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A Guide to Developing Management Plans for Conveyances

Potable Water, Food and Sanitation

2011

Travelling Public Program/
Le Programme du public voyageur

Canada

Health Canada is the federal department responsible for helping the people of Canada maintain and improve their health. *We assess the safety of drugs and many consumer products, help improve the safety of food, and provide information to Canadians to help them make healthy decisions. We provide health services to First Nations people and to Inuit communities. We work with the provinces to ensure our health care system serves the needs of Canadians.*

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1.0 PURPOSE

The Guide has been developed for use by conveyance operators to provide guidance on how to prevent or mitigate risks related to water, food and sanitation and to meet Health Canada inspection criteria through the development of management plans. On request, Health Canada Environmental Health Officer's (EHOs) will work with conveyance operators in the development of these plans specific to each sector/operator.

2.0 INTRODUCTION/MANDATE

Health Canada has a mandate under the *Department of Health Act,* Section 4, to take measures relating to the promotion and preservation of the health of the people of Canada. Under Section 4(2 (e)) the Minister's powers, duties and functions include more particularly "*the protection of public health on railways, ships, aircraft and all other methods of transportation, and their ancillary services*".

The main goal of Health Canada's Travelling Public Program is to protect the health of the travelling public by ensuring the provision of safe food, potable water, and environmental sanitation levels. The Travelling Public Program encompasses passenger conveyances and ancillary services that are federally regulated; conveyance that travel between provinces/territories and internationally. Conveyance sectors include airlines, passenger rail, marine (ferries, cruise ships and charter vessels) and passenger motor coaches. Ancillary services include operations that are integral to the operation of the conveyance such as potable water and sanitation in airports or seaports.Health Canada will work closely with sectors to address public health risks related to food, water and sanitation to implement a comprehensive risk-based approach. Program elements include: education and outreach, inspection and audits including outbreak and complaint investigations, analysis, reporting and program evaluation. Health Canada's risk–based approach will provide a consistent application of risk-based public health services across all conveyance sectors. This approach focuses Health Canada's public health activities (increased or decreased) in individual conveyance sectors based on analysis of risk from a public health perspective. The development of Management Plans is a key program activity that will assist sectors to address public health risks.

For the purposes of this guide:

- A potable water system includes the source of potable water, filling points, filling lines, all components of the distribution system including pumps, pressure tanks, treatment equipment such as filters and disinfection units and all plumbing fixtures including cross connection control equipment. Water trucks, water carts, water hoses, fixtures and storage cabinets used to transfer potable water from one system to another also form part of the potable water system.
- A food service system is an establishment that receives stores, prepares or serves food for human consumption on a conveyance and includes the transport of food from the food service system where final preparation or packaging is completed prior to being served onboard the conveyance.
- A sanitation system is an organized approach to maintaining a condition of cleanliness and removal of contamination onboard a conveyance, food services facility or terminal.

3.0 OVERVIEW OF PUBLIC HEALTH RISK AREAS

Travel can facilitate the transmission of communicable disease. The volume and rapidity of travel can have an international impact on human health. This is particularly true for conveyances as the global span of the conveyance industry requires the loading and rapid transport of people and supplies from many locations all over the world. With the 21st century potential for millions of people to have access to air, marine and ground travel on a global scale come the added problems encountered by conveyance operators that transit both into and out of disease affected areas or areas with variable and sometimes inadequate standards of general hygiene and sanitation.

Conveyances and their ancillary services represent an elevated risk environment associated with several key characteristics. These characteristics include confined environments, shared facilities, prolonged exposure, distance travelled, population, and congregation and dispersion. Many of these characteristics are unique to the conveyance environment and contribute to heightened public health risks. The environments found on board conveyances facilitate the transmission of disease to and among passengers.

Confined Environments: Conveyances represent self-contained and confined environments, while in transit. The services on these conveyances rely on internally managed and delivered sources of food and water. For aircraft, cabin air is partially re-circulated and supplemented with limited amounts of external air. In addition, the nature of conveyances implies that passengers are often located in enclosed spaces and are in close proximity to each other.

Shared Facilities: The use of common facilities and shared infrastructure is another characteristic that facilitates the transmission of disease. The shared physical environment, equipment and general surface areas can facilitate the transmission of various infectious agents. The usage of shared lavatories, sleeping areas, public areas, food and water preparation and delivery sources, and medical facilities results in increased opportunities for exposure to and transmission of communicable diseases.

Prolonged Exposure: Increased travel results in more passengers being on board conveyances for extended periods of time. This is particularly the case for international flights, cruises, transcontinental trains and tour buses. The length of time spent in the conveyance environment increases the potential for transmission of many diseases due to increased exposure to one or more sources of infection.

Distances Travelled: Travel involves covering great distances in relatively short periods of time, often resulting in the movement of many people between major population centres with different population health characteristics such as immunization status and access to health facilities. This population can move quickly between endemic and non-endemic regions, and can transport vectors, or act as host to diseases moving into new populations.

Population: The health risks are attributable, in part, to the fact that the travelling public is composed of diverse groups of individuals from different regions and vulnerabilities, which represent diverse health risks. In addition, conveyances themselves can take on supplies from local food and water sources in endemic countries and act as vehicles for transmission of communicable diseases.

Congregation and Dispersion: Travellers congregate prior to departure, during the voyage, and immediately after arrival. From there, individuals disperse quickly and either move into the general population or travel to another destination.

Relevant literature highlighting the public health risks related to food, potable water and sanitation is presented in **APPENDIX A**.

4.0 MANAGEMENT PLANS – Tools to Address Public Health Risks

A Management Plan is a document that contains written procedures and documentation that identifies and describes the actions and measures that conveyance operators are taking to minimize public health risks associated with food, potable water and sanitation. They ensure that food and water:

- are safe for the travelling public
- are fit for human consumption
- conform to requirements prescribed by all applicable Canadian legislation and Health Canada inspection guidelines

Management Plans, when consistently implemented, are an effective approach for risk mitigation to consistently ensure the safety of drinking water, food safety and sanitation onboard conveyances. Potable water or food obtained from regulated sources is not a guarantee of safety. Water or food may be contaminated during transfer to, storage or handling onboard the conveyance. A Management Plan is a tool that provides flexibility to operators to choose the most appropriate control programs for their operations. Each Management Plan is based on an operator's in-depth knowledge of its organization and relies on documentation from already existing programs (e.g. Hazard Analysis Critical Control Point (HACCP), International Standards Organization (ISO), Good Operating Practices) and existing protocols (e.g. Standing Operating Procedures (SOPs)) within an organization. This prevents duplication and increased burden to the operators by utilizing existing systems/resources. The use of management plans are a growing trend internationally and have proven to be an effective tool in identifying and controlling health and safety hazards. They are currently being utilized domestically by the aviation industry to address safety[1] and potable water[2&3] hazards and by the food manufacturing sector to address food safety[4] hazards.

