



# **Canadian Institute of Public Health Inspectors Board of Certification Instructional Objectives**



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## **Introduction**

The Canadian Institute of Public Health Inspectors (CIPHI) uses its *Board of Certification Instructional Objectives* to document the level and type of knowledge, skills and behaviours required of degree graduates. The audience for the Board of Certification Instructional Objectives includes future and current students; professors and administrators at CIPHI Accredited Learning Institutes; and employers who hire board certified graduates.

The Board of Certification Instructional Objectives have been revised to more clearly indicate a knowledge and skills hierarchy. This organizational framework distinguishes between program-level, module-level, and course/lesson-level requirements. Described knowledge, skills and behaviours have been revised to clarify, increase measurability and, where appropriate, elevate the level of performance required for board certification.

CIPHI's Instructional Objectives now describe knowledge, skills and behaviours at all six Bloom's taxonomic levels: remembering, understanding, applying, analyzing, evaluating and creating. Bloom's higher levels may be taught and practiced primarily in the final year of study, with earlier elements of the program building toward the introduction of highest levels.

CIPHI's Instructional Objectives have been improved in three key ways:

- By separating program-level requirements from module-level and course/lesson-level;
- By raising the level—in line with Canadian degree expectations—of required knowledge and skill demonstrations;
- By ensuring the knowledge, skills and behaviours at all levels are described in clear, specific and measurable language.

## **3-Tier Framework**

To elevate the level of outcomes and meet project directives, a 3-tier organizing framework for CIPHI's Board of Certification Instructional Objectives has been developed. These consist of the following:

### *Tier 1: Program Outcomes*

Program Outcomes describe the overarching goals of the program as a whole—the highest-level knowledge, skills and behaviours program graduates can demonstrate.

### *Tier 2: Major Topics Areas/Learning Module Goals*

Major topic areas are used to organize related learning module goals. The learning module goals use measurable language to describe specific knowledge, skills and behaviours students gain from a significant module within a course, from a full course, or in some cases from multiple complementary courses.

### *Tier 3: Elements of Performance*

Elements of performance are subordinate to the learning module goals for each major topic area in Tier 2. This factual, conceptual and procedural knowledge can be embedded within courses as outcomes and within lesson plans as learning activities and assignments.

## Tier 1: Program Outcomes

1	Relate key concepts and indicators, including health status of populations and the determinants of health and illness, to effective strategies for health protection and promotion.
2	Assess the effects of present and historical structure and interaction of public health on delivery and use of local, provincial/territorial, and national health services.
3	Assess environmental health hazards in order to identify appropriate mitigation, management and compliance strategies.
4	Examine current ethical, political, scientific, sociocultural, technological, environmental and economic contexts to inform public health recommendations.
5	Integrate science and public health principles and considerations in characterizing, responding to and communicating health risks.
6	Model the principles, practices and precautions of Infection Prevention and Control (IPAC).
7	Apply relevant evidence and legislation to address public health issues.
8	Use research tools and research analysis to inform evidence-based decision-making.
9	Interpret and present information for professional, nonprofessional and community audiences using terminology, media, resources and social marketing tools that reflect awareness of audience and purpose.
10	Collaborate with partners to address public health issues using team-building, negotiation, mediation and conflict management strategies.

## Tier 2: Major Topic Areas

1	Environmental Health Risk Assessment, Management and Communication
2	Environmental Infection/Disease Prevention and Control
3	Public Health Emergency Management
4	Legal, Regulatory Compliance and Enforcement
5	Advocacy and Environmental Public Health Education
6	Air Quality
7	Water
8	Soils
9	Food
10	Healthy Community Environments
11	Physical Agents
12	Waste Management

## **Learning Module Goals**

1. Learning Module Goals associated with **Environmental Health Risk Assessment, Management and Communication:**
  - a. Develop risk management options that reflect the principles and methodologies of risk assessment and awareness of community characteristics.
  - b. Demonstrate effective use of the process for inspection of public places.
  - c. Select appropriate protocols for inspection of a range of community facilities based on operation, intended use(s) and target user(s).
  - d. Communicate risk assessment results clearly and professionally to a range of audiences using key risk communication principles.
  - e. Analyze the impact of international health frameworks on the structure of public health services.
2. Learning Module Goals associated with **Environmental Infection/Disease Prevention and Control:**
  - a. Apply IPAC standards and procedures to promote infection prevention and control.
  - b. Examine the domestic and international public health significance of communicable disease.
  - c. Analyze a range of diseases from environmental hazards to identify appropriate public safety and control measures.
3. Learning Module Goals associated with **Public Health Emergency Management:**
  - a. Communicate and collaborate with stakeholders to prevent, identify and address emergencies using current emergency management terminology.
  - b. Examine the legislative structures and functions of emergency preparedness systems and public health agencies during emergencies.
4. Learning Module Goals associated with **Legal, Regulatory Compliance and Enforcement:**
  - a. Examine specific policies and standards to identify their guidance of application and interpretation of legislation.
  - b. Defend the importance of environmental public health legislation and inspection.
  - c. Appraise the process used in a compliance investigation, including gathering evidence, creating documents and taking enforcement action.
  - d. Examine the requirements of participation in the legal process.
  - e. Review public and community facility plans to ensure compliance with legislation and standards.
5. Learning Module Goals associated with **Advocacy and Environmental Public Health Education:**
  - a. Defend the value of advocacy in achieving improvement to environmental public health.
  - b. Defend the value of advocacy for structural and policy action to address the determinants of health and health equity.
  - c. Facilitate knowledge sharing to improve public awareness of environmental public health concepts.
  - d. Discuss strategies to improve the health of specific population groups based on examination of biological, social, cultural, economic and physical health determinants.
  - e. Apply culturally-relevant and appropriate approaches with people from diverse cultural, socioeconomic and educational backgrounds, and with persons of all ages, genders, health status, sexual orientations and abilities.
  - f. Outline techniques for advocacy relating to public policies and services that promote and protect the health and wellbeing of individuals and communities.
  - g. Model socially responsible and capacity-building practices including accountability, expertise sharing, and life-long learning in both professional and personal settings.
6. Learning Module Goals associated with **Air Quality:**
  - a. Examine the effects on human health of ambient air pollutants and the process used for outdoor air quality monitoring/sampling and investigation.
  - b. Examine the effects on human health of indoor air pollutants and the process used for indoor air quality monitoring/sampling and investigation.
  - c. Collect and interpret air quality data to identify issues of public health significance.

**7. Learning Module Goals associated with Water:**

- a. Explain the hazards and risks associated with drinking water with recourse to the parameters used to establish drinking water regulations and guidelines.
- b. Analyze methods used to distribute and treat drinking water to identify limitations and hazards.
- c. Appraise the legislation, bylaws and guidelines that govern water quality in Canada.
- d. Examine water chemistry and hydrology issues to identify the process by which surface, coastal and ground water can become contaminated and affect human health.
- e. Demonstrate effective use of the inspection process for recreational water quality.

**8. Learning Module Goals associated with Soils:**

- a. Apply the methodologies and established practices of soil sciences to solve public health problems.
- b. Follow environmental site assessment procedures to identify and respond to soil contamination and remediation challenges.

**9. Learning Module Goals associated with Food:**

- a. Examine the impact and implications of world foods and cultures on public health in Canada.
- b. Investigate the effect of environmental factors on the growth of microorganisms of public health significance in relation to food.
- c. Examine the public health implications associated with the design, structure, equipment and operation of food premises including abattoirs, dairies, fish plants, canneries, grain storage, food warehouses, grocery stores, restaurants and food transportation systems.
- d. Demonstrate effective use of the inspection process for food premises including food handling, equipment requirements and use, sampling, hazard identification and enforcement.
- e. Evaluate an effective Hazard Analysis and Critical Control Points (HACCP) plan for a food premises based on an HACCP food safety assessment.
- f. Select investigation procedures and follow-up measures appropriate to a range of food-borne illnesses and indicators.

