GREY BRUCE HEALTH UNIT

Public Pool

Operator Manual

GREY BRUCE HEALTH UNIT

Owen Sound
(519) 376-9420

Walkerton
(519) 881-1920

Adapted and Reprinted With the Permission of the Simcoe Muskoka District Health Unit.

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Introduction

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

This manual is designed to assist in meeting legislative and regulatory requirements and is not to be used as a replacement for specific legislative or regulatory requirements. This manual is intended to assist owners/operators of public pools with health and safety-related operational procedures applicable to public pools.

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

a) constructed
b) altered OR
c) closed for more than four weeks.

Both the manual and the Regulation do not address pool problems associated with unbalanced water chemistry, equipment, and maintenance or construction requirements.

Requirements related to pool construction are under the Ontario Building Code. Should any issues arise regarding pool construction, please contact your local municipal office and ask for a building inspector.

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

The Building Code or a full copy of the Public Swimming Pool Regulation 565/90 (O. Reg. 179/02) can be obtained from www.e-laws.gov.on.ca or by contacting:

Publications Ontario
50 Grosvenor Street
Toronto, ON M7A 1N8

1-800-668-9938

What class is my pool?

Class A

- General public admitted
- Operated in conjunction with or as part of a program of a YMCA or similar institution education, instructional, physical fitness or athletic institution supported in whole or in part by public funds
- Operated on the premises of a recreational camp, for use by campers, their visitors and camp personnel.

Class B

- Operated on the premises of: an apartment building, mobile home park nurses' residence, hotel, campground, private club, condominium, day nursery, day camp or an establishment or institution for the care or treatment of persons who are ill, infirm or aged or for persons in custodial care

What safety equipment is required?

Reaching pole	• 3.65 m long, electrically insulated & available on deck
Two Buoyant Throwing Aids	• Rope diameter to be 6 mm in diameter • Rope length to be 3 m + half the width of the pool • Available on deck and located on either side of the pool
Spine Board	• To be in good condition
Emergency Telephone	• Class A pools - on deck • Class B pools - within 30 metres of the pool • To be fully operational and tested daily
First Aid Kit *(see Appendix B)* 	Conveniently located and well marked. Must contain the following: • A current copy of the St. John Ambulance or Red Cross First Aid Manual • 12 safety pins • 24 adhesive dressings, individually wrapped • 12 sterile gauze pads each 7.5 cm square • 4 rolls of gauze bandages 5 cm in width • 4 rolls of gauze bandages 10 cm in width • 4 sterile surgical pads, individually wrapped • 6 triangular bandages • 2 rolls of splint padding • 1 roll-up splint Recommended: • 1 pair of scissors • 2 pairs of non-permeable gloves • 1 resuscitation pocket mask
Ground Fault Detector	• Available if pool has underwater lights or electrical outlets within 3 m of the pool surface and tested daily

What signs do I have to post?

1. General Pool Rules
2. Shower Sign
3. Emergency Telephone
4. No Diving
5. Deck markings
6. Black disc
7. Unsupervised Sign

1. General Pool Rules

A minimum of two signs is required on the deck or at the pool indicating the following:

- No person infected with a communicable disease or having open sores on his/her body shall enter the pool
- No person shall bring a glass container onto the deck or into the pool
- No person shall pollute the water in the pool in any manner and spitting, spouting of water and blowing the nose in the pool or on the deck are prohibited
- No person shall engage in boisterous play in or about the pool
- 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)*
- The emergency telephone is located _____

O.Reg 565/90 S. 19 (1)

2. Shower Sign

The following notice is to be posted at the entrance of every shower area and at every entrance to the pool deck:

NOTICE

Every bather shall take a shower, using warm water and soap,
and thoroughly rinse off all soap before entering or reentering the deck.

O.Reg 565/90 S. 19 (2)

3. Emergency Telephone

A notice must be posted above the phone that states the following:

If the phone is connected to a reception desk or is directly connected to emergency services, indicate this information on the sign.