Management should be committed to and supportive of developing, implementing, maintaining and continuously improving a preventive management system, including allocating sufficient resources and appropriate training as required. The team responsible for the development of the Management Plan should include representatives from all areas of the organization who are knowledgeable about the operations related to potable water, food and sanitation.. This could include people from shipping and receiving, operations, sanitation, quality assurance, maintenance and engineering.

[1] Transport Canada Safety Management System:
http://www.tc.gc.ca/eng/civilaviation/standards/sms-menu-618.htm

[2] Health Canada: Potable Water Management Plan for Airlines

[3] US EPA Aircraft Water Rule:

[4] Canadian Food Inspection Agency Food Safety Enhancement Program: **Error! Main Document Only.**http://inspection.gc.ca/english/fssa/polstrat/haccp/haccpe.shtml

The team should be able to:

- confirm that activities related to the provision of potable water, food safety and sanitation comply with applicable legislation
- identify significant hazards (for example, biological, chemical) and physical hazards), as well as the appropriate control measures;
- define the scope of the preventive management system;
- confirm that all necessary pre-requisite programs have been effectively implemented; and
- develop, implement and maintain an effective preventive management system.

5.0 ELEMENTS OF A MANAGEMENT PLAN – GUIDE TO DEVELOPMENT

Each of the public health risk areas will have common elements that should be included in the Management Plan. Specific procedures and programmes will be identified for development in order to address each public health risk area. Not all requirements are applicable to all sectors but are dependent on the type and extent of operations of the conveyance or ancillary service. Sample elements for inclusions in potable water, food safety and sanitation Management Plans can be found in the **APPENDICIES B - D**.

Elements of a *Management* Plan

1) **Statement of goal(s)/objective(s)/purpose of the Management Plan**
2) **Jurisdictional Requirements**, **Guidance and Policy Documents**
3) **Organization**
4) **Operational Management**
5) **Training Plan**
6) **Incident and Emergency Plan**
7) **Communication Plan**
8) **Processes/Procedures Review**
9) **System Inspection and Audit**

1) Statement of goal(s)/objective(s)/purpose of the Management Plan

The statement of purpose sets the intent of the plan.

e.g. "*This management plan will support Conveyance A to protect public health through managing risks associated with food, water and sanitation*."

e.g. *"By the end of 1 year "x" will be accomplished by…". This may be linked to a specific need for the certain risks or hazards to be addressed.*

2) Jurisdictional Requirements, Guidance and Policy Documents

The Management Plan structure should ensure that compliance requirements and due diligence are integrated in such a way that legal obligations are met in regards to food safety, drinking water quality and sanitation. This information will define the path to follow throughout the Management Plan development and implementation. It will also ensure appropriate cohesion between components and elements of your Management Plan.

3) Organization

Organizational arrangements set out the responsibility, authority, and accountability for system activities for all relevant positions in the organizational hierarchy. Roles and responsibilities of all individual involved in your management plan should be defined. The use of an organizational chart is a good tool to represent a typical chain of command within an organization.

4) Operational Plan

It is important to identify, understand and evaluate public health hazards related to operations and different ways to control these hazards as part of the development of Management Plans. The systematic evaluation of the water supply system or food facility, the identification of hazards and hazardous events, the assessment of gaps are all ways to either mitigate or eliminate those hazards.

5) Training Plan

Who needs training and on what? In general terms, anyone involved with the Management Plan must be adequately trained for their role & responsibilities. Organizations should integrate a dedicated training activity in their operational plan with an associated budget. Training should be in-line with characteristics of the site and reflected in personnel job descriptions.

6) Incident and Emergency Plan

Are you prepared to respond to events that could compromise the drinking water quality or food safety on your conveyance? Do you have a plan in place to respond to an adverse result, if needed?

7) Communications Plan

How do you plan to inform and keep informed employees, travellers, personnel and management of public health risks when they may arise? How do you keep the information flowing within the organization? Who will take charge when feedback is required (i.e. adverse result)?

8) Processes/Procedures Review

a. Documentation

Establish documentation (record keeping) concerning all appropriate procedures and records. This will allow for verification to confirm the effectiveness of the operational plan. Documentation is a part of ongoing due diligence and leaves a useful history in place for your facility.

b. Change Control

This is your system maintenance program. It is a built-in mechanism to maintain Management System components & elements updated \ upgraded or simply improved.

9) System Inspection and Audit

Self – Inspection

A self-inspection is a tool that operators can use to confirm that specific aspects of the Management Plan are working properly. It involves a visit to a facility or site for the purpose of gathering information to determine whether it is in compliance. An inspection generally uses a checklist format with "yes \ no" answers. Items on the checklist are evaluated and either pass the inspection or do not. Inspections are performed in a short time frame and usually focus on a single item or process and can include collecting samples.

Audit

"Say what you do – Do what you say and show me"

An audit protocol is a fundamental component in an effective management program. The audit protocol provides verification to make sure the Management Plan addresses potential public health risks and is working.

Audits are more detailed and in-depth than inspections; they can take several hours or several days, depending on the scope and depth of the audit. An audit looks at an entire process from start to finish, and include reviews of written procedures and observations of tasks as well as an inspection of the equipment and process to which the written procedures apply.

An audit frequently includes interviews with employees and document reviews to assure that the steps the operator actually takes are in line with the written procedure (do the procedures say what the operators do, and do the operators do what the procedures says). Additionally, if a procedure is based on a regulatory requirement, an audit will evaluate a written procedure to assure it meets the requirements of the regulations.

An audit asks open ended questions that allow for the operator to elaborate on what they do and how they do it. It is not based on a yes/no response.

Audit findings, because they are frequently based on regulatory compliance, or based on written documentation, are sometimes more difficult to prioritize and therefore need to be placed in categories from serious (major) to awareness required (minor).

Audits are usually scheduled as documentation must be organized and made available for review and employees must be available for interviews.

6.0 REFERENCES

Canada Labour Code

- Aviation Occupational Health and Safety Regulations. Accessed online April 5, 2011 @ http://laws-lois.justice.gc.ca/eng/regulations/SOR-87-182/index.html
- Maritime Occupational Health and Safety Regulations. Accessed online April 5, 2011 @ http://laws-lois.justice.gc.ca/eng/regulations/SOR-2010-120/index.html
- Onboard Trains Occupational Health and Safety Regulations. Accessed online April 5, 2011 @ http://www.canlii.org/en/ca/laws/regu/sor-87-184/latest/sor-87-184.html

Canadian Food Inspection Agency (2010). Food Safety Enhancement Program Manual.

http://www.inspection.gc.ca/english/fssa/polstrat/haccp/manue/fseppasae.pdf

Health Canada (2011) *Flight Kitchen Inspection Guidelines*. Ottawa, Ontario.

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http://www.ifsachoices.com/WFSG_2010(updated).pdf (1 June 2010).

