

A high-angle photograph of a person swimming in a pool. The person's arms are raised above their head, and their hair is visible. The water is clear blue with ripples. On the left side of the image, there is a large, stylized graphic element consisting of several overlapping, wavy, light blue shapes that resemble water or a splash.

PUBLIC POOL & PUBLIC SPA OPERATORS GUIDE

ML
MIDDLESEX-LONDON
**HEALTH
UNIT**
www.healthunit.com



Dear Pool and Spa Operator,

To assist you to be compliant with Ontario's pool and spa regulations, the Middlesex-London Health Unit developed The Pool and Spa Operators Guide to provide a resource that outlines your responsibilities under the Health Protection and Promotion Act, R.S.O.1990, c.H.7.

This guide was prepared for you and your staff members to ensure you provide a safe and healthy facility for your bathers. It contains information about safety,

maintenance and the operation of your facility. You can also access this information at any time on our website at www.healthunit.com.

Pool and spa owners and operators are legally responsible for making sure their facilities are operated and maintained in accordance with the provincial regulations contained in the Act. Public Health Inspectors from the Middlesex-London Health Unit are your partners in achieving these goals. A facility that is not properly operated or maintained results in unnecessary risks for your bathers, including the potential exposure to water-borne diseases and life-threatening injuries.

Public Health Inspectors periodically inspect facilities like yours to ensure compliance. Inspectors then issue reports detailing their findings at the time of their visit and any deficiencies noted should be corrected immediately.

If you have questions or concerns about compliance matters, please call the Health Unit's Environmental Health line at 519-663-5317, extension 2300 to speak to a Public Health Inspector.

Thank you for taking the time to review this guide and also for playing your part in keeping our community safe and healthy.

Yours sincerely,

A handwritten signature in black ink, appearing to read "Graham L. Pollett". The signature is fluid and cursive.

Graham L. Pollett MD, MHS, FRCPC, FACPM
Medical Officer of Health & Chief Executive Officer CEO



INTRODUCTION

It is the responsibility of public pool and / or spa owners / operators to ensure that the public pool and / or spa complies with all applicable legislation and operating standards to protect the health and safety of bathers.

All public pool and spa owners / operators must notify the Health Unit (**see Appendix A or Appendix B**) of their intention to open or re-open a public pool or spa that has been:

- constructed
- altered, or
- closed for more than four weeks

This guide is designed to assist operators in meeting regulatory requirements but is not to be used as a substitute for specific legislative or regulatory obligations. This guide does not address all sections of the *Regulation*.

Requirements related to public pool and spa construction can be found in the *Ontario Building Code*. If you have any questions regarding pool construction, please contact the City of London Building Division at 519 661-4555 or the Building Department in your Municipality and ask to speak to a Building Inspector.

For problems associated with equipment, maintenance and / or unbalanced water chemistry, contact a local swimming pool company or your equipment manufacturer.

A full copy of *Ontario Regulation 565 - Public Pools and Ontario Regulation 428/05 – Public Spas*, can be obtained from www.elaws.gov.on.ca or by contacting the Middlesex-London Health Unit at 519-663-5317 extension 2300.

Public Health Inspectors in Ontario have the duty and authority to inspect public pools and public spas at least two (2) times per year and no less than once every three (3) months to ensure compliance with *Ontario Regulation 565 - Public Pools and Ontario Regulation 428/05 – Public Spas*. Inspectors are there to ensure operators maintain public pools and spas in a safe and sanitary manner. In addition, you may contact your inspector at any time to discuss regulatory requirements. You do not need to consult your inspector before closing your pool or spa if a potential health hazard exists. It is better to be safe than sorry.

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CLASSIFICATION OF PUBLIC POOLS

A **Class A** pool is:

- a pool to which the general public is admitted;
- a pool operated in conjunction with, or as a part, of the program of a YMCA or similar institution or an educational, instructional, physical fitness or athletic institution supported in whole, or in part, by public funds, or
- a pool operated on the premises of a recreational camp, for use by campers and their visitors and camp personnel.

A **Class B** pool is one which is operated on the premises of or in conjunction with:

- an apartment building / condominium / co-operative / facility with more than five dwelling units or suites;
- a mobile home park or nurses' residence;
- a community of more than 5 single-family residences;
- a hotel / motel;
- a campground;
- a club;
- a day nursery, day camp or an establishment for the care or treatment of persons who are ill, infirm or aged or for persons in custodial care, or
- a pool other than a Class A pool, that is not exempt from the provisions of this Regulation.

NOTE: Class A and B public indoor swimming pools will be inspected at least four (4) times per year.

Class A and B public outdoor swimming pools will be inspected at least two (2) times per year, during the outdoor swimming season.

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REQUIREMENT TO NOTIFY WHEN A PUBLIC POOL IS OPENING OR RE-OPENING

Before a public pool is put into use after construction or alteration, the owner or operator must notify the Middlesex-London Health Unit in writing of:

- the building permit number issued for the construction or alteration of the pool;
- the date of opening / re-opening;
- the name and address of the operator, or
- whether the pool is intended to be operated as a Class A or a Class B pool **(see Appendix A)**.

A person who plans to open or reopen a pool for use as a public pool after construction or alteration shall not open or reopen the pool without first obtaining:

- permission in writing from the Medical Officer of Health, and
- a supply of chemicals and testing devices that are sufficient to operate the pool.

Before a public pool is put back into use after any closure of the pool (without alteration) of more than four (4) weeks duration, the owner or operator must notify the Middlesex-London Health Unit in writing of:

- the date of opening/re-opening;
- the name and address of the operator, and
- whether the pool is intended to be operated as a Class A or a Class B pool **(see Appendix B)**.

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POOL SAFETY

It is the responsibility of every owner and operator of a public pool to maintain the pool and its equipment in a safe and sanitary condition. There are many factors contributing to pool safety and they are not limited to the sections outlined below.

Accessibility

The pool must remain inaccessible to people who are not involved with its maintenance and operation during hours when it is not intended to be open to the public.

Therefore:

- the pool must be enclosed by lockable door or barriers that are capable of preventing access to the pool deck, and
- the pool fence/barrier must have a gate with a self-closing device and self-latching device

NOTE: For additional guidance, see Ontario Building Code, City of London Fencing By-law or other applicable codes/by-laws.

Black Disc and Water Clarity

- A black disc 15 cm in diameter on a white background is affixed to the bottom of the pool at its deepest point.
- The pool water is of a clarity to permit a black disc 15 cm in diameter on a white background located at the bottom of the pool at its deepest point to be clearly visible from any point on the deck 9 m away from the disc.

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Safety Equipment

The operator of the swimming pool must ensure that the following safety equipment listed in the table below is present at the pool at all times.

Table 1. Safety Equipment

Equipment	Additional Details
One (1) electrically insulated or non-conducting reaching pole that is at least 3.65 m long.	An operator will be deemed to be in compliance if they have a reaching pole constructed of fiberglass and meeting the length requirement.
Two (2) buoyant throwing aids with a six (6) mm diameter rope that is at least half the width of the pool plus three meters.	
One (1) spine board.	The spine board must have a minimum of four (4) straps and be capable of holding a person rigid without breaking or causing any further injury.
One (1) first aid box that is fully stocked (see Appendix E (Pool)).	If a public spa is located in the same enclosure, ensure the first aid box is stocked in accordance with the <i>Public Spa Regulation</i> as it requires additional items.

Emergency Telephone

- **Class A pool** – An Emergency Telephone must be provided. The Emergency Telephone must be easily accessible from the deck and tested daily before the pool is opened for use.
- **Class B pool** – A Telephone for Emergency Use is accessible no farther than 30 m from the pool and must be tested daily before the pool is opened for use.

NOTE: As cellular telephones can be easily moved away from the Emergency Telephone instructions required under Section 19.3; may experience reception problems at any time; or can run out of power quickly if not fully charged, a cellular telephone cannot be used as an Emergency Telephone (Class A) or Telephone for Emergency Use (Class B) at a public pool.

The following methods are acceptable to determine if the Emergency Telephone (Class A) or the Telephone for Emergency Use (Class B) is operational:

- 1) If connected directly to a private security system, the pool operator must allow the telephone to connect through and talk, person-to-person, with the individual monitoring the telephone line.
- 2) If connected to the local telephone utility and the 911 service would be used, the pool operator must dial and connect through to an outside local number other than the 911 service.

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- 3) If connected through to another internal extension, such as the front desk of a hotel or health club, etc, there must be some mechanism in place at the other extension to alert the person receiving the call that there is an emergency call from the pool telephone.

Ground Fault Circuit Interruptor (GFCI) and De-energizer

- Test buttons associated with the GFCI and de-energizing devices must be tested daily before the pool is opened for use.

Pool Water Outlet Covers

- All pool water outlet covers must be checked at least once every 30 days and if any of the pool's water outlet covers is found to be loose or missing, the pool must be **closed** until the cover is repaired or replaced.

NOTE: The pool must also be closed if the water outlet cover is broken, as the risk of entrapment is increased when the integrity of the water outlet cover is compromised.

Chemical Safety and Storage

- Provisions must be made for the safe storage and handling of all chemicals required for pool operation.

NOTE: A hazardous situation can be created when chemicals come into contact with small amounts of water, heat or flames, or due to improper mixing or contamination. Pool chemicals that are not stored appropriately can result in fires, toxic vapours or other incidents. Ensure manufacturers' instructions are followed when storing and handling chemicals.

Ensure that personal protective equipment is available (gloves, respirators, apron, etc) and that Material Safety Data Sheets (MSDS) for all chemicals used are located on site. Do not eat, drink or smoke in the chemical storage area.

NOTE: NEVER ADD WATER TO CHEMICALS, ALWAYS ADD CHEMICALS TO WATER. (This note does not preclude the owner / operator from any other requirements as set out by any other Act and / or Regulations.)

Reasons for Pool Closure

- As it is the responsibility of every public pool operator to maintain the pool and its equipment in a safe and sanitary condition, ensure that the pool is closed to bathers at any time that an unsafe or unsanitary condition may be present. Please see **Appendix D** for examples of reasons to close the pool. Remember that if a potential health hazard exists at the pool facility, the owner / operator has an obligation to close the pool to protect bathers.

Written Emergency and Operational Procedures

- Every owner / operator must ensure that written emergency and operational procedures and instructions are available at the pool, to be implemented in the event of an emergency, incident or injury. **Appendix C** is an example of what emergency and operational procedures should include.

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POOL OPERATION

Every owner / operator of a public pool must ensure that:

- all components of the recirculation system of the pool are maintained in proper working order;
- all surfaces of the pool deck and walls are maintained in a sanitary condition and free from hazards (**see Appendix F**);
- the pool water is maintained free from visible matter that may be hazardous to the health or safety of bathers;
- the submerged surfaces of the pool are white or light in colour, except for markings for safety and competition purposes;
- the perimeter drain of the pool is kept free from debris;
- exposed piping (within the pool enclosure, inside the structure of the pool and inside appurtenant structures to the pool) are identified by:
 - colour coding with coloured bands at least 2.5 cm wide spaced along the piping at intervals not greater than 1.2 m, or
 - painting the entire outer surface of the piping, in accordance with the following code:
 - chlorine – yellow**
 - potable water – green;**
- where changing rooms, toilets and shower facilities are provided for the pool, they are available for bathers use before entering the deck;
- where toilets are provided, they are supplied with toilet paper;
- the pool, the deck and where provided, the dressing and locker rooms, toilets, showers and connecting corridors are:
 - kept clean, disinfected and free from slipperiness;
 - free of hazardous obstructions, and
 - ventilated to remove odours.

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POOL CHEMISTRY

Required Pool Water Chemical Levels

The table below outlines the chemistry requirements for pool water to ensure adequate disinfection is achieved in order to kill microorganisms that may cause recreational water illnesses.

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Table 2. Required Water Chemical Levels

Chemical Test	Required level
Free available chlorine (unstabilized pool)	At least 0.5 mg/L (ppm)
Free available chlorine (stabilized pool)	At least 1.0 mg/L (ppm)
Bromine	At least 2.0 mg/L (ppm)
pH	7.2 – 7.8
Total alkalinity	Minimum of 80 mg/L (ppm)
Cyanuric acid (stabilized pool – uncovered outdoors)	No greater than 60 mg/L (ppm)

NOTE: mg/L = milligrams per litre; ppm = parts per million

It is important to ensure that pH, total alkalinity, and cyanuric acid levels are within the required ranges, as the ability of chlorine/bromine to disinfect pool water decreases when the levels of these chemicals are too high or too low. Please see **Appendix H** for water chemistry terms and common problems associated with chemical levels that are not maintained within appropriate parameters.

Pool Fouling

In the case of a pool fouling incident, see **Appendix G** as higher levels of chlorine / bromine may be required for longer periods of time in order to kill microorganisms such as *Cryptosporidium*.

