

# **CAYMAN ISLANDS GOVERNMENT**



## **DEPARTMENT OF ENVIRONMENTAL HEALTH**

### **GUIDELINES FOR THE OPERATION**

#### **OF**

### **TOURIST ACCOMMODATION PROPERTIES**

**(HOTELS, CONDOMINIUMS & GUESTHOUSES)**

**REVISED OCTOBER 2019**

## **1.0. LAYOUT, DESIGN AND CONSTRUCTION**

- 1.1.** The layout, design, construction and size of the food preparation areas shall allow for good food hygiene practices and of such to prevent cross contamination.
- 1.2.** An adequate number of wash hand basins/sinks suitably designed and located shall be provided in the food preparation area for the washing of hands.
- 1.3.** Hand basins/sinks shall be provided with hot and cold potable running water. Provisions shall be made for the cleaning, sanitizing and hygienic drying of hands.
- 1.4.** Mechanical airflow from a contaminated source to the food preparation area or any other area must be avoided.
- 1.5.** The heat and fume extraction units shall be designed to enable the filters and other parts requiring cleaning to be easily accessible.
- 1.6.** Food preparation areas shall be provided with adequate lighting and ventilation in accordance with the SBCCI or Cayman Islands Building Code.
- 1.7.** Floors and floor covering in food preparation areas, food storage, toilets and refuse storage areas shall be of non-absorbent material and facilitate easy cleaning.

## **2.0. FOODS & RAW MATERIAL RECEIVAL/STORAGE**

- 2.1.** All foods intended for delivery to and from a restaurant shall be transported in well maintained, appropriate and clean vehicles to ensure food safety.
- 2.2.** All highly perishable foods shall be kept at appropriate temperatures of 40 °F or below in order to prevent deterioration while in transit, and shall be transferred to the appropriate storage as early as possible after delivery.
- 2.3.** Only wholesome food items shall be received and used in the preparation of foods.

- 2.4.** All foods shall be clearly labelled to avoid misrepresentation and shall also display a 'used by' date.
- 2.5.** No unlabelled, dented, damaged, rusted food containers/packages shall be received or processed in the establishment.
- 2.6.** Upon receipt of the wholesome food items, the same shall be stored at the appropriate temperatures in the designated storage areas.
- 2.7.** While in storage food items shall be so arranged for easy rotation. i.e. first in first out.
- 2.8.** There shall be adequate chilled and cold storage compartments equipped with non-corrosive racks for storage of food items. The units shall be equipped with functional non-mercury thermometers.
- 2.9.** Adequate storage for dry goods shall be provided. The storage areas shall be kept clean and orderly.
- 2.10.** All food items shall be stored not less than 12 inches off the floor, preferably on pallets.

### **3.0. FOOD PREPARATION AREAS**

- 3.1.** Floor surfaces of the food preparation areas shall be constructed of non-slip, impervious material that can be easily cleaned.
- 3.2.** The wall surfaces of the food preparation and dishwashing areas shall be constructed of smooth impervious materials that are resistant to wear and tear. Walls shall be white or light coloured to enable light reflection and sanitation.
- 3.3.** The food preparation areas shall be free of crevices and maintained in a good condition at all times.
- 3.4.** The walls and floor junctions and corners shall be coved/rounded with radii sufficient to facilitate cleaning and promote good sanitation.
- 3.5.** An ample supply of hot and cold water under suitable pressure shall be available.

- 3.6. All fixtures, cupboards, appliances, equipment and utensils shall be free of damage and shall be maintained in good repair at all times.
- 3.7. The food contact surfaces of all equipment, appliances and utensils shall be non-toxic, impervious and non-corrosive.
- 3.8. The food preparation areas shall be equipped with wash sinks for utensils and meats.
- 3.9. The utensils sink shall be comprised of three compartments for washing, rinsing and sanitizing. The meats and vegetable sinks shall each have two compartments for washing and rinsing.
- 3.10. All sinks shall have a supply of potable hot and cold water. The minimum temperature of the hot water shall be 110 °F.
- 3.11. A separate wash sink shall be provided in the food preparation area for the washing of hands only. It shall be supplied with hot and cold running water, antibacterial liquid soap and hand drying disposable towels.
- 3.12. Separate cutting boards for dairy products, produce and meats shall be provided to reduce the potential for cross- contamination.
- 3.13. Non–mercury thermometers shall be provided for the monitoring of food temperatures during preparation and storage.
- 3.14. There shall be separate preparation work surfaces for raw and cooked foods. So as to prevent cross contamination.
- 3.15. All cooked foods shall be stored in covered containers and maintained at a temperature of 140 °F or above or cooled rapidly and kept in designated refrigerated compartments at a temperature of 40 °F or below.
- 3.16. Equipment and /or utensils such as meat slicers, grinders, trays, trolleys and can openers shall be cleaned and sanitized after each use and at the end of each day's activities.