World Health Organization. (2009). *Guide to hygiene and sanitation in aviation-3rd ed.*

http://www.who.int/water_sanitation_health/hygiene/ships/guide_hygiene_sanitation_aviation_3_edition.pdf

World Health Organization. (2009). *Guide to Ship Sanitation- Draft for review and comments*

World Health Organization. (2009). *Water safety plan manual: step-by-step risk management for drinking-water suppliers*

http://whqlibdoc.who.int/publications/2009/9789241562638_eng_print.pdf

APPENDIX A - Literature Review of Public Health Risks Areas Related to Conveyances

Potable Water

Potable water has been associated with illnesses on conveyances. One risk is posed by the potential for microbial contamination of water on conveyances by animal or human excreta. This contamination may originate from source waters, may occur during transfer operations or while water is stored on board the conveyance. Waterborne diseases in many parts of the world include cholera, enteric fevers (*Salmonella*), bacillary and amoebic dysentery and other enteric infections. Studies on outbreaks of waterborne diseases associated with ships suggest "that the majority of reported outbreaks were associated with passenger ships and that more than 6,400 people were affected. Waterborne outbreaks due to Enterotoxigenic *Escherichia coli*, Noroviruses, *Salmonella* sp, *Shigella* sp, Cryptosporidium sp, and *Giardia lamblia* occurred on ships. Enterotoxigenic *E. coli* were the pathogen most frequently associated with outbreaks"[5]. Most conveyances have a good record with respect to known contamination incidents. However, any location is at risk if proper procedures and sanitation practices are not continuously followed to ensure the safety of water that is used for drinking, personal washing and food processing and preparation.

Food

Foodborne illnesses associated with food service onboard conveyances have been reported and documented. Burslem et al. (1990) and the case report by Jessop et al. (1984) discuss a gastroenteritis outbreak that occurred on British Airways in 1984 and affected almost 1000 individuals (631 passengers, 135 crew, and 100 catering and loading workers) with two associated deaths. The two deaths included a 70-year-old man who had recently had cardiac surgery and a second individual who died from *Salmonella p*eritonitis. The investigation revealed that the source of contamination appeared to be aspic glaze (used to glaze canapés and cold plates). The likely source of the contamination into the flight kitchen resulted from a chef who had recently travelled overseas. It was also found that the glaze was not properly stored over an extended period of time, and was then used on airline meals. The study suggests the need for proper public health measures, including proper food-handling practices, to prevent similar outbreaks and the spread of disease as a result of contamination in flight kitchens.

Roberts et al. (1989) provide an examination of a study conducted between 1984 and 1986 of the microbiological quality of airline meals produced by 10 catering units in the United Kingdom. Of the 1013 samples examined, 240 had surface colony counts in excess of 10^6 organisms per gram 209 (21%) contained *Escherichia coli*, 2 (0.2%) contained *Staphylococcus aureus*, 2 (0.2%) contained *Clostridium perfringens* and 31 (3%) contained *Bacillus cereus*. It was recommended that a number of control measures be put in place including the assurance of food ingredient quality, effective temperature control across all aspects of the food process, prevention of cross-contamination, and proper training and supervision of food handlers.

Sanitation

Many of the improvements in human health in the 20th century relate to improvements in sanitation and associated infrastructure[6]. Improvements in basic sanitation underlay the difference between developed and developing nations. A review of the great public health achievements in the 20th Century in the developed world includes the control of infectious diseases, citing:

[5] Rooney R.M., Bartram J.K, Cramer, E.H. et al, A Review of Outbreaks of Waterborne Disease Associated with Ships: Evidence for Risk Management Public Health Reports / July–August 2004 / Volume 119

[6] http://cpha100.ca/12-great-achievements/sewage-and-sanitary-reformers-vs-night-filth-and-disease

> # 4 Achievement (USA) - *Control of infectious diseases has resulted from clean water and improved sanitation. Infections such as typhoid and cholera transmitted by contaminated water, a major cause of illness and death early in the 20th century, have been reduced dramatically by improved sanitation*[7].
>
> *# 3 (Canada)- Since Public Health Officials began to actively pursue adequate sanitation and clean water systems in Canada, water-borne diseases such as Cholera and typhoid has largely been controlled* [8]

A 2004 WHO review of the Costs and Benefits of Water and Sanitation Improvements at the Global Level found that:

> *Infectious diarrhoea is mainly responsible for the burden caused by water-borne and water-washed diseases. From the health perspective, improving access to safe water supply and sanitation services is a preventive intervention, whose main outcome is a reduction in the number of episodes of diarrhoea and accordingly a proportionate reduction in the number of deaths.*[9]

The spread of illness such as Norovirus, measles, tuberculosis and influenza have been reported on conveyances. Several studies explicitly note the connection to environmental contamination of common touch surfaces including the following studies:

- Widdowson et al. (2005) analyzed a Norovirus outbreak onboard a passenger aircraft in the course of an international flight. This study found that the transmission of this disease was associated with environmental contamination on board the aircraft.

- Mei Shang Ho et al (1989) studied an outbreak of gastroenteritis onboard a passenger cruise ship and found that contaminated bathrooms, particularly communal toilets, may be an important mechanism for disease transmission. The study recommended protection against environmental contamination.[10]

- Guillet et al. (1998) discuss the occurrence of airport malaria in France, including 63 reported cases of the disease in Western Europe from 1969 to 1998. This study highlights documented transmission inside the airport, to nearby residents, transportation of vectors to a secondary location, transportation of vectors inside luggage, and a case of likely transmission while in-flight.

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[7] 10 Great Public Health Achievements in the 20th Century: http://www.cdc.gov/mmwr/preview/mmwrhtml/00056796.htm

[8] http://resources.cpha.ca/cpha100/expo_e.htm

[9] http://www.who.int/water_sanitation_health/wsh0404summary/en/index.html

[10] Viral Enteritis aboard a cruise ship: www.thelancet.com/journals/lancet/article/PIIS0140-6736(89)90964-1/abstract

APPENDIX B - Elements of a Potable Water Management Plan

1) Statement of goal(s) /objective(s) / purpose of the Potable Water Management Plan

A Potable Water Management Plan will assist operators in meeting their legislated responsibilities for the provision of safe potable water to employees and passengers, both domestically and internationally.

The aim is to ensure that appropriate measures are in place so that water delivered to the passengers and employees will meet established health-based targets and that information pertaining to the achievement and maintenance of drinking water quality is documented.

To be effective, the Potable Water Management Plan needs to exist within an appropriate framework in which roles and responsibilities are clear and where the flow of key information between stakeholders is assured.

The following is a sample Purpose from Potable Water Management Plan developed for the airline industry:

The Potable Water Management Plan aims to ensure onboard potable water by identifying, eliminating or mitigating any deficiencies in conditions, policies and procedures, and by ensuring that staff consider at all times the health and safety implication of their own actions and those of their colleagues in ensuring potable water onboard aircraft for passengers and employees.