Daily Recording

It is the responsibility of every operator to maintain and sign daily records that outline the following: (**See Tests and Inspections section below**)

- free available chlorine (FAC) level;
- total chlorine level, or if bromine is used; total bromine level;
- pH value;
- number of bathers;
- Make-up Water meter reading;
- any emergencies, rescues or breakdowns of equipment;
- the time of day when the Ground Fault Circuit Interrupter (GFCI) and Emergency Telephone, or Telephone for Emergency Use are checked.

Tests and Inspections

In order to comply with *Ontario Regulation 565 – Public Pools*, the following tests and inspections must be conducted by the owner / operator of a public pool. See **Appendix I (Pool)** for an easy-to-use Public Pool Records Log sheet.

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Table 3. Test and Inspections

Tests, Inspections and Recording	Frequency
Free available chlorine/total bromine	Daily; one half (½) hour before pool opening and every two (2) hours thereafter
pH	
Emergency Telephone	Daily before opening
Ground Fault Circuit Interruptor (GFCI) test buttons activated	
Safety equipment and first aid box	
Water clarity (black disc must be clearly visible from nine (9) metres away) (also ensure to check throughout day)	
Total chlorine (FAC + combined chlorine)	
Total number of bathers	Daily
Make-up Water meter reading (20 L/bather/day minimum)	
Any emergencies, rescue, breakdowns of equipment	
Cyanuric acid (if applicable – ie. outdoor chlorinated pools)	Weekly
Water outlet covers (must also be signed by person who did inspection)	Once every 30 days
Skimmer lids, water outlet covers checked	Recommended daily or weekly
Total alkalinity	

NOTE: Where pool water is controlled by automatic sensing devices and the pH value and the disinfectant residual (free available chlorine / bromine) are automatically determined and displayed, or continuously recorded, the operator shall, at least once every day, manually determine the following to ensure that the automatic sensing devices continue to work properly:

- the pH value;
- the free available, and
- the total chlorine residual or the bromine residual.

NOTE: All pool records must be kept for at least one year, be signed by the operator who conducted the tests and inspections, and be available for the Public Health Inspector when requested.

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Test Kit and Testing Method

A fully equipped test kit must have the appropriate chemical reagents to test for the following:

- Free Available Chlorine (FAC);
- total chlorine or total bromine;
- total alkalinity;
- pH, and
- cyanuric acid (if used).

The diethyl-p-phenylene diamine (DPD) method is required for measuring FAC as it is unaffected by the presence of chloramines in pool water. The orthotolidine (OTO) method **is not permitted** for chlorine readings as it is adversely affected by the presence of chloramines in pool water.

NOTE: Chemical reagents can lose their strength over time, therefore it is recommended that chemical reagents be replaced as necessary and as per manufacturer's recommendations. The chemical reagents must also be stored as per manufacturer's instructions as extreme weather changes can also affect the effectiveness of the chemical reagents.

How to Take Pool Water Sample

Be sure to always follow the manufacturer's instructions. The following tips are useful in ensuring accurate readings:

- The pool water sample should be taken away from the jets.
- The pool water sample should be taken from 18 inches below the surface.
- The chemical reagent is to be added with the reagent bottle held completely upside down (straight up and down).
- Ensure the correct number of chemical reagent drops are added to the water sample, so that accurate readings are obtained.

Make-up Water

To reduce the effects of total dissolved solids, *Ontario Regulation 565 - Public Pools* requires that **20 litres of Make-up Water per bather per day** must be added to pool water each operating day, as determined by a water meter. This Make-up Water must be added from an external source and be free from contamination that may put the health of bathers at risk. The pool and its recirculation system must also be separate from the make-up water supply and from the sewer or drainage system into which the Make-up Water drains.

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Water Meter

Every owner and operator shall ensure that a water meter is provided that registers the volume of all Make-up Water that is added to the pool.

Make-up Water can be calculated using the following formula:

$$\text{Make-up Water} = 20 \text{ L} \times \text{average daily number of bathers}$$

Example:

What volume of Make-up Water must be added to a swimming pool after 65 bathers visited over the course of the day?

Step 1: Use formula

Make-up Water = 20 L x number of bathers

Step 2: Fill in values

Make-up Water = 20 L x 65

Make-up Water = 1,300 Liters

Step 3: Divide by 3.785 to convert the volume in liters to the volume in gallons

Make-up Water = 1,300 / 3.785

Make-up Water = 343.46 gallons

After 65 bathers have visited the swimming pool on a given day, 343.46 gallons of fresh potable water must be added to the swimming pool. For instance, if the water meter displayed 123,456 gallons at the beginning of the day, the water meter should indicate 123,799.46 (123,456 + 343.46) gallons after fresh water has been added to the pool.

Turnover Rate

See *Ontario Building Code* and the *Ontario Regulation 565 – Public Pools for the most current requirements*

Turnover Rate is the time it takes (in hours) for the circulation system to move an amount of water equivalent to the volume of the pool through the filtration system one time. Once processed through the filter, water is disinfected and then returned to the pool.

Turnover Rate is calculated using the following formula:

$$\text{Turnover Rate (hours)} = \text{Pool Volume} \div \text{Flow Rate} \div 60 \text{ minutes / hour}$$

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Pool volume is calculated using the following formula:

$$\text{Volume} = \text{Length} \times \text{Width} \times \text{Average Depth}$$

Flow Rate

Flow Rate is measured with a flow meter and is calculated using the following formula:

$$\text{Flow rate} = \text{Pool volume} \div \text{Turnover rate} \div 60 \text{ minutes / hour}$$

Example:

What is the volume of a rectangular pool with a length of 46 feet, a width of 24 feet, and a depth ranging from four (4) feet in the shallow end to eight (8) feet in the deep end?

Step 1: Use formula

$$\text{Volume} = \text{Length} \times \text{Width} \times \text{Average Depth}$$

Step 2: Fill in values

$$\begin{aligned} \text{Volume} &= 46 \times 24 \times (4+8 / 2) \\ &= 6,624 \text{ feet cubed} \end{aligned}$$

Step 3) Multiply by 7.5 to convert volume in feet cubed to volume in gallons

$$\begin{aligned} \text{Volume} &= 6,624 \times 7.5 \\ &= 49,680 \text{ gallons} \end{aligned}$$

Example:

A 275,000 gallon pool needs to turn over the water every six (6) hours. What flow rate is required for this turn over rate?

Step 1: Use formula

$$\text{Turnover Rate (hours)} = \text{Pool Volume} / \text{Flow Rate} / 60 \text{ minutes/ hour}$$

Step 2: Fill in values

$$6 \text{ hours} = 275,000 \text{ gallons} / \text{Flow Rate} / 60 \text{ minutes / hour}$$

Step 3: Solve for “Flow Rate”

$$\begin{aligned} \text{Flow Rate} &= 275,000 \text{ gallons} / 60 \text{ minutes / hour} \times 6 \text{ hours} \\ &= 763.89 \text{ gallons/minute} \end{aligned}$$

The flow meter should be indicating that 763.89 gallons of water are passing through the circulation system every minute.

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Flow Meter

Public pools and spas must be equipped with a flow measuring device that displays the rate of water flowing through the circulation system. Flow Meters must be properly sized for the design flow rate (the flow rate necessary to meet all operational requirements). Ensure to consult your local Building Department as to where the Flow Meter must be installed. The Flow Meter is an important device designed to help the owner or operator determine whether the appropriate pool water turnover rate is being achieved. The flow meter gauge must be located in a manner that permits easy observation.

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SIGNAGE

See **Appendix J (Pool)** for the required signage and the corresponding section of the *Regulation*, which indicates proper lettering size guidelines and the locations where it must be posted.

General Pool Rules Sign

The following signage must be posted in no fewer than two (2) places at the pool:

- i No person infected with a communicable disease or having open sores on his or her body shall enter the pool.
- ii No person shall bring a glass container onto the deck or into the pool.
- iii No person shall pollute the water in the pool in any manner and that spitting, spouting of water and blowing the nose in the pool or on the deck are prohibited.
- iv No person shall engage in boisterous play in or about the pool.
- v The maximum number of bathers permitted on the deck and in the pool at any time is _____. (Always 10 if the pool is greater than 93 square metres and is unsupervised regardless of the actual calculation).
- vi The emergency telephone is located _____.

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Calculating the Maximum Bather Load

The surface area of the pool water needs to be calculated before the calculation can be done to determine the maximum number of bathers that are allowed to be within the pool enclosure. The shallow and deep areas of the pool must be calculated separately.

- The shallow area of the pool is the part that is 1.35 metres (4.5 feet) or less in depth.
- The deep area of the pool is the part that is greater than 1.35 metres (4.5 feet) in depth.

Formula for Maximum Bather Load:

$$\text{Maximum Bather Load} = \frac{\text{Area of deep end}}{2.5} + \frac{\text{Area of shallow end}}{1.4} = \text{___ people}$$

Example:

The width of the swimming pool is 10 metres and the length is 15 metres. The deep area (more than 1.35 m in depth) and shallow area (1.35 m or less in depth) of the pool have the following dimensions:

Deep area: Length: 8 metres
 Width: 10 metres
Shallow area: Length: 7 metres
 Width: 10 metres

Calculations:

Step 1: Use formula to calculate surface areas for deep and shallow ends

Surface Area = Length X Width

Step 2: Use formula to determine bather load

$$\text{Maximum Bather Load} = \frac{\text{Area of deep end}}{2.5} + \frac{\text{Area of shallow end}}{1.4} = \text{___ people}$$

Step 3: Fill in values

$$\begin{aligned} \text{Maximum Bather Load} &= \frac{(8 \times 10)}{.5} + \frac{(7 \times 10)}{1.4} = 32 + 50 \\ &= 82 \text{ bathers} \end{aligned}$$

NOTE: For unsupervised Class B pools that have a pool water surface area of greater than 93 square metres, the bather load must always be 10, regardless of the calculation.

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Shower Sign

Many bathers do not realize the important role showering before swimming plays in helping to keep pool water clean. Adequate showering by bathers helps remove contaminants including dead skin, dirt, sweat, body oils and feces; it is also crucial to preventing the spread of microorganisms, including *Cryptosporidium* (a microscopic parasite not quickly killed with conventional levels of chlorine). Educating bathers about the importance of showering can go a long way to helping prevent recreational water illnesses.


The following notice must be posted at the entrance of each shower area **and** at every entrance to the deck used by bathers:

Each bather shall take a shower using warm water and soap and thoroughly rinse off all soap before entering or re-entering the deck.

Emergency Telephone Sign

A sign including the information outlined below must be posted at the location of the Emergency Telephone or the Telephone for Emergency Use:

EMERGENCY TELEPHONE INSTRUCTIONS

 **DIAL 911**

1. **REMAIN CALM. SPEAK CLEARLY. ANSWER.**
2. This pool is located at: _____
(address)
3. Enter the property off of: _____
(special directions to the pool)
4. State the type of emergency (drowning, electrical, spinal injury).
5. Remain on the line until the operator tells you to hang up.
6. When finished calling 911 – call: _____
(Owner/Operator information)

PLEASE NOTE: If the Emergency Telephone is connected to a reception desk, directly connected to emergency services, **or** you must dial a number to get an outside line, indicate this information prominently on the sign.

No Diving Sign

If the maximum pool water depth is less than 2.50 m, one of the following signs must be posted with lettering at least 15 cm high in a conspicuous location easily visible to bathers.

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CAUTION – AVOID DEEP DIVES

or

SHALLOW WATER – NO DIVING

Deck Markings

On the deck of the pool, the water depths must be clearly marked in figures not less than 10 cm high indicating:

- deep points;
- shallow points, and
- breaks between gentle and steep bottom slopes.

In addition, the words **DEEP AREA** and **SHALLOW AREA** must be marked in figures not less than 10 cm high at their appropriate locations on the deck.

Unsupervised Pool Sign

Only **Class B** public pools that are not operated in conjunction with a day care facility or day camp may be unsupervised, provided that the appropriate signs are posted.

Class B pools that have a water surface area of **less than 93 square metres**, must have the following notice posted in lettering no less than 25 mm high within the pool enclosure in a conspicuous location easily visible to bathers:

CAUTION

THIS POOL IS UNSUPERVISED. BATHERS UNDER TWELVE YEARS OF AGE ARE NOT ALLOWED WITHIN THE POOL ENCLOSURE UNLESS ACCOMPANIED BY A PARENT OR HIS OR HER AGENT WHO IS NOT LESS THAN SIXTEEN YEARS OF AGE.

Class B pools that have a water surface area of **greater than 93 square metres**, must have the following notice posted in lettering no less than 25 mm high, within the pool enclosure in a conspicuous location easily visible to bathers:

CAUTION

THIS POOL IS UNSUPERVISED. BATHERS UNDER TWELVE YEARS OF AGE ARE NOT ALLOWED WITHIN THE POOL ENCLOSURE UNLESS ACCOMPANIED BY A PARENT OR HIS OR HER AGENT WHO IS NOT LESS THAN SIXTEEN YEARS OF AGE. THE TOTAL NUMBER OF BATHERS ON THE DECK AND IN THE POOL SHALL NOT EXCEED TEN.