- 3.17. Deep fryers shall be thoroughly emptied and cleaned and the oil replaced at a minimum of twice per week or more frequently as needed.
- 3.18. Personnel not involved in food preparation shall avoid entering the food preparation areas.
- 3.19. Dishwashers shall be cleaned and sanitized at the end of each day's activities. Water shall be changed for each wash cycle. The water temperature for the wash cycle shall be no less than 180 °F and the rinse wash cycle temperature shall be at least 110 °F.
- 3.20. Non-food contact surfaces of equipment exposed to splash or spills requiring frequent cleaning shall be of a corrosion resistant, non-absorbent and smooth material.
- 3.21. Drainboards, utensil racks and tables used to store soiled/used or clean utensils shall be provided with sufficient space to hold the items that might accumulate during the hours of operation.
- 3.22. All sinks shall be cleaned and sanitized daily or more often as needed.
- 3.23. A separate area shall be provided for the storage of cleaning material and equipment.
- 3.24. A slop sink shall be provided for the sanitary cleaning of mops.  
A covered container shall be provided for the storage of soiled aprons, coats and other linen
- 3.25. Garbage shall be kept in non-porous covered containers with plastic liners and shall be emptied when filled.  
At the end of the day the containers shall be thoroughly washed and sanitized.

#### **4.0. DINING AREA**

- 4.1. The floor, walls and ceiling of this area shall be kept clean and maintained in good repair.
- 4.2. There shall be adequate ventilation provided in the dining area in accordance with the SBCCI code.
- 4.3. Furniture shall be constructed of non-toxic material and be maintained in good repair.
- 4.4. All table covering and linen shall be clean and maintained in good condition.
- 4.5. Cold food display cabinets shall be kept at 40 °F or below and equipped with sneeze guards.
- 4.6. Hot food display cabinets and /or steam heaters shall be covered and the food maintained at 140 °F or above.

## **5.0. FOOD HANDLERS**

5.1. The proprietor of a food establishment shall ensure that food handlers are supervised and trained in food hygiene practices commensurate with their work activities.

5.2. All foods that are handled, stored, packaged, displayed, transported and served shall be protected from contamination.

5.3. All food handlers shall observe the rules of good personal hygiene.

## **6.0. PERSONAL HYGIENE**

6.1. All persons working in food preparation and handling shall maintain a high standard of personal hygiene and cleanliness and shall wear clean and appropriate clothing.

6.2. Any person known or suspected of having an infectious disease or condition such as infected wounds, skin infections, sores or diarrhoea shall not be engaged in the preparation or handling of foods until certified to do so by the Medical Officer of Health or a certified medical practitioner.

6.3. No person shall be permitted to smoke in the food preparation areas.

6.4. Food handlers shall wash their hands after using the washroom and before commencing food preparation.

6.5. Hair restraints/guards, aprons and or coats shall be worn when handling food. Hair, fingernails and hands shall be kept clean at all times. Disposable gloves are encouraged to be used in the food preparation process.

6.6. Employees shall not wear jewellery on their arms or hands while preparing foods.

*(This does not apply to a plain ring such as a wedding band.)*

## **7.0. WORKERS HEALTH AND SAFETY**

7.1. Clear instructions for the use of chemicals, equipment and appliances including Materials Safety Data Sheet (MSDS) shall be readily available to employees.

7.2. Chemical storage and disposal shall be in accordance with the manufacturers' instructions.

7.3. Employees shall be provided with adequate and appropriate protective eye goggles and or protective clothing to reduce the exposure to unsafe, toxic or harmful substances when using products that may cause harm or injury.

7.4. Staff room facilities shall be provided for the employees to change clothing and to eat and rest.

7.5. The room shall be lighted and ventilated according to SBCCI code. The room shall be kept in a clean and sanitary manner at all times.

7.6. Records of all accident and injuries to employees shall be kept on a file by the employer and be readily available to the Environmental Health Officer for review.

7.7. Staff shall not be subjected to exposure to noise that may cause injury or annoyance without the appropriate noise protective equipment.

7.8. Basic training in safety procedures commensurate to the work activities employees are engaged in shall be provided. Essential staff and management shall also be trained in First Aid and CPR techniques.

7.9. Clearly visible emergency telephone numbers shall be posted in locations on the premises at all times.

7.10. All work areas shall be designed to include protection of workers health and safety.  
Where appropriate, an eyewash station shall be provided in a suitable location.

## **8.0 STAFF CHANGE ROOM FACILITIES**

8.1. Separate change rooms and sanitary facilities shall be provided for both males and females.

8.2. Staff change rooms shall be designed and constructed in accordance with the SBCCI and or the Cayman Islands Building Code.

8.3. Hand washing facilities shall be equipped with potable hot and cold running water, soap, and disposable paper towels or hot air dryers.

8.4. Personal clothing shall only be stored in designated changing room lockers.

8.5. Staff rooms shall be kept in a clean, sanitary and orderly manner.

8.6. A suitable refuse/garbage receptacle with a plastic liner on the inside shall be provided and emptied daily.

## **9.0. WATER SUPPLY AND QUALITY**

- 9.1.** A reliable source of potable water shall be provided at the establishment.
- 9.2.** Cisterns shall be constructed of durable, non-corrosive, non-porous material, have tight fitting lids and be screened to prevent the ingress of insects and other foreign matter.
- 9.3.** All properties using rainwater (cisterns), as a water source shall have the water quality tested/analysed for the parameters and at a frequency approved by the Department and the results made available to the Department upon request.