Provision of potable water to employees and passengers will be achieved by:

a) Ensuring compliance with all applicable legislative requirements and other applicable guidelines and standards;
b) Establishing procedures and policy for safe handling of water;
c) Selection of potable water sources;
d) Training of water handlers;
e) Routine Water sampling;
f) Routine Disinfection/Sanitization of Potable Water System;
g) Taking action on adverse results, incidents and complaints;
h) A cooperative approach between airport authorities, haulers and airline companies.

2) Jurisdictional Requirements, Guidance Documents and Policies

The following are examples of Canadian legislation or guidance documents which may be applicable or useful in the development of your potable water management plan:

- Canada Labour Code:
  - Sec. 124 – General Duty of Employer
  - Sec. 125 (i) (j) – Specific Duties of the Employer
  - Sec. 126 – Duties of Employees
- Canada Occupational Health and Safety Regulations:
  - Potable Water (Section: 9.24, 9.25, 9.26)

- Department of Health Act: 4 (2) (e):
    - Potable Water Regulations for Common Carriers. (Section 5, 6, 7).
- Conveyance related advisories / communications;
- Commercial and Business Aviation Advisory Circular # 0208 (2002.05.31) "Air Operator's Responsibilities with respect to potable water systems on Board Aircraft".
- Health Canada Inspection Guidelines for Conveyances and their Ancillary Services.
- Provincial / Territorial Regulations / Standards:
    - Ideally, the potable water provider meets Provincial / Territorial regulations / standards in regards to potable water. Conveyance operators should consider having this indicated in their service contract.
- Guidelines for Canadian Drinking Water Quality:
    - http://www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/index_e.html
- Manufacturer's instructions, procedures, guidelines

3) Organization

To be effective, the potable water management plan needs to exist within an appropriate framework: with corporate commitment; clear roles and responsibilities throughout the organization, and where the flow of key information between stakeholders is assured.

Roles and responsibilities

An organizational flowchart should be developed and updated that would meet the organizational requirements and reflect reporting relationships and accountabilities.
Define and record the roles and responsibilities of the department/section and individuals involved in the plan:

- functional and reporting responsibilities for each department/section, position and task;
- the competencies required for each position;
- the line of responsibility for ensuring all staff are competent and trained for their duties;
- quality assurance criteria;
- overall accountability.

E.g., Potable Water System Manager; Engineering Department Manager; Engineer at seaport and airport; Water Services Manager; ground crew; flight crew; Off-board and Onboard Service Manager

Stakeholders

Identify the internal/external stakeholders and their roles and responsibilities within the plan.

(E.g., Health Canada, airports, seaports, supply depots, water supply and handling companies, laboratories, municipalities, etc.).

4) Operational Plan

A key part of the Potable Water Management Plan is the identification of potential hazards and the mitigation of risks, both generic potable water risks and those that are specific to the conveyance or facility operation.

In order to identify, understand and evaluate the public health hazards related to your operations and determine different ways to control these hazards, a hazard identification and risk mitigation process should be undertaken. A multi barrier approach to drinking water will help you to consider potential hazards and controls throughout the potable water system. Guidance is available from Health Canada http://www.hc-sc.gc.ca/ewh-semt/water-eau/drink-potab/multi-barrier/index-eng.php.

The following steps, adapted from the Hazard Analysis Critical Control System (HACCP) food safety system, may be helpful in identifying and developing control measures for your potable water system:

- Identifying hazards associated with the potable water system:
    - hazards can be biological, chemical and physical;
    - most hazards are caused by contamination, survival or growth of pathogenic microorganisms.
- Identifying steps in the potable water system which are critical to water safety:
    - critical steps are known as critical control points (CCPs);
    - CCPs are steps where a control measure can be applied to prevent, eliminate or minimize a hazard to an acceptable level.
- Implementing effective control measures at CCPs:
    - control measures set safety standards for the CCPs;
    - standards must be measurable, observable and verifiable.
- Monitoring control measures to ensure their continuing effectiveness;
- Establish corrective actions that will be taken when deviations from the set control measures are detected;
- Establish a recordkeeping system to document the effectiveness of control measures.

All parts of the potable water system are important. The steps identified as CCPs must be controlled and monitored to ensure water safety. Other steps which are less critical can be controlled using standard operating procedures (SOPs). SOPs describe proper procedures for these less critical steps. See **APPENDIX E** for suggested sections to include in an SOP.

Examples of potential hazards, common CCPs, control measures, monitoring procedures, corrective actions and recordkeeping have been provided in Table 1.

It is important to remember that a HACCP plan is a customized document. Not all the example CCPs in Table 1 may apply to your operation. It is important that you have a close look at your potable water system and select the appropriate CCPs and SOPs.

It is important to remember that a Multi barrier system plan is a customized document. Not all of the examples CCPs in Table 1 will apply to your operation. It is important that you have a close look at your potable water system and select the appropriate CCPs and SOPs.

Table 1: Sample Hazard Analysis and Critical Controls for Potable Water

Potential Hazard	Critical Control Point	Control Measure	Monitoring Procedures	Corrective Action	Record Keeping
Contaminated water supply at bunkering.	Water Supply.	Microbiological tests of water quality at bunkering point.	Monitor microbial indicators.	Disinfection or use alternative source.	Maintain log of water samples. Record any problems.
Transfer to conveyance (hoses, filling points).	Contamination Prevention.	Regular cleaning and disinfection. Regular repair and maintenance. Proper storage and labelling.	Routine visual inspections of equipment Operator handling.	Repair or replace. Cleaning and disinfection Training.	Note deficiencies for follow up.
Defective UV disinfection equipment.	Materials & Equipment.	Routine inspections and maintenance. Regular cleaning of UV system.	Visual inspection of UV Bulbs.	Repair or replace defective UV components.	Maintain record of component replacements.
Sediment at bottom of storage tanks.	Contamination Prevention.	Routine cleaning e.g. every 6 months.	Routine visual inspections.	Procedure for cleaning storage tanks.	Maintain log of inspection results and cleaning.
Cross connections between potable and non potable water storage tanks.	Contamination Prevention.	Cross connection control program.	Routine inspections, repair and maintenance.	Repair or replace.	Document cross connection inspections.
Insufficient residual disinfection.	Disinfection.	Adequate residual to prevent regrowth e.g. less than 0.2 ppm residual chlorine.	On line or manual monitoring of residual.	Investigate cause and rectify.	Maintain log of disinfection residual.

Water Quality Surveillance and Monitoring

A critical component of the Potable Water Management Plan will address your ongoing surveillance and monitoring of water quality. Depending on your circumstances, you may wish to conduct a baseline water quality evaluation at all points of use or at representative sites.

Determine which parameters to analyse for and at what frequency (minimum requirements for parameter and frequency may be prescribed in regulations or guidance documents).

- Who is going to take water samples?
- List of approved laboratories
- How will disinfection residual be monitored?
- Who is going to review results?
- How will results be stored?
- *Corrective Action Plans*

The Potable Water Management Plan should clearly lay out a plan for corrective action to be taken In the event of an adverse result. (See Health Canada Standard for Airline Potable Water Management[11] for examples of algorithms for adverse results).

