Association of
Port Health Authorities

Ship Sanitation Working Group

Ship Sanitation Inspection Guide

Draft No.2 For Consultation

ACKNOWLEDGEMENTS

To be completed after consultation exercise.

CONTENTS

To be completed after consultation exercise.

1.0 POTABLE WATER SYSTEMS

1.1 MANAGEMENT

Drinking water bunkered from shore supplies should be free from pathogenic organisms and harmful chemicals and the handling of water must be rigidly controlled from source to consumer to avoid contamination. Potable water on board ship is derived either from distillation or from natural sources. Distilled water is either fresh or salt water that has been converted to steam and back to water. It is relatively free from impurities but has a flat taste. Natural water, or 'shore water', is usually obtained from wells, springs, or freshwater bodies ashore. It usually has to be treated, either ashore or afloat to protect the health of the crew/passengers. Every ship should carry its own potable water hose for connection to a shore supply and the Master should try and establish the likely quality of the shore side supply before bunkering. This point is particularly relevant if taking water from Africa or South America for example and many foreign going vessels will avoid bunkering in some of the more remote regions of the world if possible. In all cases, but particularly in instances where bunkering has taken place outside first world countries, the Master should be advised to check chlorine levels of the shore side water received.

Free residual chlorine of the shoreside supply should exceed 0.2 ppm although in many cases (including parts of the UK and the EU) this will not be the case. The ships potable water distribution system should maintain a minimum free residual chlorine of 0.2ppm(mg/l) throughout (including the remote part of the system) but not more than 5.0 ppm. In order to achieve the required levels of free chlorine, dosing of the system may be necessary. Full details on how to carry this out can be found in the APHA handbook.

It is common for cruise ships to monitor , influence and log the incoming water quality, indeed, many have small laboratories on board and carry out weekly checks on the potable water system. These duties will normally fall to the engineer's department or, more likely, ships nurse. There is value in discussing the ships monitoring regime with the appropriate personnel and perusing the log.

All Masters are advised to keep a 'potable water system log' regardless of the type of ship or nature of the voyage. This should include details of: tank capacities, distribution system, filters, construction materials, maintenance schedules, disinfection schedules, sample frequency, sample results and remedial action.

1.2 TREATMENT

According to the WHO Guidelines for drinking water quality, the following conditions should be met to ensure effective disinfection with chlorine:

turbidity should preferably be less than 1 nephelometric turbidity unit
the contact time should be greater than 30 minutes and the pH preferably less than 8.0, resulting in a free chlorine residual of 0.2-0.5 ppm (mg/l)

It should be noted that the above conditions will not ensure that the water is free from pathogenic protozoa since these organisms are considerably more resistant to chlorine disinfection than bacteria or viruses. In such cases, careful filtration followed by chlorination may be necessary to ensure the absence of these pathogenic organisms.

The procedure for the disinfection of potable water with chlorine can be found in the APHA Handbook and the HPA guide mentioned in the introduction but in broad terms, 100ml of potable water should be free from E.coli or Coliform contamination.

A chlorination or UV unit in tandem with a distillation unit will ensure that the drinking water is of acceptable hygienic quality. The pictures below show a distillation unit in parallel with UV on board the sail training vessel 'Gunilla'.

It is prudent for the port health officer to sample the potable water locally in port (in order to comply with the International Health Regulations 1969) and aboard visiting craft. In the UK, around 3000 ships' water samples are taken annually with a failure rate of around 10%. Although it is possible to carry out a risk assessment, poor results often occur when least expected! Full details of the correct sampling method is contained within the HPA booklet discussed in the introduction. Following a test result, it is good practice to produce a 'potable water certificate' along the lines of the one below which should be sent to the ship promptly, either via email, agent, owner or hand delivered if the ship is still in port. If the water result is poor, the port health officer at the ship's next port of call should also be informed. The Master should be encouraged to keep this certificate in a safe place near to the Deratting (exemption)Certificate so that port health colleagues are aware.

1.3 EQUIPMENT

The water system of a port is the usual source of potable water and is made available to the ship either through wateringpoints at the dockside or water barges. Each vessel should carry sufficient suitably hygienic hoses to load potable water which should be labelled 'potable water hose only', stored in a secure cabinet on a reel and not used for any other purpose. Hoses should be disinfected every 6 months using superchlorinated water at 100ppm with a contact time of 1 hour and flushed through for three minutes before each use. After use, hoses should be drained and then capped at both ends.

A deck officer will usually be responsible for the cleanliness and safety of a ship's filling hose and its ends as well as the

connections of dockside, water-barge or shipside filling lines. These connections – outlet and inlet – must be at least 40cm above the dock, water-barge deck and ships deck and housed with a proper fitting. Every such watering- point connection must be labelled 'Potable water filling' and will usually be blue in colour but not necessarily always as illustrated below. In this case, compressed air is blue and the potable water connection is green, although it is labelled 'potable', (red pipes are generally seawater)

1.4 MAINTENANCE

Potable water should be transported from storage areas to dispensing units through identified(i.e., colour coded, non-cross-connected pipes made of safe metals or plastic)pipes. All potable water outlets must be protected from back-siphonage by an air-gap or approved vacuum-breaker. To avoid contamination, potable water tanks should have no common partition with tanks containing non-potable liquids, should be labelled 'Potable Water' and be accessible through a watertight, preferably side-mounted manhole. It must have an overflow and relief valve or vent, be completely drainable from a bottom drain, able to withstand pressure and have a water-level gauge and sample tap. Fresh water tanks should be emptied, refilled and flushed every 6 months and opened, emptied, ventilated, inspected and recoated annually. Before refilling, the tanks and the distribution system should be superchlorinated to 50ppm with a contact time of 24 hours.

Anyone entering any potable water tanks should wear clean clothing and footwear and should not be suffering from skin infections, diarrhoea or any communicable disease.

When the Master is satisfied that shoreside water is acceptable he should ensure the ships' storage tanks are in order. The delivery cocks on the shore and the receiving point on the ship should be clean, in good working order and free from leaks, then ensure that the ends of the hose do not drag across the quay, fall into the sea or drag across the deck.

Desalination of seawater on board ships has been known about since the 1700's, however, today high/low pressure evaporation, distillation, filtration or reverse osmosis techniques are utilised. A combination of desalination and the storage of water may be employed. Where desalination is employed it is recommended that the equipment is not used within 20 miles of land or other pollution source including any discharges from the ship – this is usually achieved by having the inlet forward of any sewage outlets.

1.5 CONCLUSION

Potable water includes fresh water intended for drinking, washing, bathing or showering. Water used in connection with food preparation and ice production should also meet the guideline standard laid down by the Health Protection Agency in its publication; 'Guidelines for water quality on board merchant ships including passenger vessels'. This publication (ISBN 0-901144-65-7) is invaluable to port health staff and is available at;

Health Protection Agency
61 Colindale Avenue
LONDON NW9 5DF

Tel. 020 8200 1295
Fax. 020 8358 3130/3131

Price: circa £7.00

www.hpa.org.uk

The full list of legislation pertaining to ship potable water is also listed and summarised in the above publication as well as the MOU between APHA and the MCA . Other points of reference that the port health officer should be familiar with before setting foot aboard ship are;

- APHA Port Health Handbook 2004

- Numerous M Notice's appertaining to potable water which are freely available on the MCA website; www.mcga.gov.uk This site has a user friendly search facility.

The USA Vessels Sanitation Program Manual is also a useful reference text (www.cdc.gov/nceh/vsp) which will give very detailed information on the standards the Americans expect of cruise liners visiting US ports. The WHO 's International Medical Guide For Ships (ISBN 92 4 154231 4) is also very useful and is widely found aboard ships.

2. FOOD SAFETY / HYGIENE

INTRODUCTION

The Food Standards Agency's Code of Practice (CoP) on Food Safety requires that "Primary" food safety inspections of premises are carried out at appropriate frequencies. Chapter 10 of the CoP relates specifically to ships and aircraft, though it should be noted that other Chapters of the CoP are equally applicable, such as Chapter 4 on the inspection of premises and Chapter 6 on sampling. Essentially, a "Primary" inspection of a ship in relation to food safety is an inspection where all appropriate parts of the food operations are audited and a risk assessment carried out to determine the level of risk to food safety. PHO's must have regard to both the CoP and the accompanying Practice Guidance when carrying out food safety inspections along with the Industry Guide to Good Hygiene Practice: Catering Guide – Ships. (All in draft form at the present time).

When carrying out a "Primary" inspection, the CoP states that PHO's should, in general:

- establish the scope of the business and the relevant food law that applies to the operations taking place;
- thoroughly and systematically gather and record information from the observation of practices, procedures and processes and discussion with food handlers, contractors, proprietors and managers;
- assess the risk of the enterprise failing to meet food hygiene requirements;
- assess the hazards posed by the activities of the business, the managers/proprietors understanding of those hazards, and the application of appropriate controls;
- assess and verify appropriate hazard analysis or Hazard Analysis and Critical Control Point (HACCP) food safety management systems, confirming that controls are in place and operating effectively and that appropriate corrective action is taken when necessary;
- verify that appropriate "own-checks" are being carried out effectively; establish whether food is being handled and produced hygienically, is safe to eat, and that relevant temperature controls are being observed;
- have a discussion with any staff responsible for monitoring and corrective action at critical control points to confirm that control is effective;
- carry out a physical inspection to determine whether critical controls have been identified and whether the controls are in place and to assess compliance with relevant food law;
- have a discussion regarding any hazards that have been identified by the officer that have not been covered by the business's systems;
- have a discussion regarding any failure to implement or monitor any critical controls that have been identified by the business.
- check the source and any health marking of raw materials, and the health marking of finished products. Where deficiencies in health marking are identified, officers should refer to and implement any relevant provisions of Chapters 1.7 and 2.4 of the CoP and the Home Authority Principle (where applicable), and consider using their powers under Section 9 of the Act to remove affected products from the food chain;
- in relation to retail and catering businesses that sell or use shellfish, ensure that where parcels of shellfish are split before sale to the ultimate consumer, that the health marks are retained for at least 60 days.
- determine whether it is necessary to collect samples of raw materials, ingredients, additives, intermediates, finished products, or materials and articles in contact with food for analysis and/or examination;
- recommend good food hygiene practice in accordance with EU and UK Industry Guides, relevant sector specific code, and other relevant technical standards, and promote continued improvements in hygiene standards through the adoption of good practice;
- identify any actual or potential breaches of food law and, if appropriate, gather and preserve evidence;
- determine relevant enforcement action.

For the purposes of inspections and enforcement, it must be noted that the "Proprietor" of the food business on board a ship may not be the owners or charterers of that ship. This is particularly so in relation to passenger ships, where it is a common practice for food operations to be sub-contracted to other companies.

Consequently, ownership of the food business is one of the first issues for a PHO to clarify during a ship inspection where a “Primary” inspection of food operations will be undertaken. Typically, on small and medium sized non-passenger vessels, it will be the same company that operates the ship, but this should not be taken for granted and PHO’s must make all reasonable efforts to determine the proprietor of the food business. On some ships, there may be more than one proprietor of a food business, for example on a cruise vessel where the food operations for crew and passengers are contracted to a third party and retail shops on board selling confectionary, alcoholic beverages and other luxury food products are owned by individual companies.