## **10.0. SANITARY FACILITIES**

- 10.1.** Toilet facilities shall be provided in accordance with the SBCCI and or the Cayman Islands Building Code.
- 10.2.** The lavatory sink shall be provided with a potable supply of hot and cold running water, hand sanitizer, paper towels and a refuse/garbage bin.
- 10.3.** Covered receptacles with plastic liners shall be provided for waste products and these containers shall be emptied and sanitized daily.
- 10.4.** The walls and ceiling of toilet facilities shall be smooth and easy to clean and the floors shall be non-skid, non-porous and easily cleanable.
- 10.5.** Toilet facilities shall be kept in good repair and maintained in a sanitary manner.
- 10.6.** Toilet facilities shall be adequately lit and ventilated.

## **11.0. LIQUID WASTE DISPOSAL**

- 11.1.** All wastewater from the laundry, kitchen and bathrooms shall be directed through an approved plumbing, sewage treatment and disposal system.
- 11.2.** Commercial kitchens shall be provided with grease interceptors in accordance with 801.4 of the SBCCI Plumbing Code.



- 11.3. Wastewater from premises shall not be allowed to discharge into or onto the ground, pond, lake or sea in a manner so as to constitute a public health nuisance.
- 11.4. Sewage plants shall be adequately maintained.
- 11.5. Provision shall be made for the disposal of storm water.

## **12.0. SOLID WASTE STORAGE**

- 12.1. Food wastes and other refuse shall not be allowed to accumulate in food rooms.
- 12.2. All containers used for the storage of wastes awaiting collection and removal from the premises shall have a lid, be constructed of a durable material and easy to clean and sanitize.
- 12.3. Refuse storage areas/rooms shall be designed and managed in such a way as to enable them to be kept clean and free from vermin.
- 12.4. The garbage/refuse storage facility shall be located in accordance with Department of Environmental Health Guidelines.

## **13.0. BUILDING EXTERIOR AND GROUNDS**

- 13.1. The exterior of the building(s) shall be free of cracks, discoloration, peeling paint, termite infestation, moulds and mildew or any other condition that detracts from the appearance of the building.
- 13.2. Roof and roof gutters shall be free of leaks, debris and be in good repair.
- 13.3. Steps/walkways/stairways shall be kept free of all obstructions, be of non-slip/skid finished and well lit at all times.

- 13.4. Steps/walkways/stairways shall be constructed in accordance with the SBCCI and Cayman Islands Building Code and the integrity of such construction shall be maintained in a state of good repair.
- 13.5. Steps/walkways/stairways shall be of an even grade with a minimum width of thirty (30) inches.
- 13.6. Steps/walkways/stairways shall be accessible to the physically handicapped persons.

#### **OPEN AREAS/GROUNDS**

- 13.7. Shall be clean, well maintained and shall not provide harbourage for rodents and insects.
- 13.8. Shall be free of obstructions likely to cause injury or harm to guests.
- 13.9. Surface and storm water shall be disposed of within the site boundary.
- 13.10. Trees shall be pruned so as not to constitute a nuisance.
- 13.11. Entry areas and parking areas shall be well lit and properly drained.
- 13.12. Access to sewage treatment systems and refuse storage areas shall be free from obstructions.
- 13.13. Derelict vehicles or other abandoned items shall not be stored on the property.

#### **14.0. PEST CONTROL**

- 14.1. All garbage shall be kept in leak proof, non-absorbent containers with plastic liners and kept covered with tight fitting lids. The containers shall be cleaned and sanitized daily.
- 14.2. All openings to the exterior of the food preparation/service areas shall be fly proof and the doors leading to and from these areas shall be self-closing.
- 14.3. Every property shall have an effective pest control programme in place.

#### **15.0. LAUNDRY FACILITIES**

- 15.1. All equipment and appliances shall be maintained in good repair, functional and free from corrosion.

- 15.2. Adequate provision shall be made for the sanitary storage of clean linen.
- 15.3. A minimum of 30 -foot candles of lighting shall be provided in the laundry.
- 15.4. Adequate ventilation shall be provided. Where necessary, heat extraction devices or air conditioning units shall be used.
- 15.5. Cleaning chemicals and agents shall be properly labelled and stored in original containers. They shall be stored in well-ventilated and secured rooms.
- 15.6. Wastewater from laundry rooms shall be connected to an approved sewage treatment and disposal system.
- 15.7. Adequate and appropriate refuse receptacles shall be provided.

#### **16.0. INTERIOR OF ROOMS/APARTMENTS**

- 16.1. Bathrooms located in the centre of buildings shall be provided with mechanical ventilation.
- 16.2. Walls shall be cleaned and in good repair.
- 16.3. Ceilings shall be clean and in good repair.
- 16.4. Floor and floor coverings shall be clean and in good repair.
- 16.5. Fixtures (bathtubs, showers, sinks, fans, lights, faucets etc.) shall be clean, free from corrosion, discoloration and in good repair.
- 16.6. Appliances (stoves, refrigerators, dishwashers, ovens, microwave ovens etc.) shall be clean, free from corrosion, discoloration and in good repair.