5) Training Plan

Training will support the development of skills, knowledge and the capacity to manage the system; it is a fundamental step in implementing the Management Plan. Training may be required in the following areas:

- Sampling and testing equipment, sampling techniques, chain of custody and reporting;
- Disinfection and maintenance procedures including corrective actions;
- Boarding water policy and procedures;
- Cross-connection control program (identification and maintenance policy and procedure);
- Use of personal protective equipment as per operator Health and Safety policy;
- Quality assurance policies and procedures.

6) Incident and Emergency Plan

The operational plan should also include procedures for times when the system is operating in 'incident' situations (i.e. equipment failures, potable water contamination or complaints) or during other types of emergency situations (i.e. flooding, natural disasters).

[11] **Health Canada Standard for the Development of a Potable Water Management Plan (PWMP) for Airlines**

An emergency preparedness and response plan should consider the following elements and sub-elements:

- Plan to respond to natural disasters and emergency events;
- Identify potential emergency situations (e.g. waterborne illnesses) and have a written response plan;
- Plan for natural disasters that may disrupt the water supply (e.g. fire on board, flooding that contaminates water supply);
- Identify key roles and responsibilities;
- Prepare emergency contact list – internal/external; Document notification procedures as part of plan;
- Train employees and test procedure on the response plan;
- Have a contingency plan.

7) Communication Plan

A written communication plan will facilitate response to incident and emergency situations. Include both internal and external stakeholders and service providers.

- Draft communiqués, notifications to respond to incidents and adverse events, etc.;
- Contact information of internal and external stakeholders and service providers.

1) Consult the Health Canada web site at: http://www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/doc_sup-appui/boil_water-eau_ebullition/index_e.html#Communication

8) Process/Procedure Review

Document all aspects of the Potable Water Management Plan, including the plan itself. Identify those operational areas that require ongoing record keeping, for example:

- Training;
- Monitoring of critical control points;
- Complaints or response to adverse events (waterborne illness complaints, sampling results, etc.).

Prepare records for supervisor/crew use including dates, observations and signatures. Review the Potable Water Management Plan at least annually or when there is a change in process, procedure or equipment. Maintain a record of revisions with dates and signatures.

9) System Inspection and Audit

All components of a Potable Water Management plan should be subject to routine inspection by the management team responsible for implementation. Inspections may include a short checklist of activities to be observed.

A more comprehensive review of operations (an audit) including review of documentation, observations and interviews with staff may be conducted less frequency. Audits may be

conducted by management, trained staff or by an external contractor or certification agency.

The Potable Water Management Plan should include examples of the inspection checklists, an internal audit report template or set out the parameters to arrange external auditing[12].

APPENDIX C - Elements of a Food Safety Management Plan

1) Statement of goal(s)/objective(s)/purpose of the Food Safety Management Plan

A Food Safety Management Plan provides a mechanism for operators to demonstrate due diligence and their ability to meet their legislated responsibilities, both domestically and internationally.

The aim is to ensure that appropriate measures are in place so that food delivered to the passengers and crew will meet or exceed established health-based targets and that information pertaining to the achievement and maintenance of safe food quality is documented.

The following is a sample purpose for a Food Safety Management Plan:

The Food Safety Management Plan aims to ensure onboard food safety by identifying, eliminating or mitigating any deficiencies in conditions, policies and procedures, and by ensuring that staff consider at all times the health and safety implication of their own actions and those of their colleagues in ensuring food safety onboard X conveyance for passengers and employees.

Provision of safe food to employees and passengers will be achieved by:

a) Ensuring compliance with all applicable legislative requirements and other applicable guidelines and standards;
b) Establishing procedures and policy for safe preparation and handling of food;
c) Selection of food sources;
d) Training of food handlers;
e) Taking action on:

- *Incidents;*
- *Adverse results;*
- *Complaints.*

f) A cooperative approach between x, y, z (e.g. different authorities).

2) Jurisdictional Requirements, Guidance and Policy Documents

There are a variety of legislative, guidance and policy documents that may be relevant to food safety in your operation. Some examples of Canadian legislation or guidance documents are listed here:

[12] Health Canada Potable Water Management Plan Audit Guide for Aircraft – examples of an external audit

- Canada Labour Code:
    - Sec. 124 – General Duty of Employer;
    - Sec. 125 (i) (j) – Specific Duties of the Employer.
- Canada Labour Code: Sec. 126 – Duties of Employees;
- Conveyance related Occupational Health and Safety Regulations for Food Safety for Crew (Aviation, Marine or Rail);
- Department of Health Act: 4 (2) (e);
- Canadian Food Inspection Agency (CFIA) Acts and Regulations;
- Provincial / Territorial Regulations / Standards:
    - Ideally, the conveyance operator should meet or exceed food safety regulations in the location of their land-based facility, if applicable.
- Conveyance operators should consider ensuring food suppliers/caterers maintain an acceptable rating in national and/or local health inspection as part of their service contract. (e.g. meet Health Canada audit standards);
- International conveyance standards and guidelines[13] [14] (i.e. WHO Guide to Hygiene and Sanitation in Aviation, US Vessel Sanitation Program);
- Equipment manufacturer's instructions, procedures and guidelines (i.e. ware-washing machinery).

3) Organization

To be effective, the food safety management plan needs to exist within an appropriate framework: with corporate commitment to food safety; clear roles and responsibilities throughout the organization, and where the flow of key information between stakeholders is assured. An organization chart may be helpful in this section.

Roles and responsibilities

An organizational flowchart should be developed and updated that would meet the organizational requirements and reflect reporting relationships and accountabilities.

Define and record the roles and responsibilities of the department/section and individuals involved in the plan:

- functional and reporting responsibilities for each department/section, position and task;
- the competencies required for each position;
- the line of responsibility for ensuring all staff are competent and trained for their duties;

[13] World Health Organization Guide to Hygiene and Sanitation in Aviation, 3rd edition. Accessed online March 31, 2011 @www.who.int/water_sanitation_health/hygiene/ships/guide_hygiene_sanitation_aviation_3_edition.pdf

[14] One example is the 2010 World Food Safety Guidelines for Airline Catering. Accessed online March 31, 2011 @http://www.ifsachoices.com/WFSG_2010%28updated%29.pdf

- quality assurance criteria;
- overall accountability.

Stakeholders

The plan should include a listing of Internal/external stakeholders and their roles and responsibilities within the plan.

E.g. Health Canada, airports/seaports, supply depots, food supply and handling companies, laboratories, municipalities, etc.

4) Operational Plan

A key part of the Food Safety Management Plan is the identification of potential hazards and the mitigation of risks, both generic food safety risks and those that are specific to the operation.