Public Pool Operators Guide



LIFEGUARD QUALIFICATIONS

Lifeguards must:

- be at least 16 years of age;
- be the holder of a current National Lifeguard Service (NLS) Lifeguard Certificate that is dated not more than two (2) years prior to the date of which he or she is on duty;
- have the NLS Lifeguard Certificate, or a copy of the certificate, available at the pool while on duty;
- be appropriately attired so they are readily identifiable, and
- be trained in all emergency and operational procedures.

Assistant Lifeguards must:

- be at least 16 years of age;
- be the holder of a current Royal Life Saving Society Canada Bronze Cross or Award of Distinction that is dated not more than two (2) years prior to the date of which he or she is on duty;
- have the certificate, or a copy of the certificate, available at the pool while on duty;
- be trained in all emergency and operational procedures, and
- be appropriately attired so they are readily identifiable.

Public Pool Operators Guide

**Table 4. Supervision Requirements
Minimum Numbers of Lifeguards and Assistant Lifeguards for a
Public Pool with a Water Surface Area of 500 Square Metres or Less
(Other than a Wave Action Pool)**

Where there are assistant lifeguards and lifeguards on duty		Where there are only lifeguards on duty	
Number of bathers on the deck and in the pool	Minimum number of lifeguards and assistant lifeguards on duty	Number of bathers on the deck and in the pool	Minimum number of lifeguards on duty
0 – 30	1	0 – 30	1
31 – 100	2	31 – 125	2
101 – 200	3	126 – 250	3
201 – 300	4	251 – 400	4
300 or more	One additional lifeguard or assistant lifeguard for each additional 100 bathers or fraction thereof	400 or more	One additional lifeguard for each additional 150 bathers or fraction thereof

NOTE: The number of assistant lifeguards must not exceed the number of lifeguards.

At least one person 16 years of age or over on duty at every Class A pool or on the premises and within call shall be the holder of:

- a National Lifeguard Service (NLS) Lifeguard Certificate that is dated not more than two (2) years prior to the date of which he or she is on duty; or
- a current first-aid certificate,

and have the certificate or a copy of the certificate available at the pool while on duty.

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For the purposes of the *Regulation*, “first aid certificate” means:

- St. John Ambulance Emergency, Standard or Advanced First-aid Certificate that is dated not more than three (3) years prior to the date on which the holder is on duty;
- Canadian Red Cross Society’s Emergency, Standard or Advanced First-aid Certificate that is dated not more than three (3) years prior to the date on which the holder is on duty;
- Royal Life Saving Society Canada’s Aquatic Emergency Care Certificate that is dated not more than three (3) years prior to the date on which the holder is on duty;
- Canadian Ski Patrol’s Qualified Member or First-aid Certification prior to its date of expiry, or
- a certificate that the Minister considers equivalent to a qualification referred to in the *Regulation*.

Exemptions from the Safety Supervision Requirement

- Class B pools, other than a pool operated in conjunction with a daycare facility or day camp, that have a water surface area of **93 square metres or less** is exempt from the safety supervision requirements provided the appropriate notice is posted (see **Appendix J** for exact wording).
- Class B pools, other than a pool operated in conjunction with a daycare facility or day camp, that have a water surface area **greater than 93 square metres**, and where the number of bathers does NOT exceed 10, is exempt from the safety supervision requirements, provided that the appropriate notice is posted (see **Appendix J** for exact wording).

Control Stations

- A Class A pool, other than a pool installed at a recreational camp, must be equipped with:
 - at least one (1) control station if the pool area is greater than 150 square metres, but not greater than 230 square metres, and
 - at least two (2) control stations if the pool area is greater than 230 square metres.
- A control station must be:
 - an elevated platform or chair not less than 1.8 m above the water surface;
 - securely positioned while in use and located at the side of the pool so as to permit an unobstructed view of the pool bottom area, and
 - restricted to the exclusive use of lifeguards and assistant lifeguards.

Public Pool Operators Guide



PUBLIC POOL ADMISSION STANDARDS

Admission Standards for Public Pools were developed after a coroner's investigation into a drowning that occurred when a group of young children attending a supervised public pool were unsupervised by their attendants. The investigation noted that had the attendants stayed and supervised the young children, the drowning might not have occurred. The *Admission Standards* were developed to prevent such tragedies in the future. The Ministry of Health and Long-Term Care has requested public health units, like the Middlesex-London Health Unit, to encourage all public pool owners and operators to consider adopting these standards at their recreational water facilities.

Please consider these standards as a tool to assist you in preventing injuries or drownings at your pool. It is recommended these standards be posted or that your bathers be advised of them through written handouts.

Also consider the intent of these recommendations. Parental supervision is key to assisting the lifeguard staff in ensuring safety within a pool enclosure.

Owners and operators of Class B Public Pools, who have decided not to provide lifeguards, should strongly consider advising their users to limit the number of bathers that a parent, or his or her agent, can take into the pool enclosure.

Public Pool Operators Guide

An example of the Admission Standards has been provided below.

IMPORTANT NOTICE ADMISSION STANDARDS FOR PUBLIC POOLS

Admission Standards for Public Pools were developed by the **Office of the Chief Coroner** to assist lifeguards and assistant lifeguards in maintaining adequate surveillance over the whereabouts and the activities of young bathers while they are inside the pool enclosure. The Ministry of Health and Long-Term Care and the Middlesex-London Health Unit strongly support these recommendations for the purposes of preventing injuries and fatalities.

- **Children under the age of 10 years who are non-swimmers must be accompanied by a parent or guardian who is at least 12 years of age and responsible for their direct supervision. The ratio of non-swimmers to parent or guardian may be a maximum of four (4) bathers to one parent or guardian (4:1). The ratio of non-swimmers to parent or guardian may be increased to a maximum of eight (8) bathers to one parent or guardian (8:1) if life jackets are worn by all non-swimmers in their charge.**
- **Children under the age of 10 who are swimmers (able to demonstrate comfort in the water and pass the facility swim test) may be admitted to the swimming pool unaccompanied.**
- **Children under the age of six (6) years may not be admitted to the swimming pool unless they are accompanied by a parent or guardian who is responsible for their direct supervision, with a maximum of two (2) children for each parent or guardian.**
- **Guardians or group leaders are responsible for the children in their care while in the facility and must directly supervise the children at all times.**
- **Guardians or group leaders should be at least 12 years of age.**
- **Ratios of instructors/lifeguards to bathers must also be maintained as per Regulation 565.**

Public Pool Operators Guide

IMPORTANT NOTICE ADMISSION STANDARDS FOR CLASS B UNSUPERVISED PUBLIC POOLS

Admission Standards for Public Pools were developed by the **Office of the Chief Coroner** to assist lifeguards and assistant lifeguards in maintaining adequate surveillance over the whereabouts and the activities of young bathers while they are inside the pool enclosure. The Ministry of Health and Long-Term Care and the Middlesex-London Health Unit strongly support applying these recommendations for the purposes of preventing injuries and fatalities at Class B Unsupervised Public Pools.

- **The ratio of bathers under twelve years of age to parent or guardian may be a maximum of four (4) bathers to one parent or guardian (4:1). The ratio of bathers under twelve years of age to parent or guardian may be increased to a maximum of eight (8) bathers to one parent or guardian (8:1) if life jackets are worn by all bathers in their charge.**
- **Children under the age of six (6) years may not be admitted to the swimming pool unless they are accompanied by a parent or guardian who is responsible for their direct supervision, with a maximum of two (2) children for each parent or guardian.**
- **Guardians or group leaders are responsible for the children in their care while in the facility and must directly supervise the children at all times.**
- **Guardians or group leaders must be at least 16 years of age.**

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CONCLUSION

Many bathers enjoy spending their leisure time at swimming pools to relax or to exercise. Therefore, it is important for operators to protect their bathers and to apply proactive water quality and safety management.

Public Health Inspectors (PHI) act as educators as well as enforcers. They provide operators with information about public health and safety issues, while enforcing the requirements of the *Health Protection and Promotion Act* and *Ontario Regulation 565 – Public Pools*. As PHIs conduct their inspections without advance notice to pool owners / operators, it is not unusual for them to observe deficiencies during routine inspections. However, when deficiencies occur, it is the responsibility of the owner / operator to take interim measures to prevent any risk to the public and then to rectify the problem(s) as soon as reasonably possible.

Finally, remember that keeping a facility in great condition is a demanding job. Take pride in your work and feel good about yourself and the great work you do.



PUBLIC SPA — OPERATORS GUIDE

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Public Spa Operators Guide



PUBLIC SPA DEFINITION

A **public spa** means a hydro-massage pool containing an artificial body of water that is intended primarily for therapeutic or recreational use. Public spas are not drained, cleaned or refilled before use by each individual who uses them, and they include:

- hydrojets;
- air induction bubbles;
- current flow, or
- a combination of any of these over the majority of the spa area.

The Public Spas Regulation applies to a public spa operated on the premises of, or in conjunction with:

- an apartment building of more than five (5) units;
- a mobile home park, or nurses' residence,
- a community of more than five (5) single-family residences;
- a hotel / motel;
- a campground;
- a club;
- a condominium / co-operative of more than five (5) units, or
- a day nursery, day camp or institution for the care or treatment of persons who are ill, infirm or aged, or for persons in custodial care.

Public Spa Operators Guide



REQUIREMENT TO NOTIFY WHEN A PUBLIC SPA IS OPENING OR RE-OPENING

Before a public spa is put into use after construction or alteration, the owner or operator must notify the Middlesex-London Health Unit in writing of:

- the building permit number issued for the construction or alteration of the spa;
- whether or not all the preparations necessary to operate the spa in accordance with the *Regulation* have been completed;
- the date that the spa is intended to be opened or reopened for use, and
- the owner and / or operator's name and address (**see Appendix A**).

The owner and / or operator of a spa that will open / re-open after construction or alteration must obtain permission in writing from the Middlesex-London Health Unit before opening / re-opening it.

Before a public spa is put back into use after being closed (without any alteration) for more than four (4) weeks duration, the owner and / or operator must notify the Middlesex-London Health Unit in writing of:

- the date that the spa is intended to be reopened for use, and
- the owner and / or operator's name and address (**see Appendix B**).

Public Spa Operators Guide



SPA SAFETY AND OPERATION

Spa Operation

It is the responsibility of every owner and operator of a spa to maintain the spa and its equipment in a safe and sanitary condition.

Every owner and / or operator of a spa must ensure that:

- all components of the spa and its equipment are maintained in proper working order;
- all emergency equipment is maintained in proper working order;
- all surfaces of the spa deck and walls are maintained in a sanitary condition and free from potential hazards (**see Appendix F**);
- there is no carpeting or other water retentive material in any area that may become wet during daily use;
- no person brings glass onto the deck or in the spa;
- no food or beverage except water is supplied or consumed in the spa or on the deck;
- dressing rooms, washrooms and shower facilities, if provided, are available for use of bathers and maintained in a sanitary condition free from potential hazards, and
- the spa is inaccessible to people who are not involved with its operation, inspection or maintenance when it is not intended to be open for use.

Water Temperature

Every owner and / or operator of a spa must ensure that the spa water heater is equipped with a tamper proof upper limit cut off switch that limits the maximum temperature of the spa water to 40°C and is independent of the spa's water temperature thermostat.

Timing Device

Every owner and operator of a spa containing hydro-massage jet fittings must ensure that the spa is equipped with a timing device that:

- controls the period of operation of the jet pump;

Public Spa Operators Guide

- can be set to a maximum of 15 minutes, and
- is located where it requires the bather to exit the spa to reset it.

Suction System

Every owner and operator must ensure that each suction system(s) (pumps) that serves the spa is equipped with a vacuum relief mechanism that includes the following:

- a vacuum release system;
- a vacuum limit system, or
- an engineered system designed, constructed and installed to conform to good engineering practice appropriate to the circumstances.

NOTE: Entrapment hazards related to suction systems include; hair entrapment, limb and body suction entrapment, mechanical entrapment and evisceration / disembowelment. The Ontario Chief Coroner made a number of safety recommendations following a coroners' investigation in response to the tragic entrapment death of a youth in a public spa. The intent of this section is to prevent future entrapment deaths. The operator must be knowledgeable and capable of testing the vacuum relief mechanism.

Clock

Every owner and / or operator of a spa must ensure that a clock is installed in a conspicuous location that can be viewed from anywhere in the public spa.

Steps

If steps are provided for the entry and exit of the spa, the owner / operator must ensure they are equipped with:

- a handrail;
- a non-slip surface on their treads, and
- a band of contrasting colour along the entire juncture of the side and top of the edges of each step.

Emergency Telephone

It is the responsibility of every owner to ensure there is a land line Emergency Telephone, located within 30 metres of the spa that connects directly to an emergency service (not 911, as it is required to be tested daily) or the local telephone utility.