**10. Learning Module Goals associated with Healthy Community Environments:**

- a. Examine the design principles and concepts associated with community planning for healthy built and social environments.
- b. Support the public health rationale for land use planning and review.
- c. Evaluate housing and neighborhoods to identify and propose solutions to health hazards.
- d. Partner effectively with government agencies and departments to increase opportunities for advocacy and options to address housing issues.
- e. Outline health hazards and mitigation strategies associated with a range of facilities including child care, adult care, personal services, animal care, work camp and recreational.

**11. Learning Module Goals associated with Physical Agents:**

- a. Outline the risk and mitigation methods associated with radon gas.
- b. Examine the effects on human health of physical agents, such as noise, vibration, ionizing and non-ionizing radiation, extreme temperatures, and odour.
- c. Assess physical hazards using appropriate environmental sampling, monitoring or investigation methods.
- d. Communicate risk and mitigation strategies to people affected by the physical agents.

**12. Learning Module Goals associated with Waste Management:**

- a. Assess the public health significance of biological, biomedical, solid, liquid and chemical waste management practices.
- b. Examine municipal and private liquid waste treatment and disposal practices to identify public health risks.
- c. Critique the design, construction and disposal principles associated with municipal and private sewage systems.

## Tier 3: Elements of Performance

### 1. Environmental Public Health

Environmental Public Health: Environmental Health Risk Assessment, Management and Communication

#### *Health Hazard Identification and Mitigation*

- 1.1.1 Define key terminology including health hazard
- 1.1.2 Describe the various kinds of health hazards which may be reported to a certified public health inspector
- 1.1.3 Describe a health risk assessment approach to determine if a health hazard exists and to evaluate the severity of a health hazard
- 1.1.4 Describe steps to identify, reduce, or eliminate a health hazard, using specific examples
- 1.1.5 Identify the legislation in your jurisdiction which regulates health hazards

#### *Risk Assessment Principles and Methodologies*

- 1.1.6 Explain the concept and the four basic components of risk assessment (hazard identification, hazard characterization, exposure assessment, risk characterization)
- 1.1.7 Explain the differences between risk and hazard
- 1.1.8 Compare and contrast the concepts of tolerable risk, relative risk and zero risk
- 1.1.9 Explain the concept of uncertainty
- 1.1.10 Explain the differences between qualitative, semi-quantitative and quantitative assessments
- 1.1.11 Illustrate microbial exposure using the four basic risk assessment components
- 1.1.12 Illustrate chemical exposure using the four basic risk assessment components
- 1.1.13 Describe the requirements and process associated with toxicity testing
- 1.1.14 Describe the different categories of carcinogens and the methods used to assess them (i.e. weight-of-evidence, cancer slope factor, risk specific dose)
- 1.1.15 Define no observed adverse effect level (NOAEL) and lowest observed adverse effect level (LOAEL)
- 1.1.16 Explain the difference between chronic exposure, sub chronic exposure and acute exposure
- 1.1.17 Explain the concept of lifetime exposure
- 1.1.18 Describe standard uncertainty factors and safety factors
- 1.1.19 Describe basic transport of chemicals within different media
- 1.1.20 Describe the different routes of exposure
- 1.1.21 Explain the basic calculation for determining daily intake
- 1.1.22 Explain the concept of reference dose and other reference points

#### *Risk Management*

- 1.1.23 Explain the concept of risk management
- 1.1.24 Differentiate health risk assessment and health risk management
- 1.1.25 Describe influencing factors in selecting risk management options

#### *Risk Communication*

- 1.1.26 Explain the principles of risk communication
- 1.1.27 Describe the link between risk assessment, risk management and risk communication
- 1.1.28 Outline the primary objectives of risk communication
- 1.1.29 Describe factors affecting risk perception and management, including how social or other barriers can impact ability to manage risks
- 1.1.30 Distinguish between perceived risk and actual risk
- 1.1.31 Explain the principles of trust and credibility in risk communication

- 1.1.32 Explore strategies to build trust, relationships, and effective communication with communities and individuals
- 1.1.33 Compare and contrast the scientist's and the public's approach to risk
- 1.1.34 Explore strategies to overcome barriers such as language, literacy, access, and cultural interpretation of commonly used communication tools
- 1.1.35 Communicate effectively using risk communication principles: gain feedback, address concerns, establish trust, alleviate fear or anger, address changing or crisis situations, explain information in an effective yet a sympathetic manner

## Environmental Public Health: Environmental Infection/Disease Prevention and Control

### *Infection Prevention and Control*

- 1.2.1 Outline the requirements of infection prevention and control (IPAC)
- 1.2.2 Identify the North American agencies/organizations responsible for the development of IPAC guidelines and standards
- 1.2.3 Explain the chain of infection with attention to each link in the chain
- 1.2.4 Compare and contrast health care-associated infection and community acquired infection
- 1.2.5 Explain the goals, structure and elements of an institutional IPAC program
- 1.2.6 Illustrate the critical elements and methods of surveillance for health care-associated infections
- 1.2.7 Outline the personnel required and the process used to establish an IPAC program
- 1.2.8 Describe the roles and responsibilities of an infection prevention and control professional
- 1.2.9 Explain the role of occupational health and safety in IPAC
- 1.2.10 Explain the key elements of routine practices
- 1.2.11 Explain the factors that should be considered when conducting an infectious disease risk assessment
- 1.2.12 Describe the key elements in a comprehensive hand hygiene program
- 1.2.13 Describe how the condition of the hands and nail care impact hand hygiene
- 1.2.14 Identify the criteria that should be used in the selection of a hand hygiene product
- 1.2.15 Identify the key recommendations for the placement of hand washing sinks
- 1.2.16 Describe and demonstrate the technique for effective hand washing
- 1.2.17 Describe and demonstrate the technique for using alcohol-based hand rubs (ABHR)
- 1.2.18 Define "point-of-care" with respect to hand hygiene
- 1.2.19 Explain techniques for use of a range of personal protective equipment used to prevent and control disease transmission
- 1.2.20 Assess physical equipment and engineering controls in relation to infectious diseases to identify controls that should be considered in institutional settings
- 1.2.21 Assess administrative measures in relation to infectious diseases to identify measures that should be considered in institutional settings
- 1.2.22 Explain additional precautions and the processes for their implementation
- 1.2.23 Contrast contact, droplet and airborne precautions and provide examples of infectious diseases that would warrant implementation of one or more of these precautions

### *Disinfection/Sterilization of Equipment*

- 1.2.24 Compare and contrast cleaning, disinfection and sterilization
- 1.2.25 Explain the factors that affect the efficacy of reprocessing
- 1.2.26 Describe conditions guiding the use of critical, semi-critical and non-critical equipment, devices and implements
- 1.2.27 Compare and contrast high-level disinfection, intermediate- level disinfection and low-level disinfection
- 1.2.28 Provide examples of commonly used disinfectants for each level of disinfection including the concentration and contact times for each level of disinfectant
- 1.2.29 Identify the steps of reprocessing when using an ultrasonic cleaner
- 1.2.30 Explain the different types of sterilization indicators (physical, chemical and biological)
- 1.2.31 Explain the key concepts involved in environmental cleaning in relation to prevention of disease transmission
- 1.2.32 Explore differences in the client environment, especially in relation to vulnerable and marginalized groups, that affect vulnerability and susceptibility to infection
- 1.2.33 Explore techniques to tailor responses to fit client circumstances, especially in relation to vulnerable and marginalized groups.
- 1.2.34 Identify the finishes and surfaces recommended in various settings
- 1.2.35 Explain the factors to be considered in the selection of disinfectants
- 1.2.36 Differentiate between high-touch and low-touch surfaces
- 1.2.37 Explain IPAC guidance regarding the laundering of contaminated items
- 1.2.38 Describe the main waste categories and the appropriate disposal of each
- 1.2.39 Describe best practices for the handling, storage and transportation of potentially infectious waste
- 1.2.40 Identify the main components of a sharps prevention program (e.g. needle stick injury/sharps disposal)