Copies of ship inspection forms can be found in appendix XX, within which there is a section for assessing the ships compliance with the relevant parts of the Food Safety Act and food hygiene and temperature control regulations.

2.1 HAZARD ANALYSIS / MANAGEMENT

Regulation 4(3) of The Food Safety (General Food Hygiene) Regulations 1995 places a duty on food business proprietors to undertake an analysis of their food related operations and implement a management system to ensure food safety:

"4 (3) A proprietor of a food business shall identify any step in the activities of the food business which is critical to ensuring food safety and ensure that adequate safety procedures are identified, implemented, maintained and reviewed on the basis of the following principles:

(a) analysis of the potential food hazards in a food business operation;

(b) identification of the points in those operations where food hazards may occur;

(c) deciding which of the points identified are critical to ensuring food safety ("critical points");

(d) identification and implementation of effective control and monitoring procedures at those critical points; and

(e) review of the analysis of food hazards, the critical points and the control and monitoring procedures periodically, and whenever the food business's operations change."

Note that the regulation does **not** require the food business proprietor to document any part of the management system.

In practice PHO's are likely to encounter a range of situations on ships, from those ships where hazard analysis has not been undertaken at all, to those ships where it has been undertaken but there is no formal management system or where hazard analysis has been partially or even completely documented. In most cases it will be common to find documents that relate to at least a part of the requirements of hazard analysis, such as monitoring records of temperatures or potable water quality. Officers should not forget that the requirements of other legislation specific to the operation of ships may mean that parts of an analysis of hazards to food safety have already been undertaken in relation to that specific ship operation legislation, for example, potable water quality. It may, therefore, be appropriate to review other documents maintained on board ships, such as Standing Orders, Operational Procedures, Maintenance Logs, Integrated Pest Management and Control Plans, Health & Safety at Work documents, etc.

When PHO's carry out food hygiene inspections they ***must*** make an assessment of compliance with regulation 4(3). It is recommended that relevant questions concerning hazard analysis are put the senior manager(s) of the food operation, such as:

- What are the main hazards to food safety in their food operations?
- How are they controlling those hazards?
- What are the main controls in their food operations?
- Are there any policies and procedures for managing and controlling food operations?
- Do they keep records in relation to food operations?
- How do they deal with situations in food production when things go wrong?

These questions and the ensuing answers and discussions may confirm that the food operation is well managed and risks to food safety are minimised, or they may indicate that there is a lack of knowledge of hazards to food safety and specific risks to food safety exist within their operation. Officers should remember that language difficulties may lead to confusion, so answers to questions and material contained in documents should be reviewed with this in mind.
It is also recommended that any appropriate documents in relation to control of food safety are reviewed before a physical inspection is undertaken. This review may identify failings in the management of food safety immediately, for example it may become apparent during the review that incorrect temperature control of food is taking place because a procedure on cooking sets a temperature which is too low to achieve adequate cooking and destruction of bacteria in the food, or that high risk food is stored at a temperature which could result in multiplication of pathogens and/or toxin production. Alternatively, it may indicate that management of food safety is well defined. Typical documents that may be present on board are:

- Hazard Analysis / Food Safety Management System manuals
- Purchase procedures/ Supplier information / Product specs / purchase orders / purchase lists
- Delivery notes/ checklists on quality and safety
- Recipe Specifications
- Menu's
- Temperature control procedures / monitoring records
- Cleaning schedules / duty lists / cleaning chemical safety & usage instructions
- Pest control programmes / IPM procedures / chemical safety & usage instructions / de-ratting & exemption certificates / treatment plans & records
- Water quality control procedures / water quality monitoring records
- Training records
- Maintenance logs and completion records
- Internal audit records / Masters inspection records / external audit records – consultants & other PHA's.
- Doctors records of infection and control

In any event, the answers to the questions and/or the results of the document review should be confirmed during a physical inspection of food operations. It is common to find that what senior managers think is happening in practice or what documents indicate should be happening, is not always the situation in the galley itself. In this case, implementation of hazard analysis has broken down and needs to be resolved to protect food safety.

During a physical inspection, it is recommended that PHO's discuss parts of the food operation with personnel who are actively engaged in carrying out food production tasks and try to ascertain their level of understanding of food safety requirements, good hygiene practice and any relevant ship board procedures and standing instructions in relation to food production and safety.

In some cases, where time constraints apply or the timing of food production operations dictate, it may be necessary to carry out a physical inspection as a matter of urgency upon boarding the ship. In this case, observations made during the inspection may be confirmed afterwards, by questioning senior managers and reviewing documents.

Officers should be prepared to allocate a reasonable amount of time for a verbal and document review based assessments of compliance with regulation 4(3), either before or after a physical inspection.

2.2 TRAINING

The training of both food handlers and their supervisors and managers is recognised as being a fundamental necessity in food production operations in order to ensure the safety of the final product.

Chapter X of Schedule 1 of the Food Hygiene Regulations specifically relates to the training of food handlers:

> **"***The proprietor of a food business shall ensure that food handlers engaged in the food business are supervised and instructed and/or trained in food hygiene matters commensurate with their work activities."*

This chapter leaves no doubt as to the requirement for food handlers to be trained. However, the level of training required for food handlers varies depending upon their duties and their position within the organisation. Food handlers with a supervisory role should be trained to a higher standard than those whom they may supervise. A good guide to training requirements can be found in the Industry Guide to Good Hygiene Practice: Catering Guide – Ships (Part 3 - Food hygiene supervision and instruction and/or training).

The basic requirements in relation to training are that food handlers employed on an individual vessel *before* the introduction of the 1995 Regulations should be instructed or trained as soon as possible to the level commensurate with their duties. Whereas, all new food handlers on an individual vessel must be told how to do their jobs in a hygienic manner.

In the case of food handlers employed by agencies, as is common practice by cruise and ferry operators, the operator of the food business on board the vessel should instruct all crew in the 'Essentials of Food Hygiene', satisfy themselves that those requiring the higher stages of training have been trained accordingly and where a food handler cannot provide evidence of training, it should assumed that the food handler is not trained and they should be deployed, supervised or trained appropriately.

Officers should bear in mind that catering personnel may not be UK nationals and may have trained in another country. Therefore, qualifications and training may vary greatly in content and standard. The catering guide sets out minimum requirements as to content and standard of training, a summary table is set out below.

Category A food handlers are those who do not come directly into contact with high risk or open food – waiters, storekeepers, etc.

Category B food handlers are those who are directly involved in the production and handling of food and personnel with a supervisory role within food operations – chefs, cooks, sous chefs, head chef, maitre 'D, Food and Beverage Manager, Hotel Services Manager.

Category C food handlers are those personnel who occupy a purely managerial role and do not handle or prepare food - Food and Beverage Manager, Hotel Services Manager.

Stage 1, essential of food hygiene training need only involve short training sessions at a very basic level with defined subject material, but should concentrate on basic issues such as general personnel hygiene, hand washing, illness, basic temperature control and separation of raw and high risk foods. In practice this is often achieved as a part of induction or on the job training and PHO's may find that each crew member has been given a list of specific instructions that form the basis of essential food hygiene.

Stage 2, hygiene awareness instruction is normally of a similar nature to that of stage 1 training, though the subject matter covered does differ and should be more detailed, for example, the ship operators policy, Harmful bacteria, Personal health and hygiene as per Hygiene Awareness Instruction, Cross contamination, Food storage, Waste disposal, cleaning, sanitation and disinfection, 'Foreign body' hazards and potential contamination and awareness of pests liable to be encountered on board and relevant action to be taken. In addition to this information, food handlers must also be instructed on controls and monitoring points in the part of food handling operations that they are involved in. Again, this type of instruction may not be achieved as a part of formal structured training and Officers should be aware that most of this training is often given as supervisory instruction "on the job". Often a list of specific instructions may have been issued or the instruction may be contained within induction procedures for new staff or even job descriptions in contracts of employment.

Supervision and instruction at stages 1 and 2 may also be achieved by the provision of hygiene operational practice and procedure instructions which may be posted in the various parts of the food areas on board or in crew galleys and messes.

Stage 3, formal training for ordinary food handlers is the type of training that most PHO's may be familiar with and follows closely the Chartered Institute of Environmental Health's "Foundation" courses, otherwise known as a "Basic Food Hygiene" Course. Personnel who have "passed" such a course may have been given a certificate as evidence of training. However, stage 3 training may also apply at a higher level to those personnel who both handle food and supervise food production or those personnel at a more senior operational management level. Again, this standard of training is familiar to many PHO's as the "Intermediate" and "Advanced" Food Hygiene courses.

It should also be noted that any instruction, supervision or training should be up-to-date and current and if it is apparent that that is not the case, then PHO's should require update instruction, supervision or training to be given to food handlers. For example, it is strongly recommended that food handlers who attended a formal level 1 training course more than three

years ago should attend an update course. Similar recommendations should be made in the case of level 2 and level 3 courses where personnel attended a course some time ago and it is evident that they have forgotten some of the training they were given.

Evidence of having attended a training course on catering for cooks and chefs, such as NVQ or City and Guilds (or equivalent) is not evidence of itself of having been instructed, supervised or appropriately trained in food hygiene matters. PHO's will need to convince themselves by making enquiries and reviewing course material itself, that a food handler attending such a course was adequately trained on food hygiene matters.

Where food handlers have been trained outside the United Kingdom or PHO's are not familiar with the level and content of the training, they are recommended to obtain copies of course syllabuses and content in order that they can be compared with known training levels and standards available in the UK.

It is good practice for training records to be kept on board the ship and officers should review these where possible to ascertain the level and standard of training. These records may be in various forms, including formal personnel files, training plans and detailed training records or in the form of a certificate of training. Ongoing training exercises undertaken by personnel may be a feature of some vessels and they should be commended for this provided that the standard and content is appropriate.

In some cases where PHO's have asked to see training records, they have been informed that these are kept at "Head Office" and are not available for inspection or that they are in personnel files which are confidential. In situations such as these, the ships officer should be reminded that it is good practice to keep these records on board and contact details should be obtained so that copies of training records can be obtained from "Head Office". PHO's should also be aware that under their powers of entry in Section 32 of the Food Safety Act 1990, they are empowered to "inspect any records, in whatever form, in relation to a food business" and this clearly includes personnel files, whether confidential or not. The ships officer should be directed to the Notes on the back of the Ships Copy of the inspection form. (see appendix XX).
As a part of the physical inspection of food areas of the ship, observations and questions should be made as to the competency of food handlers in relation to safe food handling practices and procedures. This will give a good indication as to the level of training and competency they have received or additional training they may need. It is recommended that PHO's discuss the training of individual food personnel with those personnel during the physical audit, because, again, procedure and company requirements may not be interpreted the same way at a practical level.

PHO's should note that under the provisions of the Merchant Shipping Act 1995 the Merchant Shipping (Certification of Ships' Cooks) Regulations 1981 also apply to training of food handlers. There may be Marine Guidance Notes or similar documents issued by the Maritime Coastguard Agency which relate to training of food handlers on ships.