NOTE: As cellular telephones can be easily moved away from the emergency telephone instructions required under Section 13 (3); may experience reception problems at any time; and can run out of power quickly if not fully charged, a cellular telephone cannot be used as an Emergency Telephone at public spa.

The following methods are acceptable to determine if the Emergency Telephone is operational:

- 1) If connected directly to a private security system, the spa operator must allow the telephone to connect through and talk, person-to-person, with the individual monitoring the telephone line.

Public Spa Operators Guide

- 2) If connected to the local telephone utility and the 911 service would be used, the spa operator must dial and connect through to an outside local number other than the 911 service.
- 3) If connected through to another internal extension, such as the front desk of a hotel or health club, etc, there must be some mechanism in place at the other extension to alert the person receiving the call that it is an emergency call from the spa telephone.

Emergency Stop Button

Every owner and / or operator of a spa must ensure that **all pumps** are capable of being deactivated by an emergency stop button that:

- is separate from the spa's timing device;
- is located within the immediate vicinity of the spa, and
- activates an audible and visual signal when used.

NOTE: The intent of the Emergency Stop button is to quickly alert others of an emergency at the spa.

First Aid Box

Every owner and / or operator of a spa must ensure a fully stocked first aid box (**see Appendix E (Spa)**) is provided in a convenient location for emergency use.

Other Emergency Equipment

The owner and operator of a spa that has an inner horizontal dimension greater than three (3) metres in any direction must ensure that the following safety equipment is present at the spa at all times:

Table 5. Other Emergency Equipment

Equipment	Additional Details
One (1) electrically insulated or non-conducting reaching pole that is at least 3.65 m long.	An operator will be deemed to be in compliance if they have a reaching pole constructed of fiberglass and meeting the length requirement.
One (1) buoyant throwing aid with a six (6) mm diameter rope that is at least half the width of the spa plus three (3) metres.	
One (1) spine board or other device	The spine board must include a minimum of four (4) straps and be capable of holding a person rigid without breaking or causing any other injury.

NOTE: If safety equipment is provided for a public pool that operates in the immediate vicinity of a public spa, an owner and / or operator is not required to provide duplicate emergency equipment, as long as these items are conveniently located for emergency use at the spa.

Public Spa Operators Guide

Chemical Safety and Storage

Provisions must be made for the safe storage and handling of all chemicals required for spa operation.

NOTE: A hazardous situation can be created when chemicals come into contact with small amounts of water, heat or flames, or due to improper mixing or contamination. Chemicals for spa use that are not stored appropriately can result in fires, toxic vapours or other incidents. Ensure manufacturers' instructions are followed when storing and handling chemicals.

Ensure that personal protective equipment is available (gloves, respirators, apron, etc) and that Material Safety Data Sheets (MSDS) for all chemicals that are used are located on site. Do not eat, drink or smoke in the chemical storage area.

NOTE: NEVER ADD WATER TO CHEMICALS, ALWAYS ADD CHEMICALS TO WATER. (This note does not preclude the owner/operator from any other requirements as set out by any other Act and/or Regulations.)

Reasons for Closing a Spa

As it is the responsibility of every owner and operator of a public spa to maintain the spa and its equipment in a safe and sanitary condition, ensure that the spa is closed to bathers at any time that an unsafe or unsanitary condition may be present. Please see **Appendix D** for examples of reasons to close the spa.

Written Emergency and Operational Procedures

Although it is not outlined in the *Public Spas Regulation*, it is highly recommended that every owner and / or operator ensure that written emergency and operational procedures and instructions are available at the spa, to be implemented in the event of an emergency, incident or injury.

Operational procedures and instructions are also helpful for the daily, weekly and monthly operation of the spa. Procedures should be detailed and provide clear step-by-step instruction for necessary action(s) to be taken (**see Appendix C**).

Designation of Trained Operator

Every spa owner must designate an operator who is trained in public spa operation and maintenance, filtration systems, water chemistry and all relevant safety and emergency procedures. There are numerous courses available to instruct operators about spa operation and spa chemistry.

Every operator must ensure that the filtration system and the chemical feeders are in continuous operation without regard for the daily use period except during:

- maintenance or repairs that require the filtration system or chemical feeders to be stopped;
- draining of the public spa;
- backwashing of filters, or
- times when the public spa is closed, if it remains closed for a period of seven (7) or more consecutive days.

Public Spa Operators Guide



SPA CHEMISTRY

Required Spa Water Chemical Levels

The warmer temperature of spa water has an effect on water chemistry balance. When water temperature increases, scale formation is more likely on spa equipment, leading to shorter filter runs, shorter life span of equipment and decreased circulation. The table below outlines the chemistry requirements for spa water to ensure that adequate disinfection levels are achieved to kill microorganisms that may cause recreational water illnesses.

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Table 6. Required Spa Water Chemical Levels

Chemical Test	Required level
Free available chlorine	5.0 –10.0 mg/L (ppm)
Bromine	5.0 –10.0 mg/L (ppm)
pH	7.2 – 7.8
Total alkalinity	Minimum of 80 mg/L (ppm)
Cyanuric acid (outdoor spa – uncovered)	No greater than 150 mg/L (ppm)

NOTE: milligrams per litre (mg/L) = parts per million (ppm)

NOTE: Every owner and / or operator shall ensure that cyanurate stabilizer is **NOT** added to a public spa if the spa and its deck are totally or partially covered by a roof.

It is important to ensure that pH, total alkalinity, and cyanuric acid levels are within required ranges, as the ability of chlorine / bromine to disinfect spa water decreases when the levels of these chemicals are too high or too low.

Please see **Appendix H** for water chemistry terms and common problems that can occur when water chemistry levels are not kept within appropriate parameters.

Spa Fouling

Due to the smaller volume of water in a spa, it may not be practical to use the Centers for Disease Control and Prevention procedures for a pool fouling. The following is recommended in the event of a spa fouling:

- Evacuate bathers and close spa.
- Shut of recirculation system and chemical feed system.
- Remove as much of the waste as possible.
- Drain the spa completely.
- Clean and disinfect the interior of the spa (ensuring to reach all surfaces for adequate contact time – see manufacturers instructions).
- Clean and sanitize equipment with 100 mg/L (ppm) chlorine.
- Refill the spa and restart recirculation system.
- Adjust free available chlorine/bromine to 10 mg/L (ppm).
- Balance water chemistry.
- Re-open spa.

Tests and Inspections

The following tests and inspections must be conducted by the owner and / or operator of a public spa. All spa records must be kept for at least one (1) year, be signed by the operator and be available for the Public Health Inspector upon request. See **Appendix I (Spa)** for an easy-to-use Public Spa Records Log sheet.

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Table 7. Tests and Inspections

Tests, Inspections and Recording	Frequency
Emergency Telephone	Daily before opening (include time at which test was done)
Ground Fault Circuit Interrupter (GFCI) test buttons activated	
Free available chlorine/total bromine residual	One half-hour before pool opening and every hour thereafter or one half-hour before pool opening and one additional time if an automatic sensing device is used.
pH value	
Total alkalinity	
Water clarity – the lowest water outlet drain must be visible when spa water is in a non-turbulent state	
Water temperature	
Oxidation reduction potential (ORP) value (if spa is equipped with an automatic sensing device)	
Estimated number of bather-uses per day	
Water Replacement meter reading (if spa is more than 4,000 litres in volume)	
Whether the public spa was drained, inspected and refilled in accordance to with the <i>Regulation</i>	
Type and amount of any chemicals added manually to the public spa water	
Any emergencies, rescues, equipment breakdowns	
Cyanuric acid (if used)	Not less than once a week
Gravity and suction outlet covers	At least once every 30 operating days
Emergency stop button	
Vacuum release mechanisms	
Safety equipment and first aid box	Recommended daily
Skimmer lids, outlet covers checked	

NOTE: A spa owner or operator who drains a public spa must, before refilling the spa, inspect all parts of the spa including but not limited to:

- drain covers;
- suction fittings;
- all emergency equipment within the spa, and
- ensure that they are properly secured and operational.

It is also important to ensure that these inspections are recorded in the log book after the spa is refilled.

PUBLIC SPA DEFINITION
REQUIREMENT TO NOTIFY
SPA SAFETY AND OPERATION
SPA CHEMISTRY
SIGNAGE
SPA CONCLUSION

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Test Kit and Testing Method

A fully equipped test kit must have the appropriate chemical reagents to test for the following:

- free available chlorine or total bromine;
- total chlorine;
- total alkalinity;
- pH, and
- cyanuric acid (if used).

The diethyl-p-phenylene diamine (DPD) method is required as it is capable of measuring both FAC and Total Chlorine. The orthotolidine (OTO) method is not permitted for chlorine readings as it is adversely affected by the presence of chloramines in spa water (measures total chlorine only).

How to Take a Spa Water Sample

Always follow the manufacturer's instructions. The following tips are useful in ensuring that accurate readings are obtained:

- The spa water sample should be taken away from the jets.
- The spa water sample should be taken from 18 inches below the water's surface.
- The chemical reagent is to be added with the reagent bottle held completely upside down (straight up and down).
- Ensure the correct number of chemical reagent drops are added to the water sample, so that accurate readings are obtained.

Replacing Chemical Reagents

NOTE: Chemical reagents can lose their strength over time, therefore it is recommended that chemical reagents be replaced as necessary and as per manufacturer's recommendations. The chemical reagents must also be stored as per manufacturer's instructions as extreme weather changes can also affect the effectiveness of the chemical reagents.

Water Replacement

If the volume of a public spa exceeds 4,000 litres, the owner and / or operator must add Replacement Water to the spa **each operating day** in an amount that is **not less than 30 litres per bather, to a maximum of 20 per cent of the total spa volume**. For this purpose the public spa must be equipped with a water meter capable of measuring the volume of Replacement Water added to the public spa (see example below in water meter section).

Calculating How Often to Drain and Refill Spa (if under 4000 L)

If the spa volume is less than 4,000 litres, the operator must drain to waste and refill the total volume of water in the public spa in accordance with the following formula:

$$WRI=V/(10\times U)$$

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where,

WRI is the maximum number of operating days that may elapse between drainings, rounded up to a whole number,

V is the total spa volume in litres, and

U is the total estimated number of bathers per day.

NOTE: This Replacement Water must be added from an external source and must be free from contamination in order to protect bathers' health.

Water Meter

A public spa must be equipped with a water meter capable of measuring the volume of Replacement Water added to the public spa if the spa volume exceeds 4,000 litres. **It is important to know the exact volume of your spa since a maximum of 20 percent of the total spa volume can be added as Replacement Water per day, regardless what the usage has been throughout the day.**

Replacement Water can be calculated using the following formula:

$$\text{Replacement Water} = 30 \text{ L} \times \text{bather use}$$

Example:

What volume of Replacement Water must be added to a public spa after 65 bather uses?

Step 1: Use formula

Replacement Water = 30 L x daily number of bather uses

Step 2: Fill in values

$$\begin{aligned} \text{Replacement Water} &= 30 \text{ L} \times 65 \\ &= 1,950 \text{ Liters} \end{aligned}$$

Step 3: Divide by 3.785 to convert volume in liters to volume in gallons

$$\begin{aligned} \text{Replacement Water} &= 1,950 / 3.785 \\ &= 515.19 \text{ gallons} \end{aligned}$$

After 65 bather uses of the public spa in one (1) day, 515.19 gallons of fresh potable water must be added to the spa pool. For instance, if the water meter displayed 123,456 gallons at the beginning of the day, the water meter should indicate 123,971.19 (123456 + 515.19) gallons after fresh water has been added to the spa.

Flow Meter

Public spas must be equipped with a flow measuring device that displays the rate of water flowing through the circulation system. Flow meters must be properly sized for the design flow rate (the flow rate necessary to meet all operational requirements). Ensure to consult your local Building Department to determine where the flow meter must be installed. The flow meter is an important device to assist owners and / or operators to determine whether the appropriate turnover rate for spa water has been achieved. The flow meter gauge must be located in a manner that permits easy observation.

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SIGNAGE (APPENDIX J (SPA))

General Spa Rules Sign

Every owner and / or operator of a spa must ensure that the following sign is posted in a conspicuous place **at each entrance to the public spa**:

CAUTION

Children under the age of 12 are not allowed in the spa unless supervised by a person who is 16 years of age or older.

Pregnant women and persons with known health or medical conditions should consult with a physician before using a spa.

Do not use the spa if you have an open sore or rash, or are experiencing nausea, vomiting or diarrhea.

Overexposure may cause fainting. 10 to 15 minutes may be excessive for some individuals. Cool down periodically and leave the spa if nausea or dizziness occurs.

Enter and exit the spa slowly, to prevent slipping.

Do not play or swim near drains or suction devices. Your body, body parts, hair, jewelry and other objects may become trapped and cause injury or drowning. People with long hair should be especially careful.