EMERGENCY TELEPHONE

DIAL 911 (fire dept., ambulance)

Name of the Pool: **ABC Pool**
Address of Pool: **123 Swimmer's Lane**
Location of Pool: **Southeast Corner of Bldg**
Phone number: **123-4567**

O.Reg 565/90 S. 19 (3)

4. No Diving

If the pool water depth is **less than 2.5 metres**, one of the following signs must be posted with lettering that is 15 cm high. The following words can be posted on the wall or marked onto the deck:

CAUTION – AVOID DEEP DIVES

OR

SHALLOW WATER – NO DIVING

If at any point the water depth is **1.35 metres or less**, between 7.5 and 9 metres away from a diving area and the pool is equipped with a diving board that is 60 cm in height or less above the water, provide the following notice, clearly marked in dark letters, 15 cm high on a light background:

5. Deck Markings

On the deck, the water depths must be clearly marked in figures 10 cm high at the:

- Deep points
- Shallow points
- Breaks between gentle and steep bottom slopes

"DEEP AREA" and **"SHALLOW AREA"** at their respective locations (10 cm high on the deck).

6. Black Disc

- A black disc 150 millimetres in diameter on a white background must be affixed to the bottom of the pool at its deepest point.
- The white background at its narrowest point must be no less than the diameter of the black disc (150 millimetres).
- Must be clearly visible from any point on the deck nine metres away from the disc.

Note: The pool must be closed when the black disc is not affixed to the bottom of the pool and/or is not clearly visible.

7. Unsupervised Sign

CLASS A pools must always have lifeguards on duty. Therefore, unsupervised signs are not required. (Skip to page 8)

CLASS B pools may or may not have lifeguards on duty.

FOR CLASS B POOLS WITHOUT SAFETY SUPERVISION:
Class B pools that are **greater than 93 square metres,** the sign must read, printed in letters at least 2.5 cm high:

The bather load is always 10 regardless of the actual calculation.

CAUTION
This pool is unsupervised.

Bathers under 12 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 16 years of age. The total number of bathers on the deck and in the pool shall not exceed 10.

O.Reg 565/90 S. 17(19)(b)

For Class B pools that are **less than 93 square metres**, the sign must read, printed in letters at least 2.5 cm high:

CAUTION
This pool is unsupervised.

Bathers under 12 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 16 years of age.

O.Reg 565/90 S. 17(19)(a)

For Class B Pools that have Occasional Safety Supervision:

If a Class B pool operates with and without safety supervision at different times, a sign may be posted that states when the lifeguards are on duty. The sign below is an example:

ATTENTION!

This pool operates at times without a lifeguard in attendance.
Lifeguards will not supervise the pool on:

Mondays and Tuesdays

However, it is recommended that the unsupervised sign always be posted at pools where supervision is occasional.

How many lifeguards do I need at my pool?

You will first need to know the following parameters before using the chart below:

- The total water surface area of your pool
- The allowable bather load

To calculate these parameters, go to page 9.

The chart below indicates the minimum numbers of lifeguards and assistant lifeguards for a public pool with a water surface area of **500 square metres or less.**

Where there are lifeguards and assistant lifeguards on duty		**Where there are <u>only</u> 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

Calculating the area of the pool water surface

- The total area of the pool water surface is calculated by measuring the shallow and deep areas of the pool separately and then adding the two results together.
  - The shallow area is part of the pool that is 1.35 metres (4.5 feet) or less in depth.
  - The deep area is part of the pool that is greater than 1.35 metres (4.5 feet) in depth.

STEP 1

Length of shallow end _____ Width of shallow end _____

Area of shallow end: Length x Width = _____

STEP 2

Length of deep end _____ Width of deep end _____

Area of deep end: Length x Width = _____

STEP 3

Area of Shallow end + Area of Deep end = **Total Surface Area**

	+		=	

Calculating Bather Load

In order to calculate the total number of bathers permitted in your pool and on the deck, complete the following calculation:

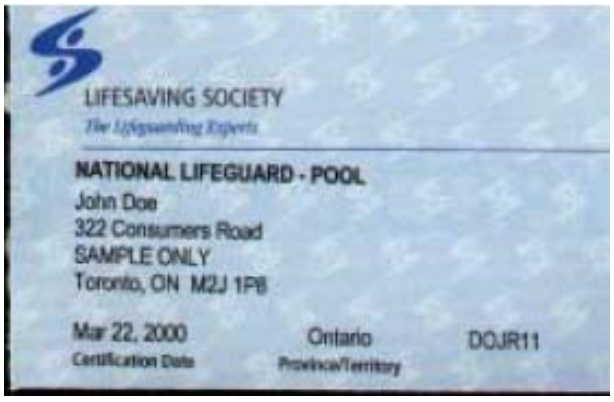
Maximum bather load = $\frac{\text{Shallow Area}}{1.4} + \frac{\text{Deep Area}}{2.5} =$ ~~people~~

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

What qualifications do lifeguards require?