Table No. XXX Summary of training requirements for food handlers

Category Of Crew	**Stage 1 'The Essentials Of Food Hygiene'**	**Stage 2 Hygiene Awareness Instruction**	**Stage 3**	
			Formal training Level 1	Formal Training Level 2 and/or 3
Category A	Before starting work for the first time	Within 4 weeks; 8 week part time staff		
Category B	Before starting work for the first time	Within 4 weeks	Within 3 months	
Category C	Before starting work for the first time	Within 4 weeks	Within 3 months	Good practice – according to responsibilities

2.3 PURCHASING / FOOD STORAGE

The production of high quality safe food can only be achieved when sound raw ingredients, free from contamination and in a condition fit to be consumed, are used to produce that food.

Chapter IX of Schedule 1 of the Food Hygiene Regulations makes specific requirements as to the safety of raw materials and ingredients accepted and stored by ships:

> *"No raw materials or ingredients shall be accepted by a food business if they are known to be, or might reasonably be expected to be, so contaminated with parasites, pathogenic micro-organisms, or toxic, decomposed or foreign substances, that after normal sorting and/or preparatory or processing procedures hygienically applied by food businesses, they would still be unfit for human consumption."*
>
> *"Raw materials and ingredients stored in the establishment shall be kept in appropriate conditions designed to prevent harmful deterioration and to protect them for contamination."*
>
> *"All food which is handled, stored, packaged, displayed and transported, shall be protected against any contamination likely to render the food unfit for human consumption, injurious to health or contaminated in such a way that it would be unreasonable to expect it to be consumed in that state. In particular, food must be so placed and/or protected as to minimize any risk of contamination. Adequate procedures must be in place to ensure pests are controlled."*
>
> *"Hazardous and/or inedible substances, including animal feedstuffs, shall be adequately labelled and stored in separate and secure containers."*

Controlling food at the purchasing, delivery and storage stages of the food production process is necessary for the ship to comply with the regulations. The level of control required on each ship will vary according to the nature of their operations. For example, small cargo vessels visiting ports every 4 or 5 days may carry only a limited stock of food on board and may re-provision by using the cook(s) visiting local supermarkets, whereas a larger vessel or a passenger vessel may use specific suppliers or chandlers to provide large quantities of foodstuffs at pre-arranged provisioning ports. With cruise vessels it is common to find that the operator of the food business on board has an arrangement with a chandler or food supplier which involves shipping cargo containers of foods to foreign ports for the purpose of provisioning.

Provisioning (delivery and receipt) is usually carried on at the berth, pier or wharf and involves the transfer of foods to the ship either by hand or by using conveyor belts or cranes and hoists. The foodstuffs may arrive at the berth in food transport vehicles or in containers.
Most ships will have refrigerators and freezers for the storage of temperature sensitive foods and dry storage facilities for ambient temperature stable food products.

Purchasing Foodstuffs

Purchasing foodstuffs needs to be controlled in the same way that other parts of the food production process are controlled in relation to hazard analysis and PHO's should expect to see that the purchasing stage of the process has undergone the process of hazard analysis. A good review of the hazards to food safety at the purchasing would normally identify several controllable hazards, including foreign body contamination, chemical contamination of fruit and vegetables from insecticides and fungicides, meats from veterinary residues such as antibiotics and food products contaminated by cleaning and pest control chemicals during warehouse storage and transport, high risk ready to eat foods contaminated by food poisoning bacteria (and their toxins).
PHO's should check that the food business operator on board a ship has gone through the process of assessing their suppliers and giving them basic specifications for the foodstuffs they supply. Officers may see supply contracts, supplier specifications, supplier audit information (the results of inspections of suppliers and/or the results of supplier questionnaires), purchasing lists, etc. The outcome of this assessment is often based on price and ability to supply the products requested, but should also be based on the food hygiene and safety standards prevalent in these supplier businesses. Typically, where ships are provisioning via local supermarkets no assessment will have been carried out, but it is fair to say that most supermarkets do not sell food that is unfit for human consumption and does meet the requirements of Chapter IX. Where the food business is based on board a passenger vessel PHO's are more likely to find a detailed assessment of food suppliers having been carried out. Officers may see records that indicate that the supplier is externally accredited by a national accreditation body, such as the British Retail Consortium or other national equivalents.

Once purchased, foodstuffs will be delivered to the vessels berth normally via an appropriate delivery vehicle. The vehicle may contain compartments for dry goods, chilled goods and frozen goods or these types of goods may be delivered separately, in vehicles capable of holding the food during transport at the appropriate temperature. In the case of cruise ships and passenger vessels where the quantity of food consumed is very large, the foodstuffs may be contained within the vehicle on pallets and where practical may be transferred to the vessel on pallets.

Wherever PHO's are carrying out a primary inspection and delivery of food stuffs is occurring or will occur during the course of the inspection, they should make every effort to review the procedures and practices employed at the point of delivery of the food. PHO's may want to satisfy themselves that the following matters are adequately controlled:

- Temperature sensitive foods having been transported at an appropriate temperature – transport temperature control records
- Food packaging in good condition
- Delivery vehicle compartments clean, in good condition without pests
- Enclosed delivery vehicle compartments
- Accurate delivery notes
- Segregation of raw and high risk foods during transport
- Segregation of foods subject to religious laws or controls, either from each other or from foods not subject to religious laws or controls, e.g. kosher and halal foods from each other and from non kosher and halal foods
- Food being delivered by reputable suppliers
- Food stuffs date coded and properly labelled, including health marks where applicable
- Temperature sensitive foods not left open to temperature abuse on wharf, but being transferred to temperature controlled storage facilities on board the ship as soon as possible – chilled foods first, frozen foods second, ambient foods last.
- Monitoring of a number of issues by ships crew / officers including:
  - Condition of food / packaging
  - Quality of food
  - Temperatures of foods at point of delivery
  - Adequate labelling and date coding of foods
  - Adequacy of shelf life of food products, particularly high risk ready to eat foods
  - Absence of pests in food – fruit and vegetables - insects, pallets of boxed foods and boxed foods – insects and rodents
  - Absence of physical and chemical contaminants in foods (so far is reasonably practical to determine)
  - Presence of foods subject to recent food hazard warnings
- Loading handlers handle foodstuffs with care
- Pallets broken down as soon as possible

In the case of small ships, where the crew visit a local supermarket and purchase some food products, they should check that the food is in good condition, has an adequate shelf life and is properly labelled. Transporting temperature sensitive foods to the ships temperature controlled storage areas should be carried out as quickly as possible and in the case of warm or hot weather it is recommended that they use cool boxes or similar for temperature sensitive foods. All foods should be protected from contamination during transport and transfer to the ship.

During the delivery of foodstuffs, ships crew may identify food which does not meet food safety or internal quality requirements. In this case, PHO's should advise that such foods are segregated from acceptable foods and that they are clearly marked so that they are not subsequently used in food production. This may necessitate the provision of a small amount of storage space in both temperature controlled storage facilities and ambient storage facilities. In addition, where foodstuffs are similarly identified as not meeting food safety or internal quality requirements during handling and production of food, the foods should again be segregated and be clearly marked so that they are not subsequently used in food production. The same storage area can be used for all such foodstuffs. The ship may dispose of such food or return it to their supplier, depending upon their normal procedures.

Food Storage

All ships, whatever their size ***should*** possess temperature controlled and ambient food storage facilities. In the case of small ships, this may be a mixture of free standing refrigerators and freezers and built in storage rooms (temperature controlled and/or ambient temperature), whereas, larger vessels may have purpose designed temperature controlled and ambient storage areas. Whatever the situation, Regulation 10 of The Food Safety (Temperature Control) Regulations may also apply to storage of foods in addition to the requirements of Schedule 1, Chapter IX of The Food Safety (General Food Hygiene) Regulations:

> *"10 (1) Subject to paragraph (2), no person shall in the course of the activities of a food business keep foodstuffs which are:*
>
> *(a) raw materials, ingredients, intermediate products or finished products; **and***
> *(b) likely to support the growth of pathogenic micro-organisms or the formation of toxins, at temperatures which would result in a risk to health.*
>
> *(2) Consistent with food safety, limited periods outside temperature control are permitted where necessary to accommodate the practicalities of handling during preparation, transport, storage, display and service of food."*

Advice received from the Food Standards Agency's enforcement branch indicates that whilst Regulations 4 to 9, 12 and part III of the temperature control regulations do not apply to non-home going ships, the temperatures quoted in those exempted regulations are based on sound scientific research and knowledge and it is reasonable to use them as a baseline for determining adequate temperature control of temperature sensitive foods. Consequently, PHO's are strongly recommended to consider refrigerated food held above 8°C as unacceptable. PHO's should also bear in mind that certain foods, such as some cheeses and certain types of cooked meat products, should be held at temperatures less than 8°C. The Code of Practice also requires PHO's to consider that some vessels are subject to food safety legislation other than the UK and often ships may be found complying with that legislation in relation to temperature control. In most cases this will mean that they are working towards storing foods at a temperature lower than 8°C for refrigerated foods.

In the UK, there is no maximum or minimum temperature quoted in food hygiene or temperature control regulations relating to catering operations for the transport and storage of frozen foods. However, it is an industry standard recommendation and a recommendation of the Industry Guide to Catering – Ships, that frozen foods are transported and stored at a temperature no warmer than ¯18°C. On home going vessels and in ordinary UK premises it may prove to be difficult to enforce this recommendation, however, as a result of the way that the temperature control regulations for non-home going vessels are written, it appears that it is perfectly possible to quote this frozen food temperature as being a requirement, rather than simply a recommendation.

Ice creams and sorbets stored for no longer than 7 days in short term storage cabinets specifically designed for the purpose *could* be stored at temperature no warmer than ¯14°C, provided they are stored in such a cabinet for the express purpose of sale or reasonably immediate use. Such products subject to longer term storage and storage not for reasonably immediate use must be stored at the same temperature as all other frozen foods.

In assessing standards of food storage, PHO's may, in addition to other matters, want to consider some or all of the following matters:

- Refrigerated food held at a temperature of 8°C or less
- Specific refrigerated foods subject to low temperature pathogen growth kept at an appropriate temperature - see manufacturers recommendations
- Frozen food held at a temperature of ¯18°C or lower
- Ice creams / sorbets in short term storage (< 7 days) held at a temperature no warmer than ¯14°C
- General structural condition of food storage areas and equipment, including lighting and ventilation levels and materials used in construction
- Standards of cleanliness of food storage areas and equipment
- Absence of pests in food storage areas and adequate pest proofing
- Potential for direct and cross contamination in storage
- Protection of food in storage, from bacterial / chemical and physical contamination, pests and damage
- Adequacy of shelf life of stored food products, particularly high risk ready to eat foods
- Stock rotation practices
- Adequately labelled foods
- Food packaging in good condition
- Segregation of foods subject to religious laws or controls, either from each other or from foods not subject to religious laws or controls, e.g. kosher and halal foods from each other and from non kosher and non halal foods
- Presence of foods subject to recent food hazard warnings

PHO's should be aware that even though foodstuffs may be contained within secondary, transit packing materials and/or primary packaging materials, it is still necessary, even in freezers, to keep high risk and ready to eat foodstuffs separated from raw foodstuffs, because there is still the potential for both direct and cross contamination of primary packaging material with subsequent cross-contamination during unpacking and use of food products. It is common to find raw shell eggs treated as, and stored with, dairy products, and officers may commonly see raw shell egg cases used in the galleys of smaller ships as shelf liners and as storage surfaces in the galley. Naturally, both of these practices are unacceptable as a result of the risk of contamination of high risk and ready to eat foodstuffs, and the risk of contamination / cross-contamination of food handling equipment, surfaces and food handler's hands.