#### **17.0. SWIMMING POOLS**

##### **Design Requirements**

**Design.** The layout, design and construction of Swimming Pools, Spas and Jacuzzis shall be in accordance with the most recent addition of the International Swimming Pool and Spa Code. The general design and construction of public and residential aquatic vessels and all related piping, equipment, and materials shall comply with Chapter 3 of the ISPSC. Provisions that are unique to a specific type of aquatic vessel are Chapters 4 through 10 of the Code.

## Definitions

**Public Pool.** Any pool, other than a residential pool, that is intended to be used for swimming or bathing and is operated by an owner, lessee, operator, licensee, or concessionaire, regardless of whether a fee is charged for use.

**Residential Pool.** Any pool intended for use which is accessory to a residential setting and available only to the household and its guests. All other pools shall be considered public pools for purposes of this code.

**Spa.** A product intended for the immersion of persons in temperature controlled water circulated in a closed system, and not intended to be drained and filled with each use. A spa usually includes a filter, a heater (electric, solar, or gas), a pump or pumps, and a control, and may also include other equipment, such as lights, blowers, and water sanitizing equipment.

**Permanent Residential Spa.** A spa, intended for use that is accessory to a residential setting and available to the household and its guests and where the water heating and water circulating equipment is not an integral part of the product. The spa is intended as a permanent plumbing fixture and not intended to be moved.

**Public Spa.** Any spa other than a permanent residential spa or residential portable spa which is intended to be used for bathing and is operated by an owner, licensee, concessionaire, regardless of whether a fee is charged for use.

**Wading Pool.** A wading pool is a pool used exclusively for wading and intended for use by young children where the depth does not exceed two feet (0.6 m).

**Residential AirBnB Pool.** Any pool intended for use which is accessory to a residential tourism accommodation property.

ISPSC. International swimming pool and spa code

MAHC. Model aquatic health code

## Recirculation System

**Circulation System design.** A circulation system consisting of pumps, piping, return inlets and outlets, filters, and other necessary equipment shall be provided for the complete circulation of water. (ISPSC 311.2). Recirculation systems shall comply with the requirements set in the latest edition of ANSI/APSP-7 Standard for Suction Entrapment Avoidance in Swimming Pools, Wading Pools, Spas, Hot Tubs, and Catch Basins. This standard covers design and performance criteria for circulation systems including components, devices, and related technology installed to protect against entrapment hazards in residential and public swimming pools, wading pools, spas, hot tubs, and catch basins, hereinafter referred to as “pools and spas.” (APSP-7 1.1) This standard applies to new and, when retrofitting, existing installations.

Wading pools and spas shall have separate dedicated filtering systems (ISPSC 311.2). **Exception:** Separate filtering systems are not required for Residential AirBnBs.

**Suction entrapment.** Suction entrapment avoidance for aquatic vessels shall be provided in accordance with APSP 7 (ISPSC 310.1).

**Single or dual outlets.** The flow rating for each listed cover/grate shall be greater than the maximum system flow (APSP-7: 4.6.1)

**Dual outlet separation.** Dual outlets shall be separated by a minimum of 3 feet (914 mm) measured from center to center of the suction pipes or located on two (2) different planes (APSP-7: 5.3.2).

**Single channel outlet.** A single listed channel outlet shall be considered acceptable if the size of the perforated area is 3 inches or greater in width and 31 inches or greater in length. (APSP-7: 5.5.1).

**Single unblockable outlet.** Single unblockable covers shall be of any size and shape such that a representation of the torso of the 99 percentile adult male cannot sufficiently block it to the extent that it creates a body suction entrapment hazard. The torso is represented as a rectangle 18 inches x 23 inches with corners of radius 4 inches (APSP-7: 5.5.2).

**Single outlet swim jet system.** Single outlet swim jet systems shall be tested and listed by a nationally recognized testing laboratory as conforming to the most recent edition of ASME/ANSI A112.19.8 and include a permanently marked Flow Rating tested to prevent hair entrapment (APSP-7: 5.6).

**Periodic evaluation, testing, and maintenance of Suction Entrapment Avoidance Systems.** Covers/grates and suction entrapment avoidance systems and related components shall be evaluated, maintained, and replaced by a person licensed or qualified in accordance with applicable manufacturer's instructions and local law (APSP-7: 5.6). A copy of the results of the testing shall be submitted to the department.

**Existing installations - Single outlets.** When retrofitting existing installations with a single suction outlet that is not listed and approved for use as a single suction outlet, the existing suction outlet shall be retrofitted with either a listed single unblockable suction outlet or a listed suction outlet cover/grate and at least one of the following shall be added in accordance with the relevant section of the code:

- One or more additional listed suction outlet cover/grate located in accordance with the code; or
- Convert suction outlet to return inlet by changing the piping, provided the system piping and skimmer(s) shall be capable of handling the full system flow; or
- Gravity flow system in accordance; or
- Engineered vent system in accordance; or
- Listed manufactured SVRS ; or
- Permanently disable the single outlet, provided the system piping and skimmer(s) shall be capable of handling the circulation and distribution requirements (APSP-7: 6.3).