Lifeguard

- Be trained in operational and emergency procedures (operational and emergency procedures to be available in writing at the pool).
- Be at least 16 years of age (copy of birth certificate required).
- Be appropriately attired so that they are readily identifiable.
- Have a current certificate (within two years from date of issue) as shown below:

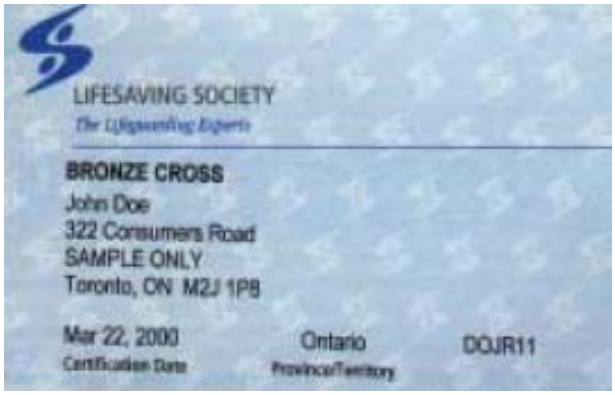


Royal Life Saving Society Canada:

- National Lifeguard Service's Lifeguard Certificate

Assistant Lifeguard

- Be trained in operational and emergency procedures.
- Be at least 16 years of age (copy of birth certificate required).
- Be appropriately attired so that they are readily identifiable.
- Have a current certificate (within two years from date of issue) as show below:



Royal Life Saving Society Canada:

- Bronze Cross OR
- Award of Distinction

- The number of assistant lifeguards cannot be greater than the number of lifeguards.
- All certificate copies to be available at the pool and signed by the operator as valid.
- Lifeguards should carry the original certificates with them while on duty.

Additional lifeguard qualifications for Class A pools only

In addition to the requirements on page 10, at least one person 16 years of age or over, who is on duty or on the premises of a class A pool, shall be within call and be the holder of a first aid certificate dated not more than three years prior to the date on which the lifeguard is on duty issued by one of the following:

- St. John Ambulance (Emergency, or Standard or Advanced certificate)
- Canadian Red Cross Society's (Emergency, or Standard or Advanced certificate)
- Royal Life Saving Society Canada's (Aquatic Emergency Care Certificate)
- Certificate that is considered equivalent as approved by the Minister of Health and Long-Term Care

What type of tests and inspections do I need to take?

Tests and inspections	When
Water clarity (Black disc clearly visible from 9 metres*	Every 2 hours and ½ hour before pool opens
Free available chlorine (FAC)	
Bromine	
pH	
Total chlorine *(Free Available Chlorine + Combined chlorine)*	Daily
Combined chlorine *(Total Chlorine - Free Available Chlorine)* *	
Number of bathers	
Make-up water meter reading	
Skimmer lids & drain covers inspected	
Safety Equipment and First Aid Kit*	
Ground fault detector	Daily – before opening
Emergency Phone	
Cyanuric Acid (outdoor pools)	Weekly
Total alkalinity*	
Water cover outlets**	Once every 30 days

** recommended*

***must also be signed by the person making the test*

Record these tests and inspections on a Pool Maintenance Form *(see Appendix C)*:

What are the required water chemical levels?

Test	Required Level
Free available chlorine (Unstabilized pool)	0.5 mg/l
Free available chlorine (Stabilized pool)	1.0 mg/l
Bromine	2.0 mg/l
pH	7.2 – 7.8
Cyanuric acid (Stabilized pool)	25 - 60 mg/l
Total alkalinity	Minimum 80 mg/l

- Record emergencies, rescues or breakdowns of equipment on the Pool and Spa Incident Report Form *(see Appendix D)*.