Current advice from the Food Standards Agency with regard to raw shell eggs, is that raw shell eggs and shelled raw egg products should be stored under refrigerated conditions and treated as a raw product until required for use and that ambient storage of raw shell eggs (and shelled raw egg products) is not acceptable. It is often more easily understood by galley crew if such products are described to them as being the same as raw chicken with the same inherent risks (bearing in mind the source of raw shell eggs!!).

Pasteurised liquid whole egg and egg white is often found in larger ships galleys. Such products, once opened, should be handled in the same way as ready to eat food products and they should be afforded the same shelf-life, temperature control and protection from contamination.

Officers should treat washed and/or prepared fruits, vegetables and salad vegetables as ready to eat foods and the recommendation is that that they should not be stored in a location where they may be subject to contamination from raw foods or other sources of contamination.

In order to adequately assess the actual temperature of stored, temperature sensitive foods, it is recommended that PHO's use calibrated (with calibration traceable to national standards) probe thermometers and where applicable, infra-red thermometers. A review of any temperature monitoring records maintained by the galley or ships crew is often a useful indicator of temperature abuse of temperature sensitive foods and examples of poor practice that Officers may encounter include a complete lack of monitoring of temperatures in refrigerators and freezers, intermittent monitoring of temperatures, temperature controlled storage operating at too high a temperature (or not at all !), intermittent operation of temperature controlled storage due to the design and operation of on board electricity production systems, a lack of sufficient temperature controlled storage space, no temperature controlled storage space.

2.4 FOOD PREPARATION / HANDLING

The complexity of the food production process on board ships involving the preparation and handling of foodstuffs ranges from being a very complex part of the food production process, particularly where the production of high volumes of food is carried out in the case of passenger vessels, to being very simple in the case of smaller vessels. However, whatever the size of vessel and complexity of the process, the risks to food safety and the potential outcome of poor practices are the same and only the scale of the potential outcome is likely to be different. Consequently, the same attention to good practices and compliance with the relevant legislation and regulations is required.

In the case of food handling and preparation, a number of The Food Safety (General Food Hygiene) Regulations 1995 are applicable, including the requirements of Chapters set out in Schedule 1:

> *"4 (1) A proprietor of a food business shall ensure that any of the following operations, namely, the preparation, processing, manufacturing, packaging, storing, transportation, distribution, handling and offering for sale or supply, of food are carried out in a hygienic way.*
>
> *(2) A proprietor of a food business shall ensure that:*
>
> *(a) the requirements set out in Chapter I of Schedule 1 are complied with as respects any food premises used for the purposes of that business;*
>
> *(b) the requirements set out in Chapter II of Schedule 1 are complied with as respects any room where food is prepared, treated or processed in the course of activities of that business, other than dining areas and premises covered by Chapter III of Schedule 1;*
>
> *(c) the requirements set out in Chapter III of Schedule 1 are complied with as respects any of the following used for the purposes of that business?*
>
> *(i) movable or temporary premises (such as marquees, market stalls and mobile sales vehicles),*
>
> *(ii) premises used primarily as a private dwelling house,*
>
> *(iii) premises used occasionally for catering purposes, and*
>
> *(iv) vending machines; and*
>
> *(d) the requirements set out in Chapters IV to X of Schedule 1 are complied with as respects that business.*

Chapters I, II and IV to X set out more detailed requirements that food premises must meet. Those most applicable to food preparation and handling (excluding those matters dealt with in the following sections 2.5 to 2.10) are outlined below. In assessing standards of food preparation and handling, PHO's may, in addition to other matters, want to consider some or all of these matters:

- Layout, design, construction and size;
  - Do they contribute to the presence of hazards?
  - Is the flow of the food such that raw and high risk foods come into contact or close proximity?
  - Does the design or layout force food to be subjected to temperature abuse?
  - Are raw and high risk foods prepared in the same location?
  - Is the structure adequate for the purpose?
  - Is equipment adequate for its purpose?
  - Is the galley and associated equipment easy to clean?
  - Is the structure and equipment durable?
- Adequate and sufficient flush lavatories associated with food areas which do not lead directly into food handling rooms;
  - Are there toilets in sufficient numbers allocated to galley crew?
  - Are the galley crew toilets located close by?
  - Do the galley crew toilets have an intervening ventilated space?
- Suitable ventilation and extraction of air with air flow designed to prevent air from contaminated areas entering food rooms;
  - Is the galley fitted with an extractor / extraction system, particularly over or close to equipment which produces steam, oil vapours, fats etc during use (including glass and dish washers)
  - Where does the make-up air come from that replaces air extracted from the galley or associated areas?

- § Is the make-up air filtered before it enters the food area(s)
- § How is the make-up supplied? Is it natural or mechanical?
- § Is sufficient extraction / ventilation provided?

· Suitable ventilation to sanitary conveniences;

- § Is sufficient extraction / ventilation provided?

· Provision of adequate changing facilities for personnel;

- § Lack of provision of separate facilities?
- § Inadequate separate facilities?
- § Facilities not separate?

· Provision of adequate facilities for the storage and disposal of food waste;

- § Excessive accumulation of waste in food area?
- § Lack of waste storage containers in food area?
- § Dirty waste storage containers?
- § Un-lidded waste storage containers in food area?
- § Lack of separation of waste types?
- § Waste food, food packaging etc. treated as “Special Waste”?
- § Lack of control of waste oils/fats?
- § Waste storage containers located in position where there is a potential cross or direct contamination hazard for unprotected and ready to eat foods, wash hand basins, clean utensils and equipment, clean crockery/cutlery/glassware, etc.?
- § Waste storage containers located where there is easy access for pests?

· Provision of potable water to food areas;

- § Potable water not provided / available in food areas?
- § Potable water not used in food areas?
- § No onboard / independent microbiological/chemical monitoring of potable water used in food areas?

· Manufacture of ice from potable water;

- § Ice produced using potable water?

· Conducting potable water in readily identifiable separate systems from those used to conduct water for steam production, refrigeration, fire control etc., with no possibility of those other systems being connected to or back flowing into, the potable water system;

- § See section 1 on potable water for more details

· All food stored, handled, packaged, displayed, transported must be protected from contamination and the risk of contamination

- § Food handling practices prevent contamination?
- § Food display practices prevent contamination?
- § Food transport practices prevent contamination?
- § Food always wrapped, covered, sealed when not undergoing processing?
- § Food handled and prepared in clean areas?
- § Food handled and prepared in separate areas for raw and high risk foods, or using separate equipment / utensils, or separated by time or order of preparation?
- § Adequate food washing facilities provided?
- § Adequate equipment and utensil washing facilities provided?
- § Food and equipment / utensil washing facilities separate?
- § Preparation too far in advance of consumption?
- § Food undergoing preparation held at ambient temperature for too long?
- § Use of sanitisers to clean and disinfect food preparation equipment and utensils?
- § Inappropriate use of cloths?
- § Use of dirty cloths?
- § Cloths used to cover high risk foods, either in storage or undergoing preparation?
- § Use of dirty food preparation equipment, utensils and surfaces?
- § Food adequately protected after cooking?

· Adequacy of pest control procedures;

- § Do procedures control all relevant pests?

- Are pests present in food areas?
- Are entrances and other areas of food rooms adequately pest proofed?
- Are insect screens present where necessary?
- Are insect screens in good condition?
- Are sufficient and adequate working electronic fly killers present in food rooms?
- Are electronic fly killers located so as to be effective but not present a contamination hazard to food undergoing processing/
- Is food protected from accidental or intentional contamination by pest control chemicals?
- Is there some one on board the vessel who is trained and competent to carry out pest control activities?
- Does the vessel, including food areas, receive regular pest control survey and control inspections?
- Is there a pest control management plan?

2.5 TEMPERATURE CONTROL

Temperature control of certain types of foodstuffs at various stages in the food production process is fundamental to reducing the risk of several common food safety hazards, including microbiological growth, toxin production, spore formation and survival of bacteria. Often, temperature control will be applied to foodstuffs at those stages in the food production process where such food safety hazards occur or are likely to occur. Clearly, there is a strong link between hazard analysis and temperature control and it is necessary for Officers to consider hazard analysis in conjunction with temperature control.

Advice received from the Food Standards Agency's enforcement branch indicates that whilst Regulations 4 to 9, 12 and part III of the temperature control regulations do not apply to non-home going ships, the temperatures quoted in those exempted regulations are based on sound scientific research and knowledge and it is reasonable to use them as a baseline for determining adequate temperature control of temperature sensitive foods. Regulations 10 and 11, however, do apply to all visiting vessels:

General requirement for food which is a risk to health

"10 (1) Subject to paragraph (2), no person shall in the course of the activities of a food business keep foodstuffs which are:

*(a) raw materials, ingredients, intermediate products or finished products; **and***
(b) likely to support the growth of pathogenic micro-organisms or the formation of toxins, at temperatures which would result in a risk to health.

(2) Consistent with food safety, limited periods outside temperature control are permitted where necessary to accommodate the practicalities of handling during preparation, transport, storage, display and service of food."

Cooling of food

"*11. A food business responsible for cooling any food which must, by virtue of this Part, be kept at a temperature below ambient temperatures shall cool that food as quickly as possible following—*

(a) the final heat processing stage; or
(b) if no heat process is applied, the final preparation stage,

to the temperature at which, by virtue of this Part, it must be kept."

Officers should note that temperature control provisions relate to the core temperature of the food and not the air temperature of the holding unit. When monitoring temperature control practices, Officers should ensure that any temperatures taken represent the core temperature of the food being checked. Officers should have regard to how long food has been subject to temperature control, for example a representative temperature is not going to be present if the food that is being monitored has only just gone back into the refrigerator after undergoing some preparation or handling. It is also worth noting that much temperature control equipment will hold food at temperatures which vary depending upon where the food is placed in the equipment and, therefore, it is wise to make more than one temperature check on the food in each individual unit.

In order to adequately assess the temperature of foods subject to temperature control, it is recommended that PHO's use calibrated (with calibration traceable to national standards) probe thermometers and where applicable, infra-red thermometers.

A review of any temperature monitoring records maintained by the galley or ships crew is often a useful indicator of temperature abuse of temperature sensitive foods and examples of poor practice that Officers may encounter include:

- a complete lack of monitoring of temperatures,
- intermittent monitoring of temperatures,
- temperature controlled storage operating at too high a temperature (or not at all !),
- final cook temperatures too low to ensure sufficient kill rates of potentially pathogenic organisms,
- reheating temperatures too low to ensure sufficient kill rates of potentially pathogenic organisms,
- inadequate cooling practices leaving food at ambient temperatures for too long and producing the risk of bacterial regeneration from spores or re-commencement of toxin production,
- intermittent operation of temperature controlled storage due to the design and operation of on board electricity production systems,
- a lack of sufficient temperature controlled storage space,
- no temperature controlled storage space,
- incorrect foods subject to temperature control (or not!),

The following table (an extract from the Industry Guide to Good Hygiene Practice) sets out some examples of foods which should be subject to temperature control:
*Technically, aW (water activity) is the key criterion.
**Technically, pH 4.5 (or more acid) is the critical limit.