### *Communicable Disease*

- 1.2.41 Explain the public health significance of communicable disease from an international perspective (i.e. pandemic, e.g. Ebola)
- 1.2.42 Differentiate between communicable and reportable diseases
- 1.2.43 Describe the signs, symptoms, modes of transmission and prevention and control methods for communicable diseases, including global emerging diseases (e.g. Chikungunya)

### *Foodborne Enteric Disease/Illness*

- 1.2.44 Describe the common types of foodborne/enteric pathogens based on their distinguishing characteristics and control measures
- 1.2.45 Explain the role of public health agencies in the investigation of foodborne/enteric diseases
- 1.2.46 Explain how and why foodborne/enteric diseases are reported to public health agencies
- 1.2.47 Describe the public health rationale for the isolation of an enteric disease case
- 1.2.48 Describe the public health rationale for the exclusion of a food handler with an enteric illness, and explain the duration of the exclusion
- 1.2.49 Explain the process of food sampling during an outbreak investigation
- 1.2.50 Interpret a lab report where a foodborne/enteric pathogen is indicated

### *Waterborne Disease/Illness*

- 1.2.51 Describe the common types of waterborne pathogens based on their distinguishing characteristics and control measures
- 1.2.52 Explain the role of public health agencies in the investigation of waterborne diseases

- 1.2.53 Explain how and why waterborne diseases are reported to public health and other agencies
- 1.2.54 Explain the process of collecting water samples with emphasis on the different sources that may be sampled during a waterborne disease investigation
- 1.2.55 Describe the purpose and nature of isolation/exclusion procedures in relation to waterborne diseases
- 1.2.56 Interpret a lab report where a waterborne pathogen is indicated

*Zoonotic Enteric Disease/Illness*

- 1.2.57 Describe the common types of zoonotic diseases based on their distinguishing characteristics and control measures
- 1.2.58 Explain the role of public health agencies in the investigation of zoonotic diseases
- 1.2.59 Explain the process for collecting samples with emphasis on the types of samples required when investigating zoonotic disease outbreaks
- 1.2.60 Describe the purpose and nature of isolation procedures in relation to zoonotic diseases
- 1.2.61 Describe the purpose and nature of reporting procedures in relation to zoonotic diseases

*Outbreak*

- 1.2.62 Explain the technical use of the term “outbreak”
- 1.2.63 Explain the steps involved in the investigation of an outbreak (institutional, community and international)
- 1.2.64 Describe the role of public health agencies in the investigation of outbreaks
- 1.2.65 Identify the factors that contribute to each high-risk group (e.g. children, elderly, immune compromised, pregnant, low income, racialized) being more susceptible to infection
- 1.2.66 Define key terminology including incidence rate, attack rate and case fatality rate
- 1.2.67 Explain why incubation period and period of communicability are important during an outbreak investigation
- 1.2.68 Discuss how a case definition is established and its importance in outbreak management.
- 1.2.69 Contrast common source type outbreak and propagated source type outbreak and provide examples
- 1.2.70 Compare and contrast the epidemic curve in a common source outbreak and a propagated source type outbreak
- 1.2.71 Describe the roles and responsibilities of an institution during an outbreak
- 1.2.72 Describe the role of the public health lab during institutional and community outbreaks
- 1.2.73 Identify the members of an outbreak team
- 1.2.74 Explain the public health rationale for the inspection of food preparation facilities during an enteric outbreak with emphasis on process for collection of food samples during the outbreak
- 1.2.75 Describe measures which may be implemented to control an outbreak
- 1.2.76 Describe routine precautions and additional precautions in relation to the suspected infectious agent during an outbreak
- 1.2.77 Provide examples of the infectious agents for each type of additional precautions
- 1.2.78 Describe the isolation period where the causative agent is unknown and explain how lab confirmation of the causative agent impacts the isolation period
- 1.2.79 Describe the exclusion period during an enteric outbreak in a daycare center and in a health care institution
- 1.2.80 Describe the exclusion period during a respiratory outbreak in relation to who is excluded during an outbreak in a health care institution/child care center
- 1.2.81 Outline the criteria used to determine when an outbreak can be declared over
- 1.2.82 Outline the components of the debriefing report at the end of outbreak, including elements the report should address (e.g. interventions to address the increased vulnerability of marginalized populations, and their importance for the people involved)

- 1.2.83 Apply regulatory requirements and guidelines when conducting outbreak investigations in various settings

#### *Integrated Pest Management*

- 1.2.84 Define key terminology including Pests, Vectors, Metamorphosis, Resistance, Infestation
- 1.2.85 Describe current and historic vector-borne diseases of significance
- 1.2.86 Explain when pest management becomes necessary
- 1.2.87 Describe investigative methods to validate presence or infestation of various pests
- 1.2.88 Identify the strategies and processes used in successful pest control
- 1.2.89 Identify non-chemical pest control methods
- 1.2.90 Identify federal law governing control and handling of pesticides
- 1.2.91 Identify provincial laws governing use and transportation of pesticides
- 1.2.92 Identify common pests likely to be encountered by citizens engaging in common activities (bedbugs, cockroaches, silverfish, mice, rats, ticks, spiders, food storage pests, flies, mosquitoes)
- 1.2.93 Explain the concepts and six basic principles of integrated pest management (acceptable pest levels, preventive cultural practices, monitoring, mechanical controls, biological controls, responsible pesticide use)
- 1.2.94 Explain the process of developing an integrated pest management plan
- 1.2.95 Explain the advantages and limitations of an integrated pest management plan

### Environmental Public Health: Public Health Emergency Management

#### *Emergency Management Principles*

- 1.3.1 Explain the four principles of emergency management (preparedness, prevention, response and recovery) as they relate to natural and anthropogenic disasters
- 1.3.2 Describe the public health interventions that may be applied during a disease outbreak or pandemic

#### *Role of Public Health Agencies*

- 1.3.3 Outline the primary goals of public health agencies (to prevent the spread of disease, prevent injury and protect the health of populations)
- 1.3.4 Explain the importance of immunization as a preventative and responsive public health intervention
- 1.3.5 Explain the significance of public health messaging/advice during an emergency
- 1.3.6 Describe the importance of providing oversight of the manufacturing, distribution and dispensing of safe drinking water, food supply and shelter for responders, victims and the public
- 1.3.7 Explain the importance of public health programs to individuals and communities coping with the aftermath of disasters
- 1.3.8 Consider which groups are most vulnerable to disaster events / susceptible to health impacts and how best to connect them with resources in the community to address their specific barriers

#### *Environmental Public Health Protocols*

- 1.3.9 Describe the program areas (food safety, drinking water, air quality, shelter, sanitation and waste management) where sampling, inspection, risk assessment, documentation, reporting and communication activities may occur

### *Stakeholder Collaboration*

- 1.3.10 Identify government and non-government agencies including first responders who may respond to an emergency
- 1.3.11 Explain circumstances under which federal resources such as the Canadian Armed Forces can be mobilized when local and provincial resources are exhausted

### *Assignment of Duties*

- 1.3.12 Describe how and why, during an emergency, certified public health inspectors may be assigned to perform different roles within the Health Protection portfolio
- 1.3.13 Describe the various roles a certified public health inspector may perform during the various stages of an emergency
- 1.3.14 Explain why it may be necessary for certified public health inspectors to perform other duties on behalf of the Health Organization during an emergency
- 1.3.15 Explain how and why reporting relationships change during an emergency to support the Health Organization

### *Emergency Management Terminology*

- 1.3.16 Define key terminology including Incident Command System, Incident Management System, Incident Command Post, Emergency Operations Centre, and Emergency Social Services
- 1.3.17 Describe the purpose of Emergency Management processes including Mitigation, Preparedness, Response, and Recovery

### *Emergency Response Systems*

- 1.3.18 Illustrate and explain the basic organizational chart for an incident command system
- 1.3.19 Explain the five basic functions/sections in the incident command structure (Command, Operations, Planning, Logistics, and Finance/Administration)
- 1.3.20 Describe key Incident Command System roles including Incident Commander, Information Officer, Safety Officer and Liaison Officer
- 1.3.21 Explain how the Incident Command System adapts to different types of incident