**Listed manufactured SVRS.** Safety vacuum release systems, mechanical or electromechanical, venting or non-venting, shall be tested, certified, and listed for the purpose by a nationally recognized testing laboratory as conforming to ANSI/ASME A112.19.17 – Manufactured safety vacuum release systems

(SVRS) for residential and commercial swimming pool, spa, hot tub and wading pool suction systems, or ASTM F 2387-04 Standard specification for manufactured safety vacuum release systems (SVRS) for swimming pools, spas, and hot tubs (APSP-7: 7.1).

**Incompatible configurations for SVRS.** Some suction vacuum release systems may be incompatible with certain system configurations. The designer or installer shall confirm suitability with the SVRS manufacturer prior to installation and use. Incompatible configurations may include check valves, two or more suction outlets, hydrostatic relief valves, skimmers, solar systems, elevated or submerged pump suction, multilevel bodies of water, and water features. The installer must submit a copy of the manufacturer's certification that installation has been completed in accordance with their recommendations.

**Check valves with listed manufactured suction vacuum release systems.** Installer shall refer to the manufacturers' installation instructions. ASME A112.19.17 does not allow use of SVRS in systems with any check valves or hydrostatic valves (APSP-7: 7.1.1).

**Flow Measurement.** Public swimming pools and wading pools shall be equipped with a flow-measuring device that indicates the rate of flow through the filter system. The flow rate measuring device shall indicate gallons per minute and shall be selected and installed to be accurate within plus or minus 10% of actual flow (ISPSC 311.7).

**Turnover rate.** The turnover rate refers to the period of time required to circulate a volume of water equal to the pool capacity. The equipment shall be sized to turn over the volume of water that the aquatic vessel is capable of containing as specified in this code for the specific installation (ISPSC 311.2.1). For public pools the turnover rate shall not exceed 6 hours and 1 hour for wading pools (ISPSC 407.2). The turnover rate for residential AirBnBs shall not exceed 12 hours (ISPSC 810.1). Spa shall be designed to have a maximum allowable turnover time of 0.5 hours (MAHC 4.7.5.2.1).

**Filter Design.** Filters shall have a flow rating equal to or greater than the design flow rate of the system. Filters shall be installed in accordance with the manufacturer's instructions. Filters shall be designed so that filtration surfaces can be inspected and serviced (ISPSC 312.2).

**Pressure and vacuum gauge.** Gauges shall be provided for public pools in the circulation system. Gauges shall be provided with ready access (ISPSC 311.6).

**Location of Pressure Gauge.** The pressure gauge shall be located downstream of the pump and between the pump and filter.

**Location of Vacuum Gauge.** A vacuum gauge shall be located between the pump and filter and upstream of the pump.

**Pump Performance.** A pump shall be provided for circulation of the pool water. The pump shall be capable of providing the flow required for filtering the pool water and filter cleaning, if applicable, against the total dynamic head developed by the complete system (ISPSC 313.2).

**Information on the Pump.** The following manufacturer's information for the pump shall be readily available to the inspecting officer:

- Name of pump manufacturer

- Pump model number
- Pump horsepower rating
- A copy of the pump curve (s)

**Location of Pumps.** Pumps and motors shall be accessible for inspection and service in accordance with the manufacturer's specifications (ISPSC 313.4).

**Time switches.** Time switches or other control methods that can automatically turn off and on heaters and pumps according to a preset schedule shall not be installed on pumps. Public health standards require 24-hour pump operation (ISPSC 303.3).

**Emergency shutoff switch.** An emergency shutoff switch shall be provided to disconnect all power to recirculation and jet system pumps and air blowers. Emergency shutoff switches shall be: provided with access; located within sight of the aquatic vessel and located not less than 5 feet (5') horizontally from the inside walls of the aquatic vessel (ISPSC 313.7).

**Makeup water.** Makeup water to maintain the water level and water used as a vehicle for sanitizers or other chemicals, for pump priming, or for other such additions, shall be from a potable water source (ISPSC 318.1).

**Protection of potable water supply.** Potable water supply systems shall be designed, installed and maintained so as to prevent contamination from nonpotable liquids, solids or gases being introduced into the potable water supply through cross-connections or any other piping connections to the system. Means of protection against backflow in the potable water supply (ISPSC 318.2).

**Backflow protection.** Water supplies for aquatic vessels shall be protected against backflow in accordance with the International Plumbing Code or the International Residential Code, as applicable in accordance with Section 102.7.1 (ISPSC Section 302.5).

**Backwash water or draining water.** Backwash water and draining water shall be discharged to the sanitary or storm sewer, or into an approved disposal system on the premise, or shall be disposed of by other approved means. Direct connections shall not be made between the end of the backwash line and the disposal system. Drains shall discharge through an air gap (ISPSC Section 320.1).

**Water Salvage.** Filter backwash water shall not be returned to the vessel except where the backwash water has been filtered to remove particulates, treated to eliminate coli form bacteria and waterborne pathogens, and such return has been approved (ISPSC Section 320.2).