PHO's are strongly recommended to consider refrigerated food held above 8°C as unacceptable. PHO's should also bear in mind that certain foods, such as some cheeses and certain types of cooked meat products, should be held at temperatures less than 8°C. The FSA Code of Practice also requires PHO's to consider that some vessels are subject to food safety legislation other than that of the UK and often ships may be found complying with that legislation in relation to temperature control. In most cases this will mean that they are working towards storing foods at temperatures lower than 8°C for refrigerated foods.

In the UK, there is no maximum or minimum temperature quoted in food hygiene or temperature control regulations relating to catering operations for the transport and storage of frozen foods. However, it is an industry standard recommendation and a recommendation of the Industry Guide to Catering – Ships, that frozen foods are transported and stored at a temperature no warmer than ¯18°C. On home going vessels and in ordinary UK premises it may prove to be difficult to enforce this recommendation, however, as a result of the way that the temperature control regulations for non-home going vessels are written, it appears that it is perfectly possible to quote this frozen food temperature as being a requirement, rather than simply a recommendation.

Ice creams and sorbets stored for no longer than 7 days in short term storage cabinets specifically designed for the purpose *could* be stored at temperature no warmer than ¯14°C, provided they are stored in such a cabinet for the express purpose of sale or reasonably immediate use. Such products subject to longer term storage and storage not for reasonably immediate use must be stored at the same temperature as all other frozen foods.

Frozen food may need to be defrosted before it undergoes any further processing and Officers should note that frozen food must be defrosted either in a refrigerator at a temperature of no higher than 8°C or in a defrost cabinet or room attached to

Food Type	Comments	
Cooked meats and fish, meat and fish products.	Includes prepared meals, meat pies, pates, potted meats, quiches and similar dishes based on fish.	
Smoked or cured fish, and raw scombroid fish.	For example smoked salmon, smoked trout, smoked mackerel, etc. Also raw tuna, mackerel and other scombroid fish	
Cooked meats in cans which have been pasteurised rather than fully disinfected.	Typically large catering packs of ham or corned beef.	
Smoked or cured meats which are not ambient stable.	Salami, parma hams and other fermented meats will not be subject to temperature controls if they are ambient shelf stable.	
Cooked vegetable dishes.	Includes cereals, rice & pulses.	Some cooked vegetable or dessert recipes may have sufficiently high sugar content* (possibly combined with other factors like acidity) to prevent the growth of pathogenic bacteria.
Any cooked dish containing egg or cheese.	Includes flans, pastries etc.	
Soft cheeses / mould ripened cheeses (after ripening).	Cheeses will include Camembert, Brie, Stilton, Roquefort, Danish Blue and any similar style of cheese.	
Prepared salads and dressings.	Includes mayonnaise and prepared salads with mayonnaise or any other style of dressing. Some salads or dressings may have a formulation (especially the level of acidity**) that is adequate to prevent growth of pathogens.	
Any sandwiches or baguettes etc whose fillings include any of the above types of food.		
Fresh pasta and uncooked or partly cooked pasta and dough products.	Includes unbaked pies and sausage rolls, unbaked pizzas and fresh pasta.	
Low acid** desserts and cream products.	Includes dairy desserts, fromage frais and cream cakes. Some artificial cream may be 'ambient stable' due to low water activity and/or high sugar. Any product that does NOT support the growth of pathogenic micro-organisms does NOT have to be kept below 55°C. It may be necessary to get clarification from suppliers.	

a freezer or refrigerator operating at no higher than 10°C. Where raw foods are defrosted they must be treated as raw and should not be placed in a location or position where it is possible for them to contaminate other foods with defrost liquor. Defrosting frozen food in standing or under running water is not acceptable as a method of defrosting food, it is unreliable and adequate defrosting cannot be guaranteed. The same can be said for defrosting frozen food at ambient temperature. Galley crew / cooks should be encouraged to plan ahead with frozen foods and allow sufficient time to defrost food. Once defrosted, the shelf life of the food reverts back to that which it would have if it were fresh food and its storage conditions

prior to use should conform to those for refrigerated food.

All food which undergoes the cooking or reheating process should reach a core temperature of at least 75°C at the end of the cooking process, when measured instantaneously, or the equivalent, for example 72°C, when measured for 2 minutes. The production of rare lamb or meat should still ensure that an adequate kill rate for potentially pathogenic bacteria has been achieved by cooking the food to a temperature of not less than 68°C core temperature and ensuring that this temperature has been held for at least 6 minutes.

The use of microwave ovens in galleys is now common practice and Officers are likely to see a whole range of types of equipment, from the small domestic type to the large purpose designed catering type. Whatever the type of unit, microwave ovens should still be fit for the purpose and food should be cooked or reheated in accordance with the guidance above.

Ideally, Officers should find that food which has been cooked and which is cooling, will be cooled to ambient temperature within 90 minutes of having completed the cooking process and will be covered to prevent contamination of the food during cooling. Officers should also find that such cooling is undertaken in an area fit for this purpose which is already a cool area. In some cases, perhaps on larger vessels or on passenger vessels, Officers may find that blast chillers/coolers are used to cool food to refrigerator temperatures. In this case, time/temperature records should be available for each food cooled, foods may still need to be covered during the process and food should still be cooled within the ideal 90 minute time period.

Upon completion of cooling, all foods should be immediately subjected to temperature control in refrigerators or freezers in order to prevent microbiological growth or toxin production before the food is further processed or is consumed.
Often, blast chillers will be used on larger vessels as a part of a cook/chill/reheat process in combination with steam convection ovens. Officers must assure themselves that the ships operation of such a process is safe and that food is not put at risk as a consequence of the use of this process.

The transport, service and display of food on the vessel should also be carried out under temperature controlled conditions where appropriate. Foods which would normally be subject to refrigeration, such as cheese, cooked meats, salami's, smoked meats and fish, milk and products containing egg should be displayed under the same conditions if there is the potential for food to be displayed for longer than 4 hours, i.e. refrigerated displays should keep food at a temperature no higher than 8°C**.** Where such foods are displayed for less than 4 hours ***and it can be proved that this is the case by use of time/temperature records*****,** they need not be refrigerated whilst displayed. However, in practice, officers are likely to see that on larger vessels and certainly passenger vessels, such food is displayed under refrigerated conditions, even when it is displayed for less than 4 hours. Where this is the case, the display should still conform to the maximum temperature of 8°C**.**

Foods which would normally be subject to cooking and are intended to be consumed hot should be held or displayed at a temperature which is not less than 63°C if there is the potential for food to be displayed for longer than 2 hours, i.e, hot displays should keep food at a temperature no lower than 63°C**.** Where such foods are displayed for less than 2 hours ***and it can be proved that this is the case by use of time/temperature records*****,** they may be held at a lower temperature whilst displayed. However, in practice, officers are likely to see that on larger vessels and certainly passenger vessels, such food is displayed under hot conditions, even when it is displayed for less than 4 hours. Where this is the case, the display should still conform to the minimum temperature of 63°C**.**

2.6 SERVICE / DISPLAY

In addition to the general temperature control requirements for food that is to be served to customers and which may also be displayed for buffet style meal presentation, the requirements of Chapters I, II and IV to X found in Schedule 1 of The Food Safety (General Food Hygiene) Regulations 1995 may also be applicable to the service and display of foods:

Officers may want to consider a number of matters in relation to the service and display of foods when assessing any hazards to food safety on board a vessel, including:

- open food left at ambient temperature for too long before service
- high risk food not protected from contamination prior to service
- use of dirty crockery, cutlery and glassware during service
- crockery, cutlery and glassware stored in areas subject to contamination
- food served at too low a temperature indicating that it has not been cooked or reheated to a sufficiently high temperature to prevent survival or multiplication of pathogens or toxin production
- poor hygiene practices by food handlers / waiting staff serving food
- use of ice in drinks from ice wells used to chill bottles
- use of glassware to serve or dispense ice
- use of dirty ice scoops or scoops subject to contamination for service or dispensing of ice
- storage of glassware in bars with the rim directly on the shelf surface
- storage of glassware in bars with the glasses not inverted
- positioning of waste receptacles in servery's, galley passes, food display areas and bars
- use of dirty crockery, cutlery and glassware in buffet areas
- lack of adequate “sneeze guards” on buffet displays
- food on buffet for too long at ambient temperature
- buffet food not displayed under temperature controlled conditions or inadequate temperature control conditions
- buffet food open to contamination from airborne contaminants, flying insects, etc.
- buffet equipment not started or powered up in sufficient time to provide an adequate source of heat or cold to maintain food at the correct temperature during display
- lack of time/temperature records for buffet display
- inadequate rotation of dirty buffet serving utensils with clean
- lack of availability of clean buffet service utensils
- use of dirty buffet service utensils
- not stirring food in buffet dishes to ensure adequate heat or cold distribution during display

Officers should be aware that on some passenger ships there are buffets and bars located in close proximity to open air areas, such as pool and open deck areas. These areas may be subject to air flow when the vessel is underway and the air flow may include exhaust streams which could contaminate food, buffet items, utensils, surfaces, crockery, cutlery and glassware. Consequently, in these type of food areas all items, including the food should be protected from potential contamination.

2.7 TRANSPORT

This section of the guide to PHO's deals with the transporting of food onto vessels from the dock-side and its subsequent movement around the vessel and is not intended to include matters relating to the transport of food from a manufacturer, warehouse, supplier or ships chandlers to the dock-side.

In addition to other Chapters of Schedule 1 of The Food Safety (General Food Hygiene) Regulations 1995, Chapter IV of Schedule 1 also applies to the transportation, i.e., the movement, of food:

> *"1. Conveyances and/or containers used for transporting foodstuffs must be kept clean and maintained in good repair and condition in order to protect foodstuffs from contamination, and must, where necessary, be designed and constructed to permit adequate cleaning and/or disinfection.*
>
> *2. (1)Receptacles in vehicles and/or containers must not be used for transporting anything other than foodstuffs where this may result in contamination of foodstuffs.*
>
> *(2)Bulk foodstuffs in liquid, granular or powder form must be transported in receptacles and/or containers/ tankers reserved for the transport of foodstuffs if otherwise there is a risk of contamination. Such containers must be marked in a clearly visible and indelible fashion, in one or more Community languages, to sow that they are used for the transport of foodstuffs, or must be marked "for foodstuffs only".*
>
> *3. Where conveyances and/or containers are used for transporting anything in addition to foodstuffs or for transporting different foodstuffs at the same time, there must be effective separation of products where necessary, to protect against the risk of contamination.*
>
> *4. Where conveyances and/or containers have been used for transporting anything other than foodstuffs or for transporting different foodstuffs, there must be effective cleaning between loads to avoid the risk of contamination.*
>
> *5. Foodstuffs in conveyances and/or containers must be so placed and protected as to minimize the risk of contamination.*
>
> *6. Where necessary, conveyances and/or containers used for transporting foodstuffs, must be capable of maintaining foodstuffs at appropriate temperatures and, where necessary, designed to allow those temperatures to be monitored."*

The matters that Officers may wish to consider in connection with this Chapter are self explanatory.