Do not enter or remain in a spa if a drain cover or suction fitting is loose, broken or missing. Immediately notify the spa operator.

No food or beverage except water is permitted within the deck or spa. No glass containers of any kind are permitted within the deck or spa.

Maximum bather capacity _____ bathers

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Maximum Bather Capacity

Every owner and / or operator of a spa must ensure that the maximum number of people permitted to use a public spa at any time is the lesser of:

- one person per square metre of surface water area, or
- the maximum bather load identified by the manufacturer of the spa.

NOTE: maximum bather capacity must be included on the General Spa Rules sign shown above.

Shower Sign

Many bathers do not realize the important role that showering before entering a spa plays in keeping spa water clean. Adequate showering by bathers helps remove contaminants including dead skin, dirt, sweat, body oils and feces; it is also crucial to preventing the spread of microorganisms, including *Cryptosporidium* (a microscopic parasite not quickly killed with conventional levels of chlorine). Educating bathers about the importance of showering can go a long way to helping to prevent recreational water illnesses.

The following notice must be posted at the entrance of each shower area **and** at every entrance to the deck used by bathers:

Each bather shall take a cleansing shower using soap and warm water and thoroughly rinse off all soap before entering the deck.

Timing Device Sign

Every owner and / or operator of a spa must ensure that a notice is posted at the timing device that identifies it as a timing device.

Emergency Stop Button Sign

Every owner/operator must ensure that the following notice is posted above the emergency stop button:

In the event of emergency push emergency stop button and use emergency phone. An audible and visual signal will activate.

Emergency Telephone Sign and Instructions

Every owner and / or operator of a spa must ensure that a sign indicating the **location of the Emergency Telephone** is posted in a conspicuous location, near the entrance to the public spa.

Further, the owner and / or operator must ensure that a sign identifying the telephone as an Emergency Telephone is posted at the Emergency Telephone that:

- lists the names, telephone numbers and addresses of people who are available for resuscitation, medical aid and fire services, and
- lists the full name and address of the public spa facility location and all of the facility's emergency telephone numbers.

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EMERGENCY TELEPHONE INSTRUCTIONS

 **DIAL 911**

1. **REMAIN CALM. SPEAK CLEARLY. ANSWER.**
2. This pool is located at: _____
(address)
3. Enter the property off of: _____
(special directions to the pool)
4. State the type of emergency (drowning, electrical, spinal injury).
5. Remain on the line until the operator tells you to hang up.
6. When finished calling 911 – call: _____
(Owner/Operator information)

PLEASE NOTE: If the Emergency Telephone is connected to a reception desk, directly connected to emergency services, **or** you must dial a number to get an outside line, indicate this information prominently on the sign.

Deck Markings

Every owner and / or operator of a spa that has an inner horizontal dimension greater than three (3) metres in any direction must also ensure that:

- **Deck markings** in figures not less than 100 millimetres high must indicate the water depths at:
 - the deep points;
 - the breaks between gentle and steep bottom slopes, and
 - the shallow points.

The words **DEEP AREA** and **SHALLOW AREA** (if applicable) must be displayed at the appropriate locations on the deck.

Public Spa Operators Guide



SPA CONCLUSION

Many bathers enjoy spending their leisure time in spas to relax or get treatment. Therefore, it is important for operators to protect their bathers and to apply proactive water quality and safety management. If spas are not properly maintained, they can pose the risk of communicable disease, serious injury, or death.

Public Health Inspectors (PHI) act as educators as well as enforcers. They provide operators with information about public health and safety issues, while enforcing the requirements of the *Health Protection and Promotion Act* and *Ontario Regulation 428/05 – Public Spas*. As PHIs conduct their inspections without advance notice to pool owners / operators, it is not unusual for them to observe deficiencies during routine inspections. However, when deficiencies occur, it is the responsibility of the owner / operator to take interim measures to prevent any risk to the public and then to rectify the problem(s) as soon as reasonably possible.

Finally, remember that keeping a spa facility in great condition is a demanding job. Take pride in your work and feel good about yourself and the great work you do.

Public Pool and Public Spa Operators Guide



APPENDIX A: NOTIFICATION OF OPENING PUBLIC POOL / SPA (New or Altered)

Name of Pool / Spa: _____

Pool / Spa Address: _____

Pool / Spa Phone #: _____

Pool is: Indoor Spa is: Indoor
 Outdoor Outdoor
 Class A
 Class B

Owner Name: _____

Owner Address: _____

Owner Phone #: _____

Operator Name: _____

Operator Address: _____

Operator Phone #: _____

Planned Opening Date: _____

Building Permit #: _____

Please fill in all information above
and return this form 14 days prior to the planned opening date

Return this form to the Middlesex-London Health Unit
50 King Street, London, ON N6A 5L7
or by fax 519-663-9276

London Office
50 King St., London, ON N6A 5L7
tel: (519) 663-5317 • fax: (519) 663-9581

www.healthunit.com
health@mlhu.on.ca

Strathroy Office - Kenwick Mall
51 Front St. E., Strathroy, ON N7G 1Y5
tel: (519) 245-3230 • fax: (519) 245-4772

Public Pool and Public Spa Operators Guide



APPENDIX B: NOTIFICATION OF RE-OPENING PUBLIC POOL / SPA

(Re-opening after 4 weeks or more of closure)

Name of Pool / Spa: _____

Pool / Spa Address: _____

Pool / Spa Phone #: _____

Pool is: Indoor
 Outdoor
 Class A
 Class B

Spa is: Indoor
 Outdoor

Owner Name: _____

Owner Address: _____

Owner Phone #: _____

Operator Name: _____

Operator Address: _____

Operator Phone #: _____

Planned Opening Date: _____

Please fill in all information above
and return this form 14 days prior to the planned opening date

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Public Pool and Public Spa Operators Guide



APPENDIX A: NOTIFICATION OF OPENING PUBLIC POOL / SPA (New or Altered)

Name of Pool / Spa: _____

Pool / Spa Address: _____

Pool / Spa Phone #: _____

Pool is: Indoor Spa is: Indoor
 Outdoor Outdoor
 Class A
 Class B

Owner Name: _____

Owner Address: _____

Owner Phone #: _____

Operator Name: _____

Operator Address: _____

Operator Phone #: _____

Planned Opening Date: _____

Building Permit #: _____

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APPENDIX B: NOTIFICATION OF RE-OPENING PUBLIC POOL / SPA

(Re-opening after 4 weeks or more of closure)

Name of Pool / Spa: _____

Pool / Spa Address: _____

Pool / Spa Phone #: _____

Pool is: Indoor
 Outdoor
 Class A
 Class B

Spa is: Indoor
 Outdoor

Owner Name: _____

Owner Address: _____

Owner Phone #: _____

Operator Name: _____

Operator Address: _____

Operator Phone #: _____

Planned Opening Date: _____

Please fill in all information above
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Public Pool and Public Spa Operators Guide



APPENDIX A: NOTIFICATION OF OPENING PUBLIC POOL / SPA (New or Altered)

Name of Pool / Spa: _____

Pool / Spa Address: _____

Pool / Spa Phone #: _____

Pool is: Indoor
 Outdoor
 Class A
 Class B

Spa is: Indoor
 Outdoor

Owner Name: _____

Owner Address: _____

Owner Phone #: _____

Operator Name: _____

Operator Address: _____

Operator Phone #: _____

Planned Opening Date: _____

Building Permit #: _____

Please fill in all information above
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APPENDIX B: NOTIFICATION OF RE-OPENING PUBLIC POOL / SPA

(Re-opening after 4 weeks or more of closure)

Name of Pool / Spa: _____

Pool / Spa Address: _____

Pool / Spa Phone #: _____

Pool is: Indoor
 Outdoor
 Class A
 Class B

Spa is: Indoor
 Outdoor

Owner Name: _____

Owner Address: _____

Owner Phone #: _____

Operator Name: _____

Operator Address: _____

Operator Phone #: _____

Planned Opening Date: _____

Please fill in all information above
and return this form 14 days prior to the planned opening date

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Public Pool and Public Spa Operators Guide

APPENDIX C: WRITTEN EMERGENCY AND OPERATIONAL PROCEDURES

Section 17 (1) of Public Pools Regulation and highly recommended for Public Spas

According to the *Public Pools Regulation*, “Every owner and every operator shall ensure that there are **written emergency and operation procedures and instructions** at the pool to be implemented in the event of an emergency, accident or injury in the pool and that all lifeguards and assistant lifeguards are trained in the emergency and operational procedures.”

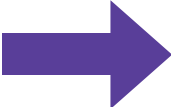
Written emergency and operational procedures and instructions are to be posted and / or provided in conspicuous locations to ensure quick response times. Procedures should be detailed and provide clear, step-by-step instructions for necessary action(s) to be taken.

Emergency Procedures

Written emergency procedures should be posted in a conspicuous location near the Emergency Telephone (or Telephone for Emergency Use for Class “B” pools) and / or lifeguard station. The following information should be included in the written emergency procedures document:

- 1) Actions to be taken if an injury occurs on the deck.
- 2) Actions to be taken if an injury occurs in the pool.
- 3) Instructions on how to use the Emergency Telephone:

EMERGENCY TELEPHONE INSTRUCTIONS

 **DIAL 911**

1. **REMAIN CALM. SPEAK CLEARLY. ANSWER.**
2. This pool is located at: _____
(address)
3. Enter the property off of: _____
(special directions to the pool)
4. State the type of emergency (drowning, electrical, spinal injury).
5. Remain on the line until the operator tells you to hang up.
6. When finished calling 911 – call: _____
(Owner/Operator information)

PLEASE NOTE: If the Emergency Telephone is connected to a reception desk, directly connected to emergency services, **or** you must dial a number to get an outside line, indicate this information prominently on the sign.

- 4) A policy for recording incident reports.
- 5) Actions to be taken in the event of a pool fouling.

Public Pool and Public Spa Operators Guide

Operational Procedures

Written operational procedures should be made available on site for owner / operator use. Written operational procedures, including routine and emergency operations, should be described in a clear, step-by-step way. It is also highly recommended that all switches, valves, direction of water flow, etc are clearly labeled. The following are only a few examples of information that should be included in the written operational procedures document:

- Instructions on how to safely operate recirculation and electrical systems.
- Instructions on how to test emergency equipment (including Ground Fault Circuit Interruptors (GFCI), etc)
- Instructions on how and when to backwash filter.
- Instructions on how to read and record values displayed on Flow Meter and Water Meter.

The operational instructions for all pieces of equipment are to be included in the written Operational Procedure Manual.

Public Pool and Public Spa Operators Guide

APPENDIX D: REASONS FOR POOL AND / OR SPA CLOSURES

It is the responsibility of the owner and / or operator to ensure that the pool / spa and its equipment are maintained in a safe and sanitary manner. When these conditions are not met, bathers are at an increased risk for injury or illness. Therefore, the owner and / or operator must take action, including closing the pool / spa in some cases, to eliminate the risk. The following is a list of possible risks and the concerns associated with each, that should result in a pool or spa closure:

Risk or Concern	Consequence(s)
Broken, loose, or missing gravity or suction outlet	Physical body / limb entrapment, disembowelment, potential drowning.
Cloudy water: Pool - the black disc is not clearly visible from any point on the deck 9 m away from the disk. Spa - the lowest water outlet drain is not clearly visible when the spa is in a non-turbulent state.	Fellow bathers may not see a bather in distress at the bottom of the pool/spa. Could also indicate unbalanced water chemistry.
No disinfectant or insufficient levels of disinfectant	Recreational water illnesses (e.g. eye, skin, mucus membrane irritation / infection, diarrhea, vomiting, etc.)
No disinfecting chemicals available on the premises	Recreational water illnesses (see above)
Missing / incomplete or inadequate test kit	Recreational water illnesses (see above) Inability to test whether chemicals are at appropriate levels
Circulation system not working	Recreational water illnesses (see above)
Pool / spa fouling	Recreational water illnesses (see above)
Emergency Telephone (Telephone for Emergency Use in Class B pools) not working	Inability to get needed help
Ground Fault Circuit Interruptor (GFCI) button not working / cannot be tested to verify that it is working	Potential electrical hazard
Emergency equipment deficient / missing / not present	Difficulty in getting a injured bather the lifesaving assistance they need
Spas - vacuum release / relief system not working / cannot be tested to verify that it is working	Entrapment, potential drowning
Emergency stop button not working properly	May hinder rescue attempt or cause injury to be more severe
Pools – inadequate lifeguard supervision	Lifesaving help delayed
Other deficiencies deemed to be a health hazard	Could lead to injury, illness, death

NOTE: The public pool or spa must be made inaccessible to bathers when the pool or spa is closed.