**Labelling.** All circulation components should be labelled, tagged, or colour coded. The pipes in the pump room should be adequately labelled including showing the direction of flow.

## **Water Chemistry and Biology**

**Water Clarity.** The water in the pool shall be sufficiently clear such that the bottom is visible while the water is static. This shall be determined either by the main suction, placed in the deepest part of the pool,

being clearly visible from the pool deck or a four in square marker tile in a contrasting colour to the pool floor (MAHC 5.7.6.1. and 5.7.6.1.1).

**Water Temperature.** A means shall be provided to monitor water temperature (ISPSC 316.4.1). Where a pool could have a water temperature below 70° F (21° C), a cold water warning sign shall be posted at the point of entry to the pool or at the attraction using such water (ISPSC Section 611.11). The temperature of the incoming make-up water shall not exceed 104°F (40°C) (ISPSC 507.1).

**Chlorine Testing.** Free available chlorine, combined available chlorine, and pH shall be tested prior to opening each day (MAHC 5.7.5.1). **Exceptions:** residential AirBnBs must be tested at least once per week.

**Types of chlorine products.** Only chlorine products that are EPA-Registered for use as sanitizers or disinfectants in aquatic venues or spas in the United States are permitted (MAHC 5.7.3.1.1.1)

**Chlorine dosing.** All chlorine dosing and generating equipment shall be capable of providing 4.0 lbs of free available chlorine per day per 10,000 gallons of pool water (MAHC 4.7.3.2.2.2)

**Free available chlorine.** Free available chlorine levels shall be maintained between 1.0 and 3.0 ppm. Spas shall maintain a minimum free available chlorine of 3.0 ppm (MAHC 5.7.3.1.1.2.3). The maximum free available chlorine concentrations shall not exceed 10.0 ppm at any time when the pool is open to bathers (MAHC 5.7.3.1.1.5).

**Combined Chlorine.** The level of combined chlorine in the water should not exceed 0.4 ppm (MAHC 5.7.4.4.1).

**Use of Cyanuric Acid.** Aquatic venues not using cyanuric acid shall maintain a minimum free chlorine concentration of 1.0 ppm (MAHC 5.7.3.1.1.2.1). Aquatic venues using cyanuric acid shall maintain a minimum free chlorine concentration of 2.0 ppm (MAHC 5.7.3.1.1.2).

**Cyanuric acid concentration.** The cyanuric acid level at all aquatic venues shall remain at or below 90 ppm (MAHC 5.7.3.1.3.2).

**Oxygen Reduction Potential.** If an ORP monitoring device is installed the oxygen reduction potential shall be no less than 600 millivolts (MAHC 4.7.3.3.4.6.2).

**Hydrogen Ion Concentration (pH).** The pH levels of the water shall be maintained between 7.2 and 7.8 (MAHC 5.7.3.4.1).

**Total alkalinity.** Total alkalinity shall be maintained in the range of 60 to 180 ppm (MAHC 5.7.4.4.1).

**Calcium hardness.** Calcium hardness shall not exceed 1000 ppm (MAHC 5.7.4.4.3).

**Total Dissolved solids.** The total dissolved solid should not exceed 1500 ppm higher than the pool source including any inorganic salts used by chlorine generation systems (NSPF).



**Saturation index.** The pool water shall be properly balanced; the saturation index shall be maintained between -0.3 and +0.3 (NSPF).

**Water Biology.** The pool water shall be monitored for microbial parameters including heterotrophic plate count, total coliforms, pseudomonas, enterococci, and E Coli. The parameters shall not exceed the standards indicated in the table below (WHO).

**Table 1: Biological Parameters**

<b>BIOLOGICAL PARAMETER</b>	<b>GUIDELINE VALUE</b>
Heterotrophic plate count	<200 mpn /100 ml
Total coliforms	<1 mpn /100 ml
Pseudomonas	<1 mpn /100 ml
Enterococci	<1 mpn /100 ml
E Coli	<1 mpn /100 ml

### **Safety Systems**

**Entry and Exit.** Pools shall have at least two approved means of entry and exit located so as to serve both ends of a pool (ISPSC 411.1). Swimming pools over 30 feet in width shall be provided with entries and exits on both side of the deep area of the pool (ISPSC 411.1.4).

**Depth markers.** Depth markers shall be provided (ISPSC 409.2). The depth of the water in feet shall be plainly and conspicuously marked (ISPSC 409.2.2). Depth markers on the vertical pool wall shall be positioned to be read from the waterside. Depth markers shall be placed so as to allow as much of the numbers to be visible above the waterline as possible (ISPSC 409.2.4). Depth markers on the deck shall be located within 18 inches (457 mm) of the water edge and positioned to be read while standing on the deck facing the water (ISPSC 409.2.5).

**Location of depth markers.** Depth markers shall be distributed uniformly on both sides and both ends of the pool (ISPSC 409.2.7). Depth markers shall be installed at the maximum and minimum water depths and at all points of slope change. Depth markers shall be installed at intermediate increments of water depth not to exceed 2 feet (607 mm). Depth markers shall be spaced at intervals not to exceed 25 feet (7620 mm) (ISPSC 409.2.1).