2.8 CLEANING / PEST CONTROL

Cleaning

The cleaning of food rooms, food areas, preparation equipment and utensils and surfaces is essential to prevent contamination of food and the encouragement of pests.

When Officers consider cleaning in the context of hazard analysis, they will see that rather than cleaning being an issue that only occurs at certain points in the food production process, it is an all encompassing issue, which would come under the heading of “food environment matters”, because the management, control and standard of cleaning affects all aspects of food production from delivery to service/display.

There is a general requirement under the provisions of both Regulation 4(1) and Regulation 4(3) (c) & (d) of The Food Safety (General Food Hygiene) Regulations 1995, and numerous requirements contained in the Chapters to Schedule 1 of the Regulations, including:

Regulation 4 (1) - “A proprietor of a food business shall ensure that any of the following operations, namely, the preparation, processing, manufacturing, packaging, storing, transportation, distribution, handling and offering for sale or supply, of food are carried out in a hygienic way.”

"hygiene" means all measures necessary to ensure the safety and wholesomeness of food during preparation, processing, manufacturing, packaging, storing, transportation, distribution, handling and offering for sale or supply to the consumer, and "hygienic" shall be construed accordingly;

Regulation 4 (3) – “A proprietor of a food business shall identify any step in the activities of the food business which is critical to ensuring food safety and ensure that adequate safety procedures are identified, implemented, maintained and reviewed on the basis of the following principles:

(a) analysis of the potential food hazards in a food business operation;

(b) identification of the points in those operations where food hazards may occur;

(c) deciding which of the points identified are critical to ensuring food safety ("critical points");

(d) identification and implementation of effective control and monitoring procedures at those critical points; and

(e) review of the analysis of food hazards, the critical points and the control and monitoring procedures periodically, and whenever the food business's operations change.”

Chapter I, 1 - “Food premises must be kept clean and maintained in good repair and condition.”

Chapter I, 2 - “The layout, design, construction and size of food premises shall, (a) permit adequate cleaning and/or disinfection;”

Chapter II, 2 - “Where necessary, adequate facilities must be provided for the cleaning and disinfecting of work tools and equipment. These facilities must be constructed of materials resistant to corrosion and must be easy to clean and have an adequate supply of hot and cold water.”

Chapter IV, 1 - “Conveyances and/or containers used for transporting foodstuffs must be kept clean”

Chapter IV, 4 – “Where conveyances and/or containers have been used for transporting anything other than foodstuffs or for transporting different foodstuffs, there must be effective cleaning between loads to avoid the risk of contamination”

Chapter V, 1 – “All articles, fittings and equipment with which food comes into contact shall be kept clean”

Chapter VI, 1 – “Food waste and other refuse must not be allowed to accumulate in food rooms, except so far as is unavoidable for the proper functioning of the business”

In assessing compliance with these requirements and determining the cleaning standards in food areas on board ships, Officers may want to consider a number of issues, including any or all of the following:

- levels of management control of cleaning including identification of hazards to food safety involving cleaning matters, presence and use of cleaning plans, cleaning schedules, cleaning records, supervisory control and monitoring, etc.;
- standard of cleaning required to be achieved at specific locations or with specific utensils and equipment, i.e. is visually clean satisfactory or does this area, surface, utensil or equipment require cleaning to the higher standard of disinfection or sanitisation?;
- adequacy of the standard of cleaning currently being achieved;
- frequency of cleaning required

- type of chemicals used for cleaning and disinfection / sanitisation:
  - § are they approved for use in commercial premises? (N.B. domestic cleaning chemicals are not satisfactory in food premises)
  - § are they designed for the purpose for which they are being used?
  - § are they designed or approved for use with food?
  - § are they still within a usable shelf life?
- efficacy of chemicals, practices and procedures employed in the cleaning process;
- sufficient quantities of cleaning chemicals and equipment available on board for the next voyage;
- provision of separate cleaning equipment for “clean” areas (High risk and other non raw food production areas, etc.) and “dirty” areas (Raw food production areas, dish / pot wash areas, sanitary accommodation, etc.)
- training and supervision in cleaning procedures

Pest Control

When Officers consider pest control in the context of hazard analysis, they will see that rather than it being an issue that only occurs at certain points in the food production process, it is an all encompassing issue, which would come under the heading of “food environment matters”, because the management, control and standard of pest control affects all aspects of food production from delivery to service/display.

Food pests such as rats, mice, cockroaches and flies can be and are found on board ships. Their presence is unacceptable because they spread diseases and transfer food poisoning and other pathogenic bacteria around the vessel, including food storage, handling, production and serving areas.

There is a general requirement under the provisions of both Regulation 4(1) and Regulation 4(3) (c) & (d) of The Food Safety (General Food Hygiene) Regulations 1995, and numerous requirements contained in the Chapters to Schedule 1 of the Regulations, including:

Regulation 4 (1) - “A proprietor of a food business shall ensure that any of the following operations, namely, the preparation, processing, manufacturing, packaging, storing, transportation, distribution, handling and offering for sale or supply, of food are carried out in a hygienic way.”

"hygiene" means all measures necessary to ensure the safety and wholesomeness of food during preparation, processing, manufacturing, packaging, storing, transportation, distribution, handling and offering for sale or supply to the consumer, and "hygienic" shall be construed accordingly;

Regulation 4 (3) – “A proprietor of a food business shall identify any step in the activities of the food business which is critical to ensuring food safety and ensure that adequate safety procedures are identified, implemented, maintained and reviewed on the basis of the following principles:

(a) analysis of the potential food hazards in a food business operation;

(b) identification of the points in those operations where food hazards may occur;

(c) deciding which of the points identified are critical to ensuring food safety ("critical points");

(d) identification and implementation of effective control and monitoring procedures at those critical points; and

(e) review of the analysis of food hazards, the critical points and the control and monitoring procedures periodically, and whenever the food business's operations change.”

Chapter I, 2 – “The layout, design, construction and size of food premises shall;

(c) permit good food hygiene practices, including protection against cross contamination between and during operations, by foodstuffs, equipment, materials, water, air supply or personnel and external sources of contamination such as pests;”

Chapter II, 1 – “In rooms where food is prepared, treated or processed (excluding dining areas);

(d) windows and other openings must be constructed to prevent the accumulation of dirt. Those which can be opened to the outside environment must where necessary be fitted with insect-proof screens which can be easily removed for cleaning. Where open windows would result in contamination of foodstuffs, windows must remain closed and fixed during production;”

Chapter V, 3 – “Adequate provision must be made for the removal and storage of food waste and other refuse. Refuse stores must be designed and managed in such a way as to enable them to be kept clean, and to protect against access by pests, and against contamination of food, drinking water, equipment or premises.”

Chapter IX, 3 – “All food which is handled, stored, packaged, displayed and transported, shall be protected against any

contamination likely to render the food unfit for human consumption, injurious to health or contaminated in such a way that it would be unreasonable to expect it to be consumed in that state. In particular, food must be so placed and/or protected as to minimize any risk of contamination. Adequate procedures must be in place to ensure pests are controlled."

Officers carrying out food safety inspections must take into account pests and pest control. Documentation, control plans and records can be reviewed as a part of the document check undertaken during the inspection and discussions about management and supervisory control may be entered into at the opening meeting.

PHO's should bear in mind that pests observed in one part of a vessel may have easy access to other parts of the vessel, including food areas, and that the presence of pests is unacceptable on any vessel, whatever the size and nature of its operations. However, unless the infestation is large or is presenting an imminent or serious risk to health, where infestations are being controlled and the pest control measures are comprehensive and are implemented by competent personnel (personnel specifically trained to implement pest control activities and apply pest control chemicals) or competent external contractors, it is recommended that Officers take no formal action other than to refer to the matter in the inspection report and make the appropriate requirements or recommendations. In those cases where there is an imminent or serious risk of injury to health, Officers must consider what formal courses of action are open to them to enforce the requirements of the regulations. This may, depending upon circumstances, involve service of an Improvement Notice, an Emergency Prohibition Notice, the attendance at the vessel of an MCA officer, prosecution of the food business operator or combinations of these actions.

During the inspection Officers may wish to consider the following matters, in addition to others, in relation to pest control in food areas:

- presence of pests in food areas
- likelihood of pest access and/or presence in food areas
- pest access points pest proofed
- design of food areas prevents pest access and movement wherever possible
- ease of movement and/or disassembly of equipment for pest control activities
- presence of pest monitors such as rodent bait boxes and cockroach traps
- evidence of infestations such as droppings, corpses, grease marks, takes on bait or live insects in insect traps
- presence of electronic fly killers in food areas and access points to the food areas
- efficiency, effectiveness and location/position of electronic fly killers
- the use of air curtains, fly screens, plastic curtains to prevent pest access
- condition of pest control and prevention equipment
- waste storage areas pest proofed
- protection of food from pest control activities
- scheduling of pest control activities

In addition to the normal pests of food, Officers may want to consider birds as a pest, where they are prevalent in close proximity to open air food areas.

2.9 PERSONAL HYGIENE

A good standard of personal hygiene is fundamental to producing safe food on board any vessel, whatever its size and the nature of its operations. Food handlers and other visitors to food areas are probably the largest source of contamination risks to food. However, a good standard of personal hygiene cannot be maintained unless adequate facilities are provided on board the vessel in sufficient quantities and suitably located for food handlers and others to use in their personal hygiene routines.

Again, there are general requirements in Regulation 4 (1) and 4 (3) of The Food Safety (General Food Hygiene) Regulations 1995 (see 2.8 above for an outline of the general requirements) and some more specific requirements in the Chapters to Schedule 1 of the regulations:

Chapter I, 2 – "The layout, design, construction and size of food premises shall;

© permit good food hygiene practices, including protection against cross contamination between and during operations, by foodstuffs, equipment, materials, water, air supply or personnel and external sources of contamination such as pests;"

Chapter I, 3 – "An adequate number of washbasins must be available, suitably located and designated for cleaning hands. An adequate number of flush lavatories must be available and connected to an effective drainage system. Lavatories must not lead directly into rooms in which food is handled."

Chapter I, 4 – "Washbasins for cleaning hands must be provided with hot and cold (or appropriately mixed) running water, materials for cleaning hands and for hygienic drying. Where necessary, the provisions for washing food must be separate from the hand-washing facility."

Chapter 1, 9 – "Adequate changing facilities for personnel must be provided where necessary."

Chapter VII, 1 – "There must be an adequate supply of potable water. This potable water must be used whenever necessary to ensure foodstuffs are not contaminated."

Chapter VIII, 1 – "Every person working in a food handling area shall maintain a high degree of personal cleanliness and shall wear suitable, clean and, where appropriate, protective clothing."

Chapter VIII, 2 – "No person, known or suspected to be suffering from, or to be a carrier of, a disease likely to be transmitted through food or while afflicted, for example with infected wounds, skin infections, sores or with diarrhoea, shall be permitted to work in any food in any food handling area in any capacity in which there is any likelihood of directly or indirectly contaminating food with pathogenic micro-organisms."