Public Pool and Public Spa Operators Guide

APPENDIX E (POOL): PUBLIC POOL FIRST AID BOX CHECKLIST

- A current copy of the St. John Ambulance or the Canadian Red Cross Society First Aid manual
- 12 safety pins
- 24 adhesive dressings individually wrapped
- 12 sterile gauze pads, each 75 mm²
- 4 rolls of 50 mm gauze bandage
- 4 rolls of 100 mm gauze bandage
- 4 sterile surgical pads individually wrapped
- 6 triangular bandages
- 2 rolls of splint padding
- 1 roll-up splint

Dates kit was checked: _____

- APPENDIX A
- APPENDIX B
- APPENDIX C
- APPENDIX D
- APPENDIX E
- APPENDIX F
- APPENDIX G
- APPENDIX H
- APPENDIX I
- APPENDIX J
- GLOSSARY
- CONVERSION CHART

Public Pool and Public Spa Operators Guide

APPENDIX E (SPA): PUBLIC SPA FIRST AID CHECK LIST

- Current copy of the St. John Ambulance or Canadian Red Cross Society First Aid manual
- 12 safety pins
- 24 adhesive dressings, individually wrapped
- 12 sterile gauze pads, each 75 mm²
- 4 rolls of 50 mm gauze bandage
- 4 rolls of 100 mm gauze bandage
- 4 sterile surgical pads, individually wrapped
- 6 triangular bandages
- 2 rolls of splint padding
- 1 roll-up splint
- 1 pair of scissors
- 2 pairs of non-permeable gloves
- 1 resuscitation pocket mask

Dates kit was checked: _____

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Public Pool and Public Spa Operators Guide

APPENDIX F: SANITATION AND PREVENTION OF COMMUNICABLE DISEASES

All owners and / or operators must maintain the pool / spa, its equipment, sanitary facilities, deck/walls in a safe and sanitary condition and free from hazards. These requirements are stated in Sections 6(2)(a), 6(4)(b), 6(4)(i) and 11(1)(a) of the Public Pools Regulation and Sections 5(1)(a) and 5(1)(d) of the Public Spas Regulation.

Recreational water facilities must be maintained in a safe and sanitary manner in order to protect bathers from potential exposure to various communicable diseases. Exposure to disease-causing organisms, known as pathogens, can come from a variety of sources in a recreational water environment. Pathogens include bacteria, viruses, fungi and parasites. Contaminated pool / spa water can contain pathogens such as *Pseudomonas*, which can cause oozing rashes (including “hot tub rash” from spas) and painful ear infections, and *Staphylococcus aureus*, which can cause skin, ear and wound infections. Ingestion of fecal matter in water contaminated with pathogens such as *E. coli*, *Shigella*, *Norovirus*, *Giardia* and *Cryptosporidium* (*Crypto*) can cause symptoms such as diarrhea and cramps. In fact, according to the U.S. Centres for Disease Control (CDC), diarrhea is one of the most commonly reported recreational water illness. On average, people have about 0.14 grams of feces on their bottoms which can contaminate recreational water (CDC). When people are ill with diarrhea, their stool can contain millions of potential pathogens. Therefore, bathers who are ill with diarrhea can easily contaminate pools / spas. Vomiting accidents can also potentially result in the spread of *Norovirus* when ingested. Poor sanitation of decks / floors can potentially cause skin infections which can result in Athlete’s Foot and Plantar’s Warts. Blood-to-blood contact can occur when bathers have open wounds, which are susceptible to pathogens such as *Hepatitis B*, *Hepatitis C* and *HIV*. The consequences of exposure to pathogens can be potentially life-threatening, particularly for vulnerable individuals, including pregnant women, children and individuals with compromised immune systems.

When the pool / spa water system becomes contaminated, bacteria are capable of creating biofilms, a dynamic, organized, cooperative community of bacteria. Biofilms are characterized by a slime layer, which the bacteria embed themselves in to protect themselves from disinfectants and can be very difficult to eliminate. In fact, biofilm bacteria can survive a disinfectant level 100 times higher in concentration before achieving the same kill as required by bacteria that float freely in the water (CDC). Biofilm pathogens can harbour in filters or plumbing. According to the CDC, an estimated 65% of human bacterial infections in aquatic environments involve biofilms. Therefore, it is very important to ensure that pool / spa water surfaces, filters, plumbing and fixtures are thoroughly cleaned on a regular basis.

Communicable diseases acquired from a recreational water facility can be prevented through adequate disinfection of pool / spa water in accordance with the *Public Pools and Public Spas Regulations*, ensuring the sanitation of pool / spa decks, walls, floors, equipment and sanitary facilities, and regular maintenance of the pool / spa water system.

Disinfectants in pool / spa water can kill the pathogens but it takes time. In properly

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disinfected pools, chlorine kills most pathogens in less than an hour. However, chlorine takes longer to kill some pathogens such as Crypto, which can survive for days - even in a properly disinfected pool (CDC). This means that without your attention and diligence, illnesses can spread in even well-maintained pools.

Other important factors that can also help to minimize the spread of communicable diseases in a public pool / spa include:

- Ensuring bathers with obvious signs of communicable disease / illness and / or open sores / wounds do not enter the water.
- Ensuring bathers shower before entering water.
- Ensuring an adequate amount of make up water is added daily per bather.

Routine practices

Procedures should be in place to ensure all staff are aware of first aid procedures and routine practices related to cleaning up feces, blood or body fluids and to seek medical advice following an exposure incident. Routine practices involve the use of barriers and practices to prevent exposure to potential infections. These practices assume that all blood, body fluids and fecal substances are potential sources of infection. Routine practices include:

- handwashing;
- proper use of personal protective equipment such as gloves, and
- routine cleaning and disinfecting

Disinfecting solutions

A common disinfecting solution used for routine disinfection of surfaces and for surfaces contaminated with blood, body substances / fluids or other contamination is a solution combining water and household bleach.

Directions:

- mix 9 equal parts of water with 1 part bleach
- avoid skin contact with solution

Since a bleach-water solution can lose its strength quickly, it should be mixed fresh before each clean-up to ensure it is effective.

Clean-up Procedure Using Bleach Solution on Body Fluid Spills

- 1) Block the area of the spill off from patrons, until the clean-up and disinfection is complete.
- 2) Put on disposable latex gloves to prevent contamination of hands.
- 3) Wipe up the spill using paper towels or absorbent material and place these in a plastic garbage bag.
- 4) Gently pour bleach solution onto all contaminated areas of the surface.
- 5) Let the bleach solution remain on the contaminated area for 20 minutes.
- 6) Wipe up the remaining bleach solution.
- 7) All non-disposable cleaning materials used such as mops and scrub brushes should be disinfected by saturating with bleach solution and air dried.

Public Pool and Public Spa Operators Guide

- 8) Remove gloves and place in plastic garbage bag with all soiled cleaning materials.
- 9) Double-bag and securely tie-up plastic garbage bags and discard.
- 10) Thoroughly wash hands with soap and water.

Centers for Disease Control and Prevention. *Cleaning up body fluid spills on pool surfaces*. Retrieved from <http://www.cdc.gov/healthywater/swimming/pools/cleaning-body-fluid-spills.html/>

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APPENDIX G: POOL FOULING

***These procedures are better suited for a public pool. It may be more advantageous to fully drain, sanitize, refill and rebalance water chemistry for a public spa due to lower volume of water*

Formed Stool

- 1) Direct everyone to **leave** the pool. If you have multiple pools that use the same filter—all pools will have to be shut down. Do not allow anyone to enter the contaminated pool until all decontamination procedures are completed.
- 2) Remove as much of the fecal material as possible using a net or scoop and dispose of in a sanitary manner. Clean and disinfect the net or scoop (e.g. after cleaning, leave the net or scoop immersed in the pool during disinfection).

VACUUMING STOOL FROM THE POOL IS NOT RECOMMENDED

- 3) Raise the chlorine to 2 ppm (if less than 2 ppm), and ensure the water's pH is between 7.2 - 7.5 and temperature is about 77°F (25°C). The chlorine concentration was selected to keep the pool closure time to approximately 30 minutes. Other concentrations or closure times can be used as long as the CT (Contact Time) inactivation value is kept constant (see Figure 1).
- 4) Maintain the chlorine concentration at 2 ppm, pH 7.2 - 7.5, for at least 25 minutes before reopening the pool. Local Regulations may require higher chlorine levels in the presence of chlorine stabilizers, which are known to slow disinfection. Ensure that the filtration system is operating while the pool reaches and maintains the proper free chlorine concentration during the disinfection process.

Note: * Establish a fecal accident log. Document each fecal accident by recording date and time of the event, whether it involved formed stool or diarrhea, and the free chlorine and pH levels at the time of observation of the event. Before reopening the pool, record the free chlorine and pH levels, the procedures followed in response to the fecal accident (including the process used to increase chlorine levels if necessary), and the contact time.

Figure 1-Giardia Inactivation for a Formed-Stool Fecal Accident

Chlorine Level (ppm)	Disinfection Time*
1.0	45 minutes
2.0	25 minutes
3.0	19 minutes

** These closure times are based on 99.9% inactivation of Giardia cysts by chlorine at pH 7.5, 77°F (25°C). The closure times were derived from the U.S. Environmental Protection Agency (EPA) Disinfection Profiling and Benchmarking Guidance Manual. These closure times do not take into account "dead spots" and other areas of poor pool water mixing.*

Public Pool and Public Spa Operators Guide

Centers for Disease Control and Prevention. (2012, November 15). Fecal incident response recommendation for pool staff. Retrieved from <http://www.cdc.gov/healthywater/pdf/swimming/pools/fecal-incident-response-recommendations.pdf>

Pool Fouling – Diarrhea

- 1) Direct everyone to **leave** the pool. If you have multiple pools that use the same filter—all pools will have to be shut down. Do not allow anyone to enter the contaminated pool until all decontamination procedures are completed.
- 2) Remove as much of the fecal material as possible using a net or scoop and dispose of in a sanitary manner. Clean and disinfect the net or scoop (e.g. after cleaning, leave the net or scoop immersed in the pool during disinfection).
- 3) Raise the free chlorine concentration to 20 ppm (mg/L) and maintain the water's pH between 7.2 - 7.5 and temperature at about 77°F (25°C). The chlorine and pH should remain at these levels for at least 12.75 hours to achieve the CT (Contact Time) inactivation value of 15,300 minutes. Cryptosporidium CT values are based on the inactivation of 99.9% of oocysts. Laboratory studies indicate that this level of Cryptosporidium inactivation cannot be reached in the presence of 50 ppm chlorine stabilizer (cyanuric acid), even after 24 hours at 40 ppm free available chlorine, pH 6.5 at a temperature of about 77°F (25°C).
- 4) Ensure that the filtration system is operating while the pool reaches and maintains the proper chlorine level during disinfection. If necessary, before attempting the hyperchlorination of any pool, consult an aquatics professional to determine the feasibility, the most optimal and practical methods, and needed safety considerations.
- 5) Backwash the filter thoroughly after reaching the CT value. Be sure the effluent is discharged directly to waste and accordance with local Regulations. Do not return the backwash through the filter. Where appropriate, replace the filter media.
- 6) Allow swimmers back into the pool after the required CT value has been achieved and the chlorine level has been returned to the normal operating range allowed by the state or local regulatory authority

Figure 2-Crypto Inactivation Time for a Diarrheal Fecal Accident

Chlorine Level (ppm)	Disinfection Time*†
1.0	15,300 minutes (255 hours)
10	1,530 minutes (25.5 hours)
20	765 minutes (12.75 hours)

† At pH 7.5, 77°F (25°C).

* Centers for Disease Control and Prevention. (2010, November 15). Fecal incident response recommendations for pool staff. Retrieved from <http://www.cdc.gov/healthywater/pdf/swimming/pools/fecal-incident-response-recommendations.pdf>

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APPENDIX H: WATER CHEMISTRY

Chlorine

Chlorine is one of the two approved sanitizers for public pool and spa water in Ontario. Many factors can affect the level of free available chlorine (FAC), including bather load, sunlight, dirt and debris, and germs brought in by birds, animals and bathers. Stabilized chlorine is used for outdoor pools and spas to slow down the breakdown of chlorine via ultraviolet rays from the sun. Combined chlorine (also known as chloramine) is produced when FAC has been used to kill germs and oxidize organic material. This combined, or used, chlorine is a poor disinfectant, achieving only a 2% bacterial kill rate relative to FAC. In addition, combined chlorine is also associated with a “chlorine odour,” eye, skin and mucous membrane irritation.

Bromine

Bromine is another common pool water disinfectant, and the only alternative to chlorine allowed in Ontario. Like chlorine, bromine is a disinfectant and oxidizer; however, unlike chlorine, combined bromines (bromamines) are also excellent sanitizers. Like chlorine, bromine is also destroyed by sunlight.

pH

The pH of pool water can affect water clarity, the efficiency of chlorine, bather comfort, and the life span of the pool equipment. The following table illustrates the problems that can be experienced when the pH is too high or too low.