A food safety management system based on the principles of HACCP or the CFIA Food Safety Enhancement Program is recommended. HACCP is customized to the food service operation, based on specific product – process hazards. The HACCP approach to food safety involves:

- Identifying hazards associated with the food service operation:
    - hazards can be biological, chemical and physical;
    - most hazards are caused by contamination, survival or growth of pathogenic microorganisms.
- Identifying steps in the food service operation which are critical to food safety:
    - critical steps are known as critical control points (CCPs);
    - CCPs are steps where a control measure can be applied to prevent, eliminate or minimize a hazard to an acceptable level.
- Implementing effective control measures at CCPs:
    - control measures set safety standards for the CCPs;
    - standards must be measurable, observable and verifiable.
- Monitoring control measures to ensure their continuing effectiveness
- Establish corrective actions that will be taken when deviations from the set control measures are detected
- Establish a recordkeeping system to document the effectiveness of control measures

All parts of the food service operation are important. The steps identified as CCPs must be controlled and monitored to ensure food safety. Other steps which are less critical can be controlled using standard operating procedures (SOPs). SOPs describe proper procedures for these less critical steps. See **APPENDIX E** for suggested sections to include in an SOP.
Examples of potential hazards, common CCPs, control measures, monitoring procedures corrective actions and recordkeeping have been provided in Table 1. It is important to remember that a HACCP plan is a customized document. Not all the example CCPs in Table 1 may apply to your food service operation. It is important that you have a close look at your food service operation and select the appropriate CCPs and SOPs.

Table 1 Sample HAACP elements

Potential Hazard	Critical Control Point (CCP)	Control Measure	Monitoring Procedures	Corrective Action	Record Keeping
Improper temperature control during transportation – growth of pathogens	Receiving	(1) PHF ≤ 8C for transport time ≤ 2 hours (2) PHF ≤ 4C for transport time > 2 hours (3) Frozen foods must be <-18°C with no evidence of thawing/refreezing.	(1) Check surface temperature of food prior to receipt (2) Visual inspection of food prior to receipt	Refuse to accept foods that do not meet the control measure standards	Complete the receiving CCP log sheet
Improper temperature control during refrigerated storage - growth of pathogens	Refrigerated Storage	(1) Refrigeration units to be operating at temperatures ≤ 4C (2) Freezer units to be operating at temperatures ≤ -18C	(1) Check refrigeration unit temperatures twice daily at least 8 hours apart (2) Check freezer unit temperatures twice daily at least 8 hours apart	(1) Check food surface temperature (2) If food temperature is ≤ 4C, re-check unit temperature 1 hour later (3) If food temperature is > 4C, move food to another unit and post an “out of order” sign on the unit (4) Schedule the unit for repair	Complete the refrigerated storage CCP log sheet
Improper temperature/time control during food preparation – growth of pathogens	Food Preparation – Temperature/Time Control	(1) PHF handled at temperatures > 4C and < 60C only during necessary preparation (2) PHF temperature > 4C for < 2 hours	Check time PHF is out of temperature control, > 4C and < 60C	(1) At or before 2 hour out of temperature control, return food to refrigerated storage (2) For future batches, reduce the batch size	Complete the food preparation temperature/time control CCP log sheet

Potential Hazard	Critical Control Point (CCP)	Control Measure	Monitoring Procedures	Corrective Action	Record Keeping
Improper handling – contamination with pathogens and chemicals	Food Preparation – Cross Contamination Control	(1) Use of separate colour coded cutting boards and utensils for raw and ready to eat foods (2) Use of food grade containers and utensils	Visual inspection of food handling practices	Discard contaminated ready to eat foods	Complete the food preparation cross contamination CCP log sheet
Improper cooking temperature/time – survival of pathogens	Cooking	Minimum Cooking Requirements: Add table from guidelines	Check internal food temperature for at least 2 portions	If the minimum required cooking temperature has not been reached, continue cooking	Complete the cooking CCP log sheet
Improper cooling of cooked PHF – growth of pathogens	Cooling	Cool PHF from 60C to 21C in $\leq$ 2 hours and 21C to 4C in $\leq$ 4 hours	Check internal food temperatures at time 0 hours, 2 hours and 6 hours	(1) Discard food (2) Reduce volume of food and increase the exposed surface area of food to enhance the cooling rate	Complete the cooling CCP log sheet
Improper reheating of PHF – survival of pathogens	Reheating	Reheat PHF to $\geq$ 74C for > 15 seconds	Check internal food temperatures and time	If the minimum required reheat temperature and time has not been reached, continue reheating	Complete the reheating CCP log sheet
Improper hot holding of PHF during storage and service – growth of pathogens	Hot Holding	Hold PHF hot $\geq$ 60C	Check internal food temperatures	(1) < 60C for $\leq$ 2 hours, reheat to $\geq$ 74C and hot hold at $\geq$ 60C (2) < 60C for > 2 hours, discard	Complete the hot holding CCP log sheet
Improper temperature control during transportation – growth of pathogens	Transportation	(1) PHF $\leq$ 8C for transport time $\leq$ 2 hours (2) PHF $\leq$ 4C for transport time > 2 hours (3) Frozen foods must be <-18°C with no evidence of	(1) Check surface temperature of food at delivery (2) Visual inspection of food at delivery	(1) Check refrigeration unit on transport vehicle (2) Use additional dry ice, ice, ice packs, etc. (3) Reduce transportation	Complete the transportation CCP log sheet

Potential Hazard	Critical Control Point (CCP)	Control Measure	Monitoring Procedures	Corrective Action	Record Keeping
		thawing/refreezing.		time	

5) Training Plan

Support programs such as training will support the development of skills, knowledge and the capacity to manage the system and is a fundamental step in implementing the Management Plan. Training may be required in the following areas:

- General food handler training;
- Specific training related to the food safety management plan covering:
    - CCP critical limits;
    - monitoring procedures;
    - corrective actions;
    - recordkeeping requirements.
- Integrated pest management;
- Cleaning and sanitizing procedures.

6) Incident and Emergency Plan

The operational plan should also contain procedures for times when the system is operating in 'incident' situations (i.e. equipment failures, food contamination or recalls, fecal/vomitus incidents, complaints). Documentation should relate to the following elements and sub-elements:

- Written plans to identify potential emergency situations, e.g. (i.e. power outages, food borne illness or outbreaks) and plan appropriate response to the event;
- Some events are likely to occur intermittently (e.g. flight delays). The responses to such planned events may be included in SOPs;
- Other events may occur rarely or potentially never (e.g. natural disasters such as hurricanes or earthquakes). These events require emergency planning to limit the potential disruption and/or damage and to restore normal operations as quickly as possible;
- Management must provide appropriate training for employees as well as conduct table top or live exercises to test the emergency response plan;
- Prepare emergency contact list – internal/external stakeholders.

7) Communication Plan

A communication plan to address normal and emergency operations is a useful addition to a food safety management plan. Communications may include planned responses to events such as food recalls, food borne illness/outbreaks or emergency situations. A communications plan may include:

- Communiqués to suppliers or regulators to meet reporting requirements;
- Notifications to passengers or crew in the event of an event.