In assessing standards of personal hygiene, PHO's may, in addition to other matters, want to consider some or all of the following matters:

- The number and location of wash basins – wash basins must be located with toilets and must also be provided in food areas where food is handled. Since their purpose is to wash hands and remove contamination, they must be positioned away from sources of direct contamination such as waste, dirty water splash, etc. An adequate number depends on the size and layout of the food areas, e.g. a small galley with closely located food stores may only need one wash basin in the galley, whereas a larger vessel with separate preparation areas may need at least one wash basin in each area.
- Provision of hot and cold running water to wash basins – N.B. Mixer taps are acceptable
- Provision of materials for cleaning hands, including soap, bactericidal soap, bactericidal gels – bactericidal soap is recommended
- Provision of materials for hand drying, including electric hot air hand dryers, fabric towels or paper towel – paper towel is recommended
- Separation of wash basins from basins or sinks used for other purposes, especially pot/dish washing and food washing
- Water supply to wash basins is derived form the ships potable water supply and is of potable quality at wash basins
- Food handlers must wash their hands at appropriate times using the proper hand washing technique
- Food handlers must wear clean, light coloured protective clothing, including hats, hairnets and beard snoods where necessary
- The consumption of food or drink by food handlers in food areas should not be permitted, as it increases the risk of transmission of pathogenic organisms to food
- The tasting of food undergoing preparation should be carried out using a clean tasting utensil each time
- The use of gloves by food handlers does not remove the need to wash hands or hands in gloves as necessary
- Gloves must be changed frequently and food handlers should wash their hands before putting on clean gloves
- The use of cloths or "chefs dusters" (cloths normally seen tucked into the waist band or the chefs uniform) should only be for handling hot items and not be used for wiping hands or surfaces
- Smoking and spitting in food areas is not permitted under any circumstances and by any person

- Wounds, cuts, etc. should be covered by water proof dressings
- Food handlers should not wear jewellery (other than a plain wedding band), false nails or strong perfume or cologne
- Food handlers hands should have short, clean nails
- Any person suffering from (or for the time being a carrier of) an infectious disease transmissible through food and water, such as food poisoning, typhoid, shigellae, etc. must not be permitted to work with food or in food handling areas until they are free of the infection, this includes galley crew, waiter, bar staff, maintenance engineers, ships officers, visitors, etc.
- Any person suffering from diarrhoea, infected wounds, skin infections, sores, etc. must not be permitted to work with food or in food handling areas until they are free of the infection, this includes galley crew, waiter, bar staff, maintenance engineers, ships officers, visitors, etc.
- Any person suspected of suffering from any of the above infections must not be permitted to work with food or in food handling areas until it is confirmed otherwise.
- The provision and adequacy of changing facilities for personnel involved in food operations

2.10 STRUCTURE AND EQUIPMENT

As with pest control, cleaning, waste control and personal hygiene, when Officers consider the structure and equipment of food production on board vessels in the context of hazard analysis, they will see that it is an all encompassing issue, which would come under the heading of “food environment matters”, because the management, control, maintenance and condition of the structure and equipment of food areas affects all aspects of food production from delivery to service/display.

Again, there are general requirements in Regulation 4 (1) and 4 (3) of The Food Safety (General Food Hygiene) Regulations 1995 (see 2.8 above for an outline of the general requirements) and some more specific requirements in the Chapters to Schedule I of the regulations, including Chapter I,1, Chapter I,2, Chapter I,5, Chapter I, 6, Chapter I, 7, Chapter I, 8, the whole of Chapter II, Chapter IV, 1, Chapter V, Chapter VI, 2 and Chapter VII, 4.

Officers carrying out primary inspections may wish to consider, in addition other matters, the following:

- Condition of floors, walls, ceilings, equipment, fixtures and fittings
- Materials used in the construction of structural surfaces and equipment
- Durability of surfaces and equipment
- All surfaces, fixtures, fittings and equipment in food areas must be easily cleanable, impervious to water, non-absorbent, washable, non-toxic to food and easy to disinfect
- Light fittings in food rooms must be covered with shatter proof diffusers
- Equipment, surfaces and light fittings close to heat sources must be heat resistant
- Heat and steam producing equipment should be provided with adequate ventilation and extraction facilities, (or the food area must be so provided)
- Windows in food areas should remain closed where there is the possibility of contamination of food from the air flow
- All surfaces, fixtures, fittings and equipment in food areas must be designed to be easily cleanable, impervious to water, non-absorbent, washable, non-toxic to food and easy to disinfect
- Equipment, fixtures and fittings must be installed so that they permit adequate cleaning of the surrounding area, including the moving of equipment, provision of gaps below, behind and above equipment sufficient to allow easy access for cleaning

3.0 SWIMMING POOLS/SPA POOLS

INTRODUCTION

There is no regulatory framework governing the standards for swimming pools/spa pools on board ships. Officers are advised that seawater is commonly used in swimming pools on older ships. Although ships using flow through seawater may not take on water within twenty miles of land , this may indeed happen .There have examples of poorly designed vessels where intakes are situated aft of the grey water outflow resulting in continuous dosing of pools with highly contaminated water.

Infective material is introduced almost continuously into pools/spa pools , their use has been associated with outbreaks of diseases/cases of infection such as gastro-intestinal infections , legionellosis ,hepatitis , leptospirosis.

In the absence of specific legislation and with regard to the complexities and technical detail in the management of these pools , officers may wish to consider the use of The Public Health (Ships) Regulations 1979 and the Environmental Protection Act 1990 supported by well regarded expert publications as follows:

???? PUBLICATIONS

3.1 MANAGEMENT

There are a number of suitable publications available to enable officers to gather information on the maintenance and suitability of equipment for use in a water environment. A few are listed below:-

Guidelines for Water Quality On Board Merchant Ships Including Passenger Vessels.

Health Protection Agency ISBN 0 90 114465 7

Swimming Pool Water Treatment and Quality Standards , Pool Water Treatment Advisory Group 1999 ISBN 0 95 170076 6

Hygiene for Spa Pools , Public Health Laboratory Service 1994 ISBN 0 90 114437 1

Management of public swimming pools-Water treatment systems , water treatment plant and heating and ventilation systems-Code of Practice British Standards Institute December 2003. PAS 39:2003. ISBN 0 58 042649 1

Legionnaire's disease. The control of *legionella* bacteria in water systems. Approved Code of Practice and Guidance 3rd Edition 2000 Health and Safety Commission ISBN 0 71 761772 6.

Disinfection of Ships Domestic Fresh Water Merchant Shipping Notice No. M1401 Department of Transport , Maritime and Coastguard Agency

Recommendations to prevent Contamination of Ships Freshwater Storage and Distribution Systems Merchant Shipping Notice M.1214

International Travel and Health .World Health Organization 2002.
ISBN 92 4 158027 5

3.2 TREATMENT

This section deals with the microbiological quality of water on board ships. It describes the relative legislation and guidelines which may be used by port/ environmental health officers and officials from the Health Protection Agency in monitoring the microbiological quality of water on board vessels , investigating illness and in taking enforcement action. Port/ environmental health officers may wish to use the resource in aiding ship owners and operators of vessels in the management of the microbiological quality of the water on board.

Water is used for a number of different and essential activities during a voyage including cooking ; drinking water ; the making of ice; engineering systems ; medical treatments ; recreational ; personal hygiene and cleaning.

Many ships travel to a variety of destinations , including developing countries during one voyage. The largest cruise ships currently afloat carry in excess of 4,000 persons.

Many important infectious diseases (such as cholera, cryptosporidiosis , giardiasis , legionellosis , typhoid fever , leptospirosis , schistosomiasis and norovirus) are transmitted by contaminated water.

With the rapid expansion of the cruise ship industry , the increasing popularity of cruise holidays often amongst people in more vulnerable groups , and the inevitable mixing of differently sourced waters on board , the potential for large common source outbreaks of infectious disease may be increased.

The 'water environment' on board ships is complex , by virtue of the provision of water for numerous and essential use throughout the ship during often long voyages , and by the ship having to have the complete infrastructure to support the safety of the water supply. It is best managed at the outset by the ship operator planning water safety by:

- obtaining water from an uncontaminated source ;
- the reduction or removal of contamination through thorough treatment processes to meet health based targets and
- the prevention of contamination during storage , distribution and handling.

Port/environmental health officers should expect that cruise ships , and many other vessels will have developed water safety management systems which will usually incorporate HACCP principles and should identify safety hazards relating to water and controlling the risks.

3.3 MAINTENANCE

No Information provided

3.4 EQUIPMENT

No Information provided

RELEVANT LEGISLATION

The Public Health (Ships) Regulations 1979. (SI 1979 - No.1435)

These regulations allow for authorised officers to require the Master to take necessary steps for preventing the spread of infection and for the removal of conditions on the ship likely to convey infection.

Environmental Protection Act 1990. SI

Provisions within the Act allow authorised officers to take enforcement action where they are satisfied that the premises , (which includes a ship) , may be in such a state as to be prejudicial to health or a nuisance.

Both above pieces of legislation have potentially, comprehensive application across the range of ship activities.

The Food Safety (General Food Hygiene) Regulations 1995 (SI 1995-No.1763)
The Food Safety (Ships and Aircraft) (England and Scotland) Order 2003
The Drinking Water Regulations 2000

There must be an adequate supply of potable water. The potable water must be used whenever necessary to ensure food-stuffs are not contaminated e.g. cleaning/personal hygiene. Former distinctions between the standards required for drinking and washing water should no longer be maintained.

4.0 WASTE DISPOSAL

4.1 SANITARY FACILITIES

All sanitary facilities (W.Cs., Urinals, Handbasins, Baths and Showers) shall be maintained in good working order and kept to a satisfactory standard of cleanliness. Ideally written cleaning schedules should be available and adhered to and in the case of passenger vessels evidence of regular checks of the facilities and remedial action taken should be documented and available for inspection.

Where communal facilities are provided they should be situated so as to be conveniently accessible to sleeping quarters and in the case of larger vessels and those carrying passengers additional strategically located facilities should also be available i.e. close to work stations, dining and recreation areas.

4.2 MANAGEMENT

In accordance with The Merchant Shipping and Fishing Vessels (Port Waste Reception Facilities) Regulations 2003 and the Local Port Waste Management Plan all ships waste must be properly disposed of in port. The Port Health Officer should be familiar with the Port Waste Management Plan relevant to that particular port. The Port Health Officer should examine the Ship's Waste Declaration Document, a copy of which should be retained on board, in order to confirm that the ship's waste has been disposed of, or in some cases retained on board, as stated in the declaration. This is particularly relevant in the case of Category 1 ship's waste (this is food waste and packaging where the ship has either visited a 3rd country or sourced food provisions from a 3rd country. Confidence in the management of waste disposal is crucial to the safe disposal of ship's waste. Port Health Officers must crucially be satisfied that the correct systems are in place to ocmply with the legislation.

4.3 DISPOSAL OF FOOD WASTE INCLUDING PACKAGING

On board storage of food and other waste shall be carried out in such a manner as not to cause nuisance, risk of contamination to foodstuffs, or to support or encourage infestations. Lidded receptacles , adequate in capacity and number and maintained in satisfactory condition shall be available for short term storage of waste. In the case of bigger vessels and those embarking on longer voyages, bulk refuse storage areas will be necessary. Such areas must be so sited , ventilated and maintained in such a manner as not to cause nuisance or support or encourage infestations.