Records must be:

- kept for a minimum of one year
- signed by the operator
- available for inspection by a Public Health Inspector.

The safety equipment and circulation system should be constantly monitored.

What type of test kit do I need?

There are many types of test kits commercially available from a pool and spa supply company.

Some kits will measure FAC/ bromine residual and pH and nothing else. This may be fine for a backyard spa, but for a public spa, a fully equipped test kit is recommended. It is mandatory that the kit contains the reagents to test for free available and combined chlorine or bromine levels, total alkalinity, cyanuric acid and pH. DPD is the most commonly used method for checking for FAC.

It is recommended that reagents be replaced as per manufacturer's recommendation. Reagents lose their strength over time. Storing them in direct sunlight and in filter/equipment rooms where the conditions are warm and humid will ruin the reagents. Storing them in cold temperature (i.e., outdoor shed in winter) may destroy the reagents. Mixing various reagents from other kits won't provide accurate results either.

Testing Method

Always follow the manufacturer's instructions.

- Take the water sample away from any jets.
- Submerge the comparator tub at least 18 inches from the water surface.
- Add reagent with the reagent bottle completely upside down and vertical (straight up and down).
- Count the drops as you add them to the comparator tube making sure that you add the exact amount required.

When should I close the pool?

- The black disc is not clearly visible
- Pool fouling (*see Appendix E*)
- No disinfecting chemicals available on the premises
- Emergency phone not working
- Ground fault detector not working
- Insufficient quantity of disinfectant (FAC or Bromine)
- Circulation system not working
- Spine board, reaching pole, buoyant throwing aids missing
- Test kit not available or essential test chemicals missing
- Main drain cover missing or not secured to the bottom of the pool
- Skimmer lids missing
- Insufficient number of lifeguards/lifeguard assistants or inadequate qualifications
- Pool barrier not secure

General Maintenance

Every owner and every operator shall ensure that the pool, the deck and where provided, the dressing and locker rooms, toilets, showers and connecting corridors are:

- Kept clean, free from slipperiness and disinfected
- Free of hazardous obstructions
- Ventilated so as to remove odours
- That no food or beverage except water is supplied or consumed in the pool or on the deck
- That no glass container is brought in the pool or on the deck

All moveable equipment, including portable diving stands, starting platforms and swing ropes that are provided for the use of bathers, that it be in placed on the deck (at least 0.6 m. away from the pool edge) only during periods when aquatic personnel can directly supervise their use.

How do I determine if the public pool has the correct turnover rate?

Turnover rate is the rate at which the volume of water is filtered, disinfected and returned to the pool each day.

Turnover period is the period of time which the volume of water is filtered, disinfected and returned to the pool each day.

1) Determine the volume in metres^3

Volume = Length in metres x Width in metres x Depth in metres

=_____ metres x ___ metres x __ metres

=_____metres^3

2) Convert from metres^3 to litres:

1 m^3 = 1000 L

Volume = _____ m^3 x 1000 L/ m^3

3) What turnover rate is required?

Using the chart below determine what the turnover period for the pool is.
Is the pool a Class A or B pool? When was the pool built?

EXISTING POOLS (constructed before 1997) as required under the Public Pool Regulation:		
	Turnover rate	**Turnover period**
Class A pools constructed **after 1974**	4 times the total water volume of the pool	Once every **6 hours**
Class A pools constructed **prior to 1974** and in a **Class B** pool	3 times the total water volume of the pool	Once every **8 hours**
NEWER POOLS (constructed after 1997) as required under the Ontario Building Code**:**		
	Turnover rate	**Turnover period**
Class A pools	6 times the total water volume of the pool	Once every **4 hours**
Class B pools	4 times the total water volume of the pool	Once every **6 hours**

4) Determine the require flow rate.

Flow rate	**=**	Pool water volume in litres Turnover period (in hours) x 60 min./hr.
	=	_____ litres (L) _____hr. x 60 min./hr.
	=	_____ L/min. (or L/pm)

5) Check the flow meter to determine the pool flow rate.

Pool Flow metre reading _____ L/min.(L/pm)

a) If the flow rate is the same or higher as calculated in step 3 then there is a good flow rate.

b) If the flow rate is less than calculated in step 3 then the water is not recirculating at the proper flow rate and a repair may be required. Consult with a pool expert.