A communications plan should include contact information of internal and external stakeholders and service providers. A media spokesperson may be designated.

8) Processes/Procedures Review

Documentation and recording keeping is a key aspect to the successful implementation of a food safety management plan.

- Document all aspects of the Food Safety Management Plan, including the plan itself;
- Identify those operational areas that require ongoing record keeping, for example:
    - Training;
    - Monitoring of critical control points.
- Complaints or response to adverse events (food illness complaints, food recalls, etc.);
- Prepare records for supervisor/crew use including dates, observations (e.g. temperatures) and signatures.

Review the food safety management plan at least annually or when there is a change in process, procedure, equipment, etc. Maintain a record of revisions with dates and signatures.

9) System Inspection and Audit

All components of a Food Safety Management Plan should be subject to routine inspection by the management team responsible for implementation. Inspections may include a short checklist of activities to be observed.

A more comprehensive review of operations (an audit) including review of documentation, observations and interviews with staff may be conducted less frequency. Audits may be conducted by management, trained staff or by an external contractor or certification agency.

The Food Safety Management Plan should include examples of the inspection checklists, an internal audit report template or set out the parameters to arrange external auditing.

APPENDIX D - Elements of a Sanitation Management Plan

1) Statement of goal(s)/objective(s)/purpose of the Sanitation Management Plan

A Sanitation Management Plan provides a mechanism for operators to demonstrate their ability to meet their legislated responsibilities, both domestically and internationally. It also supports the achievement of high standards of hygiene and sanitation which will reduce the potential for illness for crew and passengers onboard conveyances.

The aim is to ensure that appropriate measures to provide a hygienic and sanitary environment are planned, documented, implemented and evaluated.

To be effective, the sanitation management plan needs a framework with strong corporate commitment, in which roles and responsibilities are clear and where the flow of key information between stakeholders is assured.

The following is a sample purpose for a Sanitation Management Plan

The Sanitation Management Plan aims to ensure a high level of hygiene and sanitation onboard the conveyance. This will be accomplished by identifying, eliminating or mitigating any deficiencies in conditions, policies and procedures, and by supporting personnel to consider the health and safety implication of their own actions and those of their colleagues.

Provision of proper sanitation for employees and passengers will be achieved by:

a) Ensuring compliance with all applicable legislative requirements and other applicable guidelines and standards;
b) Establishing procedures and policy for sanitation practices;
c) Proper selection and use of cleaning and disinfection agents;
d) Training of crew and groomers;
e) Taking action on Incidents, adverse results or complaints;
f) *A cooperative approach between x, y, z (e.g. different authorities).*

2) Legislative Requirements, Guidance Documents and Policies

The Sanitation Management Plan should clearly describe statutory requirements as well as industry or government guidance documents and internal policies that guide the operation. The following documents may be included in this section:

- Canada Labour Code[i]:
    - Sec. 124 – General Duty of Employer;
    - Sec. 125 (i) (j) – Specific Duties of the Employer;
    - Sec. 126 – Duties of Employees.
    -
- Canadian Occupational Health and Safety Regulations, Part IX. Sanitation plus:
    - Aviation Occupational Safety and Health Regulations. Part 4 Sanitation
    - Maritime Occupational Safety and Health Regulations. Part 4
    - Onboard Trains Occupational Health and Safety Regulations. Part VI

- Department of Health Act: 4 (2) (e):
    - Food and Drugs Act;
    - Therapeutic Products Directorate has requirements for the licensing and application of cleaners and sanitizers for use in Canada.
- Health Canada Inspection Guidelines for Conveyances and their Ancillary Services;
- Provincial / Territorial Statutes and Regulations:
    - Conveyance operators should familiarize themselves with local regulatory requirements related to sanitation (e.g. pest management, solid and liquid waste management). These provisions may be applicable for operations at land based facilities. Conveyance operators should also consider ensuring suppliers meet applicable regulations including sanitation provisions in any service contract.
- Manufacturer's instructions, procedures, guidelines (i.e. sanitizing equipment and chemical specifications).

3) Organization

Corporate commitment and a clear accountability for management and crew are fundamental to the successful implementation of a sanitation management plan.

Roles and responsibilities

An organizational flowchart should be developed and updated that would meet the organizational requirements and reflect reporting relationships and accountabilities.

Define and record the roles and responsibilities of the department/section and individuals involved in the plan. This may include the following:

- Ground crews, including any contracted grooming, pest control or waste collection services;
- Onboard crew including flight crew, porters, housekeeping staff;
- Management – Head of Housekeeping, Trainers, purchasing, provisioning.

Functional and reporting responsibilities for each department/section, position and task may include:

- the competencies required for each position;
- the line of responsibility for ensuring all staff are competent and trained for their duties;
- quality assurance criteria;
- overall accountability.

Stakeholders

Stakeholders (internal or external) and their roles and responsibilities should also be identified within the plan. Some examples of stakeholders may include the following:

- Terminal operations including airports, seaports, rail or ferry terminals;
- Supply depots and contracted service providers;
- Health Canada oversight.

4) Operational Plan

A key part of the Sanitation Management Plan is the identification of potential hazards and the mitigation of risks, both generic sanitation risks and those that may be specific to the operation of the conveyance or facility.

A sanitation management system, adapted from principles of a Hazard Analysis Critical Control Point (HACCP) food safety system, is recommended. This approach involves:

- Identifying hazards associated with sanitation:
    - hazards can be biological, chemical and physical;
    - most sanitation hazards are related to the potential for disease transmission related to infectious (pathogenic) microorganisms.
- Identifying steps in the conveyance or facility operation which are critical to sanitation:
    - critical steps are known as critical control points (CCPs);
    - CCPs are steps where a control measure can be applied to prevent, eliminate or minimize a hazard to an acceptable level.
- Implementing effective control measures at CCPs:
    - control measures set safety standards for the CCPs;
    - standards must be measurable, observable and verifiable.
- Monitoring control measures to ensure their continuing effectiveness;
- Establish corrective actions that will be taken when deviations from the set control measures are detected
- Establish a recordkeeping system to document the effectiveness of control measures

> All parts of the sanitation system are important. The steps identified as CCPs must be controlled and monitored to ensure adequate sanitation. Other steps which are less critical can be controlled using standard operating procedures (SOPs). SOPs describe proper procedures for these less critical steps.

Examples of potential hazards, critical control points, control measures, monitoring procedures, corrective actions and record keeping related to sanitation are found in Table 1.