**Slip Resistant Depth Markers.** Horizontal depth markers shall be slip resistant (ISPSC 409.2.6).

**Depth marker Numbers and Letters.** Depth markers shall be not less than 4 inches (102mm) in height. The color of the numbers shall contrast with the background on which they are applied and the color shall be of a permanent nature. The lettering shall spell out the words “feet” and “inches” or abbreviate

them as “Ft.” and “In.” respectively. Where displayed in meters in addition to feet and inches, the word meter shall be spelled out or abbreviated as “m” (ISPSC 409.2.8).



Figure 1: Depth Marker and No Diving Symbol

**Signs.** Signs stating rules, instructions, and warnings shall be posted. Sign shall be placed so that they squarely face approaching traffic. The center of the message panel shall be located not less than 66 inches above the walking surface (ISPSC 611.1).

**Warning Signs.** Signs for suction entrapment warning in according with Section 310 of the International Swimming Pool and Spa Code shall be posted (ISPSC 611.1). A sign shall be posted signifying a qualified lifeguard is not on duty and persons under age 14 cannot be in the aquatic venue without direct adult supervision meaning children shall be in adult view at all times (MAHC 5.8.5.4.5). The following shall be the text of the sign:

- (i) “**WARNING ! NO LIFEGUARD ON DUTY**” with legible letters at least four (4) inches high.
- (ii) “**NO SWIMMING ALONE. CHILDREN AND NON-SWIMMERS SHALL NOT USE THE POOL UNLESS ACCOMPANIED BY A RESPONSIBLE ADULT**” shall be stated in legible letters at least two (2) inches high.

**Safety Signs.** Safety signage advising on the danger of diving into shallow areas and on the prevention of drowning shall be provided. Safety signage shall be as shown in figure below or similar thereto (ISPSC 412.1).



Figure 2: Safety Signs

<b>Actual Size:</b> 11" x 13-3/8" 16" x 18-1/2" 18-3/8" x 24"
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**Information Signs.** The operator shall post and enforce the aquatic facility rules governing health, safety, and sanitation (MAHC 6.4.2.2.1). The lettering shall be legible and at least 1 inch high with a contrasting background (MAHC 6.4.2.2.2). Signs shall be placed in a conspicuous place at the entrance to the aquatic facility (MAHC 6.4.2.2.3). The signs shall communicate expected and prohibited behaviours and other information using text that complies with the intent of the following minimum information (MAHC 6.4.2.2.3):

1. In case of an emergency, dial 911 or other emergency instructions
2. Hours of operation
3. Theoretical peak occupancy
4. Do not swim if you have open wounds
5. Do not swim if you are ill with diarrhea or have had diarrhea within the past two weeks
6. Shower before entering the water
7. No glass items are allowed
8. Do not swallow or spit water
9. Diaper changing is not allowed on the deck
10. No diving

**Additional Spa Sign.** Spas shall also have the following information or text complying with the intent of the following information:

1. Maximum water temperature is 104°F;
2. Children under age five and people using alcohol or drugs that cause drowsiness shall not use spas;
3. Pregnant women and people with heart disease, high blood pressure or other health problems should not use spas without prior consultation with a healthcare provider;
4. Children under 14 years of age shall be supervised by an adult; and
5. Use of the spa when alone is prohibited (if no lifeguards on site) (MAHC 6.4.2.2.3.7).

**No diving symbol.** Where the pool depth is 5 feet (1524mm) or less, the “No Diving” symbol shall be displayed. The symbol shall be placed on the deck at intervals of not more than 25 feet (762 cm). Additional signage shall be in accordance with ANSI Z535 (ISPSC 409.3). The symbol shall comply with the universal international symbol for “No Diving” pictured as an image of a diver with a red circle with a slash through it (MAHC 4.5.19.4.1).



Figure 3: Example of a No Diving Symbol

**Lifesaving equipment.** Pools shall be provided with lifesaving equipment in accordance with sections. Such lifesaving equipment shall be visually conspicuous and conveniently located at all times and accessible to bathers (ISPSC 409.4).

**Throwing Device.** A throwing rope attached to ring buoy or similar flotation device shall be provided. The rope shall be not less than ¼ inch in diameter and shall have a length of not less than 1 ½ times the maximum width of the pool or 50 feet, whichever is less. A ring buoy shall have an outside diameter is not less than 15 inches (ISPSC 409.4.2; MAHC 5.8.5.4.1).

**Accessory pole.** Pool shall be provided with a not-telescopic accessory or reaching pole not less than 12 feet in length and including a securely attached body hook (ISPSC 409.4.1; MAHC 5.8.5.4.2). Accessory or reaching poles shall be of non-conductive material (MAHC 5.8.5.4.2.2).

**Throwing rope.** A throwing rope attached to ring buoy or similar flotation device shall be provided. The rope shall be not less than ¼ inch in diameter and shall have a length of not less than 1 ½ times the maximum width of the pool or 50 feet, whichever is less. A ring buoy shall have an outside diameter is not less than 15 inches (ISPSC 409.4.2).