Make-up Water

Each day:

- Calculate the **number of bathers** in the pool each day
- Add **20 Litres** (four imperial gallons) of potable water **per bather** to the pool
- Use the **water meter** to determine the amount of water added to the pool (1 cubic meter = 220 imp.gals/1,000)
- **Record bather load** and amount of **make-up water added** on the Pool Maintenance Form *(Appendix C)*

For example:

- *If 40 bathers use the pool in one day, then 800 litres (40 bathers x 20 litres/per bather) of water must be added to the pool that day.*

How do I store and handle chemicals safely?

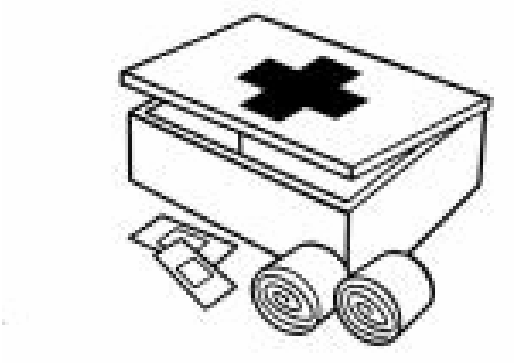
- ☐ Store pool chemicals in a cool, dry and well ventilated space.
- ☐ Keep corrosive materials such as metals and combustibles such as paper rags away from other chemicals.
- ☐ Keep all chemicals away from hot surfaces and flame.
- ☐ Have personal protective equipment available (gloves, respirators, apron etc.)
- ☐ Material safety data sheets to be made available to employees for every chemical in use.
- ☐ Do not eat, drink or smoke in the chemical storage area.
- ☐ Ensure the chemical storage room is inaccessible to unauthorized persons.
- ☐ Handle chemicals with clean and dry scoops only. Each chemical should have its own scoop. Use scoops provided by the manufacturer.
- ☐ Keep containers closed when chemicals are not in use.
- ☐ Never re-use empty chlorine containers for storage of other chemicals and never mix contaminated chemicals with your fresh supply.
- ☐ When mixing chemicals, add them slowly. NEVER ADD WATER TO THE CHEMICALS, ALWAYS ADD THE CHEMICAL TO THE WATER.

Pool parts

Make-up water meter	• measures the amount of fresh water added to pool everyday • fresh water prevents cyanuric acid build-up and dilutes swimmer pollutants • 20L of fresh water per bather must be added to the pool daily *(see Make up water section)*
Filter	• removes dirt, debris and undissolved solids from the pool water • two types of filters, sand and diatomite • some water is wasted to make room for fresh water • filter is cleaned by backwashing
Flow meter	• calculates turnover rate of the water
Skimmers	• located under the pool deck • removes water from the surface for filtration and circulation • removes objects which float on the surface of the water • each skimmer contains a basket, floating weir and equalizer line • 15% of the total volume of the pool water must be withdrawn from the pool (via skimmers or gutter) daily and discharged to waste drains
Equalizer line	• are **not permitted** • ensures that water is always in the lines so that the recirculation pump is sucking water and not air • one end of the line must be plugged
Main drain	• located at the deepest end of pool • removes and returns water to pool • cover must be flush and secure to floor of pool bottom • must be checked daily, recorded monthly
Pressure gauges	• two gauges are located at the top of the filter tank ➢ One measures the amount of water flowing into the tank ➢ The other measures how much flows out of the tank. • When too much direct collects in the filter medium, the water flow rate drops. The difference is indicated on the gauges. When the difference is quite noticeable, backwashing is required. Follow manufacturers' directions as filters vary in cleaning and pressure requirements.
Recirculation pump	• Pulls water from the pool and pushes it through the filter or it pulls the water through the filter and pushes it back to the pool. • Must be capable of pumping enough water through the system to provide the required number of turnovers *(see Turnover rate section).*

Appendix B

Public Pool First Aid Check List



- ☐ A current copy of the St. John Ambulance or Red Cross First Aid Manual
- ☐ 12 safety pins
- ☐ 24 adhesive dressings, individually wrapped
- ☐ 12 sterile gauze pads each 7.5 cm square
- ☐ 4 rolls of gauze bandages 5 cm in width
- ☐ 4 rolls of gauze bandages 10 cm in width
- ☐ 4 sterile surgical pads, individually wrapped
- ☐ 6 triangular bandages
- ☐ 2 rolls of splint padding
- ☐ 1 roll-up splint