Table 2. Issues Associated with Improper pH Levels

pH Too High	pH Too Low
Scaling of pool equipment, reducing circulation, etc.	Corrosive to pool equipment (e.g. pitting of concrete, stripped metals)
Eye and skin irritations	Eye and skin irritations
Decreased chlorine efficiency	
Cloudy water	

Total Alkalinity

Total alkalinity is a measurement of the alkaline materials in the water which prevent pH from fluctuating, it acts as a buffer. The ideal range for total alkalinity is 80 – 120 mg/L (ppm). When total alkalinity is high, it may cause the pH to drift to 8.4. When total alkalinity is low, pH bounce may occur, causing pH to change rapidly and frequently with the addition of small amounts of chemical. The following table illustrates the issues associated with high and low total alkalinity levels.

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Table 3. Issues Associated with High and Low Total Alkalinity Levels

High Total Alkalinity	Low Total Alkalinity
Water becomes scale forming	Corrosion of equipment and plaster
Short filter runs/shorter filter life span	Pitting of concrete
Reduced circulation	Eye irritation
Cloudy pool	Staining

Cyanuric Acid (Stabilizer)

Cyanuric acid is available in liquid and crystalline powder, and helps reduce the speed at which chlorine escapes into the air from outdoor pool water. The cyanuric acid “stabilizes” the chlorine by holding it in solution. It is important to ensure that the cyanuric acid level does not go above 60 mg/L (ppm) in pool water and 150 mg/L (ppm) in spa water. Levels of between 100-150 mg/L (ppm) in pool water will cause chlorine lock or overstabilization. When this happens, the chlorine is not able to disinfect the water. Chlorine which is stabilized is not as efficient at oxidation. Therefore, the minimum level of free available “stabilized” chlorine must be higher than that of free available “unstabilized” chlorine.

Cyanuric acid levels build up in the water over the season, and the only way to bring the level of cyanuric acid down is dilution. Therefore, do not use stabilized chlorine for shock chlorination and always ensure that plenty of make-up water is added daily or based on the equation for a spa that is under 4000 L in volume.

Total Dissolved Solids

Total dissolved solids are the total amount of dissolved material in the water. The dissolved material can include minerals, salts, organics, chemicals added to pool water, dust, dirt, bather load, and any other material that is water soluble. The evaporation of water will also increase the level of total dissolved solids in the pool/spa. High total dissolved solids can reduce the activity of pool/spa chemicals such as, disinfectants, algacides and other chemicals, and contributes to turbidity (cloudiness) of the water.

To reduce the effects of total dissolved solids, a public pool/spa operator must meet make up water requirements

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APPENDIX I (POOL): PUBLIC POOL RECORDS LOG

To be inspected/tested ½ hour before opening

	Time	Operator's Signature		Time	Operator's Signature
Emergency Telephone properly functioning			Ground Fault Detector/ De-energizing Device Activated		
Non-conducting Reaching Pole present			Buoyant Throwing Aids 2 present with adequate rope		
Spine Board present with 4 straps			First Aid Kit Securely latches closed		
Pool Rules Notices 2 posted Unsupervised Sign posted - if applicable			Self-Latching Gate Securely latches closed		

Public Pool – Bi-Hourly Water Chemistry and Clarity Tests

	½ hour before opening	am/ pm	am/ pm	am/ pm	am/ pm	am/ pm	am/ pm	am/ pm	am/ pm	am/ pm	am/ pm	am/ pm	am/ pm
Total Alkalinity Minimum 80 ppm													
pH 7.2-7.8													
Free Available Chlorine Unstabilized- at least 0.5 ppm Stabilized- at least 1.0 ppm													
Total Chlorine/ Total Bromine Bromine- at least 2.0 ppm													
Water Clarity Black disc visible from 9 m													
Total # of Bathers													
Operator's Initials													
Water Meter Reading		Records of any emergencies, rescues, or breakdowns of equipment, maintenance, etc.:											
Reading at beginning of day	Reading at end of day												
Make-up Water Added 20 L per bather/day													
Weekly Cyanuric Acid Test for Stabilized Pool: (sign and date) (maximum 60 ppm)													
Monthly Water Outlet Cover Security Test: (sign and date)													

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APPENDIX I (SPA): PUBLIC SPA RECORDS LOG													
To be inspected/tested ½ hour before opening													
	Time	Operator's Signature		Time	Operator's Signature								
Emergency Telephone properly functioning			Ground Fault Circuit Interrupter activated										
Caution Notices 2 posted			First Aid Kit fully stocked										
Non-conducting Reaching Pole Present			Buoyant Throwing Aid present with adequate rope										
Spine Board present with 4 straps			Self-Latching Gate securely latches closed										
Public Spa – Hourly Water Chemistry and Clarity Tests													
	½ hour before opening	am/pm	am/pm	am/pm	am/pm	am/pm	am/pm	am/pm	am/pm	am/pm	am/pm	am/pm	am/pm
Total Alkalinity Minimum 80 ppm													
pH 7.2-7.8													
Free Available Chlorine/ Total Bromine 5-10 ppm													
Oxidation Reduction Potential Minimum 700 mV													
Water Clarity Lowest water outlet drain visible in non-turbulent state													
Total # of Bathers													
Water Temperature (maximum 40°C)													
Operator's Initials													
Water Meter Reading			Records of any emergencies, rescues, or breakdowns of equipment, maintenance, date of spa drain and refill, type and amount of any chemicals added manually, etc.:										
Reading at beginning of day	Reading at end of day												
Make-up Water Added 30 L per bather/day (spa volume exceeds 4000 L)													
After drain and refill, inspections of drain covers, suction fittings, emergency equipment within spa: (date and sign) (secure and operational)													
Weekly Cyanuric Acid Test for Stabilized Spa: (sign and date) (maximum 150 ppm)													
Monthly Water Outlet Cover Security Test: (sign and date)													
Monthly Emergency Stop Button Test: (sign and date)													
Monthly Vacuum Release Mechanism Test: (sign and date)													

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APPENDIX I (POOL): PUBLIC POOL RECORDS LOG

To be inspected/tested ½ hour before opening

	Time	Operator's Signature		Time	Operator's Signature
Emergency Telephone properly functioning			Ground Fault Detector/ De-energizing Device Activated		
Non-conducting Reaching Pole present			Buoyant Throwing Aids 2 present with adequate rope		
Spine Board present with 4 straps			First Aid Kit Securely latches closed		
Pool Rules Notices 2 posted Unsupervised Sign posted - if applicable			Self-Latching Gate Securely latches closed		

Public Pool – Bi-Hourly Water Chemistry and Clarity Tests

	½ hour before opening	am/ pm	am/ pm	am/ pm	am/ pm	am/ pm	am/ pm	am/ pm	am/ pm	am/ pm	am/ pm	am/ pm	am/ pm
Total Alkalinity Minimum 80 ppm													
pH 7.2-7.8													
Free Available Chlorine Unstabilized- at least 0.5 ppm Stabilized- at least 1.0 ppm													
Total Chlorine/ Total Bromine Bromine- at least 2.0 ppm													
Water Clarity Black disc visible from 9 m													
Total # of Bathers													
Operator's Initials													
Water Meter Reading		Records of any emergencies, rescues, or breakdowns of equipment, maintenance, etc.:											
Reading at beginning of day	Reading at end of day												
Make-up Water Added 20 L per bather/day													
Weekly Cyanuric Acid Test for Stabilized Pool: (sign and date) (maximum 60 ppm)													
Monthly Water Outlet Cover Security Test: (sign and date)													

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APPENDIX I (SPA): PUBLIC SPA RECORDS LOG

To be inspected/tested ½ hour before opening

	Time	Operator's Signature		Time	Operator's Signature
Emergency Telephone properly functioning			Ground Fault Circuit Interrupter activated		
Caution Notices 2 posted			First Aid Kit fully stocked		
Non-conducting Reaching Pole Present			Buoyant Throwing Aid present with adequate rope		
Spine Board present with 4 straps			Self-Latching Gate securely latches closed		

Public Spa – Hourly Water Chemistry and Clarity Tests

	½ hour before opening	am/pm	am/pm	am/pm	am/pm	am/pm	am/pm	am/pm	am/pm	am/pm	am/pm	am/pm	am/pm
Total Alkalinity Minimum 80 ppm													
pH 7.2-7.8													
Free Available Chlorine/ Total Bromine 5-10 ppm													
Oxidation Reduction Potential Minimum 700 mV													
Water Clarity Lowest water outlet drain visible in non-turbulent state													
Total # of Bathers													
Water Temperature (maximum 40°C)													
Operator's Initials													
Water Meter Reading		Records of any emergencies, rescues, or breakdowns of equipment, maintenance, date of spa drain and refill, type and amount of any chemicals added manually, etc.:											
Reading at beginning of day	Reading at end of day												
Make-up Water Added 30 L per bather/day (spa volume exceeds 4000 L)													
After drain and refill, inspections of drain covers, suction fittings, emergency equipment within spa: (date and sign) (secure and operational)													
Weekly Cyanuric Acid Test for Stabilized Spa: (sign and date) (maximum 150 ppm)													
Monthly Water Outlet Cover Security Test: (sign and date)													
Monthly Emergency Stop Button Test: (sign and date)													
Monthly Vacuum Release Mechanism Test: (sign and date)													

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APPENDIX I (POOL): PUBLIC POOL RECORDS LOG

To be inspected/tested ½ hour before opening

	Time	Operator's Signature		Time	Operator's Signature
Emergency Telephone properly functioning			Ground Fault Detector/ De-energizing Device Activated		
Non-conducting Reaching Pole present			Buoyant Throwing Aids 2 present with adequate rope		
Spine Board present with 4 straps			First Aid Kit Securely latches closed		
Pool Rules Notices 2 posted Unsupervised Sign posted - if applicable			Self-Latching Gate Securely latches closed		

Public Pool – Bi-Hourly Water Chemistry and Clarity Tests

	½ hour before opening	am/ pm	am/ pm	am/ pm	am/ pm	am/ pm	am/ pm	am/ pm	am/ pm	am/ pm	am/ pm	am/ pm	am/ pm
Total Alkalinity Minimum 80 ppm													
pH 7.2-7.8													
Free Available Chlorine Unstabilized- at least 0.5 ppm Stabilized- at least 1.0 ppm													
Total Chlorine/ Total Bromine Bromine- at least 2.0 ppm													
Water Clarity Black disc visible from 9 m													
Total # of Bathers													
Operator's Initials													
Water Meter Reading		Records of any emergencies, rescues, or breakdowns of equipment, maintenance, etc.:											
Reading at beginning of day	Reading at end of day												
Make-up Water Added 20 L per bather/day													
Weekly Cyanuric Acid Test for Stabilized Pool: (sign and date) (maximum 60 ppm)													
Monthly Water Outlet Cover Security Test: (sign and date)													

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APPENDIX I (SPA): PUBLIC SPA RECORDS LOG

To be inspected/tested ½ hour before opening

	Time	Operator's Signature		Time	Operator's Signature
Emergency Telephone properly functioning			Ground Fault Circuit Interrupter activated		
Caution Notices 2 posted			First Aid Kit fully stocked		
Non-conducting Reaching Pole Present			Buoyant Throwing Aid present with adequate rope		
Spine Board present with 4 straps			Self-Latching Gate securely latches closed		

Public Spa – Hourly Water Chemistry and Clarity Tests

	½ hour before opening	am/pm	am/pm	am/pm	am/pm	am/pm	am/pm	am/pm	am/pm	am/pm	am/pm	am/pm	am/pm
Total Alkalinity Minimum 80 ppm													
pH 7.2-7.8													
Free Available Chlorine/ Total Bromine 5-10 ppm													
Oxidation Reduction Potential Minimum 700 mV													
Water Clarity Lowest water outlet drain visible in non-turbulent state													
Total # of Bathers													
Water Temperature (maximum 40°C)													
Operator's Initials													
Water Meter Reading		Records of any emergencies, rescues, or breakdowns of equipment, maintenance, date of spa drain and refill, type and amount of any chemicals added manually, etc.:											
Reading at beginning of day	Reading at end of day												
Make-up Water Added 30 L per bather/day (spa volume exceeds 4000 L)													
After drain and refill, inspections of drain covers, suction fittings, emergency equipment within spa: (date and sign) (secure and operational)													
Weekly Cyanuric Acid Test for Stabilized Spa: (sign and date) (maximum 150 ppm)													
Monthly Water Outlet Cover Security Test: (sign and date)													
Monthly Emergency Stop Button Test: (sign and date)													
Monthly Vacuum Release Mechanism Test: (sign and date)													

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APPENDIX J (POOL): PUBLIC POOL SIGNAGE REQUIREMENTS

Required Signage	Size of Lettering	Ont. Reg. 565 Section	Location for Posting
<p>CAUTION SWIM AT YOUR OWN RISK THIS POOL IS NOT SUBJECT TO THE REQUIREMENTS OF ONTARIO REGULATION 565 – PUBLIC POOLS</p>	25 mm	Sec. 3.2.1	Hotels with 5 or fewer units/suites, post in a conspicuous location within pool enclosure.
<p>CAUTION THIS POOL IS UNSUPERVISED. BATHERS UNDER TWELVE YEARS OF AGE ARE NOT ALLOWED WITHIN THE POOL ENCLOSURE UNLESS ACCOMPANIED BY A PARENT OR HIS OR HER AGENT WHO IS NOT LESS THAN SIXTEEN YEARS OF AGE.</p>	25 mm	Sec. 17 (19)(a)	Class B pool with a water surface area of 93 m ² or less, post in a conspicuous location within pool enclosure.
<p>CAUTION THIS POOL IS UNSUPERVISED. BATHERS UNDER TWELVE YEARS OF AGE ARE NOT ALLOWED WITHIN THE POOL ENCLOSURE UNLESS ACCOMPANIED BY A PARENT OR HIS OR HER AGENT WHO IS NOT LESS THAN SIXTEEN YEARS OF AGE. THE TOTAL NUMBER OF BATHERS ON THE DECK AND IN THE POOL SHALL NOT EXCEED TEN.</p>	25 mm	Sec. 17 (19)(b)	Class B pool with a water surface area is greater than 93 m ² , post in a conspicuous location within pool enclosure.
<p>No person infected with a communicable disease or having open sores on his or her body shall enter the pool.</p> <p>No person shall bring a glass container onto the deck or into the pool.</p> <p>No person shall pollute the water in the pool in any manner and that spitting, spouting of water and blowing the nose in the pool or on the deck are prohibited.</p> <p>No person shall engage in boisterous play in or about the pool.</p> <p>The maximum number of bathers permitted on the deck and in the pool at any time is _____.</p> <p>The location of a telephone that is available for emergency use is _____.</p>		19.1	Post in not fewer than 2 places at the pool.