### *Emergency Preparedness Legislation*

- 1.3.22 Identify the federal legislation governing emergency preparedness and management in Canada
- 1.3.23 Identify the provincial legislation that governs emergency preparedness and management (in the province in which the Environmental Health school is located)
- 1.3.24 Describe the obligations placed upon local and regional governments by provincial legislation (in the province in which the Environmental Health school is located)
- 1.3.25 Describe how local and provincial states of emergency are declared and which legislation supports them
- 1.3.26 Outline the process guiding acquisition of additional resources to respond to emergencies

*Legislative Process*

- 1.4.1 Describe the process by which legislation is written, reviewed and passed
- 1.4.2 Explain the key elements of legislation in relation to their use
- 1.4.3 Describe the types and authority of legislation
- 1.4.4 Explain the categories of law such as criminal law, torts, contracts, statutory law and duty
- 1.4.5 Interpret intent and scope of statutory law
- 1.4.6 Describe the significance on the enforcement of health laws of human rights and constitutional powers
- 1.4.7 Identify the grounds on which statutory law can be challenged
- 1.4.8 Analyze the legislative process to identify its application to public health

*Interpretation of Legislation*

- 1.4.9 Describe the different types of policy which public health inspectors may use to guide and/or direct their work
- 1.4.10 Describe and differentiate between the different types of policy standard

*Enforcement*

- 1.4.11 Describe the progressive enforcement process in relation to its application
- 1.4.12 Describe the process from education to enforcement of legislation
- 1.4.13 Recognize barriers experienced by the operator/client related to the social determinants of health that may be affecting their ability to comply with regulations
- 1.4.14 Identify options for services and supports to help vulnerable operator/clients overcome barriers, thereby improving their chances of compliance
- 1.4.15 Compare and contrast the inspection and investigation processes
- 1.4.16 Describe the documents that may be created or produced during an inspection versus an investigation (Inspection report, questionnaire, facility history, statement of facts)
- 1.4.17 Explain the importance of effective and accurate documentation
- 1.4.18 Describe what constitutes ‘evidence’ and its use in enforcement
- 1.4.19 Explain the meaning of “chain of custody”
- 1.4.20 Describe methods and tools used in enforcement to achieve compliance
- 1.4.21 Describe the essential elements in an order
- 1.4.22 Explain the significance of the Charter of Rights and Freedoms in relation to enforcement
- 1.4.23 Describe the protocol for entering a private dwelling
- 1.4.24 Describe appeal procedures in relation to orders issued by public health inspectors or medical health officers

*Legal Process*

- 1.4.25 Describe the procedure for preparing a file for legal action
- 1.4.26 Describe the process for the laying of charges
- 1.4.27 Delineate the essential elements in a case brief
- 1.4.28 Prepare a briefing note to inform manager of the need for enforcement action
- 1.4.29 Describe the process used to serve an order or a summons
- 1.4.30 Describe the process used in obtaining a witness statement
- 1.4.31 Describe the role of an expert witness
- 1.4.32 Describe best practices when testifying

## Environmental Public Health: Advocacy and Environmental Public Health Education

### *Environmental Advocacy*

- 1.5.1 Explain the importance in advocating for strong environmental public health practices and controls within the community/public and to government/legislators
- 1.5.2 Identify opportunities to advocate for structural and policy action to address the social determinants of health and health equity
- 1.5.3 Identify opportunities to influence environmental public health policy and controls. e.g. how can CIPHI be part of the advocacy.
- 1.5.4 Identify opportunities to advocate for healthier environments and better controls for population groups most vulnerable to health hazards and least equipped to advocate for themselves

### *Environmental Public Health Education*

- 1.5.5 Explain the purpose of environmental public health education
- 1.5.6 Describe the range of topics in environmental public health education
- 1.5.7 Explain the principles of adult education
- 1.5.8 Describe the steps involved in designing an educational program
- 1.5.9 Translate a scientific report on an environmental public health topic into a plain language message for the public
- 1.5.10 Design an evaluation process for an educational program
- 1.5.11 Describe various instructional techniques which may be used to present information with emphasis on the advantages and disadvantages of each
- 1.5.12 Articulate goals and objectives and a lesson plan for an educational program
- 1.5.13 Conduct a group training session to achieve specified training goals
- 1.5.14 Present and evaluate an educational program based on identified goals and criteria
- 1.5.15 Integrate culturally-appropriate strategies to increase accessibility to environmental public health education programs by vulnerable groups, such as language translation, alternate locations, fee forgiveness options, literacy supports, alternative teaching methods

## **2. Environmental Compartments**

### Environmental Compartments: Air Quality

#### *Ambient Air Quality*

- 2.1.1 Identify hazards and risks related to air pollutants.
- 2.1.2 Identify susceptible and vulnerable populations and specific risk factors to be considered (e.g., housing quality and location, transportation methods) when managing air quality risks for those groups
- 2.1.3 Describe the sources of ambient air pollution
- 2.1.4 Suggest ways in which ambient air quality databases such as the Air Quality Health Index (AQHI) may be used to inform public health interventions
- 2.1.5 Describe the various kinds of hazardous air pollutants that threaten public health or may be reported to an EHO (e.g. criteria air contaminants, heavy metals, persistent organic pollutants, toxicants, etc.)
- 2.1.6 Identify common sources of air pollutants with emphasis on the health effects associated with major hazardous air pollutants (e.g. Nitrogen oxides, sulphur oxides, ozone, carbon monoxide, carbon dioxide, hydrogen sulphide)
- 2.1.7 Explain the implications of key air quality indicators (e.g. PM2.5, sulphur oxides, hydrogen sulphide, nitrogen oxides, ozone, and volatile organic compounds)
- 2.1.8 Analyze human health effects of exposure to air quality indicators (e.g. PM2.5, sulphur oxides, hydrogen sulphide, nitrogen oxides, ozone, and volatile organic compounds)

- 2.1.9 Explain the atmospheric cycles of oxides of nitrogen and oxides of sulphur and their relationship to acid rain
- 2.1.10 Explain the atmospheric cycles of carbon dioxide and methane and their relationship to the greenhouse effect
- 2.1.11 Explain the effect of air pollutants, both human made and naturally occurring (i.e. forest fires) on the climate, or more locally on weather conditions and the subsequent impact on health
- 2.1.12 Explain the sources and atmospheric cycles of hydrocarbon

#### *Ambient Air Quality Risk Communication*

- 2.1.13 Explain what the Air Quality Health Index (AQHI) is and how it is used to protect health and provide health messages for the at-risk and general populations
- 2.1.14 Design a risk communications plan to inform various audiences (e.g. media, general public, vulnerable groups, politicians) on ambient air quality issues

#### *Ambient Air Quality Monitoring*

- 2.1.15 Explain the concept of dispersion modeling and its use during a public health air quality emergency or when investigating abnormal air emission from point sources
- 2.1.16 Describe the data required from an ambient air quality monitoring program
- 2.1.17 Explain how to compile ambient air quality standards from literature reviews
- 2.1.18 Assess the health risks and make recommendations on point-of-source control measures based on field data
- 2.1.19 Assess the health risks and make recommendations on control measures for local area air sheds and/or larger regional zones based on field data
- 2.1.20 Develop protocols for ambient air quality investigations
- 2.1.21 Assess and predict the effects of various emission gases based on field data
- 2.1.22 Describe the types of air testing equipment and sampling methods currently used in the field with emphasis on strengths and limitations
- 2.1.23 Describe the variables associated with seasons on air quality
- 2.1.24 Describe the sources of atmospheric contaminants from industries, residential communities and transportation systems
- 2.1.25 Design an ambient air sampling program given a site and situation and objective