Recommended:

- ☐ 1 pair of scissors
- ☐ 2 pairs of non-permeable gloves
- ☐ 1 resuscitation pocket mask

Date kit was checked: _____

Appendix A

Notification of Opening Public Pool or Spa

Name of Pool: _____

Municipality: _____

Location Address: _____

Mailing Address if it is different from Location _____

_____

Phone # at Pool/Spa: _____

Pool is:	**Indoor**	**[ ]**	**Spa is:**	**Indoor**	**[ ]**
	Outdoor	**[ ]**		**Outdoor**	**[ ]**
	Class A	**[ ]**			
	Class B	**[ ]**			
	Modified	**[ ]**			
	Wave Action	**[ ]**			

Operator Name: _____ **Operator Phone:** _____

Planned "Ready for Inspection" Date: _____

Planned Opening Date: _____

Please fill in <u>all</u> the information above and
*return this form 14 days **prior** to the planned opening date*

Please note that if our inspection reveals significant deficiencies, then the Pool and/or Spa may be closed until our re-inspection confirms the deficiencies have been corrected.

Return this form to the Grey Bruce Health Unit
by fax to (519) 376-0980
or by mail to:
920 First Ave West, Owen Sound ON N4K 4K5

If you have questions call and ask for the Public Health Inspector Monday to Friday 8:30am to 4:30pm at (519) 376-9420 (1-800-263-3456).
Visit us at: ***http://www.publichealthgreybruce.on.ca***

Appendix C

Pool Maintenance Record

Year:

Date	Time	Free Available Chlorine (FAC) (minimum 0.5mg/L)	Free Available Chlorine Stablized (minimum 1.0mg/L)	Total Bromine (minimum 2.0mg/L)	pH (7.2 - 7.8)	Water Clarity (Black disc clearly visible from 9 metres)	Total Chlorine	Make-up Water (20 litres/bather each day)	Bather Load (Number of bathers each day)	Ground Fault Detector (1/2 hour before opening)	Emergency Telephone (1/2 hour before opening)	First Aid kit / safety equipment	Total alkalinity (minimum 80mg/L)	Cyanuric acid (1 - 60mg/L)	Pool Outlet Cover	Name and signature of operator
		1/2 hour before opening, then every 2 hrs					Daily						Weekly		Monthly	
Date	Time	1/2 hour before opening, then every 2 hrs					Daily						Weekly		Monthly	
Date	Time	1/2 hour before opening, then every 2 hrs					Daily						Weekly		Monthly	

Other information as required (e.g. emergencies, rescues, equipment failure, pool fouling, etc) *(Use back of form if necessary)*

Appendix D **Date of Report:** _____

Public Pool and Spa Incident Report

Facility name: _____

Date and time of incident: _____

Location of incident: (circle all that apply)

a) Outside pool grounds
b) Dressing Rooms
c) Pool/Spa Deck
d) Open Lawn
e) Fence
f) Pool
g) Shallow End
h) Deep End
i) Diving Board
j) Wading Pool
k) Spa
l) Water Slide
m) Other_____

Name of person involved: _____

Address: _____

Phone number: _____ **Age:** _____ **Sex:** _____

Details of incident (include activity at time of incident): _____

_____

_____

Description of injuries (including exact location of body): _____

_____

_____

Treatment or action taken by staff (include if treatment refused): _____

_____

_____

Treatment given by emergency services (ambulance, police, fire etc): _____

_____

_____

Parents contacted: ☐ Yes ☐ No

Environmental conditions: Water (temperature, visibility, etc.) _____

Air (temperature, wind, etc.) _____

Deck (condition etc.) _____

Victim followed all rules and safety procedures: ☐ Yes ☐ No

Witness Name: _____

Address: _____

Phone: _____ **Age:** _____ **Sex:** _____

Name of staff involved: _____

Name of person completing report: _____

Pool disinfection after fecal or vomit incident

Swimming pool contaminated with fecal material – Normal formed stools

- Evacuate the pool immediately
- Remove waste with a scooping device and dispose into a toilet
- Clean and disinfect equipment used to remove waste with 500 mg/L free chlorine for 1 minute
- Superchlorinate the contaminated area to at least 10 mg/L free chlorine for a minimum of 15 minutes
- Reduce the free available chlorine of the pool to at 0.5 to 3.0 mg/L
- Reopen pool
- Document incident on Pool Maintenance Record