**Sanitary facilities.** The minimum number of toilet, urinals and other hygiene fixtures provided shall be in accordance with the requirements of the International Plumbing Code based on the peak occupancy of the pool (MAHC 4.10.1.4). Sanitary facilities shall be located no greater than 300 feet walking distance from the pool (MAHC 4.10.2.2). Residential AirBnB pools shall be exempt from these requirements (MAHC 4.10.4.2.6).

**Cleansing Showers.** A minimum of one cleansing shower shall be provides per sex for each 4000 square feet (MAHC 4.10.4.2.1). The showers shall be evenly distributed between sexes and shall be located in a hygiene facility near the entrance and within clear view of the pool (MAHC 4.10.4.2.3). Residential AirBnB pools shall be exempt from these requirements (MAHC 4.10.4.2.6).

**Chemical Storage.** Chemical storage space shall be separate from the equipment room (MAHC 5.9.1.13). Chemical storage shall be in compliance with local building and fire codes (MAHC 5.9.1.1) and to prevent access by unauthorized individuals (MAHC 5.9.1.4) and protected from getting wet (MAHC 5.9.1.5) and avoidance of mixing with incompatible materials in case leakage were to occur (MAHC 5.9.1.6).

**Chemical Storage Warning Signs.** Warning signs in compliance with NFPA or HMIS ratings shall be posted on chemical storage space doors (MAHC 5.9.1.14).



Figure 4: A Sample HMIS Colour Chart

**Ventilation.** Indoor pool air handling system design shall comply with ASHRAE Standard 62.1.2013 and/or applicable local codes (MAHC 4.6.2.5). Where pool chemicals are stored in a building intended for human occupancy, the transfer of chemical fumes and vapours from the chemical storage space to other parts of the building shall be minimized (MAHC 4.9.2.1.2).

**Pool Records.** Records shall be kept pertaining to the operation, maintenance, and management of the swimming pool, spa, other aquatic facility (MAHC 6.4.1.2). These shall include daily preventive maintenance inspection records, incident records, chemical inventory logs, pump specifications and curves, filter specifications, expiration dates for water quality testing reagents, daily water monitoring and testing records, staff certifications, and standard operation procedures.

**Daily Water Monitoring and Testing Records.** Daily monitoring and testing records shall be maintained at public pools, with the exception of residential AirBnB pools, which shall maintain weekly records. The records shall include the following (MAHC 6.4.1.6):

- pH level
- Free available chlorine
- Combined chlorine
- Total chlorine
- Total dynamic head of the recirculation system
- The flow meter reading
- Cyanuric acid levels, if used
- Calcium hardness
- Total alkalinity
- Saturation index

**A-2 Daily Pool Chemical Log**

Pool \_\_\_\_\_ Date \_\_\_\_\_

Item	1st	2nd	3rd	4th	Standard
Time	_____	_____	_____	_____	(min, ideal, max)
FAC	_____	_____	_____	_____	1, 2-5, 5 ppm
CAC	_____	_____	_____	_____	0, 0, 0.2 pools (0.5 spaa)
pH	_____	_____	_____	_____	7.2, 7.4-7.6, 7.8
ORP	_____	_____	_____	_____	650 or code compliance
Total Alkalinity	_____	_____	_____	_____	60, 80-120, 180 ppm
Cyanuric Acid	_____	_____	_____	_____	30-50, 150 ppm
Calcium Hardness	_____	_____	_____	_____	150, 200-400, 1000 ppm
Water Temperature	_____	_____	_____	_____	NA, 78-82 °F 104 °F
Air Temperature	_____	_____	_____	_____	
TDS	_____	_____	_____	_____	1,500 over starting
Saturation Index	_____	_____	_____	_____	- 0.3 to + 0.3
Water Clarity	_____	_____	_____	_____	main drain clearly visible
Water Level	_____	_____	_____	_____	1/8 - 1/4 inch
Bather Load	_____	_____	_____	_____	above gutter
Flowrate	_____	_____	_____	_____	
Turnover	_____	_____	_____	_____	
Influent Pressure	_____	_____	_____	_____	
Effluent Pressure	_____	_____	_____	_____	
Pressure Differential	_____	_____	_____	_____	

**Initialed by:** \_\_\_\_\_

**Time test taken:** \_\_\_\_\_

Optional tests: nitrates (ideal-none, max 10 ppm), phosphates (ideal-none, max 2.0 ppm), iron (ideal-none), copper (ideal-none)

**Notes:** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Chemicals Added:**

OPENING: \_\_\_\_\_

CLOSING: \_\_\_\_\_

**Figure 5: Example of a Pool Log**

**Documentation for submerged suction outlet covers.** The manufacturer's documentation on all outlet covers and sumps shall be made a part of the permanent record of the aquatic facility (MAHC 5.7.1.5.2). The following minimum data is required:

- Manufacturer's name
- Model number
- VGB compliance
- Flow rating
- Life expectancy (Expiration date)
- Date of installation
- Type of use (single/multiple)
- Type of mounting (wall/floor)