#### *Indoor Air Quality*

- 2.1.26 Identify the indicators used in indoor air quality monitoring for buildings including schools, day cares, health care facilities, homes, workplaces, theaters, private dwellings, ice arenas and indoor recreational water facilities
- 2.1.27 Explain acceptable indoor air quality with respect to temperature and humidity
- 2.1.28 Describe the health effects of airborne fungal spores, both viable and non-viable, and pollens on susceptible populations (e.g. asthmatics, patients with underlying respiratory disease)
- 2.1.29 Identify various aerosols associated with illnesses of public health significance (e.g. legionnaire's disease)
- 2.1.30 Identify the components of a mechanical ventilation system, and the factors required for decision making when adjusting air flow (e.g. HEPA filters, HVAC systems)
- 2.1.31 Describe air filtration systems and cleaning controls for gases, particulates and viable micro-organisms
- 2.1.32 Explain various types of heating systems including forced air, radiant, hot water, steam, and electric in terms of their effect on indoor air quality
- 2.1.33 Describe heat pumps and associated problems
- 2.1.34 Explain thermal comfort and factors that can affect thermal comfort

- 2.1.35 Identify common indoor contaminants including particulates, carbon monoxide (CO), carbon dioxide (CO<sub>2</sub>), volatile organic compounds, bio-aerosols, formaldehyde and asbestos (e.g. household products, building materials, second-hand smoke)
- 2.1.36 Explain acute and chronic health effects associated with various indoor air pollutants and toxic gases
- 2.1.37 Explain the sources and amounts of contaminants from various indoor activities (e.g. Zamboni machines, indoor motor sports, overcrowding, and indoor shooting ranges)

*Indoor Air Quality Testing*

- 2.1.38 Describe the strengths and weaknesses and utility of various kinds of indoor air sampling methodologies
- 2.1.39 Calibrate, use, and read indoor air quality testing equipment
- 2.1.40 Explain the operation of common instrumentation and data loggers to measure particulates, CO, CO<sub>2</sub>, volatile organic compounds, bio-aerosols, formaldehyde, radon, asbestos, temperature, relative humidity and thermal comfort

*Indoor Air Quality Data Collection & Analysis*

- 2.1.41 Develop an indoor air quality investigation protocol, including design of surveys, questionnaires, sampling methodologies, and selections of sampling equipment
- 2.1.42 Evaluate the kinds of evidence required for court proceedings related to indoor air quality concerns
- 2.1.43 Interpret continuous indoor air quality guidelines in relation to public health significance
- 2.1.44 Identify levels of exposure limits for various indoor air pollutants and toxic gases
- 2.1.45 Evaluate various sources of indoor air quality guidelines
- 2.1.46 Design an indoor air quality sampling program given a site and situation

**Environmental Compartments: Water**

*Drinking Water: Hazards and Regulations*

- 2.2.1 Identify the major biological, chemical, and physical hazards and illnesses associated with drinking water in Canada
- 2.2.2 Identify the sources of drinking water and potential hazards associated with each source
- 2.2.3 Outline the biological indicators used in drinking water analysis
- 2.2.4 Describe the limitations of using biological indicators for drinking water analysis
- 2.2.5 Explain the aesthetic objectives associated with drinking water
- 2.2.6 Identify common chemical parameters monitored in drinking water
- 2.2.7 Identify common maximum acceptable concentrations (MAC) associated with drinking water
- 2.2.8 Interpret the results for bacterial and chemical parameters from a laboratory report based on Guidelines for Canadian Drinking Water, with emphasis on the public health significance of these results
- 2.2.9 Demonstrate the procedure for taking a drinking water sample
- 2.2.10 Describe the public health risks associated with a waterline break with emphasis on the appropriate response to a waterline break
- 2.2.11 Describe events/conditions that would contribute to the issuance of a boil water order or drinking water advisory
- 2.2.12 Describe the public health significance of drinking water orders/advisories
- 2.2.13 Describe the various precautions and actions required of various facilities (e.g. dentist office, school, private residence, long-term care home) in response to a drinking water order/advisory
- 2.2.14 Design a potable water sampling program given a site and situation
- 2.2.15 Describe the components of source water protection

- 2.2.16 Explain the types of guidelines, standards, regulations and objectives associated with drinking water in Canada

*Drinking Water: Distribution and Treatment*

- 2.2.17 Describe the equipment used in water treatment facilities/plants
- 2.2.18 Describe types of equipment used to treat water for small and private systems
- 2.2.19 Describe key characteristics of the main types of wells (dug, drilled, driven, pit)
- 2.2.20 Explain how construction differs for the main types of wells (e.g., rationale, method, depth, equipment used)
- 2.2.21 Describe potential sources of well contamination and the importance of proper well siting.
- 2.2.22 Explain the concept of groundwater under direct influence (GUDI)
- 2.2.23 Explain what cross connections are and their public health significance
- 2.2.24 Explain what a cross connection control program is and its importance for drinking water
- 2.2.25 Describe the physical, chemical and biological processes used in drinking water treatment plants
- 2.2.26 Describe water treatment processes used for small and private systems
- 2.2.27 Describe point of use and point of entry water treatment equipment with emphasis on their limitations
- 2.2.28 Explain the components of a potable water distribution system, with emphasis on associated hazards
- 2.2.29 Explain the multi-barrier approach for drinking water systems, including the types of barriers
- 2.2.30 Explain what disinfection by-products are and how they are formed in drinking water
- 2.2.31 Explain the public health significance of disinfection by-products in drinking water
- 2.2.32 Explain Contact Time (CT) and how it relates to water treatment
- 2.2.33 Describe log reduction and how it relates to water treatment

*Surface, Coastal and Ground Water: Legislation*

- 2.2.34 Identify national, provincial and municipal legislation that oversees surface, ground and coastal water qualities

*Surface, Coastal and Ground Water: Chemistry and Hydrology*

- 2.2.35 Describe the natural hydrologic, major nutrient and major metal cycles
- 2.2.36 Explain the significance from an environmental health perspective of the physical, chemical and biological parameters used to characterize surface, coastal and ground water quality
- 2.2.37 Describe the lab- and field-based analytical methods used to quantify water quality parameters
- 2.2.38 Describe the factors influencing the fate and transport of contaminants through aquifers and watersheds

*Surface, Coastal and Ground Water: Contamination*

- 2.2.39 Identify natural and human sources of ground and surface water contamination in urban, suburban, and rural watershed settings
- 2.2.40 Identify the physical, chemical (including nutrients), and biological hazards typically associated with natural and human contamination sources and activities
- 2.2.41 Describe diseases that can be transmitted through contaminated surface water
- 2.2.42 Describe adverse public health effects that can be acquired through ingestion and exposure to various surface water contaminants
- 2.2.43 Explain how humans can be exposed to contaminants moving through surface, ground, and coastal waters

#### *Recreational Aquatic Facilities: Inspection*

- 2.2.44 Describe how bathers are at risk of disease, injury, or death in recreational aquatic facilities
- 2.2.45 Describe illnesses commonly associated with recreational aquatic facilities, infections of concern, modes of transmission, and prevention measures.
- 2.2.46 Explain the legislation and/or guidelines that are applicable to recreational aquatic facilities
- 2.2.47 Explain the reasons that would warrant a re-inspection of recreational aquatic facilities
- 2.2.48 Explain the public health significance associated with blood, bodily fluid, vomit, and fecal accidents in recreational aquatic facilities
- 2.2.49 Describe the response procedures for fecal accident / vomit / blood and bodily fluid spill
- 2.2.50 Explain the significance of CT values in the treatment of water in recreational aquatic facilities
- 2.2.51 Communicate the components of a recreational aquatic facility safety plan including required equipment and emergency procedures