TABLE 1: Sample Hazard Analysis and Critical Controls for Sanitation

Potential Hazard	Critical Control Point	Control Measure	Monitoring Procedures	Corrective Action	Record Keeping
Infectious disease in passengers or crew onboard a conveyance.	Preventing Disease Spread.	Crew health protocols. Personal Hygiene is practiced by all crew. Cleaning and sanitation protocols are implemented including adequate concentration and contact time for disinfection.	Passenger and crew surveillance. Supervision of grooming practices.	Reinforce training and reporting.	Illness Surveillance and reporting system.
Public vomiting or diarrheal illness onboard conveyance.	Preventing disease spread.	Clean up kit is available onboard and used by crew for interim control. Comprehensive cleaning and sanitization upon arrival.	Report to ground crew. Supervision of grooming procedures.	Evaluate effectiveness of outbreak protocols. Reinforce training and reporting as needed.	Document incidents and corrective actions taken.
Limited water available for boarding.	Contamination Prevention.	Prioritize available water (flushing lavatories; galley uses). Provide hand sanitizers.	Monitor water levels onboard . Monitor supplies.	Review reasons for water limitations and resolve as applicable.	Record problems and corrective actions taken.
Pests including rodents onboard conveyance	Prevention of damage to conveyance/ contents and disease spread by pest.	Limit access to critical areas of conveyance (e.g. galleys, aircraft wiring)	Pest inspection and eradication measures if required	Evaluate and repair damage to equipment. Review pest management strategies.	Record sightings and corrective actions taken.
Vector activity onboard conveyance.	Prevent disease spread by vectors (e.g. malaria).	Chemical or non-chemical disinsection as required (by country).	Vector control strategies (trapping, visual monitoring).	Review disinsection protocols and adjust as necessary.	Record disinsection activity and corrective actions taken.

SOPs may be written for the following onboard and ground-based procedures. See **APPENDIX E** for suggested sections to include in an SOP.

Onboard Conveyances

- Liquid waste disposal system design and functioning onboard the conveyance;
- Solid waste management onboard the conveyance;
- Cleaning schedules for all areas of conveyance, including toilet areas, galleys, passenger accommodation (cabins, seats, lounges);
- Employee facilities including access to hand washing facilities and any crew accommodation;
- Sanitizing procedures including choice of product, labelling and application (frequency, concentration, contact time).

Ground Operations

- Solid and liquid waste removal or disposal at land based facilities;
- Grooming or housekeeping services upon arrival including grooming for short turn around stops[15] (i.e. Level A in Aircraft) to comprehensive grooming at final destinations (Level C);
- Training of groomers and flight crew;
- Integrated pest management (identification and management of pests).

The operational plan should be reviewed and revised as necessary to address gaps.

5) Training Plan

Programs such as training will support the development of skills, knowledge and the capacity to manage the system and is a fundamental step in implementing the Management Plan. Training may be required in the following areas:

- Training on sanitation and hygiene principles and practices;
- Cleaning and disinfection products and their correct application;
- Integrated pest management principles and practices;
- Use of personal protective equipment as per operator Health and Safety policy;
- Quality assurance policies and procedures;
- Glossary (definitions of terms used in the plan).

6) Incident and Emergency Plan

The Sanitation Management Plan should also document actions and protocols to be taken when the system is operating in 'incident' situations (e.g. public vomiting/diarrheal incidents, outbreaks of gastrointestinal illness, passenger complaints related to sanitation).

Documentation should relate to the following elements and sub-elements:

[15] Grooming for Aircraft should include Level A (short turnaround) as well as Level B/C for longer turnaround or comprehensive grooming at final destinations.

- Written plans to respond to emergency events by identifying potential emergency situations, e.g. (i.e. gastrointestinal illness outbreaks) and planning appropriate response to the event;
- Some events are likely to occur intermittently (e.g. vomiting onboard in toilets or public passenger areas). The response to planned events should also be documented in written plans. SOPs should be reserved to describe routine procedures that are used every day;
- Other events may occur rarely or potentially never (e.g. natural disasters which disrupt access to water or sanitation supplies). These events require emergency planning to limit the potential disruption and/or damage and to restore normal operations as quickly as possible;
- Identify key roles and responsibilities;
- Prepare emergency contact list – internal/external stakeholders; Document notification procedures as part of plan;
- Management must provide appropriate training for employees as well as conduct table top or live exercises to test the emergency response plan.

7) Communication Plan

A communication plan to address normal and emergency operations is a useful addition to a Sanitation Management plan. Communications may include planned responses to events such as gastrointestinal illness outbreaks or emergency situations. A communications plan may include:

- Communiqués to suppliers or regulators to meet reporting requirements;
- Notifications to passengers or crew in the event of an event.

A communications plan should include contact information of internal and external stakeholders and service providers. A media spokesperson may be designated.

8) Processes/Procedures Review

Documentation and recording keeping is a key aspect to the successful implementation of a Sanitation Management plan.

- Document all aspects of the Sanitation Management Plan, including the plan itself.

Identify those operational areas that require ongoing record keeping, for example:

- Training;
- Crew and Passenger Illness (GI Surveillance at a minimum) reports;
- Public vomiting/public diarrheal illness events;
- Cleaning and sanitizing schedules (i.e. at least daily cleaning and sanitization for lavatories; comprehensive cleaning and sanitization prior to departure (at origin) and final destination;
- Monitoring the mixing and concentrations of cleaning and sanitizing solutions (i.e. use of test strips or other methods to monitor concentration of sanitizers);
- Complaints or response to adverse events (e.g. passenger complaints related to sanitation).

Prepare records for supervisor/crew use including dates, observations (e.g…..) and signatures.

9) System Inspection and Audit

All components of a Sanitation Management plan should be subject to routine inspection by the management team responsible for implementation. Inspections may include a short checklist of activities or areas to be observed[16] [17]. A more comprehensive review of operations (an audit) including review of documentation, observations and interviews with staff may be conducted less frequently. Audits may be conducted by management, trained staff or by an external contractor or certification agency. The Sanitation management plan should include examples of the inspection checklists, an internal audit report template or set out the parameters to arrange external auditing.

[16] WHO Guide to Hygiene and Sanitation in Aviation, 3rd Edition is a useful reference for aircraft.

[17] WHO Ship Sanitation Certification program is a useful reference for the marine environment

APPENDIX E – STANDARD OPERATING PROCEDURE TEMPLATE

The Operations section of a Management Plan may include Standard Operating Procedures (SOPs). The following template adapted from the Canadian Food Inspection Agency provides suggested headings for a SOP. [18]

A. Purpose

The purpose should be a short summary of the procedure objectives;

B. Glossary

Include acronyms, abbreviations and facility-specific terms with associated definition.

C. Roles and Responsibilities

This section includes an overview of roles and responsibilities for personnel implicated in the procedure

D. Safety

This section will highlight important considerations to ensure the safety of personnel

E. Equipment and Material Required

This section will include list of equipment that should be available for procedure.

F. Detailed Instructions

This is the detailed step by step instructions on procedures and protocols to follow for the operation.

G. References

Include any information sources cited in the procedure. (i.e. manufacturer's instructions, cross reference to CCPs/guidance documents

[18] http://www.inspection.gc.ca/english/sci/bio/anima/convet/inspect/sope.shtml