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Required Signage	Size of Lettering	Ont. Reg. 565 Section	Location for Posting
Each bather shall take a shower using warm water and soap and thoroughly rinse off all soap before entering or re-entering the deck.		19.2	Post at the entrance to each shower area and at every entrance to the deck used by bathers.
Emergency Telephone		19.3	Post at the emergency telephone.
<p>EMERGENCY TELEPHONE INSTRUCTIONS</p> <p>DIAL 911</p> <p>1. REMAIN CALM. SPEAK CLEARLY. ANSWER.</p> <p>2. This pool is located at: _____ (address)</p> <p>3. Enter the property off of: _____ (special directions to pool)</p> <p>4. State the type of emergency (drowning, electrical, spinal injury).</p> <p>5. Remain on the line until the operator tells you to hang up.</p> <p>6. When finished calling 911 – call: _____ (Owner/Operator information)</p>		19.3	Post at the emergency telephone.
Spectators are forbidden from walking upon the deck within 1.80 meters of the edge of the pool		19.4	Post at permanent spectator gallery.
<p>Markings that set out water depths indicating deep points, the breaks between gentle and steep bottom slopes and the shallow points.</p> <p>The words DEEP AREA and SHALLOW AREA.</p>	100 mm	19.5	Clearly mark on the deck at appropriate locations.
<p>CAUTION – AVOID DEEP DIVES</p> <p>or</p> <p>SHALLOW WATER – NO DIVING</p>	150 mm	19.6	Post in a conspicuous location, where a pool has a max. water depth of 2.5 m.

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Required Signage	Size of Lettering	Ont. Reg. 565 Section	Location for Posting
DANGER – AVOID DEEP OR LONG DIVES	150 mm	19.8	Class B pool that is equipped with a diving board (consult measurements), post in a location clearly visible to divers.
CAUTION – NO DIVING	150 mm	19.9	Pool is provided with ramp(s), post in a conspicuous location on each wall or fence enclosing the pool.
UNSUPERVISED BATHERS ARE NOT ALLOWED BEYOND THIS POINT	25 mm	19.10.i	Pool is provided with non-submerged ramp(s), post in conspicuous location at ramp(s).
BATHERS ARE NOT ALLOWED BEYOND THIS POINT	25 mm	19.10.ii	Pool is provided with submerged ramp(s), post in conspicuous location at removable barrier.

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APPENDIX J (SPA): PUBLIC POOL SIGNAGE REQUIREMENTS

Required Signage	Size of Lettering	Ont. Reg. 565 Section	Location for Posting
<p>CAUTION USE SPA AT YOUR OWN RISK THIS SPA IS NOT SUBJECT TO THE REQUIREMENTS OF ONTARIO REGULATION 428/05 (PUBLIC SPAS)</p>	25 mm	Sec. 2(3)	Hotels with 5 or fewer units/suites, post in a conspicuous location within spa enclosure.
<p>Timing Device</p>	25 mm	Sec. 9(2)	Post at the timing device.
<p>Emergency Telephone is located _____.</p>	25 mm	13(2)	Post in a conspicuous location near the entrance to public spa.
<p>EMERGENCY TELEPHONE INSTRUCTIONS</p> <p>DIAL 911</p> <p>1. REMAIN CALM. SPEAK CLEARLY. ANSWER.</p> <p>2. This pool is located at: _____ (address)</p> <p>3. Enter the property off of: _____ (special directions to pool)</p> <p>4. State the type of emergency (drowning, electrical, spinal injury).</p> <p>5. Remain on the line until the operator tells you to hang up.</p> <p>6. When finished calling 911 – call: _____ (Owner/Operator information)</p>		13(3)	Post at the emergency telephone.
<p>IN THE EVENT OF AN EMERGENCY PUSH EMERGENCY STOP BUTTON AND USE EMERGENCY PHONE. AN AUDIBLE AND VISUAL SIGNAL WILL ACTIVATE.</p>	25 mm	14(2)	Post above emergency stop button.

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Required Signage	Size of Lettering	Ont. Reg. 565 Section	Location for Posting
<p>Markings that set out water depths indicating deep points, the breaks between gentle and steep bottom slopes and the shallow points.</p> <p>The words DEEP AREA and SHALLOW AREA.</p>	100 mm	19.5	Where public spa has an inner horizontal dimension greater than 3 m, clearly mark on the deck at appropriate locations.
<p>CAUTION</p> <p>Children under the age of 12 are not allowed in the spa unless supervised by a person who is 16 years of age or older.</p> <p>Pregnant women and persons with known health or medical conditions should consult with a physician before using a spa.</p> <p>Do not use the spa if you have an open sore or rash, or are experiencing nausea, vomiting or diarrhea.</p> <p>Over exposure may cause fainting. 10 to 15 minutes may be excessive for some individuals. Cool down periodically and leave the spa if nausea or dizziness occurs.</p> <p>Enter and exit the spa slowly, to prevent slipping.</p> <p>Do not play or swim near drains or suction devices. Your body, body parts, hair, jewelry and other objects may become trapped and cause injury or drowning. People with long hair should be especially careful.</p> <p>Do not enter or remain in the spa if a drain cover or suction fitting is loose, broken, or missing. Immediately notify the spa operator.</p> <p>No food or beverage except water is permitted within the deck or spa.</p> <p>Maximum bather capacity of the public spa is _____.</p>	<p>50 mm - the word CAUTION</p> <p>10 mm - all other lettering</p>	18.1 and 18.2	Post in a conspicuous place at each entrance to the public spa.
<p>Each bather shall take a cleansing shower using soap and warm water before entering the deck.</p>	25 mm	19.1	Post in a conspicuous location near every entrance to the deck.

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GLOSSARY OF TERMS

Athlete's Foot

A contagious skin disease of the feet caused by direct exposure to a fungus called *Tinea*. The affected skin area may first appear as red or pink, flat or slightly raised, patches on the skin. The circular sores may be dry or scaly crusted or moist. As the sores become larger, the central area clears, leaving a ring of infected tissue around the clear area.

Automatic Sensing Device

Is a device that determines and continuously displays, sanitizer residual in a public spa's water, and pH value of a public spa's water, and regulates the operation of chemical feeders to maintain sanitizer and pH levels in accordance with the Public Spas Regulation.

Cryptosporidium (also known as "Crypto")

A parasite that can cause a diarrheal illness known as *Cryptosporidiosis*. Some people who are infected with *Cryptosporidiosis* do not show any symptoms. Other people will have watery diarrhea lasting 1 to 2 weeks, abdominal discomfort, nausea, vomiting, fatigue, low-grade fever, dehydration, weight loss and inability to eat. The parasite is protected by an outer shell that makes it very resistant to chlorine disinfection.

E. coli

A bacteria that can cause such symptoms as diarrhea, cramps, extensive dehydration and death in extreme cases.

Giardia

A parasite that can cause diarrheal illness. Some people who are infected may not show symptoms. Other people may have diarrhea, loose, mucousy pale greasy stools, stomach cramps, bloating, upset stomach, severe gas, fatigue, weight loss, nausea and dehydration. The parasite is protected by an outer shell that makes it very resistant to chlorine disinfection.

Hepatitis

An infection of the liver caused by viruses including *Hepatitis B* and *Hepatitis C* viruses. Half of the people who become infected with Hepatitis B do not have any symptoms and feel fine, while others may experience: weakness, fatigue, headache, decreased appetite, nausea and vomiting, fever, abdominal pain, rash, joint pain, jaundice (yellowish colour of the skin and whites of the eyes). A small number of people with hepatitis B can die from the initial infection. Within weeks to months of getting infected with Hepatitis C, about 25% of people will become ill. The symptoms include abdominal pain, nausea, vomiting, and jaundice (a yellowing of the skin). Most people who get infected with hepatitis C feel quite healthy and have no symptoms but they can spread the infection to others.

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HIV

HIV (Human Immunodeficiency Virus) is a virus that destroys cells vital to a person's immune system. It robs the body of its ability to fight other infections and illnesses. HIV makes the immune system weaker over time until other infections occur and Acquired Immunodeficiency Syndrome (AIDS) develops. AIDS is the advanced stage of HIV infection.

Legionella

A bacteria that can cause Legionnaire's Disease or its milder form, Pontiac Fever. Legionnaires' disease can have symptoms like many other forms of pneumonia. Signs of the disease can include: a high fever, chills, and a cough. Some people may also suffer from muscle aches and headaches. The symptoms of Pontiac Fever usually last for 2 to 5 days and may also include fever, headaches, and muscle aches; however, there is no pneumonia.

Norovirus

A virus that can cause symptoms such as sudden onset of nausea, vomiting, abdominal pain, stomach cramps, diarrhea, muscle aches, malaise, headache, low-grade fever, chills, or any combination of these.

Operator

Person designated by the owner of a public spa as being responsible for the operation of the spa.

Operating Day

A day on which the public spa is in operation and open for use.

Plantar's Warts

Warts on hands/feet caused by human papilloma virus (HPV) that can be acquired from pool/spa decks, floors in showers and changing rooms contaminated with infected skin fragments. (WHO)

Pseudomonas

A family of bacteria that can cause infections upon skin exposure. Pseudomonas folliculitis (also known as "hot tub rash") infects the skin causing it to become itchy and progress to a bumpy red rash that might become tender. There can also be pus-filled blisters, usually found surrounding hair follicles. Pseudomonas aeruginosa can cause painful ear infections (Swimmer's Ear).

Shigella

A bacteria that can cause such symptoms as diarrhea, fever, blood and/or mucus in stool, abdominal cramps. It can be highly contagious.

Staphylococcus aureus

A bacteria that can cause infection of the skin, ears and wounds and spread through the shedding of infected bathers.

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Ounces to Pounds Ounces \div 16 = Pounds	Grams to Kilos Grams \div 1000= Kilos
Fluid Ounces to Gallons Fluid ounces \div 128 = Gallons	Metres to Feet Metres x 3.28= Feet
Litres to Gallons Litres \div 3.785 = Gallons	Cubic Metres to Litres Cubic Metres x 1000= Litres
Cups to Fluid Ounces Cups x 8 = Fluid Ounces	Mililitres to Litres Mililitres \div 1000= Litres
Yards to Feet Yards x 3 = Feet	Parts per Million and Milligrams per Litre 1 ppm = 1 mg/L
Cubic Feet to Gallons Cubic Feet x 7.5= Gallons	1 ppm = 8.33 pounds of Chemical in One Million Gallons of Water
Quarts to Gallons Quarts \div 4 = Gallons	Celsius (C) to Fahrenheit (F) $^{\circ}\text{F} = (9/5 \times ^{\circ}\text{C}) + 32$
Pints to Quarts Pints \div 2 = Quarts	Fahrenheit (F) to Celsius (C) $^{\circ}\text{C} = 5/9 \times (^{\circ}\text{F} - 32)$
Gallons to Pounds Gallons x 8.33 = Pounds	Square Inches to Square Feet Square Inches \div 144= Square Feet

CONTACT INFORMATION

Middlesex-London Health Unit

For more information on
Public Pool and Public Spa Operators Guide,
please contact us at:

Phone: 519-663-5317

Website: www.healthunit.com

*Our staff will be pleased to assist you.
Thank you for your co-operation.*



www.healthunit.com