#### *Recreational Aquatic Facilities: Facility Operations*

- 2.2.52 Describe the operation and requirements of recreational aquatic facilities and associated equipment from a public health protection perspective
- 2.2.53 Describe the functions of the equipment used in the treatment of recreational aquatic facilities including the operation of filters, pumps, drains and flow meters
- 2.2.54 Describe water chemistry and temperature effects in relation to the expected ranges and management in recreational aquatic facilities
- 2.2.55 Explain chlorine chemistry and its relation to contaminants, bather load, oxidation-reduction potential (ORP) and the effects of pH
- 2.2.56 Describe free chlorine, total chlorine, chloramines, breakpoint chlorination, shock chlorination, and super-chlorination and their public health significance
- 2.2.57 Explain automated delivery systems with emphasis on considerations in their operation and maintenance
- 2.2.58 Describe other chemicals commonly used in pools including degreasers, defoamers, flocculants, algaecides, sequestering agents, clarifiers, and non-chlorine based oxidizers
- 2.2.59 Explain the role and use of disinfectants in recreational aquatic facilities
- 2.2.60 Describe the use of secondary disinfection (including Ozone and Ultraviolet light) with emphasis on safety issues associated with installation and operation
- 2.2.61 Describe the use of cyanuric acid with emphasis on its effects and related concerns
- 2.2.62 Explain bio-film development with emphasis on associated risks
- 2.2.63 Describe the problems associated with indoor air quality in a recreational aquatic facility
- 2.2.64 Describe the operation of wave pools and water slides with emphasis on associated problems
- 2.2.65 Describe the requirements for proper maintenance of recreational aquatic facilities including decks, hallways, showers, washrooms, and sauna

#### *Recreational Aquatic Facilities: Monitoring and Enforcement*

- 2.2.66 Explain the reasons for closing recreational aquatic facilities
- 2.2.67 Demonstrate the inspection process for a recreational aquatic facility
- 2.2.68 Demonstrate procedures, techniques and equipment used for water testing in recreational aquatic facilities
- 2.2.69 Explain the chemical tests and the frequency of testing required to monitor recreational aquatic facilities
- 2.2.70 Identify factors that influence the accuracy of the chemical test results and reagents for recreational aquatic facilities
- 2.2.71 Explain the purpose of record keeping of all chemical test results and site observations at recreational aquatic facilities
- 2.2.72 Describe the procedures for the collection of water samples from recreational aquatic facilities for laboratory analysis

- 2.2.73 Explain benefits of a bacteriological sampling program
- 2.2.74 Interpret the results of a laboratory water analysis and explain decisions regarding pool operation based on those results

*Recreational Aquatic Facilities: Safety Equipment and Emergency Procedures*

- 2.2.75 Describe emergency and lifesaving equipment required at recreational aquatic facilities
- 2.2.76 Describe the risks associated with entrapment and the need for maintenance of protective devices and equipment
- 2.2.77 Describe signage requirements for recreational aquatic facilities
- 2.2.78 Describe safety features in a spa/hot tub including the maximum temperature
- 2.2.79 Describe electrical hazards associated with recreational aquatic facilities
- 2.2.80 Describe safe chemical handling procedures with respect to pool patrons
- 2.2.81 Describe safe chemical storage and potential chemical interactions if improperly stored and handled, with reference to Occupational Health and Safety Standards, Building Code, Fire Code and Workplace Hazardous Materials Information System
- 2.2.82 Describe the development and components of a recreational facility Safety Plan including lifeguard qualifications where applicable

**Environmental Compartments: Soils**

*Sciences, Principles, Assessment and Management*

- 2.3.1 Describe the chemical, physical, and biological characteristics of various soil types
- 2.3.2 Describe the fate and transportation of contaminants in soil, e.g., organic substances, inorganic substances, vapours, microbes, etc.
- 2.3.3 Describe movement of liquids and vapours in soil considering various soil characteristics and environmental conditions, e.g., seasonal temperatures, porosity, hydro-conductivity, percolation, aquifers, evapotranspiration etc.
- 2.3.4 Compare and contrast methods of composting
- 2.3.5 Describe health hazards that can arise from vegetables grown in contaminated soil
- 2.3.6 Describe soil contamination management and remediation methods, e.g., removal, treatments, avoidance, etc.

*Contaminated Sites Assessment and Management*

- 2.3.7 Explain the three phases of an environmental site assessment (ESA)
- 2.3.8 Describe the potential role of public health in environmental site assessment
- 2.3.9 Differentiate Environmental Impact Assessment and Health Impact Assessment
- 2.3.10 Explain the soil sampling procedure with emphasis on requirements for various groups of contaminants, e.g., inorganic chemicals, petroleum products etc.
- 2.3.11 Compare and contrast methods of soil remediation
- 2.3.12 Identify databases useful and applicable to soil contamination and remediation

*Physical Agents*

- 2.3.13 Describe the nature and types of radiation
- 2.3.14 Explain the radioactive decay process
- 2.3.15 Identify the typical products of radioactive decay
- 2.3.16 Identify the exposure routes for radiation
- 2.3.17 Compare and contrast man-made and natural radiation
- 2.3.18 Outline procedures for radon testing in homes and public buildings (e.g. schools)
- 2.3.19 Explain methods of radon mitigation in homes and public buildings (e.g. schools)

- 2.3.20 Examine the vulnerability of population groups to high radon exposure
- 2.3.21 Identify barriers to reducing radon exposure for vulnerable groups

*Solid Waste Management*

- 2.3.22 Describe the various types of waste and waste management facilities
- 2.3.23 Identify the various sources and components/categories of the waste stream
- 2.3.24 Describe the storage, transportation and disposal requirements of the various components of the waste stream
- 2.3.25 Describe the various techniques used in preventing off-site migration of microorganisms, chemicals, leachates, particulates, gases and vermin

*Biological and biomedical waste management*

- 2.3.26 Outline a typical schedule of wastes in the biological/biomedical waste stream
- 2.3.27 Describe methods used for the safe storage and disposal of biomedical waste
- 2.3.28 Describe the equipment used for the safe distribution and transportation of biomedical waste
- 2.3.29 Identify the diseases which are transmissible as a result of infection from biomedical waste
- 2.3.30 Explain the reasons for manifesting and colour-coding biomedical wastes
- 2.3.31 Describe the methods used for rendering biomedical wastes non-pathogenic

*Liquid Waste Management: Municipal*

- 2.3.32 Describe the volumes, characteristics and composition of liquid municipal waste
- 2.3.33 Describe, sequentially, the processes involved in liquid waste treatment employed by various municipalities
- 2.3.34 Describe the mechanical, biological and chemical processes involved in liquid waste treatment employed by various municipalities
- 2.3.35 Describe the acceptable biological and chemical requirements for treated liquid waste effluents
- 2.3.36 Assess the environmental and public health concerns related to liquid waste collection and treatment systems
- 2.3.37 Describe expected levels of treatment for each of the levels of liquid waste (e.g. primary, secondary and tertiary)
- 2.3.38 Describe the disposal methods and public health concerns of storm water and industrial waste water

*Liquid Waste Management: Private*

- 2.3.39 Outline the requirements for construction of sewage disposal systems where municipal sewage treatment facilities are not available (e.g. private dwellings, small industry, and small developments)
- 2.3.40 Describe the biological processes employed by sewage disposal systems for private dwellings, small industry, and small developments where municipal sewage treatment facilities are not available
- 2.3.41 Outline the factors to be considered in the design and construction of private sewage disposal systems (i.e. soil conditions, water tables, construction materials, sizes, slopes, soil depths, etc.)
- 2.3.42 Explain the process for inspecting and approving a private sewage disposal system
- 2.3.43 Identify common problems found with private sewage disposal systems and describe how these could be corrected
- 2.3.44 Explain how to conduct a site evaluation
- 2.3.45 Explain how to conduct a percolation test
- 2.3.46 Discuss legislation applicable to private sewage disposal with emphasis on appropriate course action where a private sewage system fails

- 2.3.47 Explain the function of plumbing fixtures and fittings
- 2.3.48 Describe the process for a sanitary survey
- 2.3.49 Describe the process for conducting an environmental investigation into a malfunctioning private sewage system

#### **Environmental Compartments: Food**

##### *History of Food-Borne Illness and Food Safety Inspection*

- 2.4.1 Discuss the history of food-borne illness with emphasis on contemporary public health significance
- 2.4.2 Discuss the origins of international and domestic food safety inspection with emphasis on contemporary public health significance

##### *World Foods, Food Handling and Food Culture*

- 2.4.3 Outline food agriculture, industrial food manufacturing, and food handling practices with emphasis on cultural concepts
- 2.4.4 Explain how cultural concepts and practices impact domestic public health significance with respect to imported foods and world food cultures that are practiced in Canada
- 2.4.5 Discuss how the social determinants of health affect and are affected by the cultural food practices of vulnerable populations, with emphasis on balancing this with environmental public health goals.

