definitions
- 14.4 ACUTE GASTROENTERITIS Surveillance
- 14.5 POTABLE WATER
- 14.6 RECREATIONAL WATER FACILITIES
- 14.7 FOOD Safety
- 14.8 INTEGRATED PEST MANAGEMENT
- 14.9 Housekeeping
- 14.10 CHILD ACTIVITY CENTERS
- 14.11 HVAC Systems, Fountains, Misting Systems, Humidifiers, and Showers
- 14.12 Administrative Guidelines

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