All refuse receptacles and storage areas should be included in the ship's cleaning schedules.

Adequate provision must be made for the temporary and long term storage of CLINICAL WASTE. This is more relevant to passenger/cruise liners where the numbers of persons generating such waste will obviously be greater than cargo ships with small crews. In such situations there must be clear instructions available on the availability of containers for such waste and where it is to be stored on board. Final disposal must meet with the requirements of The Port Waste Management Plan.

4.4 VENTILATION AND TRAPPING

All sanitary facilities must be effectively water trapped to prevent the escape of odours from the foul drainage system. In addition to those sanitary facilities listed above effective water trapping must also be provided to sluices, and waste pipes serving washing machines and dishwashers. Similarly all floor drainage gullies must be trapped to eliminate the escape of odours.

All drainage facilities must be "adequate for the purpose intended and designed and constructed to avoid the risk of contamination of foodstuffs" – (The Food Safety (General Food Hygiene) Regulations 1995)

No compartment housing a W.C. shall communicate directly with any room where food is handled (The Food Safety (General Food Hygiene) Regulations 1995.

Effective ventilation must be provided to W.C. compartments, bathrooms and kitchens. The source of all air intakes for mechanical or ducted ventilation must be clean fresh air (i.e. not contaminated by engine/exhaust fumes or other odours)

4.5 SEWAGE / FOUL WASTE

The usual practice on smaller vessels is for foul waste to be held temporarily in tanks on board and then disposed of at sea. All tanks and pipework must be in sound condition and well maintained. Venting of the foul drainage system must be such as not to cause nuisance and well away from any food storage or preparation areas.

Bigger vessels, particularly cruise liners with large numbers of people aboard will generally have package sewage treatment plants on board. These plants produce a good quality final effluent which can safely be discharged into the sea .Such plants should be checked for leakage and potential nuisance.

OILY WASTE

Waste oil to be disposed of in port should be included in the Ships Waste Disposal Document.

Bilge water can be pumped out if it has an oil content of less than 15p.p.m. It is useful to confirm what facilities are available on board to measure the oil content of bilge water.

CARGO WASTE

Cargo waste, if there is any, must be declared on the Ship's Waste Disposal Document. The disposal of such waste should be checked to ensure compliance with The Port Waste Management Plan and The Merchant Shipping and Fishing Vessels (Port Waste Reception Facilities) Regulations 2003

5.0 ACCOMMODATION

5.1 HYGIENIC CONDITIONS

Living Accommodation

Cabins, messrooms etc., should be checked for evidence of a dirty state, insects or rodents. Appropriate remedial action should be taken as necessary. All decks, bulkheads and deckheads should be clean and in good repair. All bulkheads and deckheads should have smooth, hard finished washable surfaces.

WC Compartments

Should be checked for evidence of defects, blockages, foul WC's no flush, defective joints, absence of water seals, defective hand washing facilities i.e cracked\broken basins, absence of seals, no hot water, soap or hand drying facilities.

Standard

Advice to masters\owners to carry out works to remedy defects found. Verbal warning - written letter - statutory notice.

WHO International Health regulations 1969 (as amended)
Guide to Ship Sanitation 1967.
Public Health Act 1936
The Environmental Protection Act 1990

5.2 HEATING & VENTILATION

All spaces should be well ventilated. natural ventilation .should be supplemented where necessary by mechanical ventilation
There should be suitable and sufficient means of natural or mechanical ventilation. Ventilation systems must be so constructed as to enable filters and other parts requiring cleaning or replacement to be readily accessible.

Heating? - No information provided

5.3 LIGHTING

Lighting may be provided by natural means or supplied entirely by artificial means inside the vessel. There should be sufficient light for safety and comfort.

6.0 GENERAL PUBLIC HEALTH CONTROLS

This section deals with subjects involving pollution within a port health context, the presence of animals on board vessels as well as the risk posed by rodents and their control on ships as well as port environs.

6.1 POLLUTION CONTROL

Problems associated with pollution in ports and shipping are generally those caused by noise, smoke and / or dust.

6.1.1 Noise has been described as unwanted sound and there are a number of factors, which can affect the perception of the amount of nuisance caused. Amongst the most common is the time of day or night that the noise occurs, the level of background noise and the un-expectedness of the noise. Common sources of noise problems on vessels are noisy auxiliary generators, cargo pumps or handling gear (eg. winches) and in the case of pleasure vessels from unnecessarily loud music/p.a. systems. Reducing sound levels can usually be achieved by physical means, eg. repair or replacing worn equipment, baffling, mounting on sound absorbing material or screening. The Environmental Protection Act 1990 deals with noise as a statutory nuisance if in the opinion of the Port/Environmental Health Officer the noise is prejudicial to health or a nuisance.

6.1.2 Smoke is usually encountered as a result of poorly maintained or operated equipment particularly on older vessels, the use of unsuitable fuel or on occasions when a vessel has been lighting up from cold, eg after dry docking. The Clean Air Act 1993 makes it an offence for the owner, Master or other officer in charge to allow the emission of dark smoke unless permitted by legislation; The Dark Smoke (Permitted Periods) (Vessels) Regulations 1958 allow limited periods of emission in specific circumstances. Nowadays the virtual elimination of coal-fired vessels, together with improved technology has significantly reduced this as a source of pollution from vessels.

6.1.3 Dust as a nuisance associated with shipping is usually encountered as a result of poor handling techniques, accidents or breakdowns involving dusty cargoes or from processes being carried out on board the vessel, e.g. shot blasting. The handling of dusty cargoes is controlled by The Pollution Prevention and Control Act 1999. This is gradually replacing the regime set up under Part 1 of the Environmental Protection Act 1990 which ‘authorised’ the handling of certain cargoes, currently coal / coke, cement and iron ore, which had the potential for creating a dust nuisance. The conditions attached to those authorisations, (now ‘permit to operate’), specify methods and techniques for handling these types of cargo; they have usually been discussed at length between the enforcing authority and the operator and result in practical solutions and methods for preventing dust emissions. Regular maintenance of equipment, an understanding of their responsibilities by the operators and good general standards of housekeeping are usually sufficient to achieve the aim of controlling any fugitive emissions of dust from leaving the process boundary.

6.2 ANIMALS

The presence on board a vessel of captive birds or animals and any undue mortality or sickness amongst them is required by the Public Health (Ships) Regs. 1979, to be notified to the port health authority, where possible, prior to the arrival of the vessel. The local animal health and welfare officer, if not an officer of the Authority, should also be notified. Because of problems previously experienced, pet animals and birds are now rarely encountered on commercial vessels. In order, however, to prevent escape or contact with other animals they should, when the vessel is alongside a quay or wharf, be confined and behind at least two closed doors. Animals intended for import must be likewise securely confined and not landed until collected on board by an authorised carrying agent. Animals arriving from qualifying countries and territories can enter the UK by certain sea, air and rail routes, subject to stringent conditions of the Pet Travel Scheme (PETS), without quarantine, those from non-qualifying countries remain subject to 6 months quarantine. Up to date information on qualifying countries and routes as well as details of the controls and procedures for importing animals into the UK are all available on the DEFRA website.

6.3 VERMIN AND PEST CONTROL

Rodents pose a nuisance to humans through the damage they cause to property and food supplies, but more importantly, they are a health risk, carrying diseases such as Weils Disease, Salmonella and plague. Rats breed rapidly; one rodent has the potential to produce nearly one hundred off-spring in a year. The two rodents found in Britain and most commonly aboard ships are *Rattus norvegicus* (the brown or sewer rat) and *Rattus rattus* (black or ship rat) which, being slightly smaller and a good climber, can inhabit almost any type of premises including ships and dock areas.

Rodents have three requirements for survival; food, water and shelter. If one or preferably all of these elements are eliminated rodent infestation is unlikely to occur. However, 'food' should not be judged by human standards since accumulations of rubbish will provide an adequate food source. Poor standards of food hygiene and cleanliness can result in an infestation. The vigilant use of rat guards on mooring ropes and service cables when vessels are tied alongside may assist in preventing rodent infestation.

6.4 DERAT CERTIFICATES

The risks posed by ship-borne rodents to both personal and public health as well as the damage to food cargoes has been recognised for many years and this is the reason for international controls of rodents on vessels. All foreign-going vessels are required to carry either a deratting or a deratting exemption certificate; these certify that the vessel has been cleared of rodents, i.e. deratted. or that it has been inspected and found free of rodents and the plague Vector at an approved port

within the previous six months. Ports worldwide that are designated to issue these certificates are listed in WHO official publications, which are regularly updated. Occasionally officers will come across a certificate issued by an undesignated port or in an unapproved format This will require a new certificate to be issued by the approved port and the details from the 'illegal' certificate, i.e. country and port of issue, to be forwarded to the Department of Health who will make the appropriate representations at international level.

When evidence of rodents is found during a vessel inspection the Port/Environmental Health Officer can require the Master to carry out control measures. These can take the form of baiting, (acute poisons can be used under supervision on ships), trapping or fumigation as well as the removal of any harbourage. When these measures are undertaken, either by the PHA/LA or approved contractors, the supervising Port/Environmental Health Officer should ensure the safety of crew, operatives and visitors to the ship throughout the treatment, particularly during fumigation, which invariably will involve the use of methyl bromide gas.

The Public health (Ships) Regulations 1979, together with the International Health Regulations detail the current requirements for rodent control and certification on foreign-going vessels whilst the Prevention of Damage by Pests Act 1949 and Application to Shipping Order 1951 apply to home going vessels.

Infestation of shore side buildings / structures can also pose a risk to vessels and use of rat guards on mooring lines and service cables should be considered.

6.5 INFECTIOUS DISEASE CONTROL

The Public Health (Ships) Regulations specify that no person other than a pilot, customs officer, immigration officer or port health officer shall board or leave a ship which is required to obtain free partique for health clearance on arrival in the United Kingdom from a foreign port, with out consent of the port health Authority.

A Master of a ship is required to report to the Port Health Authority not less than 4 hours and not more than 12 hours before arrival at a UK port from a foreign port:

(a) the occurrence on board ship before arrival of
  (1) the death of a person otherwise than as a result of an accident, or
  (2) illness where the person who is ill has or had a temperature of 38ºC or greater which was accompanied by a rash, glandular swelling or jaundice, or where such temperature persisted for more than 48 hours, or
  (3) illness where the person has or had diarrhoea severe enough to interfere with work or normal activities;

(b) the presence on board of a person who is suffering from an infectious disease or who has symptoms which may indicate the presence of an infectious disease;

(c) any other circumstances on board which are likely to cause the spread of infectious disease; and

(d) the presence of animals or captive birds, and the occurrence of mortality or sickness amongst such animals or birds.

A vessel requiring health clearance should show by day the international flag signal QQ, or by night a red light over a white light about 2 meters apart visible all around the horizon. The Master may be required to complete a Maritime Declaration of Health and should also have ready for the port health officer a list of passengers and crew leaving the ship together with the addresses they are going to in the United Kingdom.

The Port Health Authority can be contacted through a shipping agent or the port radio should be able to provide a direct contact. A Medical Officer or other officer of the PHA will board and grant health clearance when there has occurred on the ship any of the circumstances in either (a), (b) or (c) above.