##### *Food Safety*

- 2.4.6 Describe food pathogen growth curves and environment (pH, Aw, temp, salinity, etc.) including toxin production
- 2.4.7 Provide examples of the types of food contamination (biological, chemical, physical)
- 2.4.8 Provide examples of ways in which food can become contaminated
- 2.4.9 Define key terminology including Aw (and its significance in relation to microorganism growth) and pH (and its significance in relation to microorganism growth)
- 2.4.10 Describe what is meant by the “Temperature Danger Zone”
- 2.4.11 Compare and contrast the effectiveness of common preservation methods for high risk foods
- 2.4.12 Explain the public health significance associated with common food additives
- 2.4.13 Explain the six factors that influence microbial growth in food (FAT TOM)

##### *Food Premises: Design, Structure, Equipment and Inspection*

- 2.4.14 Outline the requirements in food preparation to prevent food-borne illness
- 2.4.15 Outline the methods used in an inspection of a food premises
- 2.4.16 Design a sampling program given a site and situation in a food premises
- 2.4.17 Explain the process for the seizure and condemnation of food
- 2.4.18 Identify the criteria that would warrant the closure of a food premises
- 2.4.19 Identify “health hazards” in a food premises
- 2.4.20 Describe the hazard identification and risk characterization processes used in an inspection of a food premises
- 2.4.21 Demonstrate the various methods used to calibrate a food thermometer

##### *HACCP and Food Safety Planning*

- 2.4.22 Explain the principles underlying hazard analysis
- 2.4.23 Explain the principles underlying the concept of critical control points
- 2.4.24 Explain how to design or create a HACCP plan for a food premises
- 2.4.25 Explain how to conduct a HACCP-based food safety assessment of a food premises

- 2.4.26 Discuss the public health significance of operator compliance in developing and following a written food safety plan for a food premises
- 2.4.27 Describe strategies that food premises operators can use to improve and promote food safety
- 2.4.28 Describe strategies for assisting operators who may face challenges related to the social determinants of health to implementing these strategies

*Legislation: Provincial, Federal and International*

- 2.4.29 Explain the principles of and rationale for food safety legislation
- 2.4.30 Explain the methods for using food legislation to conduct a food safety assessment
- 2.4.31 Explain the strengths and weaknesses in applying legislation and seeking compliance
- 2.4.32 Recognize barriers experienced by the operator/client related to the social determinants of health that may affect their ability to comply with regulations
- 2.4.33 Identify options for services and supports to help operator/client overcome barriers, thereby improving their chances of compliance

*Food-Borne Illness and Food Recall*

- 2.4.34 Describe the symptoms, incubation periods, reservoirs and modes of transmission of the various food-borne illness
- 2.4.35 Explain the possible causes of food-borne illness
- 2.4.36 Explain the procedures involved in food-borne illness investigation
- 2.4.37 Outline the protocol and procedures involved in sampling body wastes of food-borne illness victims
- 2.4.38 Explain the process and procedures for dealing with food handlers with suspected/confirmed cases of food-borne illness
- 2.4.39 Describe strategies for working effectively with food handlers and their employers when there are challenges related to the social determinants of health that may make compliance difficult
- 2.4.40 Identify and evaluate the records which should be kept in food-borne illness investigations
- 2.4.41 Explain the purpose of and reasons for a food recall
- 2.4.42 Describe the process used in food recalls

### **3. Built Environments**

Built Environments: Healthy Community Environments

*Community Planning: Health Built Environments*

- 3.1.1 Describe the purpose, process and components of community planning
- 3.1.2 Define key terminology including “built environment”
- 3.1.3 Explain the characteristics of a “healthy built environment” (e.g., Complete Streets, Smart Growth, mixed use, healthy housing, access to green space, food environments, transportation options)
- 3.1.4 Examine the social environment as a distinct environment with characteristics that impact (and are impacted by) the built environment
- 3.1.5 Describe the health authority’s role in and contributions to community planning
- 3.1.6 Articulate the public health rationale and targeted outcomes for planning a healthy built environment
- 3.1.7 Explain a proposed development plan from a public health perspective

*Land Use Planning, Subdivision Application and Review*

- 3.1.8 Explain the land use review process and components (case application, site analysis, application of knowledge, risk assessment)

- 3.1.9      Describe key elements associated with various land use categories (agriculture, residential, commercial, industrial, reserve)
- 3.1.10     Explain the incompatible land uses concept
- 3.1.11     Define key terminology including “site specific”, “susceptible population” and “site suitability”.
- 3.1.12     Explain the site specific considerations needed in evaluating a plan (intended and surrounding land use, soils, topography, climate, water table)
- 3.1.13     Explain why the identification of susceptible populations is important in land use planning
- 3.1.14     Differentiate the requirements for municipal versus non-municipal services when evaluating a proposed development
- 3.1.15     Explain how site suitability relates to land use planning
- 3.1.16     Explain reasons for the evaluation of site topography information in land use planning
- 3.1.17     Explain the relationship between drinking water supply, aquifers and land use planning
- 3.1.18     Explain the relationship between solid and liquid waste disposal systems design/operation and land use planning
- 3.1.19     Explain setback in terms of its significance in public health protection
- 3.1.20     Explain the types of setbacks that may be required when reviewing a land use plan from a public health perspective (noise, air, water, sewer, land use type, right of way, utility, landfills)
- 3.1.21     Explain key factors in evaluating setbacks (types of facilities, sources of pollutants or health risk factors)
- 3.1.22     Identify potential sources of pollution of surface or drinking water by proposed land uses and factors that could influence the review decision
- 3.1.23     Analyze the relationship between noise and land use planning
- 3.1.24     Analyze the relationship between air quality and land use planning
- 3.1.25     Explain the public health significance of storm water management in land use planning

#### *Housing*

- 3.1.26    Examine the legislation used to control housing problems
- 3.1.27    Identify housing conditions which may have an adverse impact on health
- 3.1.28    Identify potential health hazards within residential neighbourhoods
- 3.1.29    Describe the role of government departments/agencies that may be involved in housing complaints
- 3.1.30    Identify ways to build partnerships with government departments/agencies to increase opportunities for collaboration, advocacy, and options to address identified housing issues
- 3.1.31    Describe the health standards that may be used in housing inspections and interventions
- 3.1.32    Describe appropriate courses of action for identified housing problems, ensuring the social determinants of health are considered when identifying appropriate courses of action (e.g. to avoid rendering someone homeless by removing them from a hazardous housing situation)
- 3.1.33    Describe the legal requirements for “right of entry” into rental and owner-occupied housing

#### Built Environments: Public and Community Facilities

##### *Child Care Facilities*

- 3.2.1      Define key terminology including “child care facility”
- 3.2.2      Outline the various kinds of complaints which may be reported to a certified public health inspector regarding child care facilities
- 3.2.3      Describe the possible health hazards associated with child care facilities
- 3.2.4      Explain the steps involved in preventing the spread of a communicable disease in a child care facility
- 3.2.5      Identify typical injury control measures in child care facilities

- 3.2.6 Identify the types of sanitizers and disinfectants used in various parts of child care facilities with emphasis on the use and effectiveness of each
- 3.2.7 Identify the legislation in your jurisdiction which regulates child care facilities

#### *Adult Care Facilities*

- 3.2.8 Define key terminology including “adult care facility”
- 3.2.9 Identify the types of adult care facilities that exist
- 3.2.10 Describe the various kinds of complaints which may be reported to a certified public health inspector regarding adult care facilities
- 3.2.11 Describe the possible health hazards associated with adult care facilities
- 3.2.12 Explain the steps involved in preventing the spread of communicable disease in an adult care facility
- 3.2.13 Identify typical injury control measures used in adult care facilities
- 3.2.14 Identify the types of sanitizers and disinfectants used in various parts of adult care facilities with emphasis on the use and effectiveness of each