Swimming pools contaminated with diarrhea or vomit

- Evacuate the pool immediately
- Consult with ill person:
  - Obtain name and contact information
  - Suggest they consult with family doctor
- Shut off the recirculation pump and chemical feeders
- Remove waste with a scooping device and dispose into a toilet
- Vacuum any remaining waste
- Clean and disinfect equipment used to remove waste with 500 mg/L with free chlorine for 1 minute
- Superchlorinate to a minimum concentration of 50 mg/L for 3.5 hours **OR** 80 mg/L for 2 hours
- Backwash filters
- Restart recirculation equipment and chemical feeders
- Reduce the free available chlorine of the pool water to 0.5 to 3.0 mg/L
- Reopen pool
- Document incident on Pool Maintenance Record
  - Report incident to Health Connections at 705-721-7520 (1-877-721-7520)

- **AMOUNT OF SANITIZER TO YIELD**

ONE MG/L OF FREE AVAILABLE CHLORINE

METRIC MEASURE TABLE

Litres of Pool Water

Chlorine Sanitizer	% ACC	2,000 l.	20,000 l.	40,000 l.	80,000 l.	200,000 l.	400,000 l.
Cl_2-Gas	100%	2.00 g	20.0 g.	40.0 g.	80.0 g.	200.0 g.	0.400 kg.
TCCA	90%	2.22 g.	22.2 g.	44.4 g.	88.8 g.	222.0 g.	0.444 kg.
Calcium	70%	2.86 g.	28.5 g.	57.1 g.	114.0 g.	286.0 g.	0.571 kg.
Calcium	65%	3.07 g.	30.7 g.	61.3 g.	123.0 g.	307.0 g.	0.613 kg.
NaDCC	62%	3.45 g.	34.5 g.	69.0 g.	138.0 g.	345.0 g.	0.690 g.
NaDCC -2H_2O	55%	3.57 g.	35.7 g.	71.4 g.	143.0 g.	357.0 g.	0.714 g.
Lithium	35%	5.71 g.	57.1 g.	114.0 g.	228.0 g.	0.571 kg.	1.14 kg.
Bleach	10.3%	10.0 ml.	100.0 ml.	200.0 ml.	400.0 ml.	2.00 l.	4.00 l.

ENGLISH MEASURE TABLE

U.S. Gallons of Pool Water

Chlorine Sanitizer	% ACC	500 gal.	5,000 gal.	10, 000 gal.	20,000 gal.	50,000 gal.	100,000 gal.
Cl_2-Gas	100%	0.004 lbs.	0.042 lbs.	0.835 lbs.	0.167 lbs.	0.417 lbs.	0.834 lbs.
TCCA	90%	0.005 lbs.	0.046 lbs.	0.093 lbs.	0.185 lbs.	0.463 lbs.	0.926 lbs.
Calcium	70%	0.006 lbs.	0.060 lbs.	0.119 lbs.	0.238 lbs.	0.596 lbs.	1.19 lbs.
Calcium	65%	0.006 lbs.	0.064 lbs.	0.128 lbs.	0.257 lbs.	0.642 lbs.	1.28 lbs.
NaDCC	62%	0.007 lbs.	0.072 lbs.	0.144 lbs.	0.287 lbs.	0.718 lbs.	1.44 lbs.
NaDCC -2H_2O	55%	0.008 lbs.	0.075 lbs.	0.149 lbs.	0.296 lbs.	0.745 lbs.	1.48 lbs.
Lithium	35%	0.013 lbs.	0.128 lbs.	0.238 lbs.	0.476 lbs.	1.19 lbs.	2.38 lbs.
Bleach	10.3%	.65 fl. oz.	6.5 fl. oz.	13.0 fl. oz.	1.6 pints	2.0 qts.	1.0 gal.