#### *Personal Services Facilities*

- 3.2.15 Define key terminology including “personal services facilities”
- 3.2.16 Identify the types of industries which may be included under the designation of personal service facilities
- 3.2.17 Describe the possible health hazards associated with personal services facilities
- 3.2.18 Explain the health risks from the different type of personal service
- 3.2.19 Describe the necessary control measures a personal services facility must implement to prevent infection and injury from a service
- 3.2.20 Explain critical and non-critical disinfection requirements of equipment used in personal service establishments
- 3.2.21 Describe disinfection and sterilization procedures required in personal services

#### *Animal Facilities*

- 3.2.22 Identify the various types of animal keeping facilities
- 3.2.23 Describe the public health concerns associated with various kinds of animal facility operations
- 3.2.24 Explain the components of a waste control program, including the disposal of dead animals for a given animal facility
- 3.2.25 Explain the setback requirements for various kinds of animal facilities with emphasis on the rationale behind these setbacks
- 3.2.26 Explain the health hazards associated with intensive livestock operations
- 3.2.27 Describe environmental controls for controlling infectious and contagious diseases at animal facilities (e.g. avian influenza)

#### *Recreational Facilities*

- 3.2.28 Describe the built environment and services (ex. food, water, waste disposal) at a recreational park or camp
- 3.2.29 Describe the appropriate terrain and layout for a recreational park or camp
- 3.2.30 Explain the natural environmental hazards to which patrons of a recreational park or camp may be exposed
- 3.2.31 Describe the various kinds of complaints which may be reported to a certified public health inspector regarding recreational facilities

#### *Work Camp Facilities*

- 3.2.32 Describe the built environment and services (ex. food, water, waste disposal) at a work camp

- 3.2.33 Describe the appropriate terrain and layout for a work camp
- 3.2.34 Identify the possible health hazards associated with work camp facilities
- 3.2.35 Describe the various kinds of complaints which may be reported to a certified public health inspector regarding work camp facilities

#### **4. Core Competencies**

##### **Core Competencies: Public Health Sciences**

- 4.1.1 Evaluate and explain a range of public health science concepts: the health status of populations, inequities in health, the determinants of health and illness, strategies for health promotion, disease and injury prevention and health protection, as well as the factors that influence the delivery and use of health services
- 4.1.2 Evaluate and explain concepts relating to the history, structure and interaction of public health and health care services at local, provincial/territorial, national, and international levels
- 4.1.3 Apply the public health sciences to practice
- 4.1.4 Use evidence and research to inform health policies and programs
- 4.1.5 Pursue lifelong learning opportunities in the field of public health

##### **Core Competencies: Assessment and Analysis**

- 4.2.1 Recognize that a health concern or issue exists
- 4.2.2 Identify relevant and appropriate sources of information, including community assets and resources
- 4.2.3 Collect, store, retrieve and use accurate and appropriate information on public health issues
- 4.2.4 Analyze information to determine appropriate implications, uses, gaps and limitations
- 4.2.5 Determine the meaning of information, considering the current ethical, political, scientific, socio-cultural and economic contexts
- 4.2.6 Recommend specific actions based on the analysis of information

##### **Core Competencies: Policy and Program Planning, Implementation and Evaluation**

- 4.3.1 Describe selected policy and program options to address a specific public health issue
- 4.3.2 Describe the implications of each option, especially as they apply to the determinants of health and recommend or decide on a course of action
- 4.3.3 Develop a plan to implement a course of action taking into account relevant evidence, legislation, emergency planning procedures, regulations and policies
- 4.3.4 Implement a policy or program and/or take appropriate action to address a specific public health issue
- 4.3.5 Demonstrate effective implementation of practice guidelines
- 4.3.6 Evaluate an action, policy or program
- 4.3.7 Set and follow priorities to maximize outcomes based on available resources
- 4.3.8 Fulfill functional roles in response to a public health emergency

##### **Core Competencies: Partnerships, Collaboration and Advocacy**

- 4.4.1 Identify and collaborate with partners in addressing public health issues
- 4.4.2 Use skills such as team building, negotiation, conflict management and group facilitation to build partnerships
- 4.4.3 Mediate between differing interests in the pursuit of health and well-being, and facilitate the allocation of resources
- 4.4.4 Advocate for healthy public policies and services that promote and protect the health and well-being of individuals and communities

#### Core Competencies: Diversities and Inclusiveness

- 4.5.1 Recognize how the determinants of health (biological, social, cultural, economic and physical) influence the health and well-being of specific population groups
- 4.5.2 Address population diversity when planning, implementing, adapting and evaluating public health programs and policies.
- 4.5.3 Apply culturally-relevant and appropriate approaches with people from diverse cultural, socioeconomic and educational backgrounds, and persons of all ages, genders, health status, sexual orientations and abilities

#### Core Competencies: Communication

- 4.6.1 Communicate effectively with individuals, families, groups, communities and colleagues
- 4.6.2 Interpret information for professional, nonprofessional and community audiences
- 4.6.3 Mobilize individuals and communities by using appropriate media, community resources and social marketing techniques
- 4.6.4 Use current technology to communicate effectively

#### Core Competencies: Leadership

- 4.7.1 Describe the mission and priorities of the public health organization where one works, and apply them in practice
- 4.7.2 Contribute to developing key values and a shared vision in planning and implementing public health programs and policies in the community
- 4.7.3 Use public health ethics to manage self, others, information and resources
- 4.7.4 Contribute to team and organizational learning to advance public health goals
- 4.7.5 Contribute to maintaining organizational performance standards
- 4.7.6 Build community capacity by sharing knowledge, tools, expertise and experience

## **APPENDIX A: 3-Tier Framework**

### **Tier 1: Program Outcomes**

1. Relate key concepts and indicators, including health status of populations and the determinants of health and illness, to effective strategies for health protection and promotion.
2. Assess the effects of present and historical structure and interaction of public health on delivery and use of local, provincial/territorial and national health services.
3. Assess environmental health hazards in order to identify appropriate mitigation, management and compliance strategies.
4. Examine current ethical, political, scientific, sociocultural, technological, environmental and economic contexts to inform public health recommendations.
5. Integrate science and public health principles and considerations in characterizing, responding to and communicating health risks
6. Model the principles, practices and precautions of Infection Prevention and Control (IPAC).
7. Apply relevant evidence and legislation to address public health issues.
8. Use research tools and research analysis to inform evidence-based decision-making.
9. Interpret and present information for professional, nonprofessional and community audiences using terminology, media, resources and social marketing tools that reflect awareness of audience and purpose.
10. Collaborate with partners to address public health issues using team-building, negotiation, mediation and conflict management strategies.



### **Tier 2: Major Topic Areas**

1. Environmental Health Risk Assessment, Management and Communication

#### ***Learning Module Goals***

- a. Develop risk management options that reflect the principles and methodologies of risk assessment and awareness of community characteristics.
- b. Demonstrate effective use of the process for inspection of public places.
- c. Select appropriate protocols for inspection of a range of community facilities based on operation, intended use(s) and target user(s).
- d. Communicate risk assessment results clearly and professionally to a range of audiences using key risk communication principles.
- e. Analyze the impact of international health frameworks on the structure and interaction of public health services.

2. Environmental Infection/Disease Prevention and Control
3. Public Health Emergency Management
4. Legal, Regulatory Compliance and Enforcement
5. Advocacy and Environmental Public Health Education
6. Air Quality
7. Water
8. Soils
9. Food
10. Healthy Community Environments
11. Physical Agents
12. Waste Management



### **Tier 3: Elements of Performance associated with Environmental Health Risk Assessment, Management and Communication**

#### ***Health Hazard Identification and Mitigation***

- 1.1.1 Define key terminology including health hazard
- 1.1.2 etc. etc.

#### ***Risk Assessment Principles and Methodologies***

- 1.1.6 Explain the concept and the four basic components of risk assessment (hazard identification, hazard characterization, exposure assessment, risk characterization)
- 1.1.7 etc. etc.

#### ***Risk Management***

- 1.1.23 Explain the concept of *risk management*
- 1.1.24 etc. etc.

#### ***Risk Communication***

- 1.1.26 Explain the principles of *risk communication*
- 1.1.27 